



**OFFICIAL MINUTES OF THE OXFORD MAYOR AND COUNCIL MEETING
WORK SESSION**

**MONDAY, FEBRUARY 21, 2022 – 6:30 PM
VIA TELECONFERENCE**

Meeting Recording Available at

<https://www.youtube.com/channel/UCatIP9h21Eyp0LkbfVjNJQ>

ELECTED OFFICIALS PRESENT:

David Eady – Mayor
George Holt – Councilmember
Lynn Bohanan – Councilmember
Laura McCanless – Councilmember
Mike Ready – Councilmember
Jim Windham – Councilmember
Jeff Wearing – Councilmember

STAFF PRESENT:

Marcia Brooks – City Clerk/Treasurer
Stacey Mullen – Deputy City Clerk
Bill Andrew – City Manager
Mark Anglin – Police Chief
Jody Reid – Utilities/Maintenance
Supervisor

OTHERS PRESENT: Cheryl Ready, Art Vinson, Theresa Eady

Agenda (Attachment A)

1. Mayor's Announcements

Motion to amend agenda to include invasive species removal proposal – Laura McCanless

Second – Jeff Wearing

Approved unanimously (7/0)

2. Committee Reports

The Trees, Parks and Recreation Board, Planning Commission, Downtown Development Authority, and Sustainability Committee reported on recent activities.

a. Trees, Parks and Recreation Board

Proposal to hire company for invasive species plant removal – Mike Ready and Laura McCanless expressed support for the project. Request will be voted on in March regular session.

Cheryl Ready and Jeff Wearing announced plans to complete work on the George Street Park fence on March 19, 2022 beginning at 9:00 a.m. Marcia Brooks will post a request on social media for volunteers.

- b. Sustainability Committee – Laura McCanless advised the committee is working on the Streets and Trails Plan. An update on the GOSP Grant will be provided at the next meeting.
 - c. Planning Commission – Bill Andrew reported on decisions made and items discussed at the last meeting.
 - d. Downtown Development Authority – A Special Called Meeting was held on February 17, 2022 to review RFPs. Historical Concepts was selected to create a conceptual plan for the downtown area.
 - e. Committee on Race – This committee will be reconstituted soon. Mayor Eady will be meeting soon with Dean Hicks at Oxford College to discuss the Twin Memorials initiative.
3. **Discussion on City's Plans to Celebrate July 4th** (Attachment B)
City Council members agreed that a July 4th event will be held in 2022. James Windham and Mike Ready volunteered to serve on the event committee. Marcia Brooks will post a notice on social media requesting participants from the community to serve on the committee.
4. **Request to Contract with Officers Mobley and Johnson for Evidence Room Audit** (Attachment C)
There was consensus among City Council members to approve the request provided that adequate funds are available in the budget. Bill Andrew and Marcia Brooks will confirm. Request will be voted on in March regular session.
5. **Request for the City Council to Consider the Outfitting of an Oxford Bike Patrol** (Attachment C)
Chief Anglin would like to use SPLOST funds to implement this problem as a community policing initiative. He anticipates being able to save some money from updated quotes on the vehicle and radios previously planned for under the SPLOST funds. Several City Council members expressed interest in this request. Jim Windham requested that Chief Anglin compare the cost of electric bicycles to regular bicycles.
- Chief Anglin informed the City Council of red-light cameras at no cost to the City as a possible revenue stream and as a speeding deterrent.
6. **Presentation of Whatcoat Street Traffic Count** (Attachment D)
This data will be used by the Downtown Development Authority as they proceed with their concept plans.
7. **New Body Cameras Recommended for the Oxford Police Department** (Attachment E)
Chief Anglin is requesting to use SPLOST funds to purchase new cameras. He feels this purchase cannot wait for implementation of the new budget. The City recently signed a contract with Axon for cloud storage of body camera footage. The proposal is

for purchasing body cameras from Axon for an increase in cost over five years of \$15,939,60. Request will be voted on in March regular session.

8. **Contract with Condrey & Associates for a Compensation Study** (Attachment F)
Laura McCanless and Mike Ready were in favor of proceeding with the contract now since the Carl Vinson Institute has cancelled their contract. They feel it is important to have the information for budget development. George Holt and Jeff Wearing did not feel there is any rush to have the study completed since all classified employees have just received a 14.1% pay increase. Mr. Holt recommended putting this item in the FY 2023 budget proposal. This item will not be included on the Regular Session agenda for March.
9. **Consideration of National Green Building Standards for the Oxford Building Code** (Attachment G)
Mayor Eady requested that Bill Andrew check with Bureau Veritas to see if there are any procedural issues the City should consider before adoption.
10. **Adoption of the Newton County Hazard Mitigation Plan** (Attachment H)
There was consensus among City Council members to approve the request provided that adequate funds are available in the budget. Bill Andrew and Marcia Brooks will confirm. Request will be voted on in March regular session.
11. **Other Business**
None.
12. **Work Session Meeting Review**
13. **Executive Session**
None.
14. **Adjourn**
The meeting was adjourned by Mayor Eady at 9:41 p.m.

Respectfully Submitted,



Marcia Brooks
City Clerk/Treasurer

Oxford Mayor and Council
Work Session
Monday, February 21, 2022 – 6:30 P.M.
Via Teleconference
Agenda

1. Mayor's Announcements
2. **Committee Reports** – The Trees, Parks and Recreation Board, Planning Commission, Downtown Development Authority, Sustainability Committee, and the Committee on Race will update the Council on their recent activities.
3. ***Discussion on City's Plans to Celebrate July 4th** – Staff is need of clarification as to the extent of our July 4th festivities so we may plan accordingly. Depending on the decision to move forward, there is an immediate need to form a Parade Planning Committee with Oxford and the Lion's Club.
4. ***Request to Contract with Officers Mobley and Johnson for Evidence Room Audit** – The Service Providers will assist with conducting an audit and inventory of the Police Property and Evidence Room in the City of Oxford Police Department. Services will be performed under the supervision of personnel of the City of Oxford Police Department.
5. ***Request for the City Council to Consider the Outfitting of an Oxford Bike Patrol** – One of the most important aspects of Community Policing is visibility and accessibility. A Bike Patrol would afford the City these two elements and provide officers with a new and more intimate perspective on the community.
6. ***Presentation of Whatcoat Street Traffic Count** – Data collection began on Wednesday, 01-28-2022 at 10:50 AM and ended at 7:54 AM, 02-07-2022. Attached you will see a one-page Speed Data Analysis for that time and an Excel spreadsheet with the raw data.
7. ***New Body Cameras recommended for the Oxford Police Department** – Chief Anglin is concerned about several issues with the current body camera system and would like to discuss a change in equipment (see attached document).
8. ***Contract with Condrey & Associates for a Compensation Study** – The City originally contracted with the Carl Vinson Institute of Government (CVIOG) for a Compensation Study in November 2021 at a cost of \$7,500 for a final deliverable no later than December 23, 2022. As has been previously reported, CVIOG has cancelled that contract due to staff shortages and cannot say when they will be able to complete it. Appendix A of the attached Proposal outlines the deliverables from Condrey & Associates. The cost for this study would be \$14,500 and would be completed by May 31, 2022 and so should be useful to our upcoming budget process. The lower CVIOG cost is due to their state subsidization from the State of Georgia. The City of Watkinsville and the Barrow County Sheriff's Office heartily endorses their work.

9. ***Consideration of National Green Building Standards for the Oxford Building Code** – Georgia allows for the adoption of NGBS as a part of our building codes. Bureau Veritas has indicated they would be able to inspect for this set of codes.
10. ***Adoption of the Newton County Hazard Mitigation Plan** – In order to qualify for emergency relief funds in the event of a disaster, communities are required to adopt a current Hazard Mitigation Plan. The attached plan has been reviewed by staff with Newton County Emergency Management officials.
11. **Other Business**
12. **Work Session Meeting Review** – Mayor Eady will review all the items discussed during the meeting.
13. **Executive Session**

*Attachments

EcoLogic LLC

Nature Based Solutions for a Biodiverse Georgia



Who We Are:

EcoLogic is a woman owned organization that specializes in regenerative landscape services including manual invasive plant removal, stormwater run-off mitigation, erosion control, soil remediation, and wildlife habitat expansion. We prioritize working with natural systems, rather than against them, to ensure the success of our regenerative landscaping goals. Our holistic approach coupled with our commitment to quality has earned us a reputation for exceptional results, which can be experienced anytime by taking a stroll through Atlanta's famed Fernbank Forest where we have managed invasive removal in key sensitive areas since February 2020.

At EcoLogic, we ascribe to the philosophy of "eco over ego" by centering our practice in ecology and community. In collaboration with Pygmy Goat Folx, the Georgia Native Plant Society, WoodsKeeper and other partners, we are establishing a sustainable landscaping network that engages with local citizens to promote land stewardship. We hope to showcase and safeguard our one-of-a-kind natural wonders so that Georgia is looked to nationwide as a progressive example for land stewardship solutions in the face of climate challenges.

What We Do:

EcoLogic assists clients to develop and implement resilient, long term property management strategies that *support biodiversity and expand high functioning green and ecological infrastructure.*

Our removal services are ideal for nurturing areas of high ecological value (i.e. wetland, conservation easements, recharge zones and stream buffers, and locations harboring rare native plant and animal species), while our earthwork and habitat expansion services are optimal for diversifying or building new ecology. For those seeking native wildlife habitat certification, EcoLogic follows guidelines laid out by the Audubon society, the National Wildlife Federation, the Xerces Society and the Georgia Native Plant Society.

Sustainability guides our whole practice. From manual invasive removal to integrating free*, repurposed materials into your project, EcoLogic is dedicated to practices that close more loops, reduce waste, and saves clients from unnecessary cost. For interested clients, we offer on-site training so you may learn our techniques hands-on and facilitate the longevity of your project. We believe in empowering you with the tools necessary to steward the land in your care, well beyond your need for EcoLogic's services.

Regeneration is a process that unfolds over time, requiring space for growth and change, with no definitive "end". A regenerated ecology is a self-regulating ecology and exists in equilibrium. We are here to help you set the regenerative process in motion and maintain momentum into the future so that as little intervention as possible is needed to keep the landscape healthy, productive, and beautiful.

How We Do It:

All projects begin with a consultation and site analysis. Each site is evaluated for a personalized approach and tailored both to the needs of the ecology and the priorities of the client.

We define our objective by triaging the site, typically starting with the trees as they have the highest ecological value and provide most of the green infrastructure (i.e. erosion control, temperature

* subject to procurement and processing fee

regulation, windbreak, shade, water re-infiltration, etc). Once the trees are secure, we focus on new growth. New growth provides the basis for biodiversity and can be encouraged either by creating space in an existing ecology or by building new habitat. *Biodiversity stabilizes a site's ecology, discouraging invasive plants from re-establishing.*

We create space for new growth mainly through gradual, targeted, manual invasive removal. We employ seasonality to our advantage, aiding the native ecology to replace intruding plants. This reduces overall unwanted regrowth, making regeneration an economical alternative to other management methods that require frequent revisitation and costly maintenance.

EcoLogic's low impact techniques are based in current restoration ecology research and allow us the precision to selectively remove undesirable plants with minimal damage to the soil integrity. *Soil health determines the health of the plants.* Soil integrity is compromised any time earth is disturbed, loosened, or left bare. We avoid unnecessary damage by practicing proper site after-care following every session. Like dressing a wound, after-care protects the affected area and allows it to heal under a layer of leaves, woodchips, or other biodegradable cover. In situations where we are building habitat and/or mitigating erosion, soil amendment and aftercare are combined.

If any remnant soils are intact, the dormant, native seed bank will become apparent once regeneration has begun. This seed bank informs important planting decisions; native plant communities provide a template for what will thrive when increasing biodiversity. It also provides a potential source of plant material for use on-site. The hidden benefit of sourcing on-site plant material is an increased likelihood of success as local plants are acclimated to their surroundings.

Installation and/or propagation can be a vital step in safeguarding the durability of a project. Disperse, gradual planting grants time for better environmental integration and can begin once the invasive plants' spread has been curbed. *EcoLogic uses plant species indigenous to our region to achieve the best results.* In addition to fulfilling conventional landscaping roles (food, medicine, beauty, fragrance, privacy, etc), native plants have three considerable advantages: 1) they thrive in our climate and soils, 2) they require far less inputs, such as water and fertilizer, while 3) simultaneously supporting the pollinators, birds, and other fauna that sustain our food systems and environment.

EcoLogic is committed to providing our clients with the most affordable solutions to their landscape obstacles, without compromising our high standard. For all projects requiring sheet mulching or soil building, we offer clients the option to procure materials themselves and provide instruction on how to find the correct materials at little to no cost. Where appropriate, EcoLogic will help clients coordinate volunteer sessions to reduce the labor burden. Additionally, our work with the Georgia Native Plant Society's propagation program gains us access to surplus native plants that we are happy to donate to relevant projects. Please note that these resources can be inconsistent and are often in limited supply, making them unsuitable for some projects, but they are free* of charge.

EcoLogic processes and prepares debris for removal as required but does not provide tow-away services. For debris that is to remain on site, we suggest re-integrating as much of it as possible back into the landscape. Brush piles are effective in mitigating erosion and double as friendly habitat for varied songbirds and small mammals. Deadwood can be a valuable resource for amending soil with hügelkultur construction. With judicious implementation, debris can even enhance the design aesthetic of your landscape. By incorporating as many circular inputs as possible into our practice, we ensure resilience is built into every step of the regenerative process.

* subject to procurement and processing fee

Marcia Brooks

From: Laura McCanless
Sent: Monday, February 21, 2022 6:20 PM
To: Bill Andrew
Subject: Other bids dismissed by TPR for a variety of reasons

Reforest Atlanta – Asbury Park restoration

Labor/5 hour session: \$1075

Outside service area fee/session: \$240

Session cost: \$1315

Number of sessions: 4-6

Total Estimate: \$5260 - \$7890

Michael Hudgins, WoodsKeeper.com

One man crew, willing to work two days a week, rate would be a simple: \$375 a day (5 hours)

Labor/5 hour session/day: \$375

City Sheep and Goats – Highly infested areas along ROW trails

Sheep only, that will eat everything up to 5' above the ground, except wisteria and vinca/periwinkle (which are toxic)

Larger projects run about \$1400 to \$2k per acre

Other options:

Ecologic Atlanta - \$75 to come give estimate

Column1	Column2	Column3	Column4	Column5
PARADE CHECKLIST 2020				
ITEMS	CITY HALL	LIONS CLUB	COMMITTEE	COMPLETE
1. Form Parade Committee (Council/Lions Club/City Hall Staff)				
2. Determine parade route. Proposed same as last year.				
3. Send DOT Request Form to interrupt traffic last week in April or first of May.				
4. Put together brochure with Entry Form/Rules & Liability Waiver. Distributed in May bills.				
5. Chief to confirm police escorts and street blockades.	Chief Harvey			
6. Contact and arrange for Parade Video and Photo's - Will require a purchase order from City Hall.				
7. Determine Parade Marshal, add to list in Parade Book, Nominations will need to be presented at June 5 Regular Session and voted on.				
8. Send out invitations to city and county officials.				
9. Order plaque for Parade Marshal and ribbons for prizes. Order from ABC Awards/will need to order at least 2 to 3 weeks in advance.				
10. Schedule advertising with local newspapers and radio stations, website, etc.				
11. City utility employees to put up flags and banners on Emory Street. Will need to issue a W/O May 31.				
12. Contact local churches and organizations for concessions.				
13. Secure band to form following parade: (Shane Millwood)				
14. Determine additional activities following parade at Old Church. City Police Department will have Safety Tent & Handouts. (Shane Millwood Band, Boy Scouts will do popcorn, Allen Memorial will have ice cream, Rust Chapel will have concession.)				

15. Contact performer for National Anthem. (Shane Milwood will let me know re: Mrs. Perry)				
16. Order tents: Covington Rental, 1 - 30 x 30 and 1 20 x 20 need to be installed by Tuesday morning at Old Church for the Annual Historic Society Picnic Tuesday night. They will be instructed to contact Jody or Scottie for instructions on placement.				
17. Locate and reserve convertible or rides for Parade Marshal, Mayor and Uncle Sam. (Billy Fortson with Ginn Motors.)				
18. Determine who will be Uncle Sam (Costumes are stored at City Hall)				
19. Order parade hand-outs, like flags, fans/hats/wrist bands, etc. Handouts should be distributed to Parade Marshal/Mayor/Uncle Sam. (Marcia and Stacey/City Hall will distribute.)	City Hall Staff			
20. Purchase water bottles, 30 cases. Water will be picked up by Utility Dept at Walmart or Home Depot and placed at maintenance facility to be picked up and disburshed to water locations by Lions Club or Scouts.	City Staff/Jody			
21. Purchase supplies for entry numbers for participants. The supplies will be ordered and numbers made by City Hall staff for day of parade. These items will be delivered by City Hall Staff to registration tent for Lions Club.				
22. Secure 2-3 volunteers to work registration tent: City Hall Staff will work with Lions Club at Registration Tent.				
23. Determine person to patrol line-up and verify registration and Judges stations.				

24. Order portable toilets from Jiffy Johns - City will order 4 Jiffy Johns; Two will be ADA and two regular. 1 ADA and 1 Regular will be placed at Old Curch, 1 regular will be placed on Whatcoat by monument, 1 ADA on City Green lot next to Post Office. They will be ordered for a Tuesday delivery with pick up on Thursday. Make signs for restrooms.	City Hall Staff/Jody/Scottie			
25. Order golf carts from Fat Boys - 4 seat golf carts will be orderd by City Hall to be delivered on Thursday to the Maintenance Facility. Lions Club will pick up and disburse from there. Henderson asked for gas powered and one with a hauling bed.	City Hall Staff			
26. Purchase plywood for band staging - 1 sheet, plywood will be placed on Old Church on Tuesday, July 3rd. Jody will confirm left over from last year.	City Hall/Jody			
27. Make copies of parade map for police, citizens/post on web/copies for Lions Club	City Hall Staff			
28. Deliver folding chairs and tables to Old Church on July 3rd for Annual Historic Picnic.	City Hall/Jody			
29. Block off entrance to Old Church with orange cones on July 4.	Police Dept			
30. Order magnectic signs for Parade Marshall, Mayor and Uncle Sam. The participant may keep. City Hall will deliver to the appropriate vehicle.	City Hall Staff			
31. Make and post "Closed for 4th of July" signs for City Hall	City Hall Staff			
32. Locate and deliver extension cords and fans for Old Church on July 3rd for Historical Society Picnic	City Hall/Jody			
33. Determine awards and number of ribbons to order for first and second place. City Hall will deliver ribbons to Lions Club at registration tent.				
34. Order popcorn and supplies.	City Hall Staff			
35. Print off 2020 Parade Awards Sheet for registration and judges.	City Hall Staff			

36. City Hall workers to provide horse trough to be placed on city lot on Emory St	City Hall/Jody			
37. Post notice on website				
38. Distribute parade brochures around city & county.				
39. Prepare gift bags for Grand Marshal. Deliver to Mayor at Old Church with plaque.				
40. Deliver 4 roll carts and 4 recycle bins to Old Church. Will also place one on City Green next to Jiffy Jons.	City Hall/Jody			
41. Police Department to determine escorts and street blockades. Work with Newton County Sherriff's office and College Campus Police for extra patrol.	City Police Department/Dave			
42. Maintenance will provide coolers, Lions Club will pick up at Maintenance. City will purchase ice to be distributed.	City Hall/Jody			
43. Deliver popcorn machine and tent, and supplies to Old Church the morning of the parade.				
44. Make and distribute balloons for Registration Tent, Parade Marshals car and Mayors car.	City Hall Staff			
45. Establish a parade line line-up				
46. Will need to creat an itinerary for the mayor for day of parade with list of prizes.	City Hall Staff			



**CITY OF OXFORD
POLICE DEPARTMENT**



**Mark A. Anglin
Chief of Police**

February 13, 2022

Mayor Eady,

I am requesting the assistance of two employees from the Covington Police Department Property and Evidence Room to assist with the audit and inventory of our Police Property and Evidence Room. The property room has been neglected for many years. Property that should have been destroyed in 2001 and later is still awaiting destruction. Currently there are several drug boxes with copious amounts of marijuana (less than an ounce) and burned marijuana cigarettes. The marijuana is causing a strong stench within the police department and is quite nauseating to some.

We are mandated by law to dispose of property after 90 days excluding trial evidence that is upcoming.

TITLE 17 - CRIMINAL PROCEDURE

CHAPTER 5 - SEARCHES AND SEIZURES

ARTICLE 3 - DISPOSITION OF PROPERTY SEIZED

§ 17-5-54 - Disposition of personal property in custody of law enforcement agency

O.C.G.A. 17-5-54 (2021)

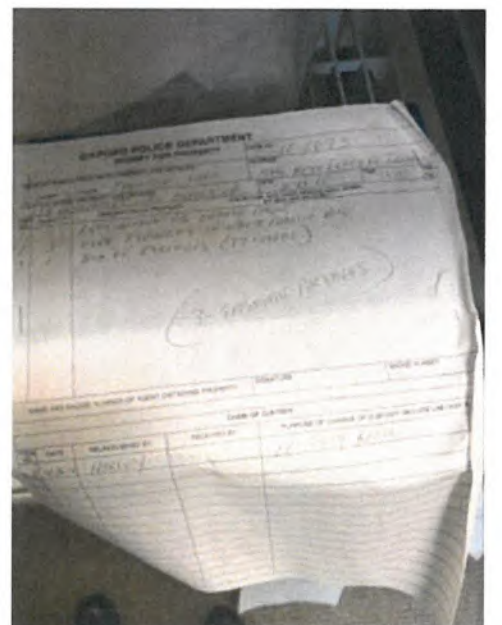
17-5-54. Disposition of personal property in custody of law enforcement agency

Once the audit and inventory are completed, I will then have to obtain a Superior Court Order to have the items destroyed, this alone will be time consuming on my part and that of the judge who will have to review all the orders before signing. I expect some backlash over this serious neglect of duty on behalf of the police department. I am requesting the service of two certified evidence technicians from the Covington Police Department, Joe Mobley and Christina Johnson, to assist with this matter. The audit and inventory will be directly supervised by myself and will have to take place on the weekend and some weeknights. The rate for the services will be \$25.00 per hour each for the technicians with a maximum of 20 hours. I have attached photos to this request.

Thank you and the council for considering this request.

Respectfully,

Mark Anglin





NON-PERSONAL SERVICES CONTRACT

Independent Service Provider Agreement

This Agreement is made effective as of this date _____ by and between the City of Oxford, 110 West Clark Street, Oxford, Georgia 30054, and **Christina Johnson, 13183 Harland Drive, NE, Covington, GA 30014**. In this Agreement, the party who is contracting to receive the services shall be referred to as “the City of Oxford”, and the party who will be providing the services shall be referred to as “Service Provider”.

Therefore, the parties agree as follows:

1. **DESCRIPTION OF SERVICES.**

The Service Provider will assist with conducting an audit and inventory of the Police Property and Evidence Room in the City of Oxford Police Department. Services will be performed under the supervision of personnel of the City of Oxford Police Department.

2. **PAYMENT.** The City of Oxford will pay compensation to Service Provider for the services based on: **Hourly Rate of \$25.00 per hour for a maximum of twenty (20) hours**. Compensation shall be payable upon completion of services of Service Provider and approval by the City of Oxford Chief of Police. Compensation shall be payable the first of the month following the month work was performed for hourly rate. The City of Oxford Chief of Police shall submit a request for payment on behalf of the Service Provider including an itemization of hours worked.

3. **WARRANTY.** The standard of care for all professional services performed or furnished by Service Provider under this Agreement will be the skill and care used by members of Service Provider’s profession practicing under similar circumstances at the same time and in the same locality. Service Provider makes no warranties, express or implied, under this Agreement or otherwise, in connection with Service Provider’s services.

4. **RELATIONSHIP OF PARTIES.** Service Provider is an independent Service Provider and neither Service Provider, Contractors employed by the Service Provider (if any), nor any of their agents are employees of the City of Oxford. Service Provider is responsible for the direction and supervision of its employees and Contractors and shall promptly remove any personnel who are not adhering to the terms of this Agreement. The City of Oxford will **not** provide fringe benefits, including health insurance, paid vacation, overtime, or any other employee benefit for the benefit of Service Provider. Service Provider shall purchase and maintain insurance for claims under workers’ or workmen’s compensation acts and other employee benefit acts, claims for damages because of bodily injury, including death, and from claims for damages, other than to work itself, to property which may arise out of or result from the Service Provider’s operation under this Contract, whether such operations be by himself or by any Sub-Service Provider or anyone directly or indirectly employed by any of them. This insurance shall be written by a company or companies approved by the City of Oxford, and for not less than One Million Dollars, (\$1,000,000.00) of General Liability. Certificates of such insurance shall be

filed with the City of Oxford prior to the commencement of the Work and upon the City of Oxford's request shall name same as an additional insured.

5. **INDEMNITY.** To the fullest extent permitted by law, Service Provider shall indemnify the City of Oxford, its officers, directors, partners, employees, and representatives from and against all losses, damages, and judgments arising from claims by third parties, including reasonable attorneys' fees and expenses recoverable under applicable law, but only to the extent they are found to be caused by a negligent act, error, or omission of Service Provider or Service Provider's officers, directors, members, partners, agents, employees, or subconsultants in the performance of services under this Agreement.

6. **LIENS AND LIEN WAIVERS.** Service Provider shall, if any lien be filed against the City of Oxford's property arising from the work under this Agreement, immediately cause such lien to be discharged of record by payment or bond. Service Provider agrees to execute and have all Sub-Service Providers and Suppliers execute "Interim Waiver and Release Upon, Payment" and "Unconditional Waiver and Release Upon, Final Payment", copies of which are attached hereto as exhibits.

7. **TERM/TERMINATION.** This Agreement shall be effective for six months from the effective date of this agreement. This agreement may be terminated by either party prior to the expiration of the term.

8. **GOVERNING LAW.** This Agreement shall be governed by and construed in accordance with the substantive laws of the State of Georgia (excluding Choice of Law provisions). In performance of this Agreement, Service Provider will comply with all requirements of applicable state and local law, regulations and ordinances. Service Provider also agrees to abide by all applicable rules and regulations of the City of Oxford.

9. **ENTIRE AGREEMENT.** This agreement contains the entire agreement of the parties, and there are no other promises or conditions in any other agreement whether oral or written.

10. **SEVERABILITY.** If any provisions of this agreement shall be held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be valid and enforceable, but that by limiting such provision it would become valid and enforceable, then such provision shall be deemed to be written, construed, and enforced as so limited.

City of Oxford

Christina Johnson

By: _____
David Eady, Mayor

By: _____
Christina Johnson

Attest: _____
Bill Andrew, City Manager

Date: _____

Date: _____



NON-PERSONAL SERVICES CONTRACT

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3. **WARRANTY.** The standard of care for all professional services performed or furnished by Service Provider under this Agreement will be the skill and care used by members of Service Provider’s profession practicing under similar circumstances at the same time and in the same locality. Service Provider makes no warranties, express or implied, under this Agreement or otherwise, in connection with Service Provider’s services.

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filed with the City of Oxford prior to the commencement of the Work and upon the City of Oxford's request shall name same as an additional insured.

5. **INDEMNITY.** To the fullest extent permitted by law, Service Provider shall indemnify the City of Oxford, its officers, directors, partners, employees, and representatives from and against all losses, damages, and judgments arising from claims by third parties, including reasonable attorneys' fees and expenses recoverable under applicable law, but only to the extent they are found to be caused by a negligent act, error, or omission of Service Provider or Service Provider's officers, directors, members, partners, agents, employees, or subconsultants in the performance of services under this Agreement.

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City of Oxford

Joe Mobley

By: _____
David Eady, Mayor

By: _____
Joe Mobley

Attest: _____
Bill Andrew, City Manager

Date: _____

Date: _____

CHAPTER: 13 - Evidence and Property

EFFECTIVE DATE: 07/01/12

NUMBER OF PAGES: 14

REVISED DATE:

DISTRIBUTION: All Employees

INDEX

I. PURPOSE

II. RULES AND REGULATIONS

- A. General
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- D. Agency Property and Equipment

STANDARD OPERATING PROCEDURES (S.O.P.)

S.O.P. 13-1 PROPERTY AND EVIDENCE MANAGEMENT

S.O.P. 13-2 VEHICLE INVENTORY / IMPOUND

I. PURPOSE

- A. Establish rules for receiving, storing, releasing, and disposing of property seized as evidence and/or property held for safekeeping.
- B. Establish rules regarding departmental property and equipment.
- C. Establish standard operating procedures for property control.
- D. Establish standard operating procedures for the impound/inventory of vehicles.

II. RULES AND REGULATIONS

A. General

1. All property seized as evidence shall be transferred to the control of the Evidence Custodian.
2. All confiscated, found or recovered weapons shall be transferred to the control of the Evidence Custodian, as well as any other items that might be construed as weapons.
3. Any personal property of an arrestee that is evidence or is believed to be evidence of a crime shall be noted in the Arrest Booking Report and secured by the Evidence Custodian.
4. All property removed from any vehicle shall be transferred to the control of the Evidence Custodian and noted in the officer's report.
5. All property found or received by officers shall be transferred to the control of the Evidence Custodian.

B. Transferring Evidence to Court

Evidence required in court for prosecutorial purposes will be released by the Evidence Custodian to the impounding officer/investigating officer for presentation in court. The evidence will be returned to the Evidence Custodian immediately after all legal proceedings have been completed. All evidence shall be returned to the Evidence Custodian in the original tagged packages. If the court retains any of the evidence, the presenting officer will notify the Evidence Custodian so the records can reflect the status of the evidence. The property receipt will be signed by the officer when accepting control of the evidence and by the Evidence Custodian upon its return.

C. Disposition of Property and Evidence

Items being held as evidence or property may be removed or released by one of the following means:

1. Release from Evidence Status to Property: The impounding officer will release evidence to property status as soon as possible after the case has been resolved. When the evidence is released by the impounding officer, it is that

officer's responsibility to notify the owner that he/she has 30 days to claim the property;

2. Court Order: Evidence released by court order shall be from a court of competent jurisdiction. Destruction of contraband will also be carried out by the Evidence Custodian after receipt of a court order;

3. Public Sale: Unclaimed property may be sold under the authority of local governing ordinances;

4. By Conversion to City Use by Court Order; and

5. By Return to the Rightful Owner: Property will be released to the person in whose name the property is listed upon presentation of proper identification. In all cases of found property, the Oxford Police Department reserves the right to secure legal determination before releasing property.

D. Agency Property and Equipment

All equipment must be clean, in good working order and conform to Oxford Police Department specifications. Employees are responsible for the proper care of agency property and of the equipment assigned to them. Should an employee damage or lose agency property, disciplinary action may be taken.

1. Damaged-Inoperative Property or Equipment: Employees shall immediately report to their supervisor any loss of, or damage to, agency property. The supervisor will be notified of any defects or hazardous conditions existing in any agency equipment or property.

2. Care of Oxford Police Department Buildings: Employees shall not mar, alter, or deface any surface in any Oxford Police Department building. No material shall be affixed in any way to any Oxford Police Department equipment without specific consent from the Chief of Police.

3. Notices: Employees shall not mark, alter, or deface any posted notice of the Oxford Police Department. Notices or announcements shall not be posted on bulletin boards without permission of a superior officer. No derogatory notices will be posted at any time.

4. Manuals: All manuals, including this Manual, are considered Oxford Police Department property. Prior to distribution, the manuals should be numbered and recorded in an Oxford Police Department log. All employees who are issued manuals are responsible for their maintenance and will make appropriate changes as directed.

5. Surrender of agency Property: Employees are required to surrender all agency property upon their separation from the Oxford Police Department. Employees who fail to return nonexpendable items will be required to reimburse the Oxford Police Department for the item(s) at fair market value.

STANDARD OPERATING PROCEDURE

ISSUED 07/01/12

S.O.P. 13-1 PROPERTY AND EVIDENCE MANAGEMENT

OCGA §17-5-50 thru 17-5-54

I. PURPOSE

The purpose of this policy is to outline the procedure of this agency with respect to property, contraband or evidence that is seized. All property with the exception of vehicles will be dealt with under this policy.

II. POLICY

The policy of the Oxford Police Department is to provide for the safekeeping of all property that comes into the possession of the Oxford Police Department. With respect to evidentiary items, the Oxford Police Department shall maintain a proper chain of custody and secure such items in a manner that will ensure that the evidence is available to be admitted at trial.

III. GENERAL PROVISIONS APPLICABLE TO ALL EVIDENTIARY ITEMS

A. Members of the Oxford Police Department shall only seize items under the following conditions:

1. An Officer has probable cause to believe that an item is contraband. (Contraband is an item that by its very nature is illegal to possess. e.g. illegal narcotics.)
2. An Officer has probable cause, at the moment of seizure, that the item to be seized is stolen.
3. An Officer has probable cause, at the moment of seizure, to believe that the item is evidence of a crime.

B. When seizing items of value (money/jewelry/precious metals/electronics) the officer shall make a handwritten inventory of the items at the scene of the seizure.

C. In cases where professional expertise is required to make a proper accounting of the property, the commanding officer of the unit shall be notified so that the services of an expert may be obtained.

D. Once an item is seized it shall be transported to police headquarters.

E. The officer who has seized the property shall fill out an Oxford Police Department property form.

F. In cases where the items relate to a criminal investigation all forms necessary for

criminal processing shall be compiled.

G. Evidence shall be properly marked or tagged with the report number, the date of seizure, the arresting officer's name and identification number as well as the suspect's name where applicable.

H. The item shall then be stored in a secure area within the seizing officer's division, which area previously has been previously designated by the commanding officer of that division. The only exception to this provision shall be cases where the case will be charged by a different division or cases where the forensic unit (where applicable) has seized the evidence.

I. In cases where the seizing officer's division will turn a suspect over to a different division for charging, the evidence shall be turned over to the charging division along with the suspect.

J. Once the evidence has been secured, it shall remain in the secure area until such time as the property/evidence room(s) is open so that the evidence can be secured in the property/evidence room(s).

K. Commanding officers shall designate officers who shall be responsible for delivering evidence to and from the property/evidence room.

L. Designated officers shall deliver evidence to the property room where the evidence/property officer will conduct an inventory. This inventory shall be conducted in the presence of the officer making the delivery. Each officer shall initial each item on the property form and sign the bottom of the form indicating that all items on the form are accounted for.

M. If any discrepancies are discovered between items listed on the property form and the items being delivered to the property room, the designated officer shall report this discrepancy, in writing, to his or her commanding officer. The evidence officer shall report the discrepancy, in writing, to his or her direct supervisor.

N. In cases where a discrepancy has been reported, the commanding officer of the unit that held the evidence shall cause an immediate investigation within his or her unit to resolve the discrepancy at issue. If the discrepancy cannot be explained or resolved, the matter shall be turned over to the Internal Affairs Division for further investigation.

IV. EVIDENTIARY NARCOTICS

A. An Officer who seizes drugs shall complete all paperwork that accompanies these arrests. The suspected narcotics should be field tested, where applicable, properly packaged and tagged. The tag should include the report number, defendant's name, date of seizure, and the seizing officer's name. The tagged narcotics along with the property form shall, then be placed into the pass-thru locker or other designated secure area. Copies of all associated paperwork should be included with the evidence.

B. Evidentiary Narcotics

1. Drugs should be removed from unnecessary exterior packaging and a net weight taken and recorded.
2. Evidence should be properly bagged in a self-sealing bag.
3. Incident report shall be typed.
4. Any drugs, as well as money which has been seized shall be logged in a "drug evidence log", and the amount of cash, if any, and any vehicle seized must be recorded.
5. The tagged and bagged narcotics and any cash seized should then be placed in the designated secure area/locker.
6. Each morning the evidence officer will check the designated secure area/locker for evidence. Upon retrieving the evidence, the evidence officer shall initial the "drug evidence log", indicating that he has received the evidence listed in the log. If the evidence officer finds any discrepancy between the "drug evidence log" and the items in the secure area/locker, he shall immediately notify, in writing, his or her supervisor.
7. The evidence officer shall then submit the narcotics evidence to the G.B.I for toxicological examination. A member of that agency will sign a receipt for the evidence.
8. The evidence officer shall maintain the receipt to insure that the chain of custody for the evidence is maintained.
9. Once a toxicology report is received, the evidence custodian shall file the report for use in subsequent criminal prosecution.
10. The evidence custodian shall be responsible for ensuring that narcotics sent for toxicological testing is returned and properly documented as well as stored in the designated area of the evidence room.
11. When the evidence is needed for court, the officer assigned to the case shall notify the evidence officer. The evidence officer shall enter the drug locker and retrieve the evidence. The officer handling the case shall sign and date the "drug

locker log", indicating that he or she has accepted the evidence.

12. When evidence is returned from court, it shall be returned to the custody of the evidence officer who shall initial the "drug locker log", indicating the return of the drugs. The evidence officer shall then return the narcotics to the drug locker. If the evidence officer is unavailable, the officer returning from court shall place the narcotics in the designated secure area/locker for overnight storage. A supervisor or second officer should witness this placement. In such cases the evidence officer shall retrieve the narcotics from the designated secure area/locker the next day and complete its return to the drug locker as outlined above.

13. In cases where items of evidence are needed for court on several occasions but are not held by the court, officers must follow the above outlined procedure and sign the evidence out each day. In no case will drugs be stored in any other manner than outlined in this policy when held in the custody of the Oxford Police Department and its members.

14. When a case is completed through a trial or plea, the officer handling the case shall notify the evidence unit of the disposition of the case. The evidence unit shall verify this disposition with the court so that a determination can be made regarding the continued custody or disposal of the narcotics.

V. NON-EVIDENTIARY NARCOTICS

Narcotics that are abandoned and narcotics turned over to police as articles found. In these cases the narcotics are not used as evidence in criminal trials; therefore it is not necessary to have a toxicology exam performed on the drugs.

A. Article found-drugs turned over to the police with no suspect. The officer who initially takes custody of the item must complete a report and a property form as well as tagging (officer's name, date of recovery, and report number) and bagging the item. The tagged item and its property form should then be placed in the designated secure area/locker.

B. The evidence clerk shall retrieve the item from the secure area and then secure the item in the narcotics storage area until such time as the items is to be disposed under the provisions of this policy.

C. Narcotics that are seized as the result of controlled buys.

1. A toxicologist need not examine these narcotics since they will not be used as evidence in a trial.

2. In conducting a controlled buy, the investigating officer draws a check from an agency checking account set up for this purpose, which is made out to the investigating officer. The officer cashes the check and uses the cash for the purchase.

3. In cases where an informant is used, the officer who cashed the check will

turn the cash over to the informant who is going to make the controlled buy. A search of the informant will be conducted prior to the controlled buy to verify the absence of any narcotics. The investigating officer will then conduct a close surveillance of the informant while he or she makes the controlled buy. The informant will be searched immediately following the controlled buy and the purchased narcotics recovered and the absence of the "buy money" is noted. (NOTE: All informants who are paid must have a complete file within the Oxford Police Department. This file shall be a restricted access file as designated by the Chief of Police.)

4. The officer who is handling the controlled buy shall compile a "controlled buy form" indicating the name of the officer, the date, the location, the check number, and a description of the article purchased, the signature of the supervisor working at the time of the buy and the gross weight of the item purchased. The controlled buy form is then heat sealed to the bag and the bag shall be placed in the secure area/locker/pass-thru locker system.

5. A supervisor, designated by the Chief of Police shall be responsible for reconciling the amount of drugs purchased with the amounts of money drawn by officers for these purchases. The supervisor conducting this reconciliation shall sign the controlled buy form as "Evidence Supervisor" indicating that this reconciliation has taken place.

VI. NARCOTICS DISPOSAL

A. It shall be the responsibility of the evidence officer to perform a monthly reconciliation between the drugs within the custody of this department and the disposition of cases. The purpose of this reconciliation is to determine those cases where the drugs will no longer be needed as evidence. In cases where the drugs are no longer needed, the drugs will be destroyed in accordance with the procedure set by the State of Georgia.

B. On a monthly basis, a drug destruction sheet indicating which narcotics are ready for destruction shall be prepared by the evidence officer. This destruction sheet shall include the following information: report number, toxicology number, name of defendant, disposition of the case, gross weight of the narcotics and two open categories for the initials of the officer who ultimately destroys the drugs as well as the outside witnesses and a second open category where the date of destruction will be filled in following destruction.

C. The drug destruction sheet shall be forwarded to a supervisor designated by the Chief of Police who will verify the dispositions of the case.

D. A command level officer designated by the Chief of Police shall review the drug destruction sheet and determine the compliance with the above listed procedure. Once it has been determined that there is compliance the designated officer shall approve the destruction of the narcotics in writing.

E. If it is determined that the destruction sheet does not meet the criteria set forth in this policy, the designated officer shall direct the individuals responsible for compliance on what is necessary to correct the deficiencies. No drugs will be destroyed before there is complete compliance with the above listed procedure.

F. Once the designated command level officer has approved the destruction of drugs, a copy of the destruction sheet shall be forwarded to evidence clerk.

G. Narcotics will then be destroyed in accordance with the procedure set forth by the State of Georgia.

VII. STOLEN PROPERTY

In addition to the general provisions of this policy, the following particular provisions also must be complied with when dealing with stolen property, or property for which there is probable cause to believe is stolen. It should be noted that state legislatures set diverse requirements for types of stolen property, and for property that has been recovered as stolen from varying crimes. It is the intent of this policy to be broad enough to cover all stolen property irrespective of the crime or type of property so as to comply all the requirements of law.

A. When dealing with any type of stolen property officers responsible for that property shall comply with the following provisions of the Georgia state law.

B. The Officer shall secure the property believed to be stolen and create an inventory detailing the property taken into custody in accordance with the general provisions of this policy.

C. The evidence officer shall maintain a log of every item brought into the custody of the Oxford Police Department and verify that the property is assigned a report number.

D. The evidence officer may deliver the stolen property to its rightful owner upon satisfactory proof of ownership after meeting the provisions of state law.

E. Anytime a firearm is returned to a person, a criminal history check must be done to determine if the person receiving the firearm has been disqualified from possessing a firearm.

F. Prior to the return of a firearm, a check of available databases concerning domestic violence protective, restraining or non-contact orders shall be conducted to determine if the person receiving the firearm is prohibited by law from possessing a firearm.

VIII. OTHER SEIZED PROPERTY

In the course of investigating crime, it is often necessary to seize what courts refer to as "mere evidence", to establish a connection between a suspect and a crime. This would include items such as wallets with identification, clothing, photographs, and any other item that belongs to a suspect, victim or witness to a crime. While some of these items may have no monetary value they may in fact be valuable to the rightful possessor of the property. In addition to the general provisions of this policy that must be followed for all items coming into the custody of the Oxford Police Department, the following particular provisions shall also be followed:

A. Prior to returning any property to a claimant the following criteria shall be met:

1. A complete photographic record of the items shall be made including at least

one photo depicting the claimant. This photograph shall be tagged by the evidence officer and maintained in the files of the evidence/property unit.

2. The person claiming the property shall complete a signed declaration of ownership of the items under penalty of perjury.

3. No items in the custody of the Oxford Police Department shall be disposed of, except in accordance with the provisions of this policy.

IX. ABANDONED PROPERTY/ARTICLES FOUND OR TURNED OVER TO POLICE

Abandoned property and found articles which come into the custody of the Oxford Police Department shall be initially handled in accordance with the general provisions of this policy. In addition to the general provisions, the following specific procedures shall be followed:

A. If the item contains any identifying feature of ownership, an attempt will be made to contact the owner. If an owner is found, then the procedures set out above for the returning of "mere evidence", shall apply for the return of these items.

B. While the provisions of state law allow for the quick disposal of property, the Oxford Police Department shall make an attempt to contact the claimant of any property before disposing of the property in accordance with the laws of this state.

C. If no owner can be located then these items will be disposed of in accordance with this policy and the provisions of state law outlined below:

1. Property that is in the possession of the police department and evidence that can be disposed of due to the completion of court proceedings shall be returned to its rightful owner.

2. Property that is unclaimed after a period of 90 days following its seizure or 90 days after the final verdict and judgment in the case may be disposed of in accordance with state law.

3. Disposition of unclaimed property:

a) The Chief of Police shall make application to the Superior Court for an order to sell, retain, or discard the property.

b) The application specifically shall list each item of personal property to be retained, sold, or discarded.

c) Once the order is granted by the Superior Court:

(1) Retained Items: The Oxford Police Department shall retain these items for official use.

(2) Discarded Items: The Oxford Police Department shall discard the items as salvage or non-serviceable equipment.

(3) Sale Items: The Oxford Police Department shall:

- (a) Place a notice in the legal organ of the county;
- (b) The notice must appear once a week for four weeks;
- (c) The notice must specifically describe the item to be sold, except that items having a value of \$75.00 or less may be advertised and/or sold in lots.
- (d) The notice must also specify the place, date and time of the sale. The notice also shall indicate whether the items or group of items are to be sold in blocks, by lot numbers, by entire lists of items, or separately.

(4) Items that remain unclaimed following notice shall be sold at a sale that shall be conducted not less than seven days nor more than fifteen days after the final notice has been run. The sale shall be to the highest bidder. If the property is not bid during two successive sales, the Oxford Police Department may retain the property or discard it as unserviceable/salvage under the provisions of this policy.

4. If an item in possession of the Oxford Police Department is a live animal or perishable, the Oxford Police Department can make application for the disposition of the property prior to the expiration of the 90 days.
5. Prior to disposition of vehicles that are not subject to forfeiture, the Oxford Police Department must contact the Georgia Crime Information Center to determine if the vehicle is stolen. The Oxford Police Department must also follow OCGA § 40-11-2 to determine the registered owner of the vehicle.
6. The Oxford Police Department shall retain records showing:
 - a) The manner in which each item came into the possession of the agency;
 - b) A description of the property;
 - c) All efforts that were made to locate the owner;
 - d) Any case or docket number;
 - e) The date of publication of each notice; and
 - f) The date on which the property was retained by the Oxford Police Department, or was sold, or discarded.
7. The proceeds from the sale of property by the Oxford Police Department will be paid into the general fund of the municipal treasury.

D. Disposition of Stolen Property

1. The Evidence Custodian shall create a record of every article of property alleged to be stolen, embezzled or otherwise unlawfully obtained that is brought into the Oxford Police Department or taken from a prisoner. The item shall be numbered and the number shall be entered in the record.

2. Any person claiming ownership of the property may apply to the department on that claim. The application shall be served on the person from who the property was taken.

a) If the person from who the property was taken fails to respond to the claim, and the applicant provides proof of ownership and proper identification, the Evidence Custodian may turn the property over to the applicant.

b) If the person from who the property was taken by law enforcement does contest the applicant's claim, the property shall not be delivered to the applicant until such time as a hearing on the matter occurs in accordance with state law.

c) Prior to delivery the applicant must sign, under penalty of false swearing, a declaration of ownership.

d) With respect to vehicles, the applicant must provide evidence of ownership through title, bill of sale, tag receipt, or other such evidence.

3. In all cases, prior to the return of property, the Evidence Custodian shall make a complete photographic record of such property.

4. Photographs, video tapes, or other identification or analysis of the property involved, duly identified in writing by the officer who originally seized the item as accurately representing the property seized, shall be admissible at trial in lieu of the item itself.

E. Disposition of Weapons

1. Any device, other than a motor vehicle, which is used as a weapon in a crime is deemed contraband and is forfeited.

2. 90 days after a final judgment is entered finding a defendant guilty of a crime that involves the illegal possession or use of a weapon, and such weapon is no longer needed for evidentiary purposes; the weapon shall be disposed of in accordance with Georgia law.

3. In any case, before a firearm is turned over to any person by the Oxford Police Department, a criminal history, as well as available databases for information regarding domestic protection orders, shall be conducted to ensure that the person taking possession is not prohibited by law from such possession.

STANDARD OPERATING PROCEDURE

ISSUED 07/01/12

S.O.P. 13-2 VEHICLE INVENTORY / IMPOUND

I. POLICY

When the driver/owner of a vehicle is arrested, and if the vehicle is subject to a lawful impound, the arresting officer will make an inventory of the vehicle for valuables.

II. CIRCUMSTANCES WARRANTING

A. According to state law, law enforcement officers may impound a motor vehicle under the following circumstances:

1. An officer may impound and remove a vehicle from a public highway when the motor vehicle poses a threat to the public health or safety;
2. An officer may impound a motor vehicle that has been left unattended on a public street, road or highway, or other public property for at least five days if it appears to the officer that the individual who left the vehicle unattended does not intend to return and remove the motor vehicle;
3. All motor vehicles required to be registered in Georgia must display a current license plate and revalidation sticker. Any motor vehicle that fails to comply with this requirement may be impounded and stored at the owner's expense;
4. If the driver of a motor vehicle has been arrested, the vehicle may be impounded when:
 - a) There is no one present who is authorized and capable of removing the vehicle;
 - b) The driver has made no specific request about the disposition of the vehicle;
 - c) The driver has made no request to use a specific towing service;
 - d) The driver of a vehicle has made a specific request for the disposition of the vehicle or has requested a specific towing service and the law enforcement officer has made a reasonable, but unsuccessful effort to comply with this request; or
 - e) The driver of a vehicle has been removed from the scene and is either physically or mentally unable to make a request for the disposition of his/her vehicle. An officer may impound a vehicle for the protection of the vehicle and its contents under the provisions above.

B. If the driver of a vehicle is arrested on private property, and the driver either owns, has control of, or permission from the owner of the property to be there, the vehicle should not be impounded except upon the request of the driver.

C. When inventorying a vehicle before impoundment, the officer and agency are protecting three distinct needs. These needs are:

1. Protection of the owner's property while it remains in Oxford Police Department custody;
2. The protection of the Oxford Police Department from potential danger; and
3. The protection of the Oxford Police Department against false claims of stolen or lost property.

D. If the officer is questioned concerning reasons for inventorying a vehicle which is being lawfully impounded, the officer should state that the vehicle is being inventoried for the above three reasons. The justification for an inventory of an impounded vehicle is based on the validity of the impoundment, not the arrest of the driver. If the impoundment was improper, any items seized during an inventory will not be admissible as evidence in court.

III. INVENTORY PROCEDURES

A. On the inventory form, the officer shall list all personal property and vehicle accessories such as radios, tape / CD players and telephones. Further, the inventory form shall contain a description of the vehicle's condition.

B. Upon completion, the impounding officer will sign the inventory form.

C. The original copy of the vehicle inventory form and impound slip will be turned in with the incident report. The duplicate copy will be given to the wrecker driver.

D. In all cases where an impound is made, there will be an incident report completed except when a traffic accident report is made.



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Georgia Code Title 17. Criminal Procedure § 17-5-54

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(a) As used in this Code section, the term:

(1) "Civil forfeiture proceeding" shall have the same meaning as set forth in [Code Section 9-16-2](#)

(<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=l1f6cd770b19d11eabc27ab24c84116-2>).

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(2) "Firearm" means any handgun, rifle, shotgun, or similar device or weapon which will or can be converted to expel a projectile by the action of an explosive or electrical charge.

(3) "Law enforcement agency" means a law enforcement agency of this state or a political subdivision of this state, including the Department of Natural Resources.

(4) "Rightful owner" means a person claiming ownership of property which is the subject of a crime or has been abandoned.

(b) This Code section shall not apply to:

(1) Personal property which is the subject of any civil forfeiture proceeding;

(2) Any property which is the subject of a disposition pursuant to [Code Sections 17-5-50](#)

(<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=l1f6d4ca0b19d11eabc27ab24c8415-50>) through [17-5-53](#) (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=l1f6d4ca1b19d11eabc27ab24c8415-53>); and

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(3) Any abandoned motor vehicle for which the provisions of Chapter 11 of Title 40 are applicable.

(c)(1) Except as provided in Chapter 16 of Title 9, [Code Sections 17-5-55](#)

(<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=l1f6d73b0b19d11eabc27ab24c8415-55>) and [17-5-56](#), and subsection (b) (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=SP&originatingDoc=l1f6d73b1b19d11eabc27ab24c8415-56>)

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5-56) of this Code section, when a law enforcement agency assumes custody of any personal property which is the subject of a crime or has been abandoned, a disposition of such property shall be made in accordance with the provisions of this Code section.

(2) When a final verdict and judgment is entered finding a defendant guilty of the commission of a crime, any personal property used as evidence in the trial shall be returned to the rightful owner of the property within 30 days following the final judgment; provided, however, that if the judgment is appealed or if the defendant files a motion for a new trial and if photographs, videotapes, or other identification or analysis of the personal property will not be sufficient evidence for the appeal of the case or new trial of the case, such personal property shall be returned to the rightful owner within 30 days of the conclusion of the appeal or new trial, whichever occurs last.

(3) Any person claiming to be a rightful owner of property shall make an application to the entity holding his or her property and shall furnish satisfactory proof of ownership of such property and present personal identification. The person in charge of such property may return such property to the applicant. The person to whom property is delivered shall sign, under penalty of false swearing, a declaration of ownership, which shall be retained by the person in charge of the property. Such declaration, absent any other proof of ownership, shall be deemed satisfactory proof of ownership for the purposes of this Code section; provided, however, that with respect to motor vehicles, paragraph (3) of subsection (b) and subsection (f) of this Code section shall govern the return of motor vehicles.

(4) If more than one person claims ownership of property, a court with jurisdiction over the property shall conduct a hearing to determine the ownership of such property.

(d) After a period of 90 days following the final verdict and judgment, when personal property that is in the custody of a law enforcement agency was used as evidence in a criminal trial or was abandoned, it shall be subject to disposition as provided in subsection (e) of this Code section if the property is not a firearm and as provided in subsection (g) of this Code section if the property is a firearm if it is:

(1) No longer needed in a criminal investigation or for evidentiary purposes in accordance with Code Section 17-5-55 (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=1f6dc1d0b19d11eabc27ab24c8415-55>) or 17-5-56 (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=1f6dc1d1b19d11eabc27ab24c8415-56>);

(2) Not claimed pursuant to Code Section 17-5-50 (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=1f6de8e0b19d11eabc27ab24c8415-50>); and

(3) Not claimed pursuant to subsection (c) of this Code section.

(e) For any unclaimed personal property that is not a firearm, the sheriff, chief of police, or other executive officer of a law enforcement agency shall make application to the superior court for an order to retain, sell, or discard such property. In the application the officer shall state each item of personal property to be retained, sold, or discarded.

Upon the superior court's granting an order for the law enforcement agency to retain such property, the law enforcement agency shall retain such property for official use. Upon the superior court's granting an order which authorizes that the property be discarded, the law enforcement agency shall dispose of the property as other salvage or nonserviceable equipment. Upon the superior court's granting an order for the sale of personal property, the officer shall provide for a notice to be placed once a week for four weeks in the legal organ of the county specifically describing each item and advising possible owners of items of the method of contacting the law enforcement agency; provided, however, that miscellaneous items having an estimated fair market value of \$75.00 or less may be advertised or sold, or both, in lots. Such notice shall also stipulate a date, time, and place said items will be placed for public sale if not claimed. Such notice shall also stipulate whether said items or groups of items are to be sold in blocks, by lot numbers, by entire list of items, or separately. Such unclaimed personal property shall be sold at a sale which shall be conducted not less than seven nor more than 15 days after the final advertised notice has been run. The sale shall be to the highest bidder. If such personal property has not been bid on in two successive sales, the law enforcement agency may retain the property for official use or the property will be considered as salvage and disposed of as other county or municipal salvage or nonserviceable equipment. With respect to unclaimed perishable personal property or animals or other wildlife, an officer may make application to the superior court for an order authorizing the disposition of such property prior to the expiration of 90 days.

(f) With respect to a motor vehicle which is the subject of a crime or has been abandoned but which is not the subject of any civil forfeiture proceeding, the law enforcement agency shall be required to contact the Georgia Crime Information Center to determine if such motor vehicle has been stolen and to follow generally the procedures of [Code Section 40-11-2](https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=11f6e0ff0b19d11eabc27ab24c8415311-2) (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=11f6e0ff0b19d11eabc27ab24c8415311-2>) to ascertain the registered owner of such vehicle.

(g)(1) With respect to unclaimed firearms, if the sheriff, chief of police, agency director, or designee of such official certifies that a firearm is unsafe because of wear, damage, age, or modification or because any federal or state law prohibits the sale or distribution of such firearm, at the discretion of such official, it shall be transferred to the Division of Forensic Sciences of the Georgia Bureau of Investigation, a municipal or county law enforcement forensic laboratory for training or experimental purposes, or be destroyed.

(2) Otherwise, an unclaimed firearm:

(A) Possessed by a municipal corporation shall be disposed of as provided for in [Code Section 36-37-6](https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=11f6e3700b19d11eabc27ab24c8437-6) (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000468&refType=LQ&originatingDoc=11f6e3700b19d11eabc27ab24c8437-6>); provided, however, that municipal corporations shall not have the right to reject any bids or to cancel any proposed sale of such firearms, and all sales shall be to persons who are licensed as firearms collectors, dealers, importers, or manufacturers under the provisions of [18 U.S.C. Section 921, et seq.](https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000546&refType=LQ&originatingDoc=11f6e3701b19d11eabc27ab24c84), (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000546&refType=LQ&originatingDoc=11f6e3701b19d11eabc27ab24c84>) and who are authorized to receive such firearms under the terms of such license; or

(B) Possessed by the state or a political subdivision other than a municipal corporation, shall be disposed of by sale at public auction to persons who are licensed as firearms collectors, dealers, importers, or manufacturers under the provisions of [18 U.S.C. Section 921, et seq.](https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000546&refType=LQ&originatingDoc=11f6e5e10b19d11eabc27ab24c84), (<https://1.next.westlaw.com/Link/Document/FullText?findType=L&originatingContext=document&transitionType=DocumentItem&pubNum=1000546&refType=LQ&originatingDoc=11f6e5e10b19d11eabc27ab24c84>) and who are authorized to receive such firearms under the terms of such license. Auctions required by this subparagraph may occur online on a rolling basis or at live events, but in no event shall such auctions occur less frequently than once every 12 months during any time in which the political subdivision or state custodial agency has an inventory of five or more saleable firearms.

(3) If no bids from eligible recipients are received within six months from when bidding opened on a firearm offered for sale pursuant to paragraph (2) of this subsection, the firearm shall be transferred to the Division of Forensic Sciences of the Georgia Bureau of Investigation, a municipal or county law enforcement forensic laboratory for training or experimental purposes, or be destroyed.

(h) Records shall be maintained showing the manner in which each personal property item came into possession of the law enforcement agency, a description of the property, all efforts to locate the owner, any case or docket number, the date of publication of any newspaper notices, and the date on which the property was retained by the law enforcement agency, sold, or discarded. All agencies subject to the provisions of this Code section shall keep records of the firearms acquired and disposed of as provided by this Code section as well as records of the proceeds of the sales thereof and the disbursement of such proceeds in accordance with records retention schedules adopted in accordance with Article 5 of Chapter 18 of Title 50, the "Georgia Records Act."

(i) The proceeds from the sale of personal property by the sheriff or other county law enforcement agency pursuant to this Code section shall be paid into the general fund of the county treasury. The proceeds from the sale of personal property by a municipal law enforcement agency pursuant to this Code section shall be paid into the general fund of the municipal treasury. The proceeds from the sale of personal property by a state agency pursuant to this Code section shall be paid into the general fund of the state.

(j) Neither the state nor any political subdivision of the state nor any of its officers, agents, or employees shall be liable to any person, including the purchaser of a firearm, for personal injuries or damage to property arising from the sale of a firearm under subsection (g) of this Code section unless the state or political subdivision acted with gross negligence or willful or wanton misconduct.

[Read this complete Georgia Code Title 17. Criminal Procedure § 17-5-54 on Westlaw \(https://1.next.westlaw.com/Document/IBD2D4B604E2911EBB5CDCE60051C9D63/View/FullText.html?originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)\)](https://1.next.westlaw.com/Document/IBD2D4B604E2911EBB5CDCE60051C9D63/View/FullText.html?originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))).

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**CITY OF OXFORD
POLICE DEPARTMENT**



**Mark A. Anglin
Chief of Police**

February 15, 2022

Mayor Eady and City Council Members,

I would like to request the approval to start a Police Bike Patrol Unit within the department. I would request to utilize part of the SPOLST funds to purchase two bicycles that are equipped for bicycle patrol. Council member Windham has expressed an interest in a Bike Rodeo to better connect with the community. To better serve the community and have a direct Community Police initiative, a bike patrol would fit in great in Oxford. I would encourage and host a monthly or quarterly Bike Ride with the Police. All members of the city would be welcome to participate.

I have received two quotes capable of outfitting our department. I am more familiar with the Police Bike Store products than the Bicycle Patrol Outfitters. The city of Covington Police, Atlanta Police, and Atlanta Fire and Rescue use the Police Bike Store to supply their departments. It would be a great benefit to the City of Oxford to establish a bike patrol within the department. Below are the two estimates for the bikes, and uniforms.

- Police Bike Store, \$4,109.97
- Bicycle Patrol Outfitters, \$ 3,811.84
- Uniforms, \$448.00 each officer, vest carrier, 2 shirts, 2 shorts, and shoes.

Thank you and the council for considering this request.

Respectfully,

Mark A. Anglin

Price Quote

EARTHSPIRITS.NET, INCORPORATED
 PoliceBikeStore.com
 179 RT 46 West STE 15-278
 Rockaway, NJ. 07866
 973-366-5868 (phone) 888-773-1427 (fax)

Name/Address
Oxford Police Department
Chief Mark Anglin
110 West Clark Street
Oxford, GA 30054
770-788-1390

Date	Quote Number	Project
02/13/22	2157	

Item	Description	Quantity	Cost	Total
codebikes-3-MaxCombo	Code Bikes - Code 3 MAX Combo Code 3 Bike - 21" Frames C3Sports MaxParol-600 DLX Light System with Taillight - C3Sports Trunk Bag Helmet	2	1,989.99	3,979.98
shipping	Freight Out-of-state sale, exempt from sales tax	1	129.99 0.00%	129.99 0.00
			Total	\$4,109.97

Request for Taxpayer Identification Number and Certification

**Give Form to the
 requester. Do not
 send to the IRS.**

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type. See Specific Instructions on page 3.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. EarthSpirits Net, Inc.		
	2 Business name/disregarded entity name, if different from above Police Bike Store		
	3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes. <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input checked="" type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____ Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner. <input type="checkbox"/> Other (see instructions) ▶ _____		
	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <small>(Applies to accounts maintained outside the U.S.)</small>		
	5 Address (number, street, and apt. or suite no.) See instructions. 179 RT 46W STE 15-278	Requester's name and address (optional)	
	6 City, state, and ZIP code Rockaway, NJ07866		
	7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number																									
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3	7	-	1	4	9	6	2	3	8																

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ▶	Date ▶ 01/05/2022
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

Bicycle Patrol Outfitters

4726 Brayton Ave
Long Beach, CA 90807
(310) 621 1147
bpopatrol@yahoo.com
www.police-bikes.com



Estimate

ADDRESS

Chief of Police Mark Anglin
City of Oxford Police
110 West Clark Street
Oxford, GA 30054
United States

SHIP TO

Chief of Police Mark Anglin
City of Oxford Police
110 West Clark Street
Oxford, GA 30054
United States

ESTIMATE 1074

DATE 02/14/2022

SALES REP

Nelson Raboy

DATE	ACTIVITY	DESCRIPTION	QTY	RATE	AMOUNT
02/14/2022	Haro PD2 Patrol Bike Package I with Lights, Bag and Helmet	The Haro PD (Police Department) series was created to meet the unique and demanding needs of law enforcement everywhere. We collaborated with the law enforcement community and those who serve them in order to create the best, most dependable and affordable series of Police bicycles available in the market today. First Responders face critically dangerous real-world situations that require their equipment to be durable and reliable. That's why we built our PD series with strong, lightweight alloy frames, agile 27.5" wheel sets and rugged, durable components from the ground up. These aren't re-decaled mountain bikes (although they certainly know how to climb in the dirt); they're bikes built to assist their partners in keeping our streets safe while keeping themselves safe at the same time.	2	1,825.92	3,651.84

If you are looking for a complete package to help get your bicycle patrol team up and riding, check out our Haro PD4 27.5" bike, NiteRider and Inertia combination package! We are offering this outstanding package deal with bicycle patrol equipment we have personally field-tested. We are confident this equipment will withstand the rigors of your daily bike patrol duties.

Haro PD4/NiteRider/Inertia Patrol package includes:

Patrol Bike: Haro PD4 27.5" Patrol, 18-speed mountain bike with a matte black frame. Frame sizes are available in XSmall (15" / 50cm), Small (17" / 52cm), Medium (19" / 54cm), and Large (21" / 56cm) sizes.

Recommended Rider Heights: 16" (5'4"-5'9"), 18" (5'8"-6'), 20" (5'11"-6'3"), and 22" (6'2" and taller)

Lighting System: NiteRider rechargeable Lumina 650 single beam headlight and Sabre 80 taillight combo system (SKU #6790)

Trunk Bag: Inertia Designs Basic bag

Helmet: Bell Trace (Matte Black) universal fit or a comparably priced helmet (call or email us with your preference)

Accessory Upgrade Options: We offer several accessory upgrade options (e.g., Serfas RX anatomical saddles, NiteRider lighting systems, rear trunk bags, frame decals and much more). Please call us for details and pricing.

Bulk Order Discounts: We offer bulk order pricing discounts on all of our Patrol bikes and Patrol bike packages. Please email (bpopatrol@yahoo.com) or

call us (951) 318-7341) for details.

Note: Bicycle Patrol Outfitters is not responsible for changes made by the product manufacturer. The components listed above are subject to change without notice. We will update our catalog and website as quickly as these changes are brought to our attention by the product manufacturer.

Size: Large (qty 2)

02/14/2022	Shipping	Shipping/Handling Fee Per Bike.	2	80.00	160.00
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(Box bikes do not fall under the free shipping category due to size and weight, however, all other items on order will be shipped no charge)

SUBTOTAL	3,811.84
TAX	0.00
TOTAL	\$3,811.84

Accepted By

Accepted Date

SPEED DATA ANALYSIS

Location



whatcoat Street
Asbury Street
Latitude: 38.861231
Longitude: -95.741185

Analysis Time Period



Start	End
1/28/2022	2/7/2022
10:50 AM	7:54 AM

Vehicles Analyzed



1,781

Speed Limit



25

Total Enforceable Violations



0

Average Speed



19

% Enforceable Violations



0%

Fastest Speed



36

Enforcement Rating

LOW

Slowest Speed



7

Name: 02-07-2022

Date/Time: 1/28/2022 10:50:06 AM

Site Code: 00000001

Station ID:

Location 1:

Location 2:

Location 3:

Location 4:

Latitude: 0.000000

Longitude: 0.000000

Channels: , Channel 1 - Unknown, 1, Channel 2 - Unknown, 2

Filters Applied: None

Date	Time	Channel	Speed	Gap	Length
1/28/2022	10:50:06 AM	1	16	0	51
1/28/2022	11:00:05 AM	2	24	599	154
1/28/2022	11:06:46 AM	1	21	1000	331
1/28/2022	11:10:48 AM	1	24	242	193
1/28/2022	11:12:18 AM	1	26	90	441
1/28/2022	11:18:58 AM	1	16	400	244
1/28/2022	11:19:15 AM	1	19	17	264
1/28/2022	11:23:45 AM	1	24	270	425
1/28/2022	11:25:36 AM	2	17	1531	346
1/28/2022	11:26:01 AM	1	27	136	138
1/28/2022	11:26:51 AM	1	19	50	264
1/28/2022	11:29:09 AM	2	16	213	154
1/28/2022	11:30:43 AM	2	23	94	386
1/28/2022	11:30:45 AM	2	25	2	165
1/28/2022	11:36:37 AM	2	21	352	232
1/28/2022	11:41:33 AM	1	30	882	315
1/28/2022	11:43:15 AM	1	27	102	331
1/28/2022	11:48:21 AM	1	23	306	161
1/28/2022	11:49:58 AM	1	24	97	307
1/28/2022	11:54:22 AM	2	30	1065	240
1/28/2022	12:01:41 PM	2	25	439	185
1/28/2022	12:08:18 PM	1	35	1100	358
1/28/2022	12:11:34 PM	1	18	196	232
1/28/2022	12:32:54 PM	1	16	1280	157
1/28/2022	12:34:36 PM	1	26	102	394
1/28/2022	12:41:14 PM	1	18	398	370
1/28/2022	12:46:23 PM	1	8	309	20
1/28/2022	12:46:27 PM	1	22	4	343
1/28/2022	12:52:22 PM	2	23	3041	232
1/28/2022	1:00:33 PM	1	26	846	295
1/28/2022	1:04:20 PM	1	16	227	370
1/28/2022	1:04:41 PM	2	27	739	272
1/28/2022	1:05:52 PM	2	19	71	343
1/28/2022	1:11:11 PM	2	11	319	209
1/28/2022	1:12:10 PM	2	26	59	272
1/28/2022	1:15:51 PM	2	13	221	228
1/28/2022	1:24:37 PM	1	9	1217	197
1/28/2022	1:26:30 PM	1	14	113	161
1/28/2022	1:31:02 PM	1	12	272	280

1/28/2022	1:33:01 PM	2	16	1030	55
1/28/2022	1:34:38 PM	1	26	216	406
1/28/2022	1:35:07 PM	2	26	126	331
1/28/2022	1:36:54 PM	2	23	107	307
1/28/2022	1:41:02 PM	2	21	248	319
1/28/2022	1:41:36 PM	1	18	418	173
1/28/2022	1:42:00 PM	2	18	58	157
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1/28/2022	1:56:57 PM	1	19	37	291
1/28/2022	1:59:12 PM	2	19	899	1004
1/28/2022	2:00:49 PM	1	21	232	287
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1/28/2022	2:05:40 PM	2	20	93	339
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1/28/2022	2:10:33 PM	2	13	293	1004
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1/28/2022	2:12:50 PM	2	29	137	205
1/28/2022	2:12:52 PM	2	25	2	343
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1/28/2022	2:35:23 PM	1	23	949	327
1/28/2022	2:37:36 PM	1	16	133	362
1/28/2022	2:38:35 PM	2	17	692	445
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1/28/2022	2:47:45 PM	1	24	609	295
1/28/2022	2:56:36 PM	1	25	531	457
1/28/2022	3:06:25 PM	2	25	1142	177
1/28/2022	3:06:28 PM	2	26	3	697
1/28/2022	3:06:36 PM	2	21	8	185
1/28/2022	3:07:24 PM	2	31	48	287
1/28/2022	3:10:31 PM	1	21	835	268
1/28/2022	3:17:31 PM	1	21	420	291
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1/28/2022	3:39:29 PM	1	16	423	1004
1/28/2022	3:43:01 PM	1	17	212	256
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1/28/2022	3:47:49 PM	2	28	1068	303
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1/28/2022	4:00:18 PM	2	12	749	20
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1/28/2022	6:44:06 PM	2	12	3214	516
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1/29/2022	4:45:09 PM	1	14	299	378
1/29/2022	5:21:15 PM	2	26	2213	165
1/29/2022	5:47:40 PM	1	24	3751	386
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1/29/2022	7:57:07 PM	1	26	7767	354
1/29/2022	8:15:51 PM	2	22	3475	610
1/29/2022	8:24:52 PM	1	24	1665	543
1/29/2022	8:42:32 PM	1	26	1060	409
1/29/2022	8:54:40 PM	2	25	2329	264
1/29/2022	11:05:14 PM	1	13	8562	303
1/29/2022	11:05:32 PM	2	16	7852	169
1/29/2022	11:05:35 PM	2	19	3	390
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1/30/2022	4:08:06 AM	1	25	2493	264
1/30/2022	9:41:51 AM	2	24	38176	169
1/30/2022	10:17:56 AM	2	18	2165	299
1/30/2022	10:59:47 AM	2	27	2511	169
1/30/2022	11:19:18 AM	1	26	25872	311
1/30/2022	11:19:37 AM	2	17	1190	165
1/30/2022	11:19:40 AM	2	15	3	173
1/30/2022	12:22:56 PM	2	15	3796	169
1/30/2022	12:27:55 PM	1	23	4117	55
1/30/2022	12:31:01 PM	1	18	186	315
1/30/2022	12:58:57 PM	2	26	2161	268

1/30/2022	1:13:04 PM	2	24	847	295
1/30/2022	1:13:05 PM	2	23	1	146
1/30/2022	1:39:51 PM	1	14	4130	374
1/30/2022	1:41:18 PM	2	14	1693	287
1/30/2022	1:49:16 PM	1	12	565	161
1/30/2022	1:57:01 PM	2	22	943	189
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1/30/2022	2:53:07 PM	1	23	251	264
1/30/2022	3:02:16 PM	2	27	573	161
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1/30/2022	8:58:41 PM	2	21	308	469
1/30/2022	11:03:25 PM	1	26	14101	236
1/30/2022	11:25:44 PM	2	23	8823	476
1/31/2022	7:00:41 AM	1	13	28636	256
1/31/2022	7:15:48 AM	2	20	28204	189
1/31/2022	7:38:27 AM	2	17	1359	165
1/31/2022	7:41:40 AM	2	26	193	323
1/31/2022	7:44:59 AM	2	11	199	20
1/31/2022	7:47:53 AM	1	23	2832	543

1/31/2022	7:48:32 AM	2	27	213	382
1/31/2022	7:50:21 AM	1	25	148	461
1/31/2022	8:00:43 AM	2	7	731	20
1/31/2022	8:00:53 AM	2	9	10	169
1/31/2022	8:01:01 AM	2	9	8	165
1/31/2022	8:06:13 AM	2	25	312	228
1/31/2022	8:08:23 AM	2	15	130	862
1/31/2022	8:21:52 AM	2	14	809	157
1/31/2022	8:22:00 AM	2	15	8	20
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1/31/2022	8:33:28 AM	2	8	128	20
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1/31/2022	9:24:02 AM	1	14	1021	630
1/31/2022	9:25:34 AM	1	16	92	252
1/31/2022	9:28:46 AM	1	13	192	453
1/31/2022	9:32:50 AM	2	20	831	323
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1/31/2022	9:42:20 AM	2	23	9	374
1/31/2022	9:42:49 AM	1	16	95	307
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1/31/2022	9:57:09 AM	1	13	126	209
1/31/2022	9:59:44 AM	1	9	155	150
1/31/2022	10:05:34 AM	1	27	350	445
1/31/2022	10:14:47 AM	1	17	553	508
1/31/2022	10:16:59 AM	1	20	132	386
1/31/2022	10:34:34 AM	2	17	2754	165
1/31/2022	10:34:38 AM	2	16	4	217
1/31/2022	10:35:48 AM	1	18	1129	457
1/31/2022	10:39:21 AM	1	11	213	311
1/31/2022	10:40:26 AM	1	32	65	272

1/31/2022	10:42:19 AM	1	19	113	406
1/31/2022	10:47:32 AM	1	18	313	567
1/31/2022	10:52:38 AM	2	21	1080	1004
1/31/2022	10:53:22 AM	2	17	44	429
1/31/2022	10:54:14 AM	1	17	402	402
1/31/2022	10:55:10 AM	2	17	108	567
1/31/2022	10:55:23 AM	1	8	69	980
1/31/2022	10:59:32 AM	2	12	262	587
1/31/2022	11:01:06 AM	1	22	343	346
1/31/2022	11:09:12 AM	2	11	580	1004
1/31/2022	11:10:35 AM	2	14	83	185
1/31/2022	11:26:22 AM	2	12	947	677
1/31/2022	11:27:17 AM	1	9	1571	20
1/31/2022	11:28:16 AM	1	11	59	378
1/31/2022	11:28:39 AM	1	16	23	496
1/31/2022	11:28:44 AM	1	16	5	307
1/31/2022	11:30:04 AM	2	17	222	394
1/31/2022	11:32:57 AM	1	24	253	213
1/31/2022	11:34:32 AM	2	12	268	1004
1/31/2022	11:40:36 AM	2	13	364	138
1/31/2022	11:42:05 AM	1	20	548	528
1/31/2022	11:42:09 AM	2	21	93	327
1/31/2022	11:42:36 AM	1	28	31	331
1/31/2022	11:43:32 AM	2	22	83	244
1/31/2022	11:44:13 AM	2	15	41	138
1/31/2022	11:47:23 AM	1	25	287	350
1/31/2022	11:48:15 AM	2	27	242	327
1/31/2022	11:53:24 AM	1	23	361	402
1/31/2022	11:56:30 AM	2	23	495	157
1/31/2022	12:02:18 PM	1	16	534	307
1/31/2022	12:05:48 PM	1	24	210	228
1/31/2022	12:07:03 PM	1	25	75	358
1/31/2022	12:08:46 PM	2	31	736	327
1/31/2022	12:11:44 PM	1	27	281	276
1/31/2022	12:12:08 PM	1	21	24	500
1/31/2022	12:12:24 PM	2	19	218	201
1/31/2022	12:12:27 PM	2	19	3	130
1/31/2022	12:14:55 PM	1	22	167	374
1/31/2022	12:15:04 PM	2	18	157	161
1/31/2022	12:17:28 PM	1	18	153	398
1/31/2022	12:19:12 PM	2	25	248	319
1/31/2022	12:21:54 PM	2	22	162	20
1/31/2022	12:25:23 PM	2	15	209	201
1/31/2022	12:30:58 PM	1	21	810	374
1/31/2022	12:33:02 PM	1	16	124	654
1/31/2022	12:34:10 PM	2	26	527	346
1/31/2022	12:34:53 PM	2	24	43	280
1/31/2022	12:37:02 PM	2	12	129	484
1/31/2022	12:40:59 PM	2	13	237	193
1/31/2022	12:41:34 PM	1	13	512	433
1/31/2022	12:43:06 PM	1	18	92	378
1/31/2022	12:48:14 PM	2	14	435	169

1/31/2022	12:48:17 PM	2	13	3	398
1/31/2022	12:49:01 PM	1	28	355	260
1/31/2022	12:50:52 PM	1	20	111	268
1/31/2022	12:51:44 PM	2	28	207	362
1/31/2022	12:55:36 PM	1	16	284	610
1/31/2022	12:57:15 PM	2	10	331	291
1/31/2022	12:58:31 PM	2	18	76	157
1/31/2022	12:58:33 PM	2	18	2	437
1/31/2022	12:59:22 PM	2	14	49	146
1/31/2022	1:01:57 PM	2	21	155	323
1/31/2022	1:02:17 PM	2	14	20	783
1/31/2022	1:03:09 PM	1	10	453	228
1/31/2022	1:03:14 PM	1	8	5	1004
1/31/2022	1:11:42 PM	1	17	508	476
1/31/2022	1:14:26 PM	2	26	729	280
1/31/2022	1:19:06 PM	1	17	444	236
1/31/2022	1:19:29 PM	1	19	23	512
1/31/2022	1:19:30 PM	1	19	1	161
1/31/2022	1:25:26 PM	1	11	356	205
1/31/2022	1:32:25 PM	1	11	419	150
1/31/2022	1:33:10 PM	2	25	1124	303
1/31/2022	1:37:24 PM	2	9	254	8
1/31/2022	1:38:27 PM	1	18	362	484
1/31/2022	1:38:41 PM	1	23	14	413
1/31/2022	1:40:34 PM	1	12	113	146
1/31/2022	1:45:12 PM	2	24	468	358
1/31/2022	1:45:19 PM	2	24	7	402
1/31/2022	1:45:48 PM	2	12	29	146
1/31/2022	1:45:50 PM	2	19	2	193
1/31/2022	1:45:52 PM	2	19	2	169
1/31/2022	1:53:11 PM	1	18	757	1004
1/31/2022	1:53:21 PM	1	11	10	457
1/31/2022	1:55:03 PM	2	13	551	583
1/31/2022	1:59:41 PM	2	12	278	445
1/31/2022	2:00:40 PM	1	24	439	323
1/31/2022	2:01:55 PM	2	20	134	142
1/31/2022	2:01:58 PM	2	19	3	531
1/31/2022	2:03:33 PM	1	23	173	138
1/31/2022	2:05:40 PM	1	13	127	744
1/31/2022	2:07:10 PM	1	26	90	256
1/31/2022	2:09:11 PM	1	23	121	516
1/31/2022	2:17:20 PM	2	14	922	150
1/31/2022	2:18:42 PM	1	20	571	240
1/31/2022	2:19:27 PM	1	16	45	709
1/31/2022	2:21:13 PM	2	17	233	976
1/31/2022	2:22:22 PM	1	15	175	437
1/31/2022	2:23:20 PM	2	9	127	20
1/31/2022	2:25:54 PM	1	25	212	331
1/31/2022	2:26:39 PM	1	16	45	472
1/31/2022	2:29:52 PM	2	14	392	1004
1/31/2022	2:30:17 PM	1	21	218	665
1/31/2022	2:31:34 PM	1	20	77	402

1/31/2022	2:32:16 PM	2	28	144	224
1/31/2022	2:33:13 PM	2	24	57	327
1/31/2022	2:36:05 PM	1	17	271	323
1/31/2022	2:40:15 PM	2	19	422	402
1/31/2022	2:40:46 PM	2	17	31	169
1/31/2022	2:43:01 PM	1	12	416	819
1/31/2022	2:55:09 PM	2	21	863	181
1/31/2022	2:55:11 PM	2	19	2	244
1/31/2022	3:03:16 PM	2	14	485	268
1/31/2022	3:03:59 PM	2	24	43	280
1/31/2022	3:04:39 PM	1	15	1298	47
1/31/2022	3:07:30 PM	1	24	171	476
1/31/2022	3:07:42 PM	2	13	223	35
1/31/2022	3:14:25 PM	1	18	415	299
1/31/2022	3:16:16 PM	2	15	514	524
1/31/2022	3:19:40 PM	2	14	204	181
1/31/2022	3:22:35 PM	2	22	175	142
1/31/2022	3:22:37 PM	2	20	2	445
1/31/2022	3:28:57 PM	2	11	380	354
1/31/2022	3:29:12 PM	1	16	887	650
1/31/2022	3:32:29 PM	1	19	197	335
1/31/2022	3:34:22 PM	1	10	113	374
1/31/2022	3:37:30 PM	1	13	188	394
1/31/2022	3:38:59 PM	2	17	602	185
1/31/2022	3:39:02 PM	2	15	3	264
1/31/2022	3:39:25 PM	1	11	115	1004
1/31/2022	3:40:59 PM	1	14	94	362
1/31/2022	3:44:57 PM	1	13	238	240
1/31/2022	3:46:07 PM	1	14	70	177
1/31/2022	3:46:33 PM	1	10	26	1004
1/31/2022	3:53:19 PM	2	14	857	728
1/31/2022	3:53:41 PM	1	13	428	472
1/31/2022	3:55:38 PM	1	11	117	280
1/31/2022	4:02:48 PM	1	15	430	457
1/31/2022	4:04:52 PM	1	19	124	413
1/31/2022	4:04:58 PM	2	12	699	236
1/31/2022	4:05:08 PM	1	16	16	240
1/31/2022	4:06:36 PM	2	11	98	20
1/31/2022	4:08:02 PM	2	20	86	209
1/31/2022	4:08:04 PM	2	19	2	244
1/31/2022	4:08:55 PM	1	28	227	276
1/31/2022	4:12:30 PM	2	19	266	417
1/31/2022	4:13:21 PM	2	19	51	185
1/31/2022	4:17:53 PM	1	21	538	272
1/31/2022	4:21:05 PM	2	16	464	142
1/31/2022	4:22:31 PM	1	16	278	398
1/31/2022	4:23:59 PM	1	16	88	232
1/31/2022	4:27:04 PM	2	21	359	276
1/31/2022	4:27:20 PM	2	27	16	413
1/31/2022	4:29:55 PM	1	16	356	622
1/31/2022	4:30:25 PM	1	22	30	366
1/31/2022	4:30:46 PM	2	26	206	433

1/31/2022	4:31:25 PM	2	28	39	335
1/31/2022	4:33:15 PM	1	14	170	512
1/31/2022	4:39:21 PM	2	16	476	138
1/31/2022	4:43:30 PM	1	16	615	260
1/31/2022	4:50:47 PM	1	13	437	449
1/31/2022	4:56:13 PM	1	27	326	315
1/31/2022	4:57:30 PM	2	15	1089	1004
1/31/2022	4:59:42 PM	1	24	209	390
1/31/2022	5:07:56 PM	2	12	626	287
1/31/2022	5:08:49 PM	1	24	547	283
1/31/2022	5:09:37 PM	2	22	101	150
1/31/2022	5:09:39 PM	2	19	2	378
1/31/2022	5:11:49 PM	2	18	130	228
1/31/2022	5:13:23 PM	1	26	274	335
1/31/2022	5:22:02 PM	1	23	519	142
1/31/2022	5:26:40 PM	1	10	278	173
1/31/2022	5:35:49 PM	2	26	1440	402
1/31/2022	5:37:21 PM	2	13	92	299
1/31/2022	5:43:22 PM	2	28	361	335
1/31/2022	5:43:23 PM	2	27	1	146
1/31/2022	5:44:10 PM	1	26	1050	386
1/31/2022	5:59:17 PM	1	16	907	264
1/31/2022	6:03:17 PM	1	18	240	378
1/31/2022	6:04:31 PM	1	18	74	461
1/31/2022	6:09:17 PM	2	25	1554	398
1/31/2022	6:11:54 PM	2	19	157	244
1/31/2022	6:11:56 PM	2	16	2	736
1/31/2022	6:12:44 PM	2	23	48	402
1/31/2022	6:21:33 PM	2	23	529	346
1/31/2022	6:21:34 PM	2	22	1	988
1/31/2022	6:26:29 PM	1	13	1318	543
1/31/2022	6:40:04 PM	1	24	815	350
1/31/2022	6:44:30 PM	2	19	1376	315
1/31/2022	6:48:21 PM	1	32	497	268
1/31/2022	7:05:20 PM	1	27	1019	370
1/31/2022	7:10:55 PM	1	24	335	335
1/31/2022	7:14:57 PM	2	25	1827	311
1/31/2022	8:07:36 PM	2	16	3159	201
1/31/2022	8:48:04 PM	1	9	5829	386
1/31/2022	9:48:35 PM	2	24	6059	217
1/31/2022	9:48:37 PM	2	24	2	248
1/31/2022	10:59:22 PM	1	27	7878	287
1/31/2022	11:29:36 PM	2	23	6059	157
1/31/2022	11:29:39 PM	2	19	3	839
2/1/2022	4:58:34 AM	1	20	21552	240
2/1/2022	6:53:10 AM	2	17	26611	165
2/1/2022	7:40:39 AM	2	13	2849	142
2/1/2022	7:43:28 AM	1	12	9894	575
2/1/2022	7:48:46 AM	1	19	318	280
2/1/2022	8:15:23 AM	1	26	1597	299
2/1/2022	8:21:12 AM	2	11	2433	465
2/1/2022	8:23:18 AM	2	22	126	882

2/1/2022	8:27:07 AM	1	27	704	386
2/1/2022	8:29:34 AM	1	16	147	736
2/1/2022	8:31:39 AM	1	18	125	157
2/1/2022	8:41:16 AM	1	19	577	311
2/1/2022	8:44:32 AM	1	29	196	362
2/1/2022	8:45:09 AM	1	29	37	413
2/1/2022	8:45:37 AM	2	26	1339	240
2/1/2022	8:52:35 AM	1	15	446	472
2/1/2022	8:57:53 AM	1	14	318	378
2/1/2022	8:59:09 AM	1	26	76	409
2/1/2022	9:02:24 AM	2	19	1007	354
2/1/2022	9:02:30 AM	1	29	201	256
2/1/2022	9:12:15 AM	2	30	591	358
2/1/2022	9:13:38 AM	1	14	668	453
2/1/2022	9:16:08 AM	2	13	233	20
2/1/2022	9:16:43 AM	1	15	185	406
2/1/2022	9:17:42 AM	1	18	59	417
2/1/2022	9:18:39 AM	1	18	57	319
2/1/2022	9:19:19 AM	1	22	40	323
2/1/2022	9:19:56 AM	2	24	228	177
2/1/2022	9:24:14 AM	1	14	295	362
2/1/2022	9:30:29 AM	1	11	375	543
2/1/2022	9:30:54 AM	2	13	658	197
2/1/2022	9:31:51 AM	1	17	82	894
2/1/2022	9:31:52 AM	2	13	58	173
2/1/2022	9:32:39 AM	2	13	47	657
2/1/2022	9:33:56 AM	1	13	125	1004
2/1/2022	9:35:04 AM	2	15	145	0
2/1/2022	9:39:27 AM	1	9	331	236
2/1/2022	9:40:11 AM	2	18	307	173
2/1/2022	9:41:56 AM	1	7	149	20
2/1/2022	9:42:25 AM	2	14	134	319
2/1/2022	9:47:27 AM	1	15	331	555
2/1/2022	9:47:49 AM	2	14	324	161
2/1/2022	9:47:51 AM	1	10	24	878
2/1/2022	9:49:20 AM	1	25	89	453
2/1/2022	9:50:47 AM	1	11	87	449
2/1/2022	9:54:17 AM	1	13	210	429
2/1/2022	9:57:00 AM	2	28	551	484
2/1/2022	9:58:04 AM	2	24	64	220
2/1/2022	9:58:19 AM	1	25	242	476
2/1/2022	10:04:34 AM	2	28	390	307
2/1/2022	10:05:54 AM	2	21	80	161
2/1/2022	10:05:57 AM	2	20	3	354
2/1/2022	10:06:53 AM	2	18	56	567
2/1/2022	10:11:40 AM	1	21	801	327
2/1/2022	10:18:02 AM	2	13	669	150
2/1/2022	10:18:29 AM	1	14	409	260
2/1/2022	10:25:37 AM	1	16	428	465
2/1/2022	10:27:07 AM	2	32	545	276
2/1/2022	10:34:58 AM	1	21	561	295
2/1/2022	10:37:01 AM	1	12	123	512

2/1/2022	10:41:40 AM	2	23	873	205
2/1/2022	10:46:56 AM	2	19	316	413
2/1/2022	10:49:02 AM	1	14	721	650
2/1/2022	10:49:13 AM	2	18	137	350
2/1/2022	10:51:12 AM	2	18	119	1004
2/1/2022	11:04:48 AM	2	17	816	228
2/1/2022	11:04:59 AM	2	17	11	161
2/1/2022	11:05:02 AM	2	18	3	165
2/1/2022	11:05:02 AM	1	12	960	669
2/1/2022	11:06:31 AM	1	33	89	457
2/1/2022	11:08:22 AM	1	25	111	366
2/1/2022	11:14:45 AM	2	16	583	150
2/1/2022	11:14:47 AM	2	17	2	339
2/1/2022	11:20:05 AM	1	13	703	413
2/1/2022	11:23:42 AM	1	19	217	213
2/1/2022	11:26:01 AM	1	16	139	1000
2/1/2022	11:26:07 AM	2	13	680	201
2/1/2022	11:26:10 AM	2	15	3	445
2/1/2022	11:26:19 AM	1	10	18	1004
2/1/2022	11:36:43 AM	2	17	633	307
2/1/2022	11:37:58 AM	1	16	699	236
2/1/2022	11:46:23 AM	2	26	580	307
2/1/2022	11:49:56 AM	1	7	718	20
2/1/2022	11:52:00 AM	2	28	337	295
2/1/2022	11:53:41 AM	2	24	101	386
2/1/2022	12:02:05 PM	1	8	729	20
2/1/2022	12:02:20 PM	2	21	519	280
2/1/2022	12:03:42 PM	2	15	82	157
2/1/2022	12:09:44 PM	1	21	459	287
2/1/2022	12:16:35 PM	2	33	773	303
2/1/2022	12:17:13 PM	2	12	38	260
2/1/2022	12:21:40 PM	2	29	267	461
2/1/2022	12:23:38 PM	2	19	118	307
2/1/2022	12:25:49 PM	1	25	965	492
2/1/2022	12:40:07 PM	2	26	989	228
2/1/2022	12:40:08 PM	2	22	1	240
2/1/2022	12:41:08 PM	2	23	60	193
2/1/2022	12:41:10 PM	2	21	2	248
2/1/2022	12:45:03 PM	1	7	1154	20
2/1/2022	12:46:23 PM	2	16	313	299
2/1/2022	12:46:42 PM	1	16	99	240
2/1/2022	1:02:24 PM	2	12	961	469
2/1/2022	1:09:57 PM	2	16	453	1004
2/1/2022	1:10:19 PM	1	9	1417	630
2/1/2022	1:12:34 PM	2	16	157	335
2/1/2022	1:12:53 PM	2	20	19	354
2/1/2022	1:16:17 PM	2	15	204	173
2/1/2022	1:20:22 PM	1	18	603	220
2/1/2022	1:27:28 PM	1	15	426	20
2/1/2022	1:28:54 PM	2	12	757	20
2/1/2022	1:32:29 PM	2	20	215	335
2/1/2022	1:34:51 PM	2	26	142	248

2/1/2022	1:37:30 PM	1	19	602	327
2/1/2022	1:40:56 PM	1	16	206	146
2/1/2022	1:42:16 PM	1	29	80	886
2/1/2022	1:44:35 PM	2	16	584	173
2/1/2022	1:44:38 PM	2	18	3	169
2/1/2022	1:47:10 PM	1	9	294	236
2/1/2022	1:47:12 PM	1	14	2	327
2/1/2022	1:48:56 PM	2	23	258	201
2/1/2022	1:49:58 PM	1	22	166	311
2/1/2022	1:55:02 PM	2	17	366	256
2/1/2022	1:55:36 PM	1	24	338	362
2/1/2022	2:00:11 PM	2	19	309	169
2/1/2022	2:06:09 PM	2	21	358	323
2/1/2022	2:14:16 PM	2	14	487	358
2/1/2022	2:16:04 PM	2	27	108	303
2/1/2022	2:16:42 PM	1	10	1266	228
2/1/2022	2:18:01 PM	2	25	117	197
2/1/2022	2:18:03 PM	2	25	2	327
2/1/2022	2:20:12 PM	2	16	129	465
2/1/2022	2:21:27 PM	1	15	285	677
2/1/2022	2:21:39 PM	1	8	12	55
2/1/2022	2:22:14 PM	1	19	35	488
2/1/2022	2:22:33 PM	1	15	19	374
2/1/2022	2:24:03 PM	2	12	231	299
2/1/2022	2:24:07 PM	2	14	4	181
2/1/2022	2:25:06 PM	2	15	59	150
2/1/2022	2:28:47 PM	2	12	221	209
2/1/2022	2:28:48 PM	1	12	375	472
2/1/2022	2:32:32 PM	1	11	224	567
2/1/2022	2:33:21 PM	2	26	274	217
2/1/2022	2:33:23 PM	2	22	2	161
2/1/2022	2:33:41 PM	1	33	69	606
2/1/2022	2:34:20 PM	2	18	57	354
2/1/2022	2:44:18 PM	1	9	637	20
2/1/2022	2:46:09 PM	1	14	111	157
2/1/2022	2:49:09 PM	2	17	889	366
2/1/2022	2:55:57 PM	1	14	588	150
2/1/2022	2:56:27 PM	1	15	30	453
2/1/2022	2:59:29 PM	2	12	620	20
2/1/2022	3:00:27 PM	1	17	240	390
2/1/2022	3:11:37 PM	1	7	670	20
2/1/2022	3:12:30 PM	1	18	53	327
2/1/2022	3:13:54 PM	2	17	865	323
2/1/2022	3:17:59 PM	2	16	245	4
2/1/2022	3:21:09 PM	1	23	519	280
2/1/2022	3:26:10 PM	2	15	491	1004
2/1/2022	3:27:02 PM	1	9	353	386
2/1/2022	3:29:09 PM	2	25	179	252
2/1/2022	3:33:49 PM	1	14	407	402
2/1/2022	3:33:54 PM	1	17	5	244
2/1/2022	3:34:20 PM	1	27	26	142
2/1/2022	3:38:26 PM	2	21	557	276

2/1/2022	3:40:49 PM	2	25	143	268
2/1/2022	3:40:50 PM	2	22	1	248
2/1/2022	3:43:05 PM	2	14	135	457
2/1/2022	3:46:17 PM	2	14	192	157
2/1/2022	3:46:19 PM	2	21	2	323
2/1/2022	3:50:08 PM	1	17	948	390
2/1/2022	3:54:55 PM	1	23	287	500
2/1/2022	3:56:51 PM	2	18	632	268
2/1/2022	3:57:52 PM	2	12	61	441
2/1/2022	3:58:38 PM	1	16	223	378
2/1/2022	3:59:15 PM	1	19	37	307
2/1/2022	3:59:28 PM	2	15	96	161
2/1/2022	4:01:42 PM	1	18	147	244
2/1/2022	4:03:44 PM	1	20	122	146
2/1/2022	4:04:20 PM	2	14	292	240
2/1/2022	4:05:48 PM	1	15	124	433
2/1/2022	4:07:00 PM	1	21	72	598
2/1/2022	4:08:58 PM	2	22	278	272
2/1/2022	4:09:01 PM	2	26	3	1004
2/1/2022	4:11:17 PM	2	17	136	244
2/1/2022	4:11:20 PM	2	12	3	728
2/1/2022	4:12:41 PM	1	19	341	642
2/1/2022	4:19:26 PM	1	12	405	669
2/1/2022	4:19:30 PM	2	13	490	173
2/1/2022	4:19:31 PM	1	11	5	587
2/1/2022	4:19:55 PM	1	11	24	476
2/1/2022	4:22:10 PM	1	12	135	425
2/1/2022	4:24:30 PM	1	26	140	323
2/1/2022	4:25:35 PM	1	16	65	252
2/1/2022	4:29:19 PM	1	15	224	354
2/1/2022	4:31:36 PM	2	11	726	1004
2/1/2022	4:38:53 PM	2	14	437	303
2/1/2022	4:39:05 PM	1	27	586	476
2/1/2022	4:40:02 PM	2	11	69	220
2/1/2022	4:41:46 PM	2	26	104	366
2/1/2022	4:45:15 PM	1	15	370	307
2/1/2022	4:45:56 PM	1	18	41	870
2/1/2022	4:55:44 PM	1	24	588	264
2/1/2022	4:56:10 PM	1	18	26	362
2/1/2022	4:56:28 PM	1	10	18	201
2/1/2022	4:56:59 PM	1	21	31	406
2/1/2022	5:00:46 PM	1	11	227	248
2/1/2022	5:01:28 PM	2	14	1182	169
2/1/2022	5:02:39 PM	1	26	113	378
2/1/2022	5:03:45 PM	1	27	66	146
2/1/2022	5:04:02 PM	1	27	17	394
2/1/2022	5:08:46 PM	2	24	438	409
2/1/2022	5:10:32 PM	2	11	106	488
2/1/2022	5:11:28 PM	1	9	446	165
2/1/2022	5:21:24 PM	2	15	652	854
2/1/2022	5:23:14 PM	2	21	110	232
2/1/2022	5:23:16 PM	2	19	2	138

2/1/2022	5:25:13 PM	1	16	825	264
2/1/2022	5:26:05 PM	2	29	169	362
2/1/2022	5:27:09 PM	1	25	116	303
2/1/2022	5:27:31 PM	2	28	86	394
2/1/2022	5:30:56 PM	2	27	205	484
2/1/2022	5:38:51 PM	1	15	702	362
2/1/2022	5:56:57 PM	1	28	1086	398
2/1/2022	5:58:00 PM	2	21	1624	205
2/1/2022	5:58:02 PM	2	19	2	272
2/1/2022	6:02:38 PM	1	12	341	465
2/1/2022	6:03:27 PM	1	21	49	307
2/1/2022	6:06:27 PM	2	17	505	161
2/1/2022	6:06:29 PM	2	17	2	311
2/1/2022	6:06:52 PM	2	26	23	370
2/1/2022	6:17:19 PM	2	12	627	1004
2/1/2022	6:20:16 PM	1	9	1009	20
2/1/2022	6:26:09 PM	2	13	530	1004
2/1/2022	6:27:40 PM	2	13	91	343
2/1/2022	6:46:58 PM	1	26	1602	189
2/1/2022	6:55:52 PM	2	30	1692	386
2/1/2022	7:04:13 PM	2	30	501	154
2/1/2022	7:16:00 PM	1	27	1742	417
2/1/2022	7:26:39 PM	1	16	639	303
2/1/2022	7:34:56 PM	2	22	1843	165
2/1/2022	7:34:58 PM	2	20	2	177
2/1/2022	7:56:28 PM	2	26	1290	260
2/1/2022	8:12:53 PM	1	30	2774	142
2/1/2022	8:27:04 PM	2	21	1836	543
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2/1/2022	10:44:35 PM	1	11	9102	437
2/2/2022	6:51:15 AM	2	21	31607	185
2/2/2022	7:07:31 AM	1	23	30176	472
2/2/2022	7:11:59 AM	1	11	268	343
2/2/2022	7:15:38 AM	1	18	219	614
2/2/2022	7:34:59 AM	2	22	2624	323
2/2/2022	7:35:06 AM	2	18	7	31
2/2/2022	7:37:23 AM	2	23	137	150
2/2/2022	7:38:57 AM	2	14	94	189
2/2/2022	7:40:51 AM	1	12	1513	169
2/2/2022	7:58:48 AM	1	25	1077	335
2/2/2022	7:59:48 AM	2	25	1251	417
2/2/2022	8:02:47 AM	2	27	179	205
2/2/2022	8:04:38 AM	1	31	350	303
2/2/2022	8:06:19 AM	1	12	101	150
2/2/2022	8:06:48 AM	1	12	29	134
2/2/2022	8:15:13 AM	1	9	505	453
2/2/2022	8:18:04 AM	2	27	917	205
2/2/2022	8:23:10 AM	1	12	477	165
2/2/2022	8:25:02 AM	2	20	418	165
2/2/2022	8:25:05 AM	2	19	3	646
2/2/2022	8:30:26 AM	2	14	321	1004
2/2/2022	8:48:26 AM	1	29	1516	354

2/2/2022	8:56:01 AM	2	17	1535	346
2/2/2022	8:56:07 AM	2	16	6	520
2/2/2022	8:56:20 AM	1	24	474	406
2/2/2022	8:57:50 AM	2	23	103	370
2/2/2022	8:58:12 AM	2	22	22	531
2/2/2022	9:04:07 AM	1	20	467	425
2/2/2022	9:09:34 AM	2	14	682	189
2/2/2022	9:10:54 AM	1	14	407	291
2/2/2022	9:11:00 AM	1	20	6	441
2/2/2022	9:22:51 AM	2	27	797	1004
2/2/2022	9:28:59 AM	1	21	1079	220
2/2/2022	9:29:53 AM	2	15	422	138
2/2/2022	9:29:56 AM	2	15	3	236
2/2/2022	9:32:11 AM	1	17	192	240
2/2/2022	9:33:49 AM	2	16	233	39
2/2/2022	9:39:38 AM	2	18	349	339
2/2/2022	9:41:41 AM	1	14	570	339
2/2/2022	9:43:36 AM	2	14	238	1004
2/2/2022	9:43:40 AM	2	11	4	0
2/2/2022	9:44:59 AM	2	13	79	134
2/2/2022	9:45:02 AM	2	14	3	1004
2/2/2022	9:50:15 AM	1	18	514	287
2/2/2022	9:55:51 AM	2	15	649	142
2/2/2022	9:55:59 AM	2	23	8	382
2/2/2022	9:57:42 AM	2	15	103	1004
2/2/2022	10:00:21 AM	1	23	606	421
2/2/2022	10:06:13 AM	2	22	511	228
2/2/2022	10:07:05 AM	2	30	52	327
2/2/2022	10:08:04 AM	1	22	463	346
2/2/2022	10:11:31 AM	1	23	207	173
2/2/2022	10:13:16 AM	1	11	105	224
2/2/2022	10:18:18 AM	1	16	302	567
2/2/2022	10:19:18 AM	1	22	60	157
2/2/2022	10:21:55 AM	2	12	890	547
2/2/2022	10:23:39 AM	2	22	104	228
2/2/2022	10:26:06 AM	2	20	147	390
2/2/2022	10:27:14 AM	2	15	68	331
2/2/2022	10:29:12 AM	1	18	594	169
2/2/2022	10:29:39 AM	2	23	145	264
2/2/2022	10:34:47 AM	1	32	335	335
2/2/2022	10:35:28 AM	1	13	41	421
2/2/2022	10:40:38 AM	2	25	659	154
2/2/2022	10:40:52 AM	2	24	14	161
2/2/2022	10:40:53 AM	2	24	1	165
2/2/2022	10:40:54 AM	1	13	326	882
2/2/2022	10:43:22 AM	2	12	149	311
2/2/2022	10:43:26 AM	2	12	4	402
2/2/2022	10:43:45 AM	1	16	171	409
2/2/2022	10:44:04 AM	2	16	38	1004
2/2/2022	10:44:55 AM	1	14	70	539
2/2/2022	10:45:32 AM	1	24	37	480
2/2/2022	10:47:49 AM	1	13	137	390

2/2/2022	10:48:35 AM	1	18	46	315
2/2/2022	10:51:48 AM	2	14	464	205
2/2/2022	10:51:51 AM	2	11	3	874
2/2/2022	10:58:17 AM	2	25	386	488
2/2/2022	10:59:05 AM	1	25	630	496
2/2/2022	11:00:51 AM	2	18	154	417
2/2/2022	11:01:52 AM	1	25	167	346
2/2/2022	11:02:40 AM	2	18	109	209
2/2/2022	11:02:58 AM	2	22	18	161
2/2/2022	11:03:29 AM	1	25	97	161
2/2/2022	11:11:56 AM	1	25	507	315
2/2/2022	11:17:09 AM	2	11	851	390
2/2/2022	11:21:05 AM	2	13	236	173
2/2/2022	11:24:44 AM	1	13	768	244
2/2/2022	11:26:03 AM	1	16	79	350
2/2/2022	11:27:57 AM	2	10	412	20
2/2/2022	11:48:50 AM	2	17	1253	500
2/2/2022	11:48:51 AM	1	19	1368	299
2/2/2022	12:01:53 PM	1	20	782	346
2/2/2022	12:06:13 PM	2	21	1043	480
2/2/2022	12:11:12 PM	2	21	299	295
2/2/2022	12:23:26 PM	1	11	1293	394
2/2/2022	12:23:32 PM	1	15	6	776
2/2/2022	12:26:09 PM	2	14	897	134
2/2/2022	12:26:41 PM	1	8	189	528
2/2/2022	12:26:43 PM	1	13	2	161
2/2/2022	12:27:29 PM	2	15	80	181
2/2/2022	12:34:07 PM	1	21	444	283
2/2/2022	12:35:20 PM	1	20	73	315
2/2/2022	12:35:22 PM	1	22	2	228
2/2/2022	12:37:46 PM	2	12	617	488
2/2/2022	12:37:47 PM	1	18	145	327
2/2/2022	12:37:50 PM	2	14	4	20
2/2/2022	12:41:35 PM	1	14	228	433
2/2/2022	12:43:20 PM	1	7	105	787
2/2/2022	12:43:40 PM	2	15	350	303
2/2/2022	12:49:51 PM	2	15	371	157
2/2/2022	12:49:53 PM	2	13	2	268
2/2/2022	12:49:57 PM	2	15	4	319
2/2/2022	12:51:29 PM	2	18	92	402
2/2/2022	12:58:51 PM	1	25	931	358
2/2/2022	1:04:25 PM	1	19	334	382
2/2/2022	1:10:19 PM	1	16	354	567
2/2/2022	1:13:05 PM	1	9	166	319
2/2/2022	1:18:01 PM	2	15	1592	331
2/2/2022	1:22:51 PM	2	18	290	138
2/2/2022	1:22:55 PM	2	19	4	138
2/2/2022	1:25:15 PM	1	16	730	248
2/2/2022	1:25:22 PM	1	12	7	366
2/2/2022	1:27:55 PM	1	26	153	398
2/2/2022	1:32:28 PM	2	14	573	1004
2/2/2022	1:33:10 PM	1	15	315	598

2/2/2022	1:35:41 PM	1	23	151	358
2/2/2022	1:42:01 PM	1	22	380	555
2/2/2022	1:42:26 PM	2	24	598	394
2/2/2022	1:43:23 PM	2	17	57	248
2/2/2022	1:43:25 PM	2	15	2	169
2/2/2022	1:47:13 PM	2	12	228	492
2/2/2022	1:55:35 PM	1	14	814	295
2/2/2022	2:04:01 PM	1	12	506	264
2/2/2022	2:04:16 PM	1	10	15	669
2/2/2022	2:08:02 PM	2	11	1249	31
2/2/2022	2:08:38 PM	1	17	262	417
2/2/2022	2:08:57 PM	1	16	19	496
2/2/2022	2:09:31 PM	2	13	89	1004
2/2/2022	2:09:44 PM	1	9	47	1004
2/2/2022	2:11:05 PM	2	13	94	189
2/2/2022	2:12:28 PM	2	16	83	374
2/2/2022	2:12:42 PM	2	19	14	260
2/2/2022	2:13:23 PM	2	15	41	291
2/2/2022	2:14:16 PM	2	13	53	201
2/2/2022	2:14:18 PM	2	14	2	161
2/2/2022	2:19:19 PM	2	14	301	1004
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2/2/2022	2:57:03 PM	1	16	344	295
2/2/2022	3:07:30 PM	2	22	922	280
2/2/2022	3:09:22 PM	2	23	112	402
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2/2/2022	3:18:56 PM	2	20	574	161
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2/2/2022	3:22:05 PM	2	20	81	366
2/2/2022	3:23:24 PM	1	22	457	465
2/2/2022	3:26:06 PM	2	18	241	327
2/2/2022	3:31:13 PM	1	25	469	232
2/2/2022	3:32:42 PM	1	23	89	280
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2/2/2022	3:39:02 PM	2	26	240	169
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2/2/2022	3:39:28 PM	2	22	25	268
2/2/2022	3:42:10 PM	2	26	162	1004
2/2/2022	3:43:24 PM	1	25	642	283
2/2/2022	3:44:43 PM	2	14	153	1004
2/2/2022	3:44:58 PM	2	7	15	20

2/2/2022	3:51:21 PM	2	16	383	1004
2/2/2022	3:51:39 PM	1	11	495	228
2/2/2022	3:52:30 PM	1	16	51	213
2/2/2022	3:53:34 PM	2	13	133	43
2/2/2022	3:59:37 PM	1	8	427	803
2/2/2022	3:59:40 PM	2	14	366	173
2/2/2022	3:59:41 PM	1	8	4	169
2/2/2022	4:03:35 PM	1	19	234	504
2/2/2022	4:04:15 PM	1	21	40	268
2/2/2022	4:10:11 PM	2	26	631	409
2/2/2022	4:15:39 PM	2	15	328	457
2/2/2022	4:17:39 PM	1	13	804	217
2/2/2022	4:18:31 PM	1	14	52	327
2/2/2022	4:19:34 PM	2	18	235	370
2/2/2022	4:19:43 PM	2	17	9	886
2/2/2022	4:22:20 PM	1	24	229	461
2/2/2022	4:25:56 PM	2	19	373	445
2/2/2022	4:32:11 PM	2	13	375	161
2/2/2022	4:33:03 PM	1	20	643	331
2/2/2022	4:33:13 PM	1	24	10	358
2/2/2022	4:35:52 PM	1	22	159	429
2/2/2022	4:38:21 PM	1	23	149	224
2/2/2022	4:42:13 PM	1	25	232	291
2/2/2022	4:49:39 PM	1	28	446	390
2/2/2022	4:53:34 PM	1	21	235	157
2/2/2022	4:54:31 PM	2	21	1340	291
2/2/2022	4:56:03 PM	1	15	149	642
2/2/2022	4:56:29 PM	1	24	26	315
2/2/2022	4:59:52 PM	1	11	203	283
2/2/2022	5:01:31 PM	1	22	99	244
2/2/2022	5:12:45 PM	1	13	674	217
2/2/2022	5:23:56 PM	2	24	1765	169
2/2/2022	5:24:01 PM	2	23	5	138
2/2/2022	5:24:19 PM	2	20	18	236
2/2/2022	5:26:54 PM	2	11	155	823
2/2/2022	5:27:32 PM	1	19	887	169
2/2/2022	5:28:37 PM	2	29	103	421
2/2/2022	5:29:45 PM	1	14	133	343
2/2/2022	5:59:26 PM	2	25	1849	252
2/2/2022	5:59:28 PM	2	23	2	142
2/2/2022	6:00:20 PM	1	16	1835	346
2/2/2022	6:04:15 PM	1	12	235	535
2/2/2022	6:04:51 PM	1	24	36	362
2/2/2022	6:05:20 PM	2	15	352	984
2/2/2022	6:13:12 PM	1	11	501	252
2/2/2022	6:13:14 PM	2	12	474	260
2/2/2022	6:13:15 PM	1	11	3	142
2/2/2022	6:15:24 PM	1	20	129	535
2/2/2022	6:15:43 PM	1	24	19	236
2/2/2022	6:15:59 PM	2	25	165	291
2/2/2022	6:26:56 PM	1	21	673	358
2/2/2022	6:35:58 PM	2	26	1199	362

2/2/2022	6:38:13 PM	1	16	677	626
2/2/2022	6:53:44 PM	2	13	1066	1004
2/2/2022	6:59:44 PM	1	10	1291	12
2/2/2022	7:06:14 PM	1	25	390	488
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2/2/2022	7:17:16 PM	2	21	1412	291
2/2/2022	7:18:57 PM	2	16	101	161
2/2/2022	7:19:04 PM	2	18	7	417
2/2/2022	7:22:11 PM	2	18	187	248
2/2/2022	7:22:19 PM	2	13	8	1004
2/2/2022	7:29:02 PM	2	14	403	1000
2/2/2022	7:51:52 PM	2	11	1370	406
2/2/2022	7:51:59 PM	2	30	7	177
2/2/2022	7:56:36 PM	2	17	277	280
2/2/2022	8:05:28 PM	1	17	3479	508
2/2/2022	8:08:17 PM	1	13	169	429
2/2/2022	8:11:15 PM	1	13	178	496
2/2/2022	8:43:06 PM	1	16	1911	311
2/2/2022	8:44:40 PM	2	22	2884	213
2/2/2022	8:56:38 PM	2	22	718	295
2/2/2022	9:11:19 PM	1	18	1693	524
2/2/2022	9:59:10 PM	2	11	3752	146
2/2/2022	9:59:48 PM	2	12	38	1004
2/2/2022	9:59:54 PM	2	11	6	886
2/2/2022	10:00:07 PM	2	15	13	28
2/2/2022	10:00:32 PM	2	12	25	1004
2/2/2022	10:00:41 PM	2	14	9	1004
2/2/2022	10:31:26 PM	2	13	1845	740
2/2/2022	10:31:32 PM	2	12	6	602
2/2/2022	10:34:07 PM	2	15	155	1004
2/2/2022	11:31:01 PM	1	27	8382	524
2/2/2022	11:41:41 PM	2	22	4054	157
2/2/2022	11:43:09 PM	1	25	728	272
2/3/2022	6:38:00 AM	1	16	24891	165
2/3/2022	6:38:01 AM	1	16	1	165
2/3/2022	6:59:27 AM	2	18	26266	303
2/3/2022	7:24:48 AM	2	14	1521	20
2/3/2022	7:29:23 AM	2	17	275	260
2/3/2022	7:38:44 AM	1	19	3643	20
2/3/2022	7:56:43 AM	2	27	1640	382
2/3/2022	8:13:52 AM	2	23	1029	209
2/3/2022	8:14:58 AM	2	26	66	406
2/3/2022	8:38:58 AM	1	20	3614	429
2/3/2022	8:47:22 AM	1	22	504	169
2/3/2022	8:50:29 AM	2	21	2131	287
2/3/2022	9:00:58 AM	1	21	816	449
2/3/2022	9:10:38 AM	2	29	1209	756
2/3/2022	9:10:39 AM	1	22	581	154
2/3/2022	9:16:49 AM	2	17	371	161
2/3/2022	9:20:13 AM	1	15	574	402
2/3/2022	9:21:06 AM	1	17	53	520
2/3/2022	9:22:16 AM	2	19	327	232

2/3/2022	9:26:48 AM	2	27	272	197
2/3/2022	9:28:35 AM	1	19	449	402
2/3/2022	9:28:52 AM	2	27	124	272
2/3/2022	9:31:31 AM	2	33	159	197
2/3/2022	9:34:07 AM	1	26	332	354
2/3/2022	9:34:25 AM	2	17	174	268
2/3/2022	9:37:32 AM	1	18	205	126
2/3/2022	9:38:09 AM	2	17	224	165
2/3/2022	9:38:16 AM	2	12	7	539
2/3/2022	9:38:19 AM	1	27	47	374
2/3/2022	9:40:51 AM	2	18	155	169
2/3/2022	9:40:53 AM	2	18	2	256
2/3/2022	9:42:20 AM	2	22	87	307
2/3/2022	9:42:47 AM	2	21	27	315
2/3/2022	9:48:48 AM	1	10	629	492
2/3/2022	9:48:59 AM	1	12	11	445
2/3/2022	9:54:03 AM	1	24	304	476
2/3/2022	9:54:28 AM	2	23	701	307
2/3/2022	10:00:59 AM	1	13	416	169
2/3/2022	10:02:39 AM	1	23	100	457
2/3/2022	10:07:07 AM	2	21	759	394
2/3/2022	10:12:29 AM	1	20	590	268
2/3/2022	10:15:13 AM	1	20	164	453
2/3/2022	10:22:52 AM	1	18	459	319
2/3/2022	10:25:46 AM	2	19	1119	256
2/3/2022	10:40:04 AM	2	23	858	272
2/3/2022	10:45:18 AM	2	21	314	421
2/3/2022	10:52:12 AM	1	25	1760	429
2/3/2022	11:00:15 AM	2	31	897	201
2/3/2022	11:09:14 AM	2	24	539	488
2/3/2022	11:09:55 AM	1	15	1063	780
2/3/2022	11:10:08 AM	1	15	13	484
2/3/2022	11:10:39 AM	2	14	85	260
2/3/2022	11:20:45 AM	2	11	606	157
2/3/2022	11:25:51 AM	2	14	306	319
2/3/2022	11:25:57 AM	2	14	6	240
2/3/2022	11:27:07 AM	2	12	70	445
2/3/2022	11:27:26 AM	2	13	19	173
2/3/2022	11:27:34 AM	2	17	8	366
2/3/2022	11:31:51 AM	1	32	1303	280
2/3/2022	11:41:50 AM	1	15	599	386
2/3/2022	11:44:49 AM	2	21	1035	276
2/3/2022	11:47:15 AM	2	13	146	661
2/3/2022	11:47:16 AM	2	12	1	161
2/3/2022	11:47:17 AM	2	13	1	165
2/3/2022	11:52:42 AM	2	13	325	189
2/3/2022	11:52:48 AM	2	14	6	858
2/3/2022	11:52:50 AM	2	16	2	20
2/3/2022	11:53:57 AM	2	15	67	209
2/3/2022	11:54:07 AM	2	14	10	1004
2/3/2022	11:54:53 AM	2	18	46	240
2/3/2022	11:54:59 AM	2	16	6	760

2/3/2022	11:55:02 AM	2	16	3	169
2/3/2022	11:55:30 AM	2	20	28	563
2/3/2022	11:57:10 AM	1	15	920	315
2/3/2022	11:58:22 AM	1	26	72	547
2/3/2022	12:02:09 PM	2	15	399	146
2/3/2022	12:02:15 PM	2	13	6	843
2/3/2022	12:02:19 PM	2	12	4	161
2/3/2022	12:04:22 PM	1	15	360	291
2/3/2022	12:08:35 PM	1	20	253	260
2/3/2022	12:10:20 PM	2	15	481	224
2/3/2022	12:14:13 PM	1	8	338	319
2/3/2022	12:14:57 PM	2	18	277	472
2/3/2022	12:17:15 PM	2	20	138	146
2/3/2022	12:26:54 PM	1	13	761	598
2/3/2022	12:29:55 PM	2	14	760	429
2/3/2022	12:38:35 PM	2	19	520	303
2/3/2022	12:39:07 PM	1	17	733	161
2/3/2022	12:39:54 PM	1	21	47	413
2/3/2022	12:40:15 PM	1	20	21	496
2/3/2022	12:40:25 PM	1	23	10	276
2/3/2022	12:46:32 PM	1	22	367	516
2/3/2022	12:48:00 PM	2	26	565	402
2/3/2022	12:49:38 PM	1	24	186	165
2/3/2022	12:51:33 PM	2	17	213	165
2/3/2022	12:53:45 PM	1	8	247	752
2/3/2022	12:53:52 PM	2	14	139	1004
2/3/2022	12:58:20 PM	1	16	275	268
2/3/2022	12:59:19 PM	1	18	59	382
2/3/2022	1:04:08 PM	2	24	616	220
2/3/2022	1:04:45 PM	2	15	37	161
2/3/2022	1:09:31 PM	1	14	612	555
2/3/2022	1:10:23 PM	2	23	338	161
2/3/2022	1:10:25 PM	2	20	2	268
2/3/2022	1:12:38 PM	2	16	133	276
2/3/2022	1:17:42 PM	2	14	304	161
2/3/2022	1:17:43 PM	2	14	1	437
2/3/2022	1:17:49 PM	2	10	6	228
2/3/2022	1:18:22 PM	2	21	33	138
2/3/2022	1:18:41 PM	1	20	550	142
2/3/2022	1:19:10 PM	1	15	29	20
2/3/2022	1:19:12 PM	2	24	50	185
2/3/2022	1:21:53 PM	1	18	163	224
2/3/2022	1:25:09 PM	1	18	196	382
2/3/2022	1:30:01 PM	1	18	292	681
2/3/2022	1:30:12 PM	2	18	660	437
2/3/2022	1:30:16 PM	1	11	15	165
2/3/2022	1:31:41 PM	1	11	85	173
2/3/2022	1:31:46 PM	1	8	5	764
2/3/2022	1:39:11 PM	2	23	539	358
2/3/2022	1:41:17 PM	2	15	126	1004
2/3/2022	1:48:43 PM	2	22	446	138
2/3/2022	1:49:10 PM	1	10	1044	173

2/3/2022	1:52:30 PM	1	20	200	295
2/3/2022	1:57:01 PM	1	24	271	169
2/3/2022	1:59:32 PM	1	17	151	209
2/3/2022	2:01:33 PM	2	17	770	157
2/3/2022	2:01:36 PM	2	15	3	224
2/3/2022	2:04:59 PM	1	18	327	236
2/3/2022	2:06:18 PM	1	11	79	248
2/3/2022	2:08:11 PM	1	11	113	441
2/3/2022	2:08:56 PM	2	22	440	161
2/3/2022	2:08:58 PM	2	19	2	323
2/3/2022	2:14:16 PM	2	31	318	512
2/3/2022	2:17:37 PM	2	22	201	260
2/3/2022	2:17:54 PM	1	12	583	173
2/3/2022	2:18:38 PM	1	11	44	409
2/3/2022	2:18:51 PM	2	13	74	43
2/3/2022	2:19:10 PM	2	15	19	386
2/3/2022	2:20:10 PM	2	22	60	366
2/3/2022	2:21:26 PM	2	18	76	382
2/3/2022	2:24:06 PM	2	16	160	1004
2/3/2022	2:26:00 PM	2	17	114	185
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2/3/2022	2:32:17 PM	1	22	819	157
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2/3/2022	2:40:56 PM	2	13	310	449
2/3/2022	2:40:59 PM	2	14	3	20
2/3/2022	2:41:53 PM	2	20	54	374
2/3/2022	2:43:08 PM	1	12	376	638
2/3/2022	2:47:18 PM	1	25	250	154
2/3/2022	2:51:19 PM	2	20	566	413
2/3/2022	2:51:22 PM	2	19	3	512
2/3/2022	2:54:48 PM	1	30	450	150
2/3/2022	2:57:42 PM	1	27	174	484
2/3/2022	2:59:14 PM	2	21	472	220
2/3/2022	2:59:17 PM	2	23	3	134
2/3/2022	3:00:37 PM	2	18	80	492
2/3/2022	3:01:09 PM	1	34	207	307
2/3/2022	3:11:14 PM	1	12	605	327
2/3/2022	3:15:58 PM	1	16	284	165
2/3/2022	3:19:49 PM	1	17	231	256
2/3/2022	3:24:11 PM	2	17	1414	409
2/3/2022	3:25:20 PM	1	29	331	268
2/3/2022	3:27:14 PM	1	24	114	161
2/3/2022	3:32:42 PM	2	23	511	260
2/3/2022	3:32:44 PM	2	23	2	276
2/3/2022	3:35:27 PM	2	14	163	150
2/3/2022	3:35:35 PM	2	7	8	20
2/3/2022	3:36:26 PM	1	17	552	311
2/3/2022	3:37:15 PM	1	12	49	551
2/3/2022	3:41:01 PM	2	14	326	362
2/3/2022	3:41:06 PM	1	14	231	508
2/3/2022	3:42:12 PM	2	13	71	516

2/3/2022	3:46:25 PM	2	22	253	260
2/3/2022	3:47:55 PM	1	15	409	445
2/3/2022	4:02:30 PM	1	16	875	236
2/3/2022	4:03:42 PM	1	15	72	378
2/3/2022	4:06:03 PM	2	21	1178	524
2/3/2022	4:08:21 PM	2	16	138	209
2/3/2022	4:08:23 PM	1	17	281	843
2/3/2022	4:09:07 PM	1	19	44	909
2/3/2022	4:09:38 PM	2	24	77	453
2/3/2022	4:09:44 PM	2	18	6	323
2/3/2022	4:11:53 PM	1	14	166	650
2/3/2022	4:12:00 PM	1	12	7	449
2/3/2022	4:13:33 PM	1	14	93	315
2/3/2022	4:15:42 PM	2	13	358	154
2/3/2022	4:18:08 PM	1	21	275	236
2/3/2022	4:20:53 PM	1	12	165	453
2/3/2022	4:23:07 PM	1	17	134	157
2/3/2022	4:23:34 PM	1	20	27	461
2/3/2022	4:24:18 PM	1	23	44	378
2/3/2022	4:25:36 PM	2	12	594	287
2/3/2022	4:28:48 PM	2	21	192	350
2/3/2022	4:33:51 PM	2	15	303	157
2/3/2022	4:48:00 PM	2	15	849	173
2/3/2022	5:00:27 PM	2	14	747	378
2/3/2022	5:01:17 PM	1	24	2219	626
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2/3/2022	5:03:19 PM	2	10	6	571
2/3/2022	5:03:43 PM	1	9	146	181
2/3/2022	5:06:18 PM	1	19	155	283
2/3/2022	5:13:59 PM	1	24	461	339
2/3/2022	5:17:49 PM	1	20	230	374
2/3/2022	5:21:05 PM	2	18	1066	161
2/3/2022	5:21:09 PM	2	13	4	665
2/3/2022	5:24:46 PM	2	23	217	709
2/3/2022	5:24:50 PM	2	20	4	500
2/3/2022	5:26:03 PM	1	27	494	425
2/3/2022	5:30:21 PM	2	20	331	346
2/3/2022	5:40:10 PM	2	17	589	307
2/3/2022	5:45:22 PM	2	21	312	252
2/3/2022	5:45:35 PM	1	28	1172	280
2/3/2022	5:49:28 PM	2	18	246	165
2/3/2022	5:49:31 PM	2	18	3	398
2/3/2022	6:00:45 PM	1	12	910	248
2/3/2022	6:01:46 PM	2	12	735	35
2/3/2022	6:05:25 PM	2	15	219	244
2/3/2022	6:05:28 PM	2	14	3	441
2/3/2022	6:06:36 PM	2	15	68	1004
2/3/2022	6:13:36 PM	1	28	771	130
2/3/2022	6:17:07 PM	2	15	631	335
2/3/2022	6:19:06 PM	1	26	330	248
2/3/2022	6:30:34 PM	2	25	807	374
2/3/2022	6:33:23 PM	1	24	857	276

2/3/2022	6:33:42 PM	2	24	188	323
2/3/2022	6:40:12 PM	1	21	409	142
2/3/2022	7:08:44 PM	1	26	1712	409
2/3/2022	7:10:26 PM	2	12	2204	516
2/3/2022	7:28:24 PM	2	22	1078	520
2/3/2022	8:31:36 PM	2	33	3792	299
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2/3/2022	9:12:04 PM	1	8	12	1004
2/3/2022	9:12:12 PM	1	8	8	165
2/3/2022	9:12:13 PM	1	8	1	201
2/3/2022	9:12:40 PM	1	9	27	240
2/3/2022	9:12:47 PM	1	9	7	1004
2/3/2022	9:13:15 PM	1	12	28	358
2/3/2022	9:15:15 PM	1	9	120	1004
2/3/2022	9:15:31 PM	1	9	16	165
2/3/2022	9:16:24 PM	1	9	53	165
2/3/2022	9:16:32 PM	1	8	8	1004
2/3/2022	9:16:37 PM	1	8	5	161
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2/3/2022	9:26:10 PM	1	25	569	130
2/3/2022	9:26:11 PM	1	25	1	169
2/3/2022	9:34:48 PM	1	11	517	528
2/3/2022	9:45:57 PM	1	15	669	555
2/3/2022	9:47:40 PM	2	23	2932	409
2/3/2022	9:47:41 PM	2	22	1	169
2/3/2022	10:11:33 PM	1	10	1536	437
2/3/2022	10:14:55 PM	1	9	202	248
2/3/2022	10:15:28 PM	1	8	33	1004
2/3/2022	10:25:14 PM	1	9	586	165
2/3/2022	10:27:47 PM	1	11	153	1004
2/3/2022	10:28:32 PM	1	13	45	835
2/3/2022	10:28:49 PM	1	8	17	398
2/3/2022	10:30:41 PM	1	8	112	488
2/3/2022	10:30:50 PM	1	8	9	295
2/3/2022	10:32:13 PM	2	15	2672	783
2/3/2022	10:32:16 PM	2	16	3	724
2/3/2022	10:34:07 PM	1	8	197	150
2/3/2022	10:40:06 PM	1	8	359	449
2/3/2022	10:44:43 PM	1	13	277	382
2/3/2022	10:44:57 PM	1	13	14	173
2/3/2022	10:45:03 PM	1	9	6	476
2/3/2022	10:45:19 PM	1	13	16	1004
2/3/2022	10:52:07 PM	1	14	408	472
2/3/2022	10:52:22 PM	1	9	15	1004
2/3/2022	10:53:19 PM	1	9	57	161
2/3/2022	10:53:28 PM	1	13	9	1004
2/3/2022	10:53:44 PM	1	17	16	386
2/3/2022	10:53:58 PM	1	8	14	492
2/3/2022	10:54:11 PM	1	8	13	697
2/3/2022	10:54:17 PM	1	8	6	161
2/3/2022	10:54:19 PM	1	9	2	236

2/3/2022	10:54:39 PM	1	16	20	1004
2/3/2022	10:55:55 PM	1	24	76	315
2/3/2022	10:55:59 PM	1	12	4	736
2/3/2022	10:56:52 PM	1	14	53	1004
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2/3/2022	10:57:05 PM	1	12	4	169
2/3/2022	10:57:38 PM	1	9	33	1004
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2/3/2022	10:59:31 PM	1	15	16	173
2/3/2022	10:59:34 PM	1	31	3	1004
2/3/2022	11:02:41 PM	1	31	187	161
2/3/2022	11:02:43 PM	1	32	2	173
2/3/2022	11:02:52 PM	1	32	9	173
2/3/2022	11:02:57 PM	1	10	5	606
2/3/2022	11:07:38 PM	1	19	281	610
2/3/2022	11:07:40 PM	1	24	2	417
2/3/2022	11:07:53 PM	1	12	13	1004
2/3/2022	11:07:56 PM	1	8	3	165
2/3/2022	11:07:58 PM	1	13	2	358
2/3/2022	11:08:11 PM	1	13	13	173
2/3/2022	11:08:16 PM	1	13	5	173
2/3/2022	11:18:02 PM	1	12	586	161
2/3/2022	11:29:30 PM	1	10	688	1004
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2/3/2022	11:30:00 PM	1	18	13	929
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2/3/2022	11:34:33 PM	1	19	232	594
2/3/2022	11:34:41 PM	2	32	3745	425
2/3/2022	11:34:42 PM	2	32	1	161
2/3/2022	11:54:19 PM	1	33	1186	362
2/3/2022	11:55:12 PM	2	23	1230	394
2/4/2022	1:01:43 AM	1	17	4044	441
2/4/2022	1:04:12 AM	2	14	4140	260
2/4/2022	1:04:39 AM	1	10	176	154
2/4/2022	1:04:55 AM	2	17	43	406
2/4/2022	1:07:02 AM	1	20	143	437
2/4/2022	1:07:25 AM	2	17	150	311
2/4/2022	2:56:53 AM	1	26	6591	169
2/4/2022	2:57:13 AM	1	16	20	795
2/4/2022	2:57:16 AM	1	16	3	173
2/4/2022	2:57:22 AM	1	14	6	394
2/4/2022	3:02:04 AM	1	14	282	165
2/4/2022	3:02:34 AM	1	23	30	846
2/4/2022	3:02:38 AM	1	23	4	169
2/4/2022	3:05:30 AM	1	31	172	1004
2/4/2022	3:05:35 AM	1	16	5	165
2/4/2022	3:05:38 AM	1	14	3	496
2/4/2022	3:15:17 AM	1	24	579	1004
2/4/2022	3:15:29 AM	1	8	12	1004
2/4/2022	3:16:33 AM	1	12	64	890
2/4/2022	3:16:35 AM	1	12	2	169
2/4/2022	3:16:44 AM	1	16	9	1004

2/4/2022	3:16:53 AM	1	16	9	165
2/4/2022	3:17:40 AM	1	14	47	1004
2/4/2022	3:17:52 AM	1	14	12	157
2/4/2022	3:17:57 AM	1	14	5	157
2/4/2022	3:24:54 AM	1	11	417	299
2/4/2022	3:24:57 AM	1	12	3	650
2/4/2022	3:25:33 AM	1	20	36	1004
2/4/2022	3:25:55 AM	1	11	22	457
2/4/2022	3:27:09 AM	1	25	74	441
2/4/2022	3:27:13 AM	1	25	4	169
2/4/2022	3:29:28 AM	1	17	135	1004
2/4/2022	3:31:48 AM	1	9	140	453
2/4/2022	3:31:55 AM	1	9	7	1004
2/4/2022	3:32:11 AM	1	9	16	173
2/4/2022	3:33:34 AM	1	24	83	689
2/4/2022	3:35:01 AM	1	12	87	705
2/4/2022	3:35:04 AM	1	12	3	173
2/4/2022	4:23:51 AM	1	13	2927	626
2/4/2022	5:41:59 AM	1	29	4688	319
2/4/2022	6:26:05 AM	1	9	2646	197
2/4/2022	6:29:40 AM	1	11	215	634
2/4/2022	6:29:44 AM	1	10	4	524
2/4/2022	7:14:46 AM	2	15	22041	413
2/4/2022	7:14:53 AM	2	13	7	598
2/4/2022	7:18:07 AM	1	11	2903	8
2/4/2022	7:26:55 AM	2	25	722	417
2/4/2022	7:40:18 AM	1	23	1331	406
2/4/2022	7:42:05 AM	2	21	910	240
2/4/2022	7:54:07 AM	2	25	722	189
2/4/2022	8:04:29 AM	1	8	1451	134
2/4/2022	8:13:12 AM	2	26	1145	335
2/4/2022	8:28:58 AM	2	25	946	335
2/4/2022	8:38:43 AM	2	25	585	165
2/4/2022	8:38:44 AM	2	24	1	236
2/4/2022	8:40:11 AM	2	14	87	161
2/4/2022	8:41:22 AM	2	21	71	492
2/4/2022	8:46:05 AM	1	13	2496	335
2/4/2022	8:47:38 AM	1	17	93	354
2/4/2022	8:51:25 AM	1	27	227	650
2/4/2022	8:55:19 AM	1	30	234	406
2/4/2022	8:57:36 AM	1	24	137	280
2/4/2022	8:57:59 AM	2	15	997	272
2/4/2022	9:00:59 AM	2	23	180	772
2/4/2022	9:13:23 AM	1	26	947	331
2/4/2022	9:16:26 AM	2	23	927	232
2/4/2022	9:20:05 AM	2	30	219	161
2/4/2022	9:31:50 AM	2	14	705	240
2/4/2022	9:32:40 AM	2	18	50	303
2/4/2022	9:32:42 AM	2	19	2	197
2/4/2022	9:35:03 AM	1	18	1300	256
2/4/2022	9:35:22 AM	1	24	19	142
2/4/2022	9:37:12 AM	2	19	270	575

2/4/2022	9:39:04 AM	1	24	222	335
2/4/2022	9:41:40 AM	2	21	268	453
2/4/2022	9:42:55 AM	2	18	75	673
2/4/2022	9:43:14 AM	1	11	250	161
2/4/2022	9:43:21 AM	1	10	7	520
2/4/2022	9:44:00 AM	2	17	65	1004
2/4/2022	9:46:07 AM	2	14	127	752
2/4/2022	9:47:37 AM	2	15	90	161
2/4/2022	9:48:47 AM	2	14	70	236
2/4/2022	9:48:50 AM	2	11	3	264
2/4/2022	9:49:32 AM	2	26	42	362
2/4/2022	9:51:31 AM	2	23	119	382
2/4/2022	10:08:05 AM	2	12	994	445
2/4/2022	10:13:10 AM	2	24	305	512
2/4/2022	10:18:11 AM	1	28	2090	465
2/4/2022	10:19:28 AM	2	18	378	382
2/4/2022	10:29:27 AM	2	22	599	276
2/4/2022	10:30:47 AM	1	26	756	335
2/4/2022	10:32:27 AM	2	20	180	181
2/4/2022	10:32:29 AM	2	21	2	150
2/4/2022	10:33:03 AM	2	24	34	972
2/4/2022	10:39:22 AM	1	27	515	24
2/4/2022	10:42:56 AM	1	15	214	476
2/4/2022	10:44:44 AM	1	13	108	445
2/4/2022	10:46:08 AM	2	14	785	370
2/4/2022	10:46:11 AM	2	16	3	20
2/4/2022	10:48:08 AM	1	19	204	354
2/4/2022	10:57:19 AM	2	12	668	16
2/4/2022	10:58:43 AM	1	14	635	228
2/4/2022	11:00:00 AM	2	22	161	417
2/4/2022	11:15:55 AM	2	12	955	307
2/4/2022	11:15:59 AM	2	14	4	890
2/4/2022	11:26:40 AM	2	16	641	409
2/4/2022	11:27:42 AM	1	19	1739	366
2/4/2022	11:27:52 AM	2	23	72	677
2/4/2022	11:29:53 AM	1	25	131	354
2/4/2022	11:32:32 AM	1	26	159	169
2/4/2022	11:33:00 AM	2	20	308	189
2/4/2022	11:33:02 AM	2	24	2	161
2/4/2022	11:35:36 AM	2	27	154	528
2/4/2022	11:47:53 AM	1	11	921	610
2/4/2022	11:53:47 AM	1	11	354	20
2/4/2022	11:53:51 AM	1	11	4	461
2/4/2022	12:03:33 PM	1	11	582	20
2/4/2022	12:03:37 PM	1	13	4	449
2/4/2022	12:03:45 PM	1	9	8	1004
2/4/2022	12:07:28 PM	2	22	1912	409
2/4/2022	12:08:28 PM	2	24	60	189
2/4/2022	12:08:29 PM	2	30	1	685
2/4/2022	12:21:05 PM	1	32	1040	398
2/4/2022	12:22:28 PM	2	23	839	307
2/4/2022	12:25:15 PM	2	23	167	339

2/4/2022	12:25:58 PM	1	19	293	535
2/4/2022	12:32:12 PM	1	12	374	299
2/4/2022	12:46:26 PM	2	21	1271	280
2/4/2022	12:47:32 PM	2	15	66	264
2/4/2022	12:49:50 PM	2	21	138	472
2/4/2022	12:50:48 PM	1	18	1116	461
2/4/2022	12:51:05 PM	1	9	17	8
2/4/2022	1:07:57 PM	1	11	1012	224
2/4/2022	1:07:59 PM	1	25	2	319
2/4/2022	1:08:06 PM	1	9	7	756
2/4/2022	1:08:41 PM	2	23	1131	299
2/4/2022	1:09:02 PM	1	19	56	406
2/4/2022	1:09:05 PM	1	20	3	449
2/4/2022	1:11:23 PM	1	20	138	165
2/4/2022	1:11:28 PM	1	20	5	165
2/4/2022	1:11:37 PM	2	16	176	283
2/4/2022	1:12:35 PM	2	23	58	236
2/4/2022	1:14:35 PM	1	13	187	535
2/4/2022	1:14:38 PM	2	15	123	228
2/4/2022	1:14:44 PM	2	16	6	850
2/4/2022	1:15:11 PM	2	15	27	894
2/4/2022	1:17:21 PM	2	15	130	705
2/4/2022	1:18:50 PM	2	11	89	8
2/4/2022	1:24:52 PM	1	23	617	421
2/4/2022	1:26:24 PM	1	12	92	343
2/4/2022	1:27:05 PM	1	17	41	228
2/4/2022	1:37:38 PM	1	20	633	217
2/4/2022	1:41:29 PM	2	14	1359	299
2/4/2022	1:41:32 PM	2	15	3	1004
2/4/2022	1:51:43 PM	2	26	611	583
2/4/2022	1:53:40 PM	1	30	962	386
2/4/2022	1:55:57 PM	2	21	254	161
2/4/2022	1:55:59 PM	2	19	2	390
2/4/2022	1:59:15 PM	2	22	196	161
2/4/2022	2:03:36 PM	2	17	261	390
2/4/2022	2:06:04 PM	2	15	148	339
2/4/2022	2:07:06 PM	2	14	62	217
2/4/2022	2:10:35 PM	1	24	1015	795
2/4/2022	2:19:12 PM	1	9	517	39
2/4/2022	2:25:13 PM	2	21	1087	331
2/4/2022	2:27:15 PM	1	24	483	323
2/4/2022	2:27:32 PM	1	26	17	386
2/4/2022	2:29:12 PM	1	17	100	327
2/4/2022	2:31:15 PM	2	21	362	551
2/4/2022	2:37:31 PM	1	19	499	457
2/4/2022	2:37:36 PM	2	18	381	280
2/4/2022	2:38:18 PM	1	18	47	252
2/4/2022	2:42:24 PM	2	16	288	382
2/4/2022	2:47:47 PM	1	23	569	291
2/4/2022	2:48:56 PM	2	32	392	240
2/4/2022	2:49:53 PM	1	24	126	374
2/4/2022	2:52:58 PM	2	26	242	157

2/4/2022	2:55:53 PM	1	29	360	445
2/4/2022	2:56:22 PM	2	16	204	51
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2/4/2022	2:57:58 PM	2	16	96	20
2/4/2022	3:05:10 PM	1	16	471	354
2/4/2022	3:07:00 PM	2	22	542	319
2/4/2022	3:17:54 PM	1	17	764	724
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2/4/2022	3:22:16 PM	2	13	916	476
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2/4/2022	3:31:19 PM	1	25	158	311
2/4/2022	3:34:53 PM	1	12	214	248
2/4/2022	3:35:12 PM	1	16	19	303
2/4/2022	3:40:45 PM	1	14	333	382
2/4/2022	3:43:08 PM	1	18	143	543
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2/4/2022	4:12:37 PM	1	16	184	488
2/4/2022	4:18:10 PM	1	23	333	366
2/4/2022	4:25:51 PM	2	20	1139	28
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2/4/2022	4:30:47 PM	1	29	757	185
2/4/2022	4:31:11 PM	2	20	187	480
2/4/2022	4:34:14 PM	2	27	183	244
2/4/2022	4:34:15 PM	2	24	1	213
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2/4/2022	4:56:29 PM	1	25	326	228
2/4/2022	4:57:38 PM	1	24	69	598
2/4/2022	4:58:43 PM	1	21	65	457
2/4/2022	4:59:06 PM	2	29	1491	398
2/4/2022	4:59:20 PM	2	20	14	906
2/4/2022	5:08:13 PM	1	26	570	169
2/4/2022	5:12:12 PM	1	28	239	657
2/4/2022	5:12:18 PM	2	23	778	209
2/4/2022	5:13:13 PM	2	18	55	276
2/4/2022	5:24:56 PM	1	17	764	441
2/4/2022	5:27:16 PM	1	26	140	335

2/4/2022	5:28:03 PM	1	20	47	331
2/4/2022	5:28:12 PM	1	14	9	551
2/4/2022	5:34:29 PM	2	18	1276	157
2/4/2022	5:34:31 PM	2	18	2	382
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2/4/2022	5:37:11 PM	2	21	2	319
2/4/2022	5:40:27 PM	2	29	196	280
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2/4/2022	6:05:33 PM	1	25	333	248
2/4/2022	6:24:18 PM	2	24	1342	370
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2/4/2022	6:30:09 PM	2	21	333	295
2/4/2022	6:52:52 PM	1	30	2839	240
2/4/2022	7:00:39 PM	2	34	1830	307
2/4/2022	7:15:15 PM	1	28	1343	378
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2/4/2022	7:36:42 PM	1	21	1287	240
2/4/2022	7:55:32 PM	1	23	1130	500
2/4/2022	8:19:13 PM	2	19	3288	386
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2/4/2022	8:56:53 PM	2	21	2260	433
2/4/2022	8:58:50 PM	2	23	117	327
2/4/2022	9:38:00 PM	1	26	4085	382
2/4/2022	9:45:21 PM	2	14	2791	484
2/4/2022	10:03:30 PM	2	14	1089	150
2/4/2022	10:20:18 PM	2	26	1008	433
2/5/2022	12:32:33 AM	2	19	7935	213
2/5/2022	2:59:52 AM	1	19	19312	307
2/5/2022	3:36:10 AM	1	13	2178	512
2/5/2022	7:42:24 AM	2	12	25791	976
2/5/2022	7:59:24 AM	2	14	1020	524
2/5/2022	8:40:29 AM	1	23	18259	272
2/5/2022	8:46:20 AM	1	19	351	362
2/5/2022	8:57:34 AM	1	8	674	161
2/5/2022	9:00:43 AM	1	25	189	350
2/5/2022	9:06:35 AM	2	16	4031	189
2/5/2022	9:31:02 AM	2	18	1467	201
2/5/2022	9:37:45 AM	1	17	2222	346
2/5/2022	9:40:18 AM	1	32	153	339
2/5/2022	10:19:26 AM	1	16	2348	472
2/5/2022	10:22:44 AM	1	21	198	394
2/5/2022	10:25:29 AM	2	22	3267	323
2/5/2022	10:26:36 AM	1	23	232	362
2/5/2022	10:31:36 AM	2	15	367	717
2/5/2022	10:43:24 AM	2	13	708	0
2/5/2022	10:44:00 AM	1	8	1044	20
2/5/2022	10:44:12 AM	2	19	48	311
2/5/2022	10:48:49 AM	2	16	277	551

2/5/2022	10:52:50 AM	2	20	241	201
2/5/2022	10:53:52 AM	2	17	62	169
2/5/2022	10:55:56 AM	2	14	124	228
2/5/2022	11:03:27 AM	1	25	1167	370
2/5/2022	11:03:49 AM	2	9	473	445
2/5/2022	11:18:41 AM	1	26	914	480
2/5/2022	11:24:08 AM	1	19	327	386
2/5/2022	11:31:54 AM	2	28	1685	276
2/5/2022	11:34:18 AM	1	9	610	248
2/5/2022	12:23:27 PM	1	30	2949	244
2/5/2022	12:30:01 PM	1	21	394	465
2/5/2022	12:32:11 PM	2	20	3617	197
2/5/2022	12:33:28 PM	1	18	207	492
2/5/2022	12:37:13 PM	2	16	302	157
2/5/2022	12:56:36 PM	1	15	1388	220
2/5/2022	1:04:36 PM	2	23	1643	130
2/5/2022	1:04:40 PM	2	24	4	354
2/5/2022	1:05:57 PM	1	26	561	571
2/5/2022	1:20:15 PM	1	19	858	370
2/5/2022	1:31:18 PM	2	23	1598	331
2/5/2022	1:38:39 PM	1	31	1104	398
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2/5/2022	2:02:48 PM	2	20	1890	319
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2/5/2022	2:13:48 PM	2	18	7	185
2/5/2022	2:14:13 PM	1	26	912	276
2/5/2022	2:29:19 PM	2	23	931	984
2/5/2022	2:31:01 PM	2	15	102	370
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2/5/2022	3:08:29 PM	2	24	465	272
2/5/2022	3:21:36 PM	2	17	787	268
2/5/2022	3:22:03 PM	1	19	914	421
2/5/2022	3:31:37 PM	1	24	574	437
2/5/2022	3:36:27 PM	1	23	290	157
2/5/2022	3:37:59 PM	2	23	983	315
2/5/2022	3:38:37 PM	1	22	130	346
2/5/2022	3:42:25 PM	1	28	228	378
2/5/2022	3:45:44 PM	2	19	465	429
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2/5/2022	4:01:47 PM	1	19	2	398
2/5/2022	4:16:05 PM	2	25	1821	291
2/5/2022	4:21:22 PM	1	13	1175	291
2/5/2022	4:27:32 PM	2	27	687	197
2/5/2022	4:38:31 PM	2	26	659	339
2/5/2022	4:38:33 PM	1	12	1031	382
2/5/2022	4:47:49 PM	1	19	556	421
2/5/2022	4:54:35 PM	1	21	406	457
2/5/2022	4:57:54 PM	1	25	199	441

2/5/2022	5:08:48 PM	2	36	1817	350
2/5/2022	5:10:54 PM	2	16	126	732
2/5/2022	5:34:12 PM	2	21	1398	264
2/5/2022	5:49:02 PM	2	19	890	287
2/5/2022	6:08:36 PM	2	25	1174	161
2/5/2022	6:15:56 PM	2	23	440	331
2/5/2022	6:22:47 PM	2	20	411	953
2/5/2022	6:31:55 PM	2	24	548	283
2/5/2022	7:50:45 PM	2	16	4730	331
2/5/2022	7:52:51 PM	1	19	10497	244
2/5/2022	8:21:56 PM	2	15	1871	760
2/5/2022	9:01:38 PM	1	17	4127	276
2/5/2022	9:37:27 PM	2	13	4531	28
2/5/2022	10:38:19 PM	1	24	5801	315
2/5/2022	11:45:04 PM	2	23	7657	417
2/6/2022	12:11:39 AM	1	15	5600	476
2/6/2022	2:20:09 AM	2	22	9305	346
2/6/2022	6:05:09 AM	2	11	13500	579
2/6/2022	6:20:18 AM	2	12	909	55
2/6/2022	7:35:34 AM	2	15	4516	673
2/6/2022	8:59:44 AM	1	23	31685	350
2/6/2022	9:07:50 AM	2	19	5536	236
2/6/2022	9:24:20 AM	2	12	990	138
2/6/2022	9:27:57 AM	2	13	217	323
2/6/2022	9:28:00 AM	2	16	3	20
2/6/2022	9:28:35 AM	2	16	35	346
2/6/2022	9:47:27 AM	2	25	1132	213
2/6/2022	9:56:11 AM	1	20	3387	256
2/6/2022	9:57:48 AM	2	22	621	283
2/6/2022	10:05:10 AM	2	20	442	913
2/6/2022	10:08:24 AM	2	18	194	366
2/6/2022	10:32:16 AM	2	17	1432	189
2/6/2022	10:32:18 AM	2	14	2	457
2/6/2022	10:34:49 AM	2	15	151	366
2/6/2022	10:41:14 AM	2	14	385	268
2/6/2022	10:49:54 AM	2	15	520	311
2/6/2022	10:57:32 AM	2	22	458	567
2/6/2022	11:01:27 AM	2	26	235	201
2/6/2022	11:15:44 AM	2	13	857	224
2/6/2022	11:18:49 AM	1	20	4958	634
2/6/2022	11:31:15 AM	2	25	931	315
2/6/2022	12:06:22 PM	2	9	2107	35
2/6/2022	12:07:08 PM	1	23	2899	339
2/6/2022	12:08:54 PM	1	16	106	732
2/6/2022	12:19:12 PM	1	26	618	551
2/6/2022	12:25:09 PM	1	13	357	575
2/6/2022	12:39:35 PM	1	27	866	161
2/6/2022	12:40:35 PM	1	23	60	236
2/6/2022	12:48:01 PM	1	26	446	413
2/6/2022	12:50:12 PM	2	27	2630	240
2/6/2022	12:55:12 PM	2	24	300	323
2/6/2022	1:05:10 PM	2	19	598	205

2/6/2022	1:05:24 PM	2	19	14	850
2/6/2022	1:06:20 PM	2	24	56	157
2/6/2022	1:16:05 PM	2	26	585	535
2/6/2022	1:23:05 PM	2	17	420	161
2/6/2022	1:32:28 PM	2	14	563	539
2/6/2022	1:32:35 PM	2	15	7	20
2/6/2022	1:42:00 PM	2	12	565	134
2/6/2022	1:43:18 PM	2	11	78	0
2/6/2022	1:51:36 PM	1	22	3815	461
2/6/2022	1:57:07 PM	1	21	331	280
2/6/2022	2:00:42 PM	2	25	1044	240
2/6/2022	2:12:11 PM	1	22	904	343
2/6/2022	2:21:06 PM	1	26	535	260
2/6/2022	2:24:57 PM	2	30	1455	307
2/6/2022	2:25:55 PM	2	21	58	386
2/6/2022	2:28:56 PM	1	16	470	398
2/6/2022	2:29:49 PM	2	14	234	12
2/6/2022	2:31:43 PM	2	35	114	421
2/6/2022	2:33:56 PM	1	16	300	618
2/6/2022	2:38:31 PM	2	11	408	457
2/6/2022	2:42:13 PM	2	22	222	256
2/6/2022	2:45:11 PM	2	21	178	224
2/6/2022	3:10:53 PM	2	27	1542	185
2/6/2022	3:11:38 PM	2	18	45	303
2/6/2022	3:13:47 PM	2	31	129	244
2/6/2022	3:24:15 PM	2	17	628	213
2/6/2022	3:24:18 PM	2	14	3	213
2/6/2022	3:27:48 PM	2	20	210	382
2/6/2022	3:29:52 PM	2	25	124	220
2/6/2022	3:29:54 PM	2	24	2	165
2/6/2022	3:34:35 PM	1	21	3639	315
2/6/2022	3:37:16 PM	2	13	442	791
2/6/2022	3:39:16 PM	2	16	120	1004
2/6/2022	3:50:13 PM	2	28	657	169
2/6/2022	3:51:41 PM	1	24	1026	287
2/6/2022	3:58:44 PM	1	21	423	425
2/6/2022	4:01:48 PM	1	16	184	390
2/6/2022	4:16:30 PM	2	23	1577	264
2/6/2022	4:27:28 PM	1	16	1540	587
2/6/2022	4:35:37 PM	1	12	489	240
2/6/2022	4:42:11 PM	1	30	394	343
2/6/2022	4:57:15 PM	1	20	904	409
2/6/2022	5:31:57 PM	1	29	2082	185
2/6/2022	5:48:48 PM	2	21	5538	315
2/6/2022	5:48:50 PM	2	22	2	413
2/6/2022	5:50:54 PM	1	13	1137	677
2/6/2022	5:53:10 PM	1	15	136	1004
2/6/2022	6:05:56 PM	2	14	1026	20
2/6/2022	6:17:26 PM	1	23	1456	256
2/6/2022	7:03:50 PM	2	19	3474	409
2/6/2022	7:12:44 PM	2	26	534	327
2/6/2022	7:26:55 PM	1	18	4169	465

2/6/2022	7:40:01 PM	2	21	1637	618
2/6/2022	8:17:03 PM	1	23	3008	224
2/6/2022	8:17:39 PM	2	21	2258	398
2/6/2022	8:21:28 PM	2	13	229	449
2/6/2022	8:48:30 PM	1	11	1887	260
2/6/2022	8:48:37 PM	1	10	7	213
2/6/2022	8:54:26 PM	2	17	1978	173
2/6/2022	8:54:29 PM	2	18	3	205
2/6/2022	9:00:20 PM	2	17	351	563
2/6/2022	9:10:20 PM	1	18	1303	350
2/6/2022	9:18:39 PM	2	16	1099	382
2/6/2022	9:44:35 PM	2	22	1556	469
2/6/2022	9:48:05 PM	1	24	2265	547
2/6/2022	10:09:12 PM	1	25	1267	315
2/7/2022	1:36:41 AM	1	15	12449	520
2/7/2022	2:24:36 AM	1	12	2875	240
2/7/2022	6:21:37 AM	2	24	31022	146
2/7/2022	6:58:39 AM	2	20	2222	157
2/7/2022	7:09:55 AM	1	16	17119	272
2/7/2022	7:10:46 AM	2	14	727	398
2/7/2022	7:16:47 AM	1	13	412	20
2/7/2022	7:42:48 AM	2	14	1922	142
2/7/2022	7:43:01 AM	1	13	1574	28
2/7/2022	7:49:38 AM	1	27	397	193
2/7/2022	7:51:26 AM	1	9	108	567
2/7/2022	7:54:00 AM	2	17	672	551



**CITY OF OXFORD
POLICE DEPARTMENT**



**Mark A. Anglin
Chief of Police**

February 13, 2022

Mayor Eady and City Council Members,

I am requesting to change the current Body Worn Camera (BWC) equipment and to add additional equipment. The Oxford Police Department is currently under contract with Axon to provide and store our BWC footage in the cloud under Evidence.com. Chief Harvey signed a 5-year contract in October of 2021, to maintain the Flex Camera System. The Flex System attaches to a band that the officer must wear on his/her head, or on the lapel. The camera is then connected to a second control device that the officer must wear on their torso or pocket, with a cord connecting the two pieces of equipment.

The current equipment is not feasible for those who wear glasses and in my opinion is an actual officer safety issue. With the current set up it makes the officer's head area target. If the offender does not want to be recorded, the next logical thing for the offender is to eliminate the camera, that is currently in the head area of the officer. The officer must be able to keep the camera in place while handling a call for service. It is very difficult for the officer to try and keep the camera in place to capture the incident. The officers and the city would be better protected with a new camera system. I would like to request we move to the Axon Body Cam 3(BW3) model. The BW3 is a single unit that attaches to the uniform in the same manner as the current control unit. The thought process from the previous administration was the current camera catches the side view of an incident. The BW3, has a 140-degree peripheral field of view with the human eye being 120 degrees.

The current annual contract that is for storage only of the BWC footage is currently \$1392.00 annually. The new quote of \$3,187.92 will be an add on to the current contract, totaling \$4,579.92 annually. The new quote consists of the BW3 system, equipment for charging, downloading, maintenance, and cloud storage. I am requesting that we add the Signal Sidearm Kit. This is a simple attachment to the firearm holster that will automatically activate the BW3 system when a weapon is drawn from the holster. The Signal Sidearm kit will also activate any officer within range of the officer who must draw the weapon from the holster. It is my understanding that the Newton County Sheriff's Department is going to this addition also. The new quote further includes maintenance of the BW3 with the units being replaced every 2.5 years. This is a great option as some of the equipment we have now needs to be replaced due to normal wear and tear. I have identified one unit that is completely inoperable, and the spare units do not hold a full charge for an entire shift.

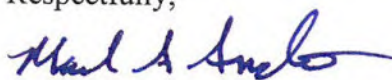
It is my understanding that SPOLST money has been designated for the radio system upgrade that is being enacted by Covington/Newton 911. After reviewing the requested equipment system upgrades from Chief Harvey, I have identified \$5,289.77 that can be cut from the equipment. It is my professional opinion that we do not need a Control Station and antenna at the police department. We have a control station now that collects dust and is not utilized. I was advised that we have that in case we need to talk on the radio in an emergency. If the emergency is that serious, I would expect our departmental personnel to be out in the field. I was also advised that we do not have good reception inside of the building. I have consulted with Trudy Henry, Communications Director, and with Rebecca Norwood. Ms. Norwood is with the consulting firm who is advising Covington/Newton 911 on this transition. Ms. Norwood advises that the new portable radios will be tested inside of our building to ensure we can transmit from inside of our building.

I would like to request to utilize part of the SPOLST from the identified radio savings to go forward with the new add on to the current contract from Axon. If my calculations are correct, the budget will have to be increased \$ 3,187.92 annually over the next 5 years.

- Current contract for storage only: \$1,392.00 annually.
- Proposed new contract with equipment, sidearm signal kit, maintenance, and video storage: \$3,187.92 annually.
- Radio upgrade savings: \$5,289.77
- Current contract over 5 years: \$8,523.00
- Proposed contract over 5 years: \$15,939.60
- Total cost over 5 years \$ 24,462.60

I am requesting approval to utilize part of the SPOLST for the new contract with Axon. I am attaching the current contract, proposed contract, PowerPoint presentation from Axon, and radio upgrade information. Thank you and the council for your consideration.

Respectfully,



Mark A. Anglin



Axon Enterprise, Inc.
 17800 N 85th St.
 Scottsdale, Arizona 85255
 United States
 VAT: 86-0741227
 Domestic: (800) 978-2737
 International: +1.800.978.2737

Q-331786-44459.829KM

Issued: 09/20/2021



Quote Expiration: 10/15/2021

EST Contract Start Date: 11/15/2021
 Account Number: 412245

Payment Terms: N30
 Delivery Method: Fedex - Ground

SHIP TO		BILL TO	
Business;Delivery;Invoice-110 W Clark St		Oxford Police Dept. - GA	
110 W Clark St	Oxford, GA 30054-2274	110 W Clark St	Oxford, GA 30054-2274
USA		USA	
		Email:	

SALES REPRESENTATIVE	PRIMARY CONTACT
Rob Marangelo Phone: Email: rmarangelo@axon.com Fax:	David Harvey Phone: (770) 788-1390 Email: dharvey@oxfordgeorgia.org Fax: (770) 786-2211

Program Length	60 Months
TOTAL COST	\$8,523.00
ESTIMATED TOTAL W/ TAX	\$8,523.00

Bundle Savings	\$144.00
Additional Savings	\$0.00
TOTAL SAVINGS	\$144.00

PAYMENT PLAN	
PLAN NAME	INVOICE DATE
Upfront Hardware	
Year 1	Oct, 2021
Year 2	Oct, 2022
Year 3	Oct, 2023
Year 4	Oct, 2024
Year 5	Oct, 2025
	AMOUNT DUE
	\$1,563.00
	\$1,392.00
	\$1,392.00
	\$1,392.00
	\$1,392.00
	\$1,392.00

Quote Details

Bundle Summary		
Item	Description	QTY
Flex2MBD	Flex 2 Multi-Bay Dock Bundle	1
ProLicense	Pro License Bundle	1
BasicLicense	Basic License Bundle	3
DynamicBundle	Dynamic Bundle	80

Bundle: Flex 2 Multi-Bay Dock Bundle			
Quantity:	Start:	End:	
1	11/15/2021	11/14/2026	
Total: 1563 USD			
Category	Item	Description	QTY
Dock	11537	DOCK, FLEX 2, 6-BAY + CORE	1
Power Cord	71019	NORTH AMER POWER CORD FOR AB3 8-BAY, AB2 1-BAY / 6-BAY DOCK	1

Bundle: Pro License Bundle			
Quantity:	Start:	End:	
1	11/15/2021	11/14/2026	
Total: 2340 USD			
Category	Item	Description	QTY
E.com License	73746	PROFESSIONAL EVIDENCE.COM LICENSE (Formerly SKU 73746)	1
A La Carte Storage	73683	10 GB EVIDENCE.COM A-LA-CART STORAGE	3

Bundle: Basic License Bundle			
Quantity:	Start:	End:	
3	11/15/2021	11/14/2026	
Total: 2700 USD			
Category	Item	Description	QTY
E.com License	73840	EVIDENCE.COM BASIC LICENSE	3
A La Carte Storage	73683	10 GB EVIDENCE.COM A-LA-CART STORAGE	3

Bundle: Dynamic Bundle			
Quantity:	Start:	End:	
80	11/15/2021	11/14/2026	
Total: 1920 USD			
Category	Item	Description	QTY
Other	73683	10 GB EVIDENCE.COM A-LA-CART STORAGE	80

Tax is estimated based on rates applicable at date of quote and subject to change at time of invoicing. If a tax exemption certificate should be applied, please submit prior to invoicing.

Standard Terms and Conditions

Axon Enterprise Inc. Sales Terms and Conditions

Axon Master Services and Purchasing Agreement:

This Quote is limited to and conditional upon your acceptance of the provisions set forth herein and Axon's Master Services and Purchasing Agreement (posted at www.axon.com/legal/sales-terms-and-conditions), as well as the attached Statement of Work (SOW) for Axon Fleet and/or Axon Interview Room purchase, if applicable. In the event you and Axon have entered into a prior agreement to govern all future purchases, that agreement shall govern to the extent it includes the products and services being purchased and does not conflict with the Axon Customer Experience Improvement Program Appendix as described below.

ACEIP:

The Axon Customer Experience Improvement Program Appendix, which includes the sharing of de-identified segments of Agency Content with Axon to develop new products and improve your product experience (posted at www.axon.com/legal/sales-terms-and-conditions), is incorporated herein by reference. By signing below, you agree to the terms of the Axon Customer Experience Improvement Program.

Acceptance of Terms:

Any purchase order issued in response to this Quote is subject solely to the above referenced terms and conditions. By signing below, you represent that you are lawfully able to enter into contracts. If you are signing on behalf of an entity (including but not limited to the company, municipality, or government agency for whom you work), you represent to Axon that you have legal authority to bind that entity. If you do not have this authority, please do not sign this Quote.

D. L. C.

Signature

10-06-2021

Date Signed

9/20/2021

5-YEAR QUOTE SUMMARY

Oxford Police Department

Axon Enterprise, Inc.
17800 North 85th Street
Scottsdale, AZ 85255

Main Contacts:

Rob Marangelo
(480)-613-7726
rmarangelo@axon.com



Axon's Body 3 package bundles hardware, software, accessories, equipment refreshes, and warranties together to help equip your officers with the solutions they need to stay safe.

Oxford Police Department and Axon Enterprise, Inc. (Axon) will be partnering to deliver a Body Worn Camera (BWC) solution for the Oxford Police Department at a total 5 year cost of **\$15,939.60**. Our goal is to deliver predictable annual spend, and the best technology in order to reduce your agency's liability while increasing your agency's efficiency and most importantly, safety.

Axon represents the entire network of devices, applications, and people that is revolutionizing public safety around the world. Our mission is to protect life. Our technologies give law enforcement the confidence, focus, and time they need to keep their communities safe. Today, our CEWs are in use in more than 18,000 agencies globally and our other Axon family of products are in use by more than 6,000 agencies. Our suite of connected products from body cameras to evidence management, has given police agencies the flexibility and the versatility to operate with increased transparency and efficiency

A message from our CEO and founder Rick Smith

WHERE DO WE GO FROM HERE?

<https://www.axon.com/news/where-do-we-go-from-here>

The solution created for the Oxford Police Department includes:

Hardware:

- (4) Axon Body 3 Cameras
- (1) 8-Bay Docking Stations for Charging and Evidence Offload
- (5) USB-C Cables for Alternative Charging Method
- (5) Magnet Mounts
- (2) Wing Clip Mounts
- (4) Signal Sidearm for Firearm Activation of Camera
 - (8) Signal Sidearm Batteries

Warranties and Equipment Refresh:

- Technology Assurance Plan (TAP)
 - Full 5-year “No Questions Asked” Warranty on All Cameras
 - (4) of the Latest Body Worn Cameras at Year 2.5
 - (4) of the Latest Body Worn Cameras at Year 5
 - New Docking Stations and Mounts Each Refresh

Axon Professional Services:

- Body Cam Starter:
 - Set Up of All Devices and Docks
 - System Admin and End User Training

Logistical Details: 60-75 Days from Signed Quote to delivery of hardware. Set up can be scheduled based on department preference after delivery.

Next Steps:

Paperwork we need the agency to sign:

- Quote

Program Products & Features:

Axon Body 3

Axon Body 3 isn't just a camera: it's a rugged communications beacon front-and-center on every call. Coupled with enhanced low-light performance and reduced motion blur, that means clearer evidence in the now, more efficient AI-powered processes after the fact, and most importantly, safer communities in the long run.

What is TAP?

The Technology Assurance Plan (TAP) is a service plan that combines warranty coverage on your Axon body cameras with automatic refresh units every 2.5 years. Minimizing the chance that an officer goes on duty without a camera, TAP includes on-site spare units, as well as an extended warranty at no additional cost through the life of the agreement. TAP not only protects your agency today—it ensures it will stay protected in the future.

Axon Signal Sidearm

Axon Signal Sidearm – a smart sensor that attaches to an officer's holster. The Signal Sidearm sensor uses Axon Signal technology to trigger Axon body-worn cameras within range to start recording automatically when an officer's weapon is drawn.



Axon Enterprise, Inc.
 17800 N 85th St.
 Scottsdale, Arizona 85255
 United States
 VAT: 86-0741227
 Domestic: (800) 978-2737
 International: +1.800.978.2737

Q-369237-44594.904RM

Issued: 02/02/2022

Quote Expiration: 03/31/2022

EST Contract Start Date: 05/15/2022

Account Number: 412245

Payment Terms: N30

Delivery Method: Fedex - Ground

SHIP TO		BILL TO	
Business;Delivery;Invoice-110 W Clark St	Oxford Police Dept. - GA	110 W Clark St	110 W Clark St
110 W Clark St	Oxford, GA 30054-2274	Oxford, GA 30054-2274	Oxford, GA 30054-2274
USA	USA	USA	USA
	Email:		

SALES REPRESENTATIVE	PRIMARY CONTACT
Rob Marangelo	Mark Anglin
Phone:	Phone: 770-788-1390 ext 211
Email: rmarangelo@axon.com	Email: manglin@oxfordgeorgia.org
Fax:	Fax: (770) 786-2211

Program Length	54 Months
TOTAL COST	\$15,939.60
ESTIMATED TOTAL W/ TAX	\$15,939.60

Bundle Savings	\$5,488.72
Additional Savings	\$508.00
TOTAL SAVINGS	\$5,996.72

PAYMENT PLAN		INVOICE DATE	AMOUNT DUE
Year 1		Apr, 2022	\$3,187.92
Year 2		Oct, 2022	\$3,187.92
Year 3		Oct, 2023	\$3,187.92
Year 4		Oct, 2024	\$3,187.92
Year 5		Oct, 2025	\$3,187.92

BILLED ON FULFILLMENT

PLAN NAME

INVOICE DATE

AMOUNT DUE

None

As Fulfilled

\$0.00

Quote Details

Bundle Summary

Item	Description	QTY
AB3C	AB3 Camera Bundle	4
AB3MBD	AB3 Multi Bay Dock Bundle	1
BWCamMBDTAP	Body Worn Camera Multi-Bay Dock TAP Bundle	1
BWCamTAP	Body Worn Camera TAP Bundle	4
DynamicBundle	Dynamic Bundle	1

Bundle: Dynamic Bundle Quantity: 1 Start: 5/15/2022 End: 11/14/2026 Total: 4507.6 USD

Category	Item	Description	QTY
Other	73352	BWC HARDWARE FINANCING TRUE UP PAYMENT	4
Other	73352	BWC HARDWARE FINANCING TRUE UP PAYMENT	1
Other	71044	BATTERY, SIGNAL SIDEARM, CR2430 SINGLE PACK	8
Other	74028	WING CLIP MOUNT, AXON RAPIDLOCK	2
Other	75015	SIGNAL SIDEARM KIT	4
Other	85144	AXON STARTER	1

Bundle: AB3 Camera Bundle Quantity: 4 Start: 5/15/2022 End: 11/14/2026 Total: 2796 USD

Category	Item	Description	QTY
Camera	73202	AXON BODY 3 - NA10 - US - BLK - RAPIDLOCK	4
Camera Mount	74020	MAGNET MOUNT, FLEXIBLE, AXON RAPIDLOCK	5
USB	11534	USB-C to USB-A CABLE FOR AB3 OR FLEX 2	5

Bundle: AB3 Multi Bay Dock Bundle Quantity: 1 Start: 5/15/2022 End: 11/14/2026 Total: 995 USD

Category	Item	Description	QTY
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Dock	74210	AXON BODY 3 - 8 BAY DOCK			1
Power Cord	71019	NORTH AMER POWER CORD FOR AB3 8-BAY, AB2 1-BAY / 6-BAY DOCK			1

Bundle: Body Worn Camera Multi-Bay Dock TAP Bundle Quantity: 1 Start: 5/15/2022 End: 11/14/2026 Total: 1593 USD

Category	Item	Description	QTY
Dock Warranty	80465	EXT WARRANTY, MULTI-BAY DOCK (TAP)	1
Multi-Bay Dock Refresh 1	73689	MULTI-BAY BWC DOCK 1ST REFRESH	1
Multi-Bay Dock Refresh 2	73688	MULTI-BAY BWC DOCK 2ND REFRESH	1

Bundle: Body Worn Camera TAP Bundle Quantity: 4 Start: 5/15/2022 End: 11/14/2026 Total: 6048 USD

Category	Item	Description	QTY
Camera Warranty	80464	EXT WARRANTY, CAMERA (TAP)	4
Camera Refresh 1 with Spares	73309	AXON CAMERA REFRESH ONE	4
Camera Refresh 2 with Spares	73310	AXON CAMERA REFRESH TWO	4

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Signature

Date Signed

2/2/2022

Mark Anglin

From: Rebecca Norwood <rebecca.norwood@tusaconsulting.com>
Sent: Wednesday, January 26, 2022 11:40 AM
To: Trudy Henry
Cc: Dennis Ward; Mark Anglin
Subject: Re: Question

Follow Up Flag: Follow up
Flag Status: Flagged

Trudy,

We hope you are well! Welcome back.

Chief,

A control station allows for an external antenna on the roof to provide better coverage than a portable inside the building. Your new system is going to be tested to ensure that a portable radio can operate inside your building, so you may decide to wait until that time to buy a control station as it may not be needed. These stations can also provide communications when there are system issues by allowing you to communicate directly with officers from the control station to their mobiles in the cars or portables. This is a last mile back up.

The choice is yours. I hope this information helps.

Rebecca Norwood | rebecca.norwood@tusaconsulting.com
Senior Consultant / Engineer
Headquarters: 118 N Conistor Ln, Ste. B, Box 357, Liberty, MO. 64068
(m) 919-473-6820 | www.tusaconsulting.com



tusa | Consulting Services
Raising the Bar in Critical Communications

On Jan 26, 2022, at 10:50 AM, Trudy Henry <trudy.henry@covington-newton911.com> wrote:

Hey Dennis and Rebecca, hope all is well. Chief Anglin in the new Oxford Chief. He has approached me with the question of why do I need a control station at Oxford PD? He said I have a 4 man department and when we are working we should be on the road. My question to you is, what are the benefits of having a control station and do you see a need for Oxford to have one?

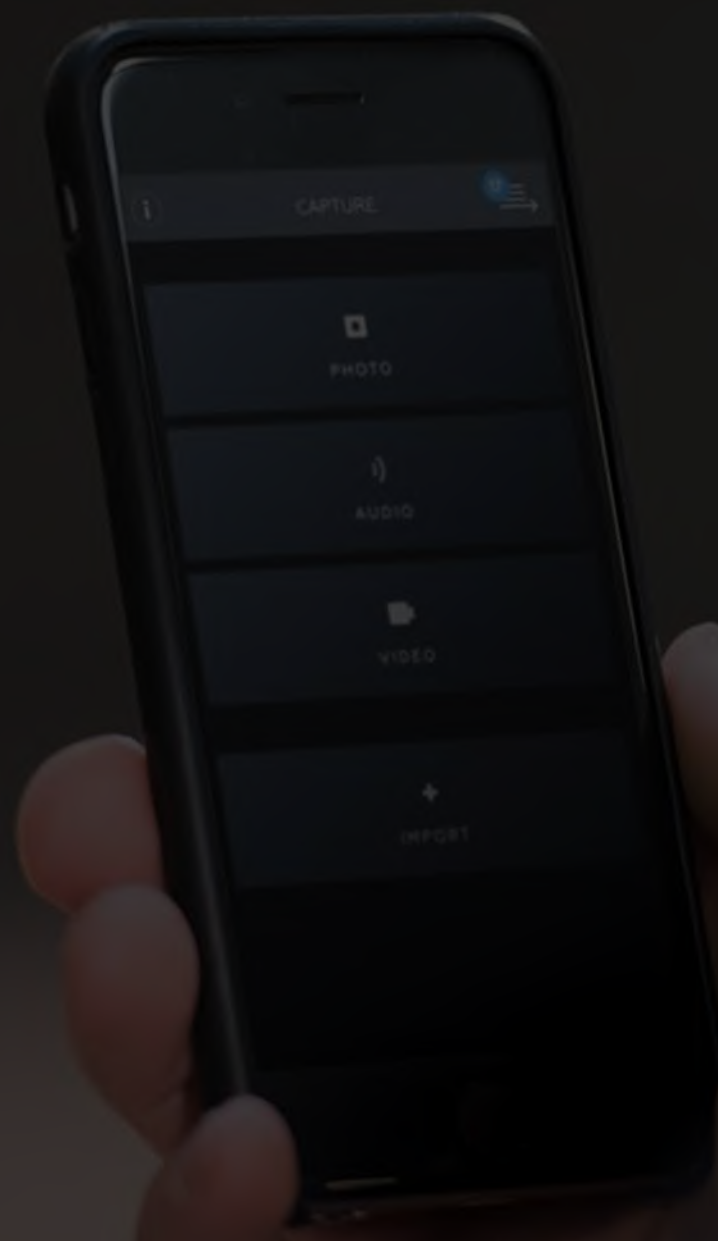
Thank you for your help!

<image001.png>



Oxford Police Department

Axon Body 3 Cameras



100,000+ OFFICERS

6,000+ AGENCIES

85% OF MAJOR CITIES

40+ MAJOR PROSECUTORS

150,000+ CAMERAS

500,000+ TASERS



GET TO THE TRUTH FASTER



ACT WITH CONFIDENCE



FOCUS ON WHAT MATTERS

WORKFLOW

DEVICES – APPS – PEOPLE



FIELD CAPTURE



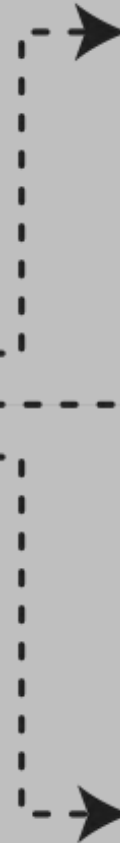
AXON EVIDENCE
AXON RECORDS



DISTRICT ATTORNEY



PRESS



STATION

ACTIVATION



SIGNAL
SIDEARM

CAPTURE



AXON BODY 3 WITH
RESPOND FOR DEVICES



AXON CITIZEN
FOR COMMUNITIES

DE-ESCALATION



TASER 7

PRODUCTIVITY



AXON
EVIDENCE



AXON
RECORDS



AXON
PERFORMANCE



REDACTION
STUDIO

**“When we came across Axon,
and we did our research, we
very quickly learned that Axon
was leaps and bounds above
everybody else.”**

**JIM MUNRO, SERGEANT
CITY OF CLOVIS POLICE DEPARTMENT**



AXON BODY 3

SEE TRUTH IN THE MOMENT

Decreased Litigation
Increased Cost Savings


COMPLAINTS:
DOWN 88%

USE OF FORCE:
DOWN 75%





GUILTY PLEAS:
UP 20%



OFFICER COURT
TIME REDUCED
BY 70%



Axon Case Studies

	CITIZEN COMPLAINTS	USE OF FORCE
RIALTO PD	↓ 88%	↓ 59%
MESA PD	↓ 40%	↓ 75%
BIRMINGHAM PD	↓ 70%	↓ 34%
SAN DIEGO PD	↓ 41%	↓ 47%
ORLANDO PD	↓ 65%	↓ 53%

CAPTURE CLEARER TRUTH: CORE CAPABILITIES

EMBEDDED GPS

LIGHTER, MORE SECURE MOUNT

FULL-SHIFT BATTERY

RUGGED WEARABILITY

SIMPLE OPERATION & DISPLAY

IRONCLAD SECURITY

PRECISION AUDIO



TIME-SAVING FEATURES

SIMPLER OPERATION IN THE FIELD

- Rapid Recharge & Offload
- Wireless activation (Axon Signal)

EFFICIENT PROGRAM MANAGEMENT

- Axon Device Manager
- Configurability
- Managed LTE

AXON NETWORK INTEGRATIONS

- Multi-cam playback, Cases, Review mode and more in Axon Evidence
- *(Future)*: Video dictation & Transcription w/ Axon Records

	Total Quantity	Oxford Police		
		Qty	Unit Cost	Total Cost
Mobile				
Mid-tier Remote Mount P25 Police	239	4	\$ 3,954.20	\$ 15,816.80
Mid-tier Dash Mount P25 Fire/EMS	61	0	\$ 3,797.40	\$ -
Low-tier Dash Mounty P25 City	3	0	\$ 2,616.90	\$ -
Portable				
Mid-tier Portable P25 Police/EMS	308	5	\$ 4,500.60	\$ 22,503.00
Mid-tier Portable Mount P25 Fire	125	0	\$ 5,020.60	\$ -
Low-tier P25	39	0	\$ 2,049.02	\$ -
Carrying Case/Belt Clip	472	5	Incl	\$ -
Single Unit Desk Charger ^{NOTE#1}	417	5	Incl	\$ -
Multi-Unit Charger	33	1	\$ 962.50	\$ 962.50
Multi-Unit Charger - Low Tier Portable	0	0	\$ 458.50	\$ -
Speaker Mic	227	5	\$ 92.40	\$ 462.00
Speaker Mic FIRE	135	0	\$ 385.00	\$ -
Vehicular Charger for Portables	23	0	\$ 330.40	\$ -
Control Station (non-dispatch)				
Control Station	21	1	\$ 4,373.10	\$ 4,373.10
Antenna System	21	1	\$ 916.67	\$ 916.67
TOTAL	\$ 3,501,613.95		\$	\$ 45,034.07

Porterdale Police			Covington Police		
Qty	Unit Cost	Total Cost	Qty	Unit Cost	
5	\$ 3,954.20	\$ 19,771.00	44	\$ 3,954.20	
0	\$ 3,797.40	\$ -	0	\$ 3,797.40	
0	\$ 2,616.90	\$ -	0	\$ 2,616.90	
8	\$ 4,500.60	\$ 36,004.80	70	\$ 4,500.60	
0	\$ 5,020.60	\$ -	0	\$ 5,020.60	
0	\$ 2,049.02	\$ -	0	\$ 2,049.02	
8	Incl	\$ -	70	Incl	
8	Incl	\$ -	80	Incl	
1	\$ 962.50	\$ 962.50	2	\$ 962.50	
0	\$ 458.50	\$ -	0	\$ 458.50	
8	\$ 92.40	\$ 739.20	0	\$ 92.40	
0	\$ 385.00	\$ -	0	\$ 385.00	
0	\$ 330.40	\$ -	0	\$ 330.40	
0	\$ 4,373.10	\$ -	2	\$ 4,373.10	
0	\$ 916.67	\$ -	2	\$ 916.67	
2 - portable 3 - mobiles - reprogrammed		\$	23 - mobiles -- reprogrammed		
		57,477.50			

		Covington Fire					
<u>Total Cost</u>		<u>Qty</u>	<u>Unit Cost</u>	<u>Total Cost</u>		<u>Qty</u>	
\$ 173,984.80		0	\$ 3,954.20	\$ -		0	
\$ -		10	\$ 3,797.40	\$ 37,974.00		35	
\$ -		0	\$ 2,616.90	\$ -		0	
\$ 315,042.00		0	\$ 4,500.60	\$ -		0	
\$ -		35	\$ 5,020.60	\$ 175,721.00		90	
\$ -		0	\$ 2,049.02	\$ -		0	
\$ -		35	Incl	\$ -		90	
\$ -		30	Incl	\$ -		30	
\$ 1,925.00		3	\$ 962.50	\$ 2,887.50		15	
\$ -		0	\$ 458.50	\$ -		0	
\$ -		0	\$ 92.40	\$ -		0	
\$ -		35	\$ 385.00	\$ 13,475.00		100	
\$ -		9	\$ 330.40	\$ 2,973.60		14	
\$ 8,746.20		2	\$ 4,373.10	\$ 8,746.20		10	
\$ 1,833.33		2	\$ 916.67	\$ 1,833.33		10	
\$ 501,531.33	2 - APX Next			\$ 243,610.63	3 - APX Next		

Newton County Fire			Sheriff		
<u>Unit Cost</u>	<u>Total Cost</u>	<u>Qty</u>	<u>Unit Cost</u>	<u>Total Cost</u>	
\$ 3,954.20	\$ -	181	\$ 3,954.20	\$ 715,710.20	
\$ 3,797.40	\$ 132,909.00	0	\$ 3,797.40	\$ -	
\$ 2,616.90	\$ -	0	\$ 2,616.90	\$ -	
\$ 4,500.60	\$ -	192	\$ 4,500.60	\$ 864,115.20	
\$ 5,020.60	\$ 451,854.00	0	\$ 5,020.60	\$ -	
\$ 2,049.02	\$ -	0	\$ 2,049.02	\$ -	
Incl	\$ -	192	Incl	\$ -	
Incl	\$ -	192	Incl	\$ -	
\$ 962.50	\$ 14,437.50	8	\$ 962.50	\$ 7,700.00	
\$ 458.50	\$ -	0	\$ 458.50	\$ -	
\$ 92.40	\$ -	192	\$ 92.40	\$ 17,740.80	
\$ 385.00	\$ 38,500.00	0	\$ 385.00	\$ -	
\$ 330.40	\$ 4,625.60	0	\$ 330.40	\$ -	
\$ 4,373.10	\$ 43,731.00	4	\$ 4,373.10	\$ 17,492.40	
\$ 916.67	\$ 9,166.67	4	\$ 916.67	\$ 3,666.67	
\$	\$ 695,223.77	3 - traffic motor units	\$	\$ 1,626,425.27	

District Attorney			EMA		
Qty	Unit Cost	Total Cost	Qty	Unit Cost	
0	\$ 3,954.20	\$ -	3	\$ 3,954.20	
0	\$ 3,797.40	\$ -	0	\$ 3,797.40	
0	\$ 2,616.90	\$ -	0	\$ 2,616.90	
8	\$ 4,500.60	\$ 36,004.80	5	\$ 4,500.60	
0	\$ 5,020.60	\$ -	0	\$ 5,020.60	
0	\$ 2,049.02	\$ -	0	\$ 2,049.02	
8	Incl	\$ -	5	Incl	
8	Incl	\$ -	5	Incl	
1	\$ 962.50	\$ 962.50	1	\$ 962.50	
0	\$ 458.50	\$ -	0	\$ 458.50	
8	\$ 92.40	\$ 739.20	5	\$ 92.40	
0	\$ 385.00	\$ -	0	\$ 385.00	
0	\$ 330.40	\$ -	0	\$ 330.40	
0	\$ 4,373.10	\$ -	1	\$ 4,373.10	
0	\$ 916.67	\$ -	1	\$ 916.67	
		\$ 37,706.50			

		Animal Control				
<u>Total Cost</u>		<u>Qty</u>	<u>Unit Cost</u>	<u>Total Cost</u>		<u>Qty</u>
\$	11,862.60	0	\$ 3,954.20	\$	-	2
\$	-	9	\$ 3,797.40	\$	34,176.60	0
\$	-	0	\$ 2,616.90	\$	-	0
\$	22,503.00	11	\$ 4,500.60	\$	49,506.60	9
\$	-	0	\$ 5,020.60	\$	-	0
\$	-	0	\$ 2,049.02	\$	-	0
\$	-	11	Incl	\$	-	9
\$	-	11	Incl	\$	-	9
\$	962.50	0	\$ 962.50	\$	-	1
\$	-	0	\$ 458.50	\$	-	0
\$	462.00	0	\$ 92.40	\$	-	9
\$	-	0	\$ 385.00	\$	-	0
\$	-	0	\$ 330.40	\$	-	0
\$	4,373.10	0	\$ 4,373.10	\$	-	0
\$	916.67	0	\$ 916.67	\$	-	0
\$	41,079.87			\$	83,683.20	

911			Piedmont EMS			
<u>Unit Cost</u>		<u>Total Cost</u>	<u>Qty</u>	<u>Unit Cost</u>		<u>Total Cost</u>
\$	3,954.20	\$ 7,908.40	0	\$	3,954.20	\$ -
\$	3,797.40	\$ -	7	\$	3,797.40	\$ 26,581.80
\$	2,616.90	\$ -	0	\$	2,616.90	\$ -
\$	4,500.60	\$ 40,505.40	0	\$	4,500.60	\$ -
\$	5,020.60	\$ -	0	\$	5,020.60	\$ -
\$	2,049.02	\$ -	0	\$	2,049.02	\$ -
	Incl	\$ -	0		Incl	\$ -
	Incl	\$ -	0		Incl	\$ -
\$	962.50	\$ 962.50	0	\$	962.50	\$ -
\$	458.50	\$ -	0	\$	458.50	\$ -
\$	92.40	\$ 831.60	0	\$	92.40	\$ -
\$	385.00	\$ -	0	\$	385.00	\$ -
\$	330.40	\$ -	0	\$	330.40	\$ -
\$	4,373.10	\$ -	1	\$	4,373.10	\$ 4,373.10
\$	916.67	\$ -	1	\$	916.67	\$ 916.67
		\$ 50,207.90	mobiles are dual head 27 portable to be reprogrammed		\$ 31,871.57	

Electric Group				School District	
Qty	Unit Cost	Total Cost		Qty	Unit Cost
0	\$ 3,954.20	\$ -		0	\$ 3,954.20
0	\$ 3,797.40	\$ -		0	\$ 3,797.40
0	\$ 2,616.90	\$ -		0	\$ 2,616.90
0	\$ 4,500.60	\$ -		0	\$ 4,500.60
0	\$ 5,020.60	\$ -		0	\$ 5,020.60
3	\$ 2,049.02	\$ 6,147.05		10	\$ 2,049.02
3	Incl	\$ -		10	Incl
3	Incl	\$ -		10	Incl
0	\$ 962.50	\$ -		0	\$ 962.50
0	\$ 458.50	\$ -		0	\$ 458.50
0	\$ 92.40	\$ -		0	\$ 92.40
0	\$ 385.00	\$ -		0	\$ 385.00
0	\$ 330.40	\$ -		0	\$ 330.40
0	\$ 4,373.10	\$ -		0	\$ 4,373.10
0	\$ 916.67	\$ -		0	\$ 916.67
		\$ 6,147.05			

		Covington Public Works				
<u>Total Cost</u>		<u>Qty</u>	<u>Unit Cost</u>	<u>Total Cost</u>		<u>Qty</u>
\$ -		0	\$ 3,954.20	\$ -		0
\$ -		0	\$ 3,797.40	\$ -		0
\$ -		1	\$ 2,616.90	\$ 2,616.90		2
\$ -		0	\$ 4,500.60	\$ -		0
\$ -		0	\$ 5,020.60	\$ -		0
\$ 20,490.17		11	\$ 2,049.02	\$ 22,539.18		12
\$ -		11	Incl	\$ -		12
\$ -		11	Incl	\$ -		12
\$ -		0	\$ 962.50	\$ -		0
\$ -		0	\$ 458.50	\$ -		0
\$ -		0	\$ 92.40	\$ -		0
\$ -		0	\$ 385.00	\$ -		0
\$ -		0	\$ 330.40	\$ -		0
\$ -		0	\$ 4,373.10	\$ -		0
\$ -		0	\$ 916.67	\$ -		0
\$ 20,490.17				\$ 25,156.08		

5 -- Public Works
1- port 1 - mobile -- Airport
1 -- ACM
4 -- Water/Sewer

County Public Works			Code Enforcement		
<u>Unit Cost</u>	<u>Total Cost</u>	<u>Qty</u>	<u>Unit Cost</u>	<u>Total Cost</u>	
\$ 3,954.20	\$ -	0	\$ 3,954.20	\$ -	
\$ 3,797.40	\$ -	0	\$ 3,797.40	\$ -	
\$ 2,616.90	\$ 5,233.80	0	\$ 2,616.90	\$ -	
\$ 4,500.60	\$ -	0	\$ 4,500.60	\$ -	
\$ 5,020.60	\$ -	0	\$ 5,020.60	\$ -	
\$ 2,049.02	\$ 24,588.20	3	\$ 2,049.02	\$ 6,147.05	
Incl	\$ -	3	Incl	\$ -	
Incl	\$ -	3	Incl	\$ -	
\$ 962.50	\$ -	0	\$ 962.50	\$ -	
\$ 458.50	\$ -	0	\$ 458.50	\$ -	
\$ 92.40	\$ -	0	\$ 92.40	\$ -	
\$ 385.00	\$ -	0	\$ 385.00	\$ -	
\$ 330.40	\$ -	0	\$ 330.40	\$ -	
\$ 4,373.10	\$ -	0	\$ 4,373.10	\$ -	
\$ 916.67	\$ -	0	\$ 916.67	\$ -	
	\$ 29,822.00			\$ 6,147.05	

Georgia State Patrol

<u>Qty</u>	<u>Unit Cost</u>	<u>Total Cost</u>
0	\$ 3,954.20	\$ -
0	\$ 3,797.40	\$ -
0	\$ 2,616.90	\$ -
0	\$ 4,500.60	\$ -
0	\$ 5,020.60	\$ -
0	\$ 2,049.02	\$ -
0	Incl	\$ -
0	Incl	\$ -
0	\$ 962.50	\$ -
0	\$ 458.50	\$ -
0	\$ 92.40	\$ -
0	\$ 385.00	\$ -
0	\$ 330.40	\$ -
0	\$ 4,373.10	\$ -
0	\$ 916.67	\$ -
	\$	\$ -

Model	Description	Total Quantity	List Unit Price	List Extended Price	Discount %	Discount Unit Price	Discount Extended Price
MOBILES							
Mid-tier Remote Mount P25 Police			\$ 6,571.00			\$ 3,954.20	
M22URS9PW1AN	APX4500 7/800 MHZ	196	\$ 1,564.00	\$ 306,544.00	35%	\$ 1,016.60	\$ 199,253.60
GA00318AC	ENH: 5 YEAR ESSENTIAL SVC	196	\$ 246.00	\$ 48,216.00		Included	Included
G831AD	ADD: SPKR 15W WATER RESISTANT	196	\$ 60.00	\$ 11,760.00	35%	\$ 39.00	\$ 7,644.00
GA00580AD	ADD: TDMA OPERATION	196	\$ 450.00	\$ 88,200.00		Included	Included
G996BD	ADD: PROGRAMMING OVER P25 (OTAP)	196	\$ 100.00	\$ 19,600.00	35%	\$ 65.00	\$ 12,740.00
QA02756AD	ADD: 3600 OR 9600 TRUNKING BAUD SINGLE SYSTEM	196	\$ 1,570.00	\$ 307,720.00	35%	\$ 1,020.50	\$ 200,018.00
GA00804AA	ADD: APX O2 CH (GREY)	196	\$ 492.00	\$ 96,432.00	35%	\$ 319.80	\$ 62,680.80
G444AH	ADD: APX CONTROL HEAD SOFTWARE	196	\$ -	\$ -	35%	\$ -	\$ -
G67CF	ADD: REMOTE MOUNT MID POWER	196	\$ 297.00	\$ 58,212.00	35%	\$ 193.05	\$ 37,837.80
GA00226AA	ADD: GPS ANTENNA	196	\$ 75.00	\$ 14,700.00	35%	\$ 48.75	\$ 9,555.00
G174AF	ADD: ANT 3DB LOW-PROFILE 762-870	196	\$ 43.00	\$ 8,428.00	35%	\$ 27.95	\$ 5,478.20
G892AB	ENH:HAND MIC,GCAI WTR RESISTANT APX	196	\$ 72.00	\$ 14,112.00	35%	\$ 46.80	\$ 9,172.80
G843	ADD: AES ENCRYPTION APX	196	\$ 475.00	\$ 93,100.00	35%	\$ 308.75	\$ 60,515.00
Q498AY	ENH: ASTRO 25 OTAR W/ MULTIKEY	196	\$ 740.00	\$ 145,040.00	35%	\$ 481.00	\$ 94,276.00
	Programming & Installation	196	\$ 387.00	\$ 75,852.00	N/A	\$ 387.00	\$ 75,852.00
Mid-tier Dash Mount P25 Fire/EMS			\$ 5,862.00			\$ 3,797.40	
M22URS9PW1AN	APX4500 7/800 MHZ	83	\$ 1,564.00	\$ 129,812.00	35%	\$ 1,016.60	\$ 84,377.80
GA00318AC	ENH: 5 YEAR ESSENTIAL SVC	83	\$ 246.00	\$ 20,418.00		Included	Included
G831AD	ADD: SPKR 15W WATER RESISTANT	83	\$ 60.00	\$ 4,980.00	35%	\$ 39.00	\$ 3,237.00
GA00580AD	ADD: TDMA OPERATION	83	\$ 450.00	\$ 37,350.00		Included	Included
G996BD	ADD: PROGRAMMING OVER P25 (OTAP)	83	\$ 100.00	\$ 8,300.00	35%	\$ 65.00	\$ 5,395.00
QA02756AD	ADD: 3600 OR 9600 TRUNKING BAUD SINGLE SYSTEM	83	\$ 1,570.00	\$ 130,310.00	35%	\$ 1,020.50	\$ 84,701.50
G892AB	ENH:HAND MIC,GCAI WTR RESISTANT APX	83	\$ 72.00	\$ 5,976.00	35%	\$ 46.80	\$ 3,884.40
G444AH	ADD: APX CONTROL HEAD SOFTWARE	83	\$ -	\$ -	35%	\$ -	\$ -
GA00226AA	ADD: GPS ANTENNA	83	\$ 75.00	\$ 6,225.00	35%	\$ 48.75	\$ 4,046.25
G174AF	ADD: ANT 3DB LOW-PROFILE 762-870	83	\$ 43.00	\$ 3,569.00	35%	\$ 27.95	\$ 2,319.85
G66AW	ADD: DASH MOUNT O2 CH WWM	83	\$ 125.00	\$ 10,375.00	35%	\$ 81.25	\$ 6,743.75
GA00804AA	ADD: APX O2 CH (GREY)	83	\$ 492.00	\$ 40,836.00	35%	\$ 319.80	\$ 26,543.40
G843	ADD: AES ENCRYPTION APX	83	\$ 475.00	\$ 39,425.00	35%	\$ 308.75	\$ 25,626.25
Q498AY	ENH: ASTRO 25 OTAR W/ MULTIKEY	83	\$ 740.00	\$ 61,420.00	35%	\$ 481.00	\$ 39,923.00
	Programming & Installation	83	\$ 342.00	\$ 28,386.00	N/A	\$ 342.00	\$ 28,386.00
Low-tier Dash Mounty P25 City			\$ 4,547.00			\$ 2,616.90	
M36URS9PW1AN	APX1500 7/800	23	\$ 1,564.00	\$ 35,972.00	35%	\$ 1,016.60	\$ 23,381.80
GA00318AC	ENH: 5 YEAR ESSENTIAL SVC	23	\$ 246.00	\$ 5,658.00		Included	Included
GA00804AA	ADD: APX O2 CH (GREY)	23	\$ 492.00	\$ 11,316.00	35%	\$ 319.80	\$ 7,355.40
G831AD	ADD: SPKR 15W WATER RESISTANT	23	\$ 60.00	\$ 1,380.00	35%	\$ 39.00	\$ 897.00
GA01339AA	ENH: SW P25 TRUNKING	23	\$ 1,070.00	\$ 24,610.00	35%	\$ 695.50	\$ 15,996.50
GA00580AD	ADD: TDMA OPERATION	23	\$ 450.00	\$ 10,350.00		Included	Included
GA00235AA	ADD: NO GPS ANTENNA NEEDED APX	23	\$ -	\$ -	35%	\$ -	\$ -
G444AH	ADD: APX CONTROL HEAD SOFTWARE	23	\$ -	\$ -	35%	\$ -	\$ -
W22BA	ADD: STD PALM MICROPHONE APX	23	\$ 72.00	\$ 1,656.00	35%	\$ 46.80	\$ 1,076.40
G174AF	ADD: ANT 3DB LOW-PROFILE 762-870	23	\$ 43.00	\$ 989.00	35%	\$ 27.95	\$ 642.85

Model	Description	Total Quantity	List Unit Price	List Extended Price	Discount %	Discount Unit Price	Discount Extended Price
G66AW	ADD: DASH MOUNT O2 CH WWM	23	\$ 125.00	\$ 2,875.00	35%	\$ 81.25	\$ 1,868.75
G996BD	ADD: PROGRAMMING OVER P25 (OTAP)	23	\$ 100.00	\$ 2,300.00	35%	\$ 65.00	\$ 1,495.00
	Programming & Installation	23	\$ 325.00	\$ 7,475.00	N/A	\$ 325.00	\$ 7,475.00
PORTABLES							
Mid-tier Portable P25 Police/EMS			\$ 7,523.00			\$ 4,500.60	
H98UCF9PW6BN	APX6000 700/800 MODEL 2.5 PORTABLE	232	\$ 3,026.00	\$ 702,032.00	35%	\$ 1,966.90	\$ 456,320.80
G996AU	ADD: PROGRAMMING OVER P25 (OTAP)	232	\$ 100.00	\$ 23,200.00	35%	\$ 65.00	\$ 15,080.00
QA05570AA	ALT: LI-ION IMPRES 2 IP68 3400 MAH	232	\$ 100.00	\$ 23,200.00	35%	\$ 65.00	\$ 15,080.00
QA00580AC	ADD: TDMA OPERATION	232	\$ 450.00	\$ 104,400.00		Included	Included
Q887AU	ADD: 5Y ESSENTIAL SERVICE	232	\$ 206.00	\$ 47,792.00		Included	Included
H122BR	ALT: 1/4 WAVE 7/8 STUBBY (NAR6595)	232	\$ 24.00	\$ 5,568.00	35%	\$ 15.60	\$ 3,619.20
Q629AK	ENH: AES ENCRYPTION	232	\$ 475.00	\$ 110,200.00	35%	\$ 308.75	\$ 71,630.00
Q498AY	ENH: ASTRO 25 OTAR W/ MULTIKEY	232	\$ 740.00	\$ 171,680.00	35%	\$ 481.00	\$ 111,592.00
Q361AR	ADD: P25 9600 BAUD TRUNKING	232	\$ 300.00	\$ 69,600.00	35%	\$ 195.00	\$ 45,240.00
H38BT	ADD: SMARTZONE OPERATION	232	\$ 1,200.00	\$ 278,400.00	35%	\$ 780.00	\$ 180,960.00
Q806BM	ADD: ASTRO DIGITAL CAI OPERATION	232	\$ 515.00	\$ 119,480.00	35%	\$ 334.75	\$ 77,662.00
NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A, 115VAC, US/NA	232	\$ 165.00	\$ 38,280.00	30%	\$ 115.50	\$ 26,796.00
PMNN4486A	BATT IMPRES 2 LIION R IP67 3400T	232	\$ 163.00	\$ 37,816.00	30%	\$ 114.10	\$ 26,471.20
	Programming	232	\$ 59.00	\$ 13,688.00	N/A	\$ 59.00	\$ 13,688.00
Mid-tier Portable P25 Fire			\$ 8,323.00			\$ 5,020.60	
H98UCF9PW6BN	APX6000 700/800 MODEL 2.5 PORTABLE	98	\$ 3,026.00	\$ 296,548.00	35%	\$ 1,966.90	\$ 192,756.20
G996AU	ADD: PROGRAMMING OVER P25 (OTAP)	98	\$ 100.00	\$ 9,800.00	35%	\$ 65.00	\$ 6,370.00
Q361AR	ADD: P25 9600 BAUD TRUNKING	98	\$ 300.00	\$ 29,400.00	35%	\$ 195.00	\$ 19,110.00
QA02006AA	ENH: APX6000XE RUGGED RADIO	98	\$ 800.00	\$ 78,400.00	35%	\$ 520.00	\$ 50,960.00
QA00580AC	ADD: TDMA OPERATION	98	\$ 450.00	\$ 44,100.00		Included	Included
Q887AU	ADD: 5Y ESSENTIAL SERVICE	98	\$ 206.00	\$ 20,188.00		Included	Included
H122BR	ALT: 1/4 WAVE 7/8 STUBBY (NAR6595)	98	\$ 24.00	\$ 2,352.00	35%	\$ 15.60	\$ 1,528.80
H38BT	ADD: SMARTZONE OPERATION	98	\$ 1,200.00	\$ 117,600.00	35%	\$ 780.00	\$ 76,440.00
Q806BM	ADD: ASTRO DIGITAL CAI OPERATION	98	\$ 515.00	\$ 50,470.00	35%	\$ 334.75	\$ 32,805.50
QA05570AA	ALT: LI-ION IMPRES 2 IP68 3400 MAH	98	\$ 100.00	\$ 9,800.00	35%	\$ 65.00	\$ 6,370.00
Q498AY	ENH: ASTRO 25 OTAR W/ MULTIKEY	98	\$ 740.00	\$ 72,520.00	35%	\$ 481.00	\$ 47,138.00
Q629AK	ENH: AES ENCRYPTION	98	\$ 475.00	\$ 46,550.00	35%	\$ 308.75	\$ 30,257.50
NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A, 115VAC, US/NA	98	\$ 165.00	\$ 16,170.00	30%	\$ 115.50	\$ 11,319.00
PMNN4486A	BATT IMPRES 2 LIION R IP67 3400T	98	\$ 163.00	\$ 15,974.00	30%	\$ 114.10	\$ 11,181.80
	Programming	98	\$ 59.00	\$ 5,782.00	N/A	\$ 59.00	\$ 5,782.00
Low-tier P25			\$ 3,725.67			\$ 2,049.02	
H92UCF9PW6AN	APX 900 7/800 MHZ MODEL 2 PORTABLE	30	\$ 1,597.00	\$ 47,910.00	35%	\$ 1,038.05	\$ 31,141.50
QA04096AA	ENH: P25 TRUNKING	30	\$ 1,070.00	\$ 32,100.00	35%	\$ 695.50	\$ 20,865.00
Q887AT	ADD: 5Y ESSENTIAL SERVICE	30	\$ 162.00	\$ 4,860.00		Included	Included
QA06765AA	ALT: IMPRESS LI-ION 3000MAH	30	\$ 85.00	\$ 2,550.00	35%	\$ 55.25	\$ 1,657.50
G996AZ	ADD: PROGRAMMING OVER P25 (OTAP)	30	\$ 100.00	\$ 3,000.00	35%	\$ 65.00	\$ 1,950.00
H122BY	ALT: 1/4- WAVE 7/800 STUBBY (PMAF4022A)	30	\$ 9.00	\$ 270.00	35%	\$ 5.85	\$ 175.50
QA00580AF	ADD: TDMA OPERATION	30	\$ 450.00	\$ 13,500.00		Included	Included
PMPN4174A	CHGR DESKTOP SINGLE UNIT IMPRES, US/NA	30	\$ 76.00	\$ 2,280.00	30%	\$ 53.20	\$ 1,596.00
PMNN4493A	BATT IMPRES LIION HE DENS IP68 3000T	30	\$ 135.00	\$ 4,050.00	30%	\$ 94.50	\$ 2,835.00
	Programming	30	\$ 41.67	\$ 1,250.00	N/A	\$ 41.67	\$ 1,250.00

Model	Description	Total Quantity	List Unit Price	List Extended Price	Discount %	Discount Unit Price	Discount Extended Price
Individual Items							
NNTN7624C	CHARGER,CHR IMP VEH EXT NA/EU KIT	23	\$ 472.00	\$ 10,856.00	30%	\$ 330.40	\$ 7,599.20
PMPN4284A	CHARGER, DESKTOP, MULTI-UNIT, IMPRES 2, 1-DISP EXT PS 100-240VAC US/NA	1	\$ 655.00	\$ 655.00	30%	\$ 458.50	\$ 458.50
NNTN8844A	CHARGER, MULTI-UNIT, IMPRES 2, 6-DISP, NA/LA-PLUG, ACC USB CHGR	26	\$ 1,375.00	\$ 35,750.00	30%	\$ 962.50	\$ 25,025.00
PMMN4099BL	AUDIO ACCESSORY-REMOTE SPEAKER MICROPHONE,IP68 REMOTE SPEAKER MICROPHONE,3.5MM,UL	183	\$ 132.00	\$ 24,156.00	30%	\$ 92.40	\$ 16,909.20
PMMN4107C	AUDIO ACCESSORY-REMOTE SPEAKER MICROPHONE,AUDIO ACCESSORY-AUDIO ADAPTER,NEXT GEN FIRE RSM MODEL 1.5	98	\$ 550.00	\$ 53,900.00	30%	\$ 385.00	\$ 37,730.00
Control Stations (non-Dispatch)							
Control Station			\$ 7,037.00			\$ 4,373.10	
M22URS9PW1AN	APX4500 7/800 MHZ	22	\$ 1,564.00	\$ 34,408.00	35%	\$ 1,016.60	\$ 22,365.20
G91AE	ADD: CNTRL STATION PWR SUPPLY APEX	22	\$ 269.00	\$ 5,918.00	35%	\$ 174.85	\$ 3,846.70
W665BJ	ADD: BASE STATION APEXWWM	22	\$ 70.00	\$ 1,540.00	35%	\$ 45.50	\$ 1,001.00
GA00318AC	ENH: 5 YEAR ESSENTIAL SVC	22	\$ 246.00	\$ 5,412.00		Included	Included
GA00235AA	ADD: NO GPS ANTENNA NEEDED APX	22	\$ -	\$ -	35%	\$ -	\$ -
GA00580AD	ADD: TDMA OPERATION	22	\$ 450.00	\$ 9,900.00		Included	Included
G142AD	ADD: NO SPEAKER APX	22	\$ -	\$ -	35%	\$ -	\$ -
QA02756AD	ADD: 3600 OR 9600 TRUNKING BAUD SINGLE SYSTEM	22	\$ 1,570.00	\$ 34,540.00	35%	\$ 1,020.50	\$ 22,451.00
GA00804AA	ADD: APX O2 CH (GREY)	22	\$ 492.00	\$ 10,824.00	35%	\$ 319.80	\$ 7,035.60
G89AC	ADD: NO RF ANTENNA NEEDED	22	\$ -	\$ -	35%	\$ -	\$ -
G444AH	ADD: APX CONTROL HEAD SOFTWARE	22	\$ -	\$ -	35%	\$ -	\$ -
G66AW	ADD: DASH MOUNT O2 CH WWM	22	\$ 125.00	\$ 2,750.00	35%	\$ 81.25	\$ 1,787.50
G996BD	ADD: PROGRAMMING OVER P25 (OTAP)	22	\$ 100.00	\$ 2,200.00	35%	\$ 65.00	\$ 1,430.00
W382AM	ADD: CONTROL STATION DESK GCAI MIC	22	\$ 169.00	\$ 3,718.00	35%	\$ 109.85	\$ 2,416.70
Q498AY	ENH: ASTRO 25 OTAR W/ MULTIKEY	22	\$ 740.00	\$ 16,280.00	35%	\$ 481.00	\$ 10,582.00
G843	ADD: AES ENCRYPTION APX	22	\$ 475.00	\$ 10,450.00	35%	\$ 308.75	\$ 6,792.50
	Program & Install Non-Public Safety	22	\$ 767.00	\$ 16,874.00	N/A	\$ 750.00	\$ 16,500.00
Antenna System							
	Provide omni antenna, 50' coax, and install	22	\$ 916.67	\$ 20,166.67	N/A	\$ 916.67	\$ 20,166.67
				List Extended Price		Discount Extended Price	
TOTAL SUBSCRIBER PRICING				\$ 4,892,936.67		\$ 2,952,121.37	



February 8, 2022

Mr. Bill Andrew
City Manager
City of Oxford
110 W. Clark Street
Oxford, Georgia 30054

Dear Mr. Andrew:

I have enclosed a proposal to conduct a classification and compensation study for the City of Oxford. If selected, we plan to begin work on the project March 8, 2022, with a preliminary report submitted for review in May 2022 and a final report submitted on or before May 31, 2022. The enclosed proposal outlines a thorough study for the City.

I believe you will agree that confidence is built in a new classification and compensation system by involving management and employees in the process. If selected for this project, we would interview approximately 100% of the city's 21 employees covered under this letter of agreement. We believe this high percentage of persons individually interviewed for the study will greatly increase its validity. As you will note from the enclosed proposal, in the employee interview process we utilize a variety of skilled consultants with specific subject matter knowledge of local government administration, public safety, public utilities, public finance, public works, and information technology. This process leads to a valid and expertly prepared compensation plan that is accepted by the City's employees.

Condrey and Associates has been serving clients nationwide for more than 23 years and has never been involved in any litigation. I strongly encourage you to check the references we have listed in our proposal packet. I believe you will find that we work very hard to deliver a thoroughly documented and competitive personnel system that meets the needs of management and employees alike.

This offer of services is valid until May 30, 2022. We will be happy to revise the enclosed memorandum of agreement to meet appropriate legal requirements as deemed necessary by the City of Oxford or to enter into an appropriate contract initiated by the City.

We are looking forward to providing high quality human resource management consulting services to the City of Oxford. I believe you will find our firm to be highly competent and responsive to the needs of your jurisdiction. Please contact me at (706) 380-7107 if I may provide further information.

Sincerely,

Steve Condrey, Ph.D.
President

**PROPOSAL FOR A CLASSIFICATION
AND COMPENSATION STUDY
FOR THE CITY OF
OXFORD, GEORGIA**

February 8, 2022

**Condrey and Associates, Inc.
PO Box 7907
Athens, Georgia 30604-7907
(706) 380-7107 (phone)
(586) 816-4067 (fax)
steve@condrey-consulting.com
www.condrey-consulting.com**

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PROFILE OF PROPOSER

Condrey and Associates, Inc. is a human resource management consulting firm providing personnel-related technical assistance to local and state government organizations. All work performed for the City of Oxford project will be conducted from the firm's offices in Athens, Georgia.

The two principals associated with the project, Dr. Steve Condrey and Ms. Jan Hansford, have collaborated on over 500 similar projects for state and local governments. Consultants for this project will be chosen from among consultants with specific subject matter knowledge in local government, public safety, public utilities, public health, and public works administration: Mr. Mark Knowles, an independent consultant experienced in financial administration and information technology, Dr. Rex Facer, Associate Professor in the Romney Institute of Public Management at Brigham Young University and a skilled human resources consultant, Gene Mays, former Chief Deputy of the Athens-Clarke County, Georgia, Sheriff's Department and a skilled law enforcement consultant, Mr. James Hansford, a skilled classification consultant and former Executive Director of the Georgia Firefighter Standards and Training Commission, Mr. Mike Mahathirath, a skilled consultant specializing in IT, Finance and Staffing Analyses, Dr. Mark Foster, an industrial psychologist with extensive experience in law enforcement administration, Dr. James M. Austin, Jr., an industrial psychologist and President of Austin Consulting, Inc., Mr. Brian Burke, a certified Real Estate Appraiser and Firefighter, and Dr. Greg Reece, a skilled technical writer and consultant.

REPRESENTATIVE CLIENT CONTACTS

Listed below are five representative references. Additional professional references are available upon request.

Ms. Sharyn Dickerson
City Manager
City of Watkinsville
191 VFW Drive
Watkinsville, Georgia 30677
(706) 614-9991
sdickerson@cityofwatkinsville.com

We completed a comprehensive classification and compensation study for the City of Watkinsville in 2018 (approximately 15 employees).

Mr. Jud Smith
Sheriff
Barrow County Sheriff's Office
233 East Broad Street
Winder, Georgia 30680
(770) 307-3081
jud.smith@barrowsheriff.com

We completed a comprehensive classification and compensation study for Barrow County Sheriff's Office in 2018 (approximately 210 employees). We completed an update for the department in 2021.

Ms. Holly S. Fields
Human Resources Director
City of Hinesville
115 East M. L. King, Jr. Drive
Hinesville, GA 31313
(912) 876-3564
hfields@cityofhinesville.org

We completed a comprehensive classification and compensation study for the City of Hinesville in 2018 (approximately 200 employees). We completed an update of their pay plan in 2021.

Ms. Heather Doke, PHR
Human Resources Director
City of Sheridan
55 Grinnell Plaza
Sheridan, WY 82801
(307) 675-4220
hdoke@sheridanwy.net

We completed a comprehensive classification and compensation study for the City of Sheridan in 2005 (approximately 200 employees). We completed updates of their system in 2013 and 2018 and will complete another update in 2022.

Ms. Debbie Hardin
Human Resources Manager
Town of Fort Mill
200 Tom Hall Street
Fort Mill, South Carolina 29715
(803) 547-2116
dhardin@fortmillsc.gov

We completed a comprehensive classification and compensation study for the Town of Fort Mill in 2019 (approximately 200 employees).

SELECTED CLIENTS

Alabama

Alabama Department of Postsecondary Education
Alabama Department of Corrections
Alabama Department of Human Resources Head Start
Anniston Water Works and Sewer Board
City of Anniston
City of Athens
City of Auburn
Curry Water Authority
City of Decatur
City of Dothan
Dothan-Houston County Intellectual Disabilities Board
City of Enterprise
City of Eufaula
Cleburne County
Eufaula Water & Sewer Board
Etowah County
Town of Falkville
City of Gadsden
City of Jasper
Jasper Water Works and Sewer Board
Lee County
Limestone County
City of Madison
City of Mobile
Mobile County
Mobile County Personnel Board
Mobile Area Water and Sewer Board
Mobile Housing Authority
North Central Alabama Regional Council of Governments (NARCOG)
City of Opelika
City of Prattville
City of Rainbow City
City of Tallahassee
City of Tuscaloosa
Selma Waterworks and Sewer Board
Walker County

Alaska

Matanuska-Susitna Borough

Arkansas

City of Jonesboro
City of North Little Rock

Connecticut

Town of Waterford

Florida

City of Miami Beach

St. Johns County

City of Panama City Beach

St. Johns County Property Appraiser

St. Johns County Clerk of Courts

Georgia

City of Acworth

Ben Hill County

Brunswick-Glynn County Joint Water and Sewer Commission

City of Canton

City of Cartersville

Columbus Consolidated Government

Cook County

Coweta County Water and Sewerage Authority

City of Forest Park

City of Hinesville

City of Holly Springs

City of Lawrenceville

City of Suwanee

Lowndes County

Morgan County

Paulding County

City of Peachtree City

Pickens County

City of Statesboro

Tift County

Troup County

City of Tybee Island

United Methodist Church, North Georgia Conference

City of Valdosta

City of Watkinsville

Kentucky

Bowling Green Municipal Utilities

DESA International, Inc., Bowling Green

City of Morganfield

Illinois

Village of Forsyth

City of Moline

Iowa

Dallas County
Muscatine Power and Water
City of Pella

Maine

City of Scarborough

Maryland

City of Takoma Park

Missouri

City of Cape Girardeau
City of Gladstone
City of Jefferson City
City of Lake Saint Louis
City of O'Fallon
City of Sedalia

Nevada

Carson City School District
City of Boulder City

New Hampshire

Local Government Center
City of Concord
Town of Hanover
Manchester Employees' Contributory Retirement System

New Mexico

Bloomfield School District
Deming Public School System
Santa Fe Community College
San Juan College

New York

Madison County Government
Onondaga County Government
Orange County Government

North Carolina

Braswell Memorial Library, Rocky Mount
Cape Fear Public Utility Authority
Town of Chapel Hill
City of Hickory
City of Laurinburg

North Carolina, (Continued)

Lenoir County
City of Lincolnton
Lincoln County Government
North Carolina League of Municipalities
Orange County Government
City of Rocky Mount
Rutherford County Government
City of Wilson

North Dakota

City of Bismarck
City of Mandan
Mandan Parks District

Oklahoma

City of Broken Arrow
Northeastern State University

South Carolina

Town of Fort Mill
City of Goose Creek
Jasper County Government
McCormick County
Saluda County

South Dakota

City of Aberdeen
City of Pierre
Minnehaha County
Pennington County
City of Madison
City of Mitchell
City of Rapid City
City of Spearfish

Tennessee

City of Hendersonville

Texas

City of Big Spring
City of Beaumont
City of Forney
City of Galveston
City of Rockport
City of Seabrook

Texas (Continued)

Galveston County Government
Galveston County Health District
Harris County Housing Authority
Oller Engineering, Inc., Lubbock
Texas Municipal League Intergovernmental Risk Pool
Webb County Government

Vermont

Town of Hartford
Town of Norwich

Virginia

The Children's Center
City of Franklin
Franklin Development and Housing Authority
Powhatan County
Town of Rocky Mount
Town of Vinton

Washington

City of Moses Lake

Wyoming

City of Casper
City of Cody
City of Evanston
Evanston Parks & Recreation District
City of Gillette
City of Green River
City of Laramie
City of Rock Springs
City of Sheridan
Sheridan County Government
Sheridan Recreation District

SUMMARY OF PROPOSER'S QUALIFICATIONS

Stephen E. Condrey, Ph.D. Steve Condrey, President of Condrey and Associates, has over thirty years of professional experience in human resource management and has consulted nationally and internationally with over 800 organizations concerning personnel-related issues. He is the immediate past Editor-in-Chief of the *Review of Public Personnel Administration* and is the co-editor of *Public Administration in Post-Communist Countries* (CRC Press, 2013), editor of the *Handbook of Human Resource Management in Government*, Jossey-Bass, (1998, 2005 and 2010), and *Radical Reform of the Civil Service*, Lexington Press, 2001. He is the 1998 recipient of the University of Georgia's Walter Barnard Hill Award for Distinguished Achievement in Public Service and Outreach and was named Hill Fellow by the University of Georgia in 2004 (the University of Georgia's highest public service faculty honor). He holds the IPMA-SCP designation from the International Public Management Association for Human Resources. Steve retired from the Carl Vinson Institute of Government, University of Georgia in 2010. He was appointed by President Obama as Chairman of the Federal Salary Council in 2010 and served in this capacity until 2017. Dr. Condrey was elected as a Fellow to the National Academy of Public Administration in 2012 and was President of the American Society for Public Administration for 2013-2014.

Ms. Jan Hansford. Jan Hansford, Vice President of Condrey and Associates, is a Principal Human Resource Management Consultant with the Vinson Institute and recently retired as Human Resources Director of Athens-Clarke County, Georgia, a consolidated government of over 1600 employees. With over 30 years of related experience, both as a practitioner and as a consultant, Jan specializes in administrative classification issues, *Fair Labor Standards Act* compliance, and payroll restructuring and administration. She is also well-versed in communicating complex classification and compensation issues in a clear and understandable fashion and will assist in communicating study results to department heads, elected officials, and employees. Ms. Hansford has assisted in managing over 400 personnel-related projects. Jan holds the IPMA-SCP designation from the International Public Management Association for Human Resources.

Mr. Mark Knowles. Mark Knowles, Principal Consultant with Condrey and Associates, is the founder of GovDirections.com – a leading online procurement monitoring system. Mark has prior experience with the Georgia Municipal Association, where he provided technical assistance to local governments. Mark has assisted with organizational management issues related to technology in several communities including the cities of Rapid City, South Dakota, and Auburn, Alabama. Mark has experience in performance benchmarking and assisted in the design and implementation of systems in communities such as Lowndes County and Dawson County, Georgia. Mark has over twenty years of classification and compensation experience and has assisted managing projects in over 200 jurisdictions across the United States.

Mr. Gene Mays. Gene Mays, Senior Consultant with Condrey and Associates, has over twenty-five years of law enforcement experience as a Patrol Officer, Corporal, Juvenile Officer, Detective, Sergeant, Internal Affairs Officer, and Captain with the Athens-Clarke County Police Department. He recently retired as Chief Deputy of the Clarke County, Georgia Sheriff Department. In addition to directly related law enforcement experience, Gene is a skilled law

enforcement consultant, having consulted with numerous jurisdictions concerning personnel-related issues (classification and compensation, job analysis, and assessment centers). Gene coordinated the law enforcement interviews with the City of Anniston, Alabama, Orange County, North Carolina, Jefferson City, Missouri, North Little Rock and Jonesboro, Arkansas, Galveston County, Texas, Wilson, North Carolina, Auburn, Alabama, Cape Girardeau, Missouri, Sheridan, Wyoming, Gladstone, Missouri and Jasper, Alabama projects.

Mr. James E. Hansford. Jim Hansford, Principal Consultant with Condrey and Associates, has over thirty-five years of experience as a Firefighter, Lieutenant, Captain, Chief of Training and Fire Chief of a consolidated government fire department. He recently retired as the Executive Director of the State of Georgia Firefighter Standards and Training Council, where he administered the certification program for all fire departments in the State of Georgia. Jimmy is a member of the International Association of Fire Chiefs, Georgia Association of Fire Chiefs, and the Georgia Firefighters Association. Mr. Hansford is a skilled consultant, having assisted with over 100 personnel-related projects in various jurisdictions.

Mr. Mike Mahathirath. Mike Mahathirath, Senior Consultant with Condrey and Associates, is co-founder of GovDirections – the leading online procurement monitoring service. Mike has prior experience with the Georgia Municipal Association and the Georgia Department of Community Affairs. Mike managed one of the largest lease-purchase pools in the United States and implementation of a statewide uniform chart of accounts for Georgia Local Governments. Mike has over twelve years of experience working with local governments throughout the United States.

Dr. Rex Facer. Rex L. Facer II, Senior Consultant with Condrey and Associates, is an Associate Professor in the Romney Institute of Public Management in the Marriott School at Brigham Young University where he teaches in the Master of Public Administration program. President Obama appointed Facer to the Federal Salary Council in 2010. Facer previously served on NASPAA's Commission on Peer Review and Accreditation, including a term as chair. The commission is the accrediting body for master's degree programs in public administration. Professor Facer regularly lectures and consults nationally and internationally on human resource management and local public finance issues. His published research has appeared in leading peer-reviewed journals. His current research focuses on public sector compensation practices, alternative work schedules, and local government finance. Rex coordinates all performance appraisal design and training as well as all salary equity analyses for Condrey and Associates, Inc.

Dr. James M. Austin, Jr. Jim Austin, Senior Consultant with Condrey and Associates, is President of Austin Consulting, Incorporated. Dr. Austin has extensive experience in conducting job analysis, assessment center preparation/administration, policy development, training, and position classification activities in a variety of public and private sector organizations including Home Depot.

Dr. Mark Foster. Mark Foster, Senior Consultant with Condrey and Associates, is an industrial psychologist with over 20 years of experience in law enforcement personnel selection and promotion administration. Mark has coordinated the promotional process for the Georgia State

Patrol for the past twelve years, and the Georgia Bureau of Investigation for the past eight years. Additionally, he has consulted nationally with numerous other law enforcement agencies and with Fortune 500 corporations such as Georgia Pacific and Federal Express.

Dr. Cathy Reese. Cathy Reese, Senior Consultant with Condrey and Associates, is Assistant Professor of Public Administration at Arkansas State University where she teaches courses in budgeting, financial administration, and human resource management. Cathy has over 15 years of experience in conducting classification and compensation studies and most recently worked on the North Little Rock and Jonesboro, Arkansas, projects.

Mr. Brian Burke. Brian Burke, Senior Consultant with Condrey and Associates, is a certified Real Estate Appraiser and Fire Officer. Brian has consulted with over 30 organizations, and currently works for a local government.

Ms. Linda Seagraves. Linda Seagraves, Principal Consultant with Condrey and Associates, is a Personnel Specialist with the Vinson Institute of Government. Ms. Seagraves specializes in payroll restructuring and is skilled in calculating project implementation costs so that accurate budget projections are provided to the client. Ms. Seagraves has consulted with over 500 organizations.

Dr. Gregory L Reece. Greg Reece, Principal Consultant with Condrey and Associates, is a human resources technical writer and skilled consultant with over fifteen years of experience in providing services related to the development of classification and compensation plans for city and county governments, state and regional agencies, non-profit organizations, libraries, and colleges and universities. He specializes in the review and analysis of job data in the development of defensible job descriptions for public-sector employees using the Factor Evaluation System (FES). He holds degrees from Claremont Graduate University (Ph.D.), Vanderbilt University (M.Div.), Samford University (B.A), and Martin Methodist College (A.A.). Greg has provided consulting services for the City of Auburn, AL Library; the Lincoln County, NC Library; the Morton-Mandan, ND Library; the McCormick County, SC Library; the City of Eufaula, AL Library; the Mitchell, SD Library; and various college and university-based libraries. Greg lives in Montevallo, AL where he serves as President of the Parnell Memorial Library Foundation Board, a 501c3 organization which provides financial and other support for Montevallo's public library.

SUMMARY OF CONSULTANT RESPONSIBILITIES AND ASSIGNMENTS

Steve Condrey will serve as project director and will coordinate all direct contacts with the client in conjunction with **Jan Hansford**. Jan will also coordinate the classification interview schedule, personally interview top administrative personnel, be responsible for constructing the overall classification plan, direct the salary survey, calculate project implementation costs, review the proposed classification plan with appropriate City officials, conduct employee classification appeals (if any), and be available on an as-needed basis for follow-up technical assistance and training during the first year of project implementation.

Dr. Greg Reece is the writer for the project. **Linda Seagraves** will coordinate salary data collection activities as part of this project and will calculate the costs of various project implementation plans.

City of Oxford staff support required for the project will be minimal. We request that one person be appointed to serve as our principal contact for the purpose of communicating project plans and schedules and gathering current payroll information.

PROJECT UNDERSTANDING, PROPOSED APPROACH, AND METHODOLOGY

- * For a full description of project activities please see the enclosed draft contract.
- * Condrey and Associates will conduct a salary survey specifically for this project. Approximately 15 organizations will be invited to participate in the survey. The salary data will be collected using an internet-based salary survey.
- * We will provide the City of Oxford with three implementation plans showing the relative impact of differing funding levels on the compensation plan. This will provide the City with a degree of flexibility in implementing the project. Back-up data will provide individual employee salary calculations for placement in the new plan. Additionally, Condrey and Associates will discern the need for and, if necessary, detail the cost of any equity adjustment to ease employee pay compression.
- * Three months following project implementation, Condrey and Associates will conduct an employee appeals process. The appeals process will provide employees an opportunity to provide written justification for appealing their classification. Condrey and Associates will reply to all appeals in writing and will conduct telephone reviews to ascertain the nature of the appeals. We normally have few (if any) classification appeals.
- * Condrey and Associates utilizes a modified version of the Factor Evaluation System (FES). FES is the most widely utilized point-factor evaluation system and is the basis for most all other point-factor job evaluation systems. We have utilized FES in over 500 organizations of differing functions and degrees of administrative sophistication. We find that FES, when applied skillfully and properly, produces an internally equitable classification plan that is highly acceptable to management as well as the organization's employees. Training in FES application will be provided to the City of Oxford human resources staff. Also, we provide a full year of follow-up technical assistance to include additional training to ensure that the system is properly maintained. Please note that all FES data calculations are available in electronic format. Also, since FES is in the public domain, there are no copyright or royalty fees associated with its use.
- * We will conduct extensive interviews or desk audits with full-time position incumbents (approximately 100% of the city's 21 employees). This will help assure an accurate and internally equitable classification plan that is accepted by management as well as the City's employees.
- * Condrey and Associates utilizes a system of career ladders as an overlay to the classification system developed through our job evaluation system. These career ladders provide avenues for managerial flexibility as well as individual employee incentive and achievement. We believe this methodology is superior to traditional broad-banding and avoids that system's potential flaws, including those related to equal pay.

* Condrey and Associates is very familiar with the *Americans with Disabilities Act* (ADA). In addition to providing advice to clients in the practical application of ADA, one of the firm's principals conducted the most extensive survey to date of ADA implementation in America's cities. Approximately 300 cities responded to the survey. The results appear in the *American Review of Public Administration*.

SUMMARY OF THE PROPOSED FEE STRUCTURE

Condrey and Associates will provide the services outlined in the enclosed draft contract for the **fixed cost** of \$14,500. This fee includes one year of follow-up technical assistance at no additional charge to the jurisdiction.

MEMORANDUM OF AGREEMENT

This agreement is made and entered into this ____ day of _____, 2022, by and between the City of Oxford, party of the first part, hereinafter called the COOPERATOR and Condrey and Associates, Inc., party of the second part, hereinafter called the CONSULTANT. All obligations under this agreement will be performed by Condrey and Associates, Inc.

WITNESSETH, inasmuch as the COOPERATOR is desirous of setting up a cooperative service with Condrey and Associates and inasmuch as the CONSULTANT is willing to undertake and conduct such a cooperative service, the purpose of this agreement is to establish the terms and conditions under which such a cooperative service will be accomplished pursuant to the conditions herein set forth.

The CONSULTANT is an independent contractor. Furthermore, the parties hereto agree that any information gathered from the COOPERATOR or its employees, and the documents prepared therefrom, shall be the property of the COOPERATOR. They shall remain confidential and shall not be used by CONSULTANT other than in its duties and responsibilities hereunder.

NOW, THEREFORE, in consideration of the following mutual promises, covenants, and conditions, it is agreed as follows:

Section I

Condrey and Associates will:

a. Carry on the cooperative service via telephone, Zoom, and in the offices of Condrey and Associates substantially as set forth in the attached outline marked "Appendix A" and made a part of this agreement.

b. Preserve all of its records bearing upon the amounts payable under this agreement, and further agrees that any specifically authorized representative of the COOPERATOR shall, until the expiration of one year after final payment under this agreement, have access to and the right to examine any directly pertinent books, documents, papers, and records of Condrey and Associates involving transactions related to this agreement.

Section II

COOPERATOR will pay Condrey and Associates a fixed fee of \$ 14,500. This amount will be paid in two (2) equal installments, within twenty (20) days of receipt of billing. The invoices should be directed to Mr. Bill Andrew, City Manager, City of Oxford, 110 W. Clark Street, Oxford, Georgia 30054; telephone number (770) 786-7004. The billings shall occur on March 15, 2022 and May 1, 2022.

Section III

The term of this agreement shall be from March 8, 2022 through May 31, 2022. However, it may be terminated by either party by written notice of such intent submitted 30 days in advance. In the event of such termination, the COOPERATOR will pay Condrey and Associates a prorated portion of the upcoming installment consistent with the revised termination date. Condrey and Associates will continue to work on the project until the revised termination date and will provide to the COOPERATOR interim findings and summary notes that reflect the status of the project at the time of revised termination.

Section IV

This agreement may be modified at any time by mutual consent of the parties hereto. Any modification hereto shall be in writing and signed by both parties.

Section V

Neither party to this agreement will discriminate against any person, employee or applicant for employment because of race, creed, color, religion, sex, national origin, ancestry, age, veteran status, or disability.

IN WITNESS WHEREOF, this agreement is entered into on the date first above written.

FOR CONDREY AND ASSOCIATES:

FOR THE CITY OF OXFORD:

—

Stephen E. Condrey
President

Date: _____

Date: _____

Jan H. Hansford
Vice President

Date: _____

Corporate Seal

APPENDIX A

Contract for Technical Assistance to the City of Oxford: Proposal for Reviewing and Updating the City's Compensation and Classification System

The administration of the City of Oxford has determined the need for a review and updating of the job classification system and pay plan for selected jobs covered under its personnel system.

Condrey and Associates proposes the following schedule of activities to accomplish four objectives:

1. Review and revise the current personnel classification system and pay plan for all employees covered under this agreement;
2. Produce an updated description of each job and produce a classification system based on job content analysis;
3. Collect salary data and produce a recommended pay plan based on job analysis, job evaluation, and survey data; and
4. Train designated personnel in each step of classification and pay plan development to help insure the implementation and maintenance of the system.

Phase I – Developing a Work Plan and Schedule of Activities

- 1.1 Condrey and Associates, in cooperation with appropriate officials, will generate a work plan of activities and target dates for completion.
- 1.2 During this phase all the documents detailing the current personnel policies and procedures, job classification system and pay plan will be made available to Condrey and Associates for review and analysis.

Phase II – Job Analysis Survey

- 2.1 Condrey and Associates will develop a detailed job survey form to be completed by position incumbents. This data will serve as the basis for generating updated job descriptions, job classifications, and job evaluations (ranking of jobs).
- 2.2 Condrey and Associates will determine the number of interviews and/or job audits that will need to be conducted to insure adequate data for generating a complete and valid description of each job and job classification. It is anticipated approximately 100% of the City's 21 employees will be interviewed concerning their job duties and responsibilities.

- 2.3 After the job survey, job audits and interview data are analyzed, a properly formatted job description will be completed for each job. The written job description will draw on four sources of information: (1) current job descriptions, (2) information from the job survey, (3) supervisors' review and critique, and (4) interviews and job audits.

Phase III – Job Evaluation

- 3.1 Condrey and Associates will furnish a job evaluation format of established procedures for ranking jobs and measuring differences in job content.
- 3.2 Condrey and Associates and appropriate officials will select a format best suited for measuring different levels of knowledge, skills, and abilities required to perform the jobs to be evaluated.

Phase IV – Developing a Compensation Structure

Condrey and Associates will:

- 4.1 Condrey and Associates will conduct a salary survey of organizations specifically for this project. The survey will include up to 15 organizations and 15 benchmark positions.
- 4.2 Condrey and Associates will collect, review, and format published salary data covering relevant public and private organizations.
- 4.3 Condrey and Associates will analyze and format the survey data for use in establishing competitive pay levels.
- 4.4 After the survey data is compiled, Condrey and Associates will review all data generated to this point with appropriate officials to determine what additional information needs to be considered before moving to the next phase.

Phase V – Developing a Pay Plan

Condrey and Associates will:

- 5.1 Establish recommended pay grades based on the job evaluation results (Phase III) and the wage survey (Phase IV).
- 5.2 Establish pay steps or ranges in each grade and present the complete recommended pay plan to appropriate officials for review. At this point the plan will reflect the data from Phases III and IV as well as cost-of-living data and the jurisdiction's financial condition and compensation policy.

Phase VI – Implementing and Administering the Program

Condrey and Associates will:

- 6.1 Recommend a series of career ladders and lattices as appropriate.
- 6.2 Determine the proper FLSA designation of each position.
- 6.3 Present alternative plans to ameliorate salary compression.
- 6.4 Be available to provide a reasonable level of ongoing technical assistance necessary to maintain the program.

Cost and Duration

The cost to Condrey and Associates to provide the services specified in this proposal will be a **fixed fee** of \$14,500. Considering the scope of the project, we anticipate a three (3) month work plan beginning March 8, 2022, with final reports submitted on or before May 31, 2022. Follow-up technical assistance will be provided through May 31, 2023 at no additional cost to the City (with the exception of travel-related costs). Formal involvement would terminate May 31, 2022.

City of Oxford
Schedule of Activities

<u>DATE</u>	<u>ACTIVITY</u>
March 2022	<ul style="list-style-type: none">o Conduct project orientation for human resources staff, department heads and elected officialso Distribute position questionnaireso Completed position questionnaires returned to Condrey and Associates
April 2022	<ul style="list-style-type: none">o Conduct employee interviewso Conduct salary survey
May 2022	<ul style="list-style-type: none">o Continue salary surveyo Develop preliminary cost estimateo Present preliminary classification and pay reporto Publish final report
June 2022 - May 2023	<ul style="list-style-type: none">o Provide follow-up technical assistance in pay plan implementation.

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ICC 700-2020

National Green Building Standard®



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PREFACE

INTRODUCTION

Green buildings are designed, constructed, and operated with a goal of minimizing their environmental footprint. In both new construction and renovation, the building and its site are designed in an integrated manner using environmentally preferable practices and materials from start to finish. Many green features also carry direct consumer benefits, such as lower monthly utility bills, greater comfort, reduced maintenance, and increased value. To provide a uniform national platform for recognizing and advancing green construction and development, in 2007, the National Association of Home Builders (NAHB) and the International Code Council (ICC) partnered to establish the first consensus-based green building standard. The joint effort culminated in the publication of the 2008 National Green Building Standard® (NGBS) that received approval from the American National Standards Institute (ANSI).

Using a points-based system, a home or building can attain a rating of Bronze, Silver, Gold, or Emerald—depending on the green practices included. Alternative to the points-based system, new single-family homes, townhouses, or duplexes can earn a Certified rating by using a new streamlined, mandatory checklist of green practices. For a building to attain any certification level, all applicable mandatory provisions must be implemented. The NGBS also requires that the builder or remodeler incorporate a minimum number of features in each of six categories (lot development, resource efficiency, energy efficiency, water efficiency, indoor environmental quality, and homeowner education) for each rating level. The scope of the NGBS includes all newly-constructed and remodeled single-family dwellings, townhomes, multifamily residential buildings, as well as residential land developments. Beginning with the 2020 NGBS, both the commercial and residential portions of mixed-use buildings can also be certified. Residential and mixed-use communities of all sizes and densities can be recognized for green practices that are incorporated into their design and construction.

The NGBS provides developers, builders, and remodelers with a credible definition of green building and a useful measurement of relative environmental ratings. The expansive point-based system offers a process that can accommodate varying climates, market conditions, construction types, and homebuyer preferences.

The NGBS was updated in 2012 and 2015 to incorporate advances in building science, reflect recent model code improvements, and add more choices for compliance. As with the original, these later versions were developed in accordance with the ANSI requirements, and the NGBS remains a leading consensus-based residential green building standard.

This collaboration of the leading codes and standards development organizations and their continued commitment to the ANSI process further solidified the standing of the NGBS as the national benchmark for green residential construction in the United States. With over 200,000 dwelling units certified to date nationwide, the 2020 NGBS incorporates process improvements and new practices that reflect its decade-long implementation in the field.

The 2020 NGBS features many updates with the potential to further transform residential construction. Its expanded scope includes assisted living, residential care, and group homes with an I-1 occupancy, as well as the commercial space of mixed-use buildings, making the standard relevant to more diverse use types. For renovation, the new prescriptive paths for energy and water consumption provide flexibility to demonstrate a building's improvement. And finally, the certified compliance path for single-family homes, townhomes, and duplexes offers a streamlined approach for single-family builders to gain recognition for the efficiency and green features of their homes.

DEVELOPMENT

The Consensus Committee for the 2020 National Green Building Standard®, consisting of 45 members, was assembled of those entities and interests that are affected by the provisions of the Standard. In addition, eight Task Groups were formed according to specific areas of technical expertise to serve as a resource to the Consensus Committee. The Task Groups included committee members and other subject area experts. The entire NGBS was open for the public to submit proposed changes before the Consensus Committee and Task Groups began their work on revising and expanding its provisions. The Consensus Committee met three times during 2017, 2018, and 2019 to discuss and take formal actions first on proposed changes and then on public comments. All meetings were open to the public to provide an opportunity to address the Consensus Committee. All committee actions were also balloted through formal letter ballots.

Overall, the Consensus Committee reviewed and acted upon nearly 700 proposed changes and public comments ranging from revisions to individual provisions to addition of new compliance options.

ANSI APPROVAL

The ICC 700-2020 National Green Building Standard® was approved by ANSI as an American National Standard on January 6, 2020.

MAINTENANCE

The development process for the National Green Building Standard® is managed by Home Innovation Research Labs, an ANSI-Accredited Standards Developer. The NGBS is revised on a continuous maintenance basis in accordance with ANSI requirements. Proposals for revising the 2020 edition of the National Green Building Standard® are welcome. Please visit the Home Innovation Research Labs website (www.homeinnovation.com/NGBS) for a proposal form and instructions.

DISCLAIMER

Home Innovation Research Labs, NAHB, ICC, their members, and those participating in the development of the NGBS accept no liability resulting from compliance or noncompliance with the provisions. Home Innovation Research Labs, NAHB, or ICC do not have the power or authority to enforce compliance with the contents of the NGBS. Similarly, neither NAHB nor ICC makes any representations or warranties regarding enforcement, application, or compliance with the NGBS or any part thereof.

2020 Consensus Committee on the National Green Building Standard®

At the time of ANSI approval, the Consensus Committee consisted of the following members:

Chair	Robert D. Ross
Vice Chairs	Paula Marie Cino, Amy Schmidt
Committee Staff	Kevin Kauffman, Nay Shah, Vladimir Kochkin
ICC Staff Liaison	Allan Bilka

Committee Member	Representative
ACCA (U)	Donald Prather
Air-Conditioning, Heating and Refrigeration Institute (P)	Laura Petrillo-Groh
Alliance for Water Efficiency (G)	Thomas Pape
Aluminum Extruders Council, Glass Association of North America (P)	Thomas Culp
American Gas Association (P)	Paul W. Cabot
.....	Ted Williams (Alt.)
American Wood Council (P)	Loren Ross
BOMA International (U)	Andrew Klein
Building Quality (U)	Craig Conner
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City of Des Moines (G)	Sean S. Devlin
City of Winter Park (G)	Kristopher R. Stenger
Coconino County (G)	Steven White
Crescent Communities (U)	Gregory Curtis Coolidge
DuPont Building Innovations (P)	Theresa A. Weston
Edison Electric Institute (P)	Steven Rosenstock
G&R Construction Services LLC (U)	Robert D. Ross
Gas Technology Institute/Carbon Management Information Center (P)	Neil P. Leslie
Greenscapes Alliance (P)	Greg Johnson
Knez Construction (U)	William A. Sanderson
Kohler Company (P)	Cambria McLeod
.....	Shabbir Rawalpindiwala (Alt.)
Los Alamos County (G)	Lee Brammeier
Lutron Electronics (P)	Michael Jouaneh
Mathis Consulting Company (U)	R Christopher Mathis
National Multifamily Housing Council (U)	Paula Cino
North American Insulation Manufacturers Association (P)	Charles C Cottrell
.....	Merle McBride (Alt.)
P3 Builder Group (U)	John Barrows
PEG (U)	Matthew Cooper
Plastic Pipe and Fittings Association (PPFA) (P)	Michael Cudahy
Plumbing Manufacturers International (P)	Matt Sigler
Portland Cement Association (P)	Marc Allen Nard
Red Tree Builders (U)	Brandon Bryant
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.....	Lorraine Ross (Alt.)

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Urban Northwest Homes (U)	Jerud Martin
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U.S. Department of Housing & Urban Development (G)	Dana Bres
U.S. Environmental Protection Agency (G)	Bob Thompson
.....	Robert L. Goo (Alt.)
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.....	Nicholas Capezza
WDG Architecture (U)	Eric Schlegel
Window & Door Manufacturers Association (P)	Jeff Inks

Acknowledgement

The development of the 2020 National Green Building Standard® (NGBS) would not have been possible without the contributions of time, effort, and insight by the Consensus Committee members, and the individuals who participated on the Task Groups. The organizations that sponsored this NGBS development process—ICC and NAHB—recognize and appreciate these contributions, as well as those of everyone who participated in the public hearings and formal comment process.

There is no implied or explicit endorsement of the 2020 NGBS by Consensus Committee members or by any other individuals and organizations participating in its development.

INTEREST CATEGORIES

Membership by Interest Category	
General Interest (G):	10
Producer Interest (P):	19
User Interest (U):	16
TOTAL: 45	



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SECTION 1

SCOPE & ADMINISTRATION

101 GENERAL

101.1 Title. The title of this document is the *National Green Building Standard®*, hereinafter referred to as “this Standard.”

101.2 Scope. The provisions of this Standard shall apply to the design, construction, alteration, enlargement, and renovation of (1) all residential buildings, (2) residential portions of mixed-use buildings, or (3) mixed-use buildings where the residential portion is greater than 50% of the gross floor area. This Standard shall also apply to subdivisions, building sites, building lots, and accessory structures.

101.2.1 Residential designation. For the purpose of this standard, all Group R occupancies as defined by the International Building Code and all buildings within the scope of the International Residential Code shall be considered residential. Assisted living facilities, residential board and care facilities, and group homes classified as an I-1 occupancy as defined by the International Building Code shall also be considered residential.

101.3 Intent. The purpose of this Standard is to establish criteria for rating the environmental impact of design and construction practices to achieve conformance with specified performance levels for green residential buildings, renovation thereof, accessory structures, building sites, and subdivisions. This Standard is intended to provide flexibility to permit the use of innovative approaches and techniques. This Standard is not intended to abridge safety, health, or environmental requirements contained in other applicable laws, codes, or ordinances.

101.4 Referenced documents. The codes, standards, and other documents referenced in this Standard shall be considered part of the requirements of this Standard to the prescribed extent of each such reference. The edition of the code, standard, or other referenced document shall be the edition referenced in Chapter 14.

101.5 Appendices. Where specifically required by a provision in this Standard, that appendix shall apply. Appendices not specifically required by a provision of this Standard shall not apply unless specifically adopted.

102 CONFORMANCE

102.1 Mandatory practices. This Standard does not require compliance with any specific practice except those noted as mandatory.

102.2 Conformance language. The green building provisions are written in mandatory language by way of using the verbs “to be,” “is,” “are,” etc. The intent of the language is to require the user to conform to a particular practice in order to qualify for the number of points assigned to that practice. Where the term “shall” is used, or the points are designated as “mandatory,” the provision or practice is mandatory.

102.3 Documentation. Verification of conformance to green building practices shall be the appropriate construction documents, architectural plans, site plans, specifications, builder certification and sign-off, inspection reports, or other data that demonstrates conformance as determined by the Adopting Entity. Where specific documentation is required by a provision of the Standard, that documentation is noted with that provision.

102.4 Alternative compliance methods. Alternative compliance methods shall be acceptable where the Adopting Entity finds that the proposed green building practice meets the intent of this Standard.

SECTION 103 ADMINISTRATION

103.1 Administration. The Adopting Entity shall specify performance level(s) to be achieved as identified in Chapter 3 and shall provide a verification process to ensure compliance with this Standard.

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SECTION 2

DEFINITIONS

201 GENERAL

201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this Standard, have the meanings shown in this chapter.

201.2 Interchangeability. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

201.3 Terms defined in other documents. Where terms are not defined in this Standard, and such terms are used in relation to the reference of another document, those terms shall have the definition in that document.

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

SECTION 202 DEFINITIONS

ACCESSORY STRUCTURE. A structure, the use of which is customarily accessory to and incidental to that of the residential building; the structure is located on the same lot or site as the residential building; the structure does not contain a dwelling unit or a sleeping unit; and (1) is classified as Group U – Utility and Miscellaneous in accordance with the ICC International Building Code, or (2) is classified as accessory in accordance with the ICC International Residential Code, or (3) is classified as accessory to the residential use by a determination of the Adopting Entity.

ADDITION. An extension or increase in the conditioned space floor area or height of a building or structure.

ADOPTING ENTITY. The governmental jurisdiction, green building program, or any other third-party compliance assurance body that adopts this Standard and is responsible for implementation and administration of the practices herein.

ADVANCED FRAMING. Code compliant layout, framing and engineering techniques that minimize the amount of framing products used and waste generated to construct a building while maintaining the structural integrity of the building.

AFUE (Annual Fuel Utilization Efficiency). The ratio of annual output energy to annual input energy which includes any non-heating season pilot input loss, and for gas or oil-fired furnaces or boilers, does not include electrical energy.

AIR BARRIER. Material(s) assembled and joined together to provide a barrier to air leakage through the building envelope. An air barrier may be a single material or a combination of materials.

AIR HANDLER. A blower or fan used for the purpose of distributing supply air to a room, space, or area.

AIR INFILTRATION. The uncontrolled inward air leakage into a building caused by the pressure effects of wind or the effect of differences in the indoor and outdoor air density or both.

AIR, MAKE-UP. Air that is provided to replace air being exhausted.

ARCHITECTURAL COATINGS. A material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, primers, paints, varnishes, sealers, and stains. An architectural coating is a material applied to stationary structures or their appurtenances at the site of installation. Coatings applied in shop applications, sealants, and adhesives are not considered architectural coatings.

AREA OF HIGH INTERSECTION DENSITY. An area whose existing streets and sidewalks create at least 90 intersections per square mile (35 intersections per square kilometer).

AUTHORITY HAVING JURISDICTION (AHJ). An agency or agent responsible for enforcing this code.

BALANCED VENTILATION. Any combination of concurrently operating mechanical exhaust and mechanical supply whereby the total mechanical exhaust airflow rate is within 10% of the total mechanical supply airflow rate.

BIOBASED PRODUCT. A commercial or industrial material or product that is composed of, or derived from, in whole or in significant part, biological products or renewable agricultural materials, including plant, animal, and marine materials, or forestry materials.

BROWNFIELD (also EPA-Recognized Brownfield). A site in which the expansion, redevelopment or reuse of would be required to address the presence or potential presence of a hazardous substance, pollutant or contaminant. Brownfield sites include:

- EPA-recognized brownfield sites as defined in Public Law 107-118 (H.R. 2869) “Small Business Liability Relief and Brownfields Revitalization Act,” 40 CFR, Part 300; and
- Sites determined to be contaminated according to local or state regulation.

(i.e.: Pub.L. 107-118, § 1, Jan. 11, 2002, 115 Stat. 2356, provided that: “This Act [enacting 42 U.S.C.A. § 9628, amending this section, 42 U.S.C.A. § 9604, 42 U.S.C.A. § 9605, 42 U.S.C.A. § 9607, and 42 U.S.C.A. § 9622, and enacting provisions set out as notes under this section and 42 U.S.C.A. § 9607] may be cited as the ‘Small Business Liability Relief and Brownfields Revitalization Act.’”)

CERTIFIED GEOTHERMAL SERVICE CONTRACTOR. A person who has a current certification from the International Ground Source Heat Pump Association as an installer of ground source heat pump systems or as otherwise approved by the Adopting Entity.

CLIMATE ZONE. Climate zones are determined based on Figure 6(1).

CLUSTER DEVELOPMENT. A design technique that concentrates residential buildings and related infrastructure at a higher density within specified areas on a site. The remaining land on the site can then be used for low intensity uses such as recreation, common open space, farmland, or the preservation of historical sites and environmentally sensitive areas.

COMMON AREA(S).

1. Areas within a site or lot that are predominantly open spaces and consist of non-residential structures, landscaping, recreational facilities, roadways and walkways, which are owned and maintained by an incorporated or chartered entity such as a homeowner’s association or governmental jurisdiction; or
2. Areas of a multifamily building that are outside the boundaries of a dwelling unit or sleeping unit and are shared among or serve the dwelling units or sleeping units; including, but not limited to, hallways, amenity and resident services areas,

parking areas, property management offices, mechanical rooms, and laundry rooms.

COMPONENT. See “Major Component” and/or “Minor Component”.

COMPOST FACILITY. An outdoor bin or similar structure designed for the decomposition of organic material such as leaves, twigs, grass clippings, and vegetative food waste.

COMPRESSED NATURAL GAS (CNG) VEHICLE RESIDENTIAL FUELING APPLIANCE. A residential appliance that supplies compressed natural gas into a CNG vehicle.

CONDITIONED SPACE. An area, room or space that is enclosed within the building thermal envelope and that is directly or indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from conditioned spaces by uninsulated walls, floors or ceilings or where they contain uninsulated ducts, piping or other sources of heating or cooling.

CONSTRUCTED WETLAND. An artificial wetland system (such as a marsh or swamp) created as new and/or restored habitat for native wetland plant and wildlife communities as well as to provide and/or restore wetland functions to the area. Constructed wetlands are often created as compensatory mitigation for ecological disturbances that result in a loss of natural wetlands from (1) anthropogenic discharge for wastewater, stormwater runoff, or sewage treatment; (2) mines or refineries; or (3) development.

CONSTRUCTION WASTE MANAGEMENT PLAN. A system of measures designed to reduce, reuse, and recycle the waste generated during construction and to properly dispose of the remaining waste.

CONTINUOUS PHYSICAL FOUNDATION TERMITE BARRIER. An uninterrupted, non-chemical method of preventing ground termite infestation (e.g., aggregate barriers, stainless steel mesh, flashing, or plastic barriers).

COEFFICIENT OF PERFORMANCE (COP) – COOLING. The ratio of the rate of heat removal to the rate of energy input, in consistent units, for a complete refrigerating system of some specific portion of the system under designated operating conditions.

COEFFICIENT OF PERFORMANCE (COP) – HEATING. The ratio of the rate of heat delivered to the rate of energy input, in consistent units, for a complete heat pump

system, including the compressor, and, if applicable, auxiliary heat, under designated operating conditions.

DAYLIGHT CONTROL. A device or system that provides automatic control of electric light levels based on the amount of daylight.

DEMAND CONTROLLED HOT WATER LOOP. A hot water circulation (supply and return) loop with a pump that runs “on demand” when triggered by a user-activated switch or motion-activated sensor.

DESUPERHEATER. An auxiliary heat exchanger that uses superheated gases from an air conditioner’s or heat pump’s vapor-compression cycle to heat water.

DIRECT-VENT APPLIANCE. A fuel-burning appliance with a sealed combustion system that draws all air for combustion from the outside atmosphere and discharges all flue gases to the outside atmosphere.

DRAIN-WATER HEAT RECOVERY. A system to recapture the heat energy in drain water and use it to preheat cold water entering the water heater or other water fixtures.

DURABILITY. The ability of a building or any of its components to perform its required functions in its service environment over a period of time without unforeseen cost for maintenance or repair.

DWELLING UNIT. A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.

DYNAMIC GLAZING. Any fenestration product that has the fully reversible ability to change its performance properties, including U-factor, SHGC, or VT.

EER (Energy Efficiency Ratio). A measure of the instantaneous energy efficiency of electric air conditioning defined as the ratio of net equipment cooling capacity in Btu/h to total rate of electric input in watts under designated operating conditions. When consistent units are used, this ratio becomes equal to COP. (See also Coefficient of Performance.)

ENERGY MANAGEMENT CONTROL SYSTEM. An integrated computerized control system that is intended to operate the heating, cooling, ventilation, lighting, water heating, and/or other energy-consuming appliances and/or devices for a building in order to reduce energy consumption. Also known as Building Automation Control (BAC) or Building Management Control System (BMCS).

ENERGY MONITORING DEVICE. A device installed within a building or dwelling unit that can provide near real-time data on whole building, dwelling unit or sleeping unit energy consumption.

ENGINEERED WOOD PRODUCTS. Products that are made by combining wood strand, veneers, lumber or other wood fiber with adhesive or connectors to make a larger composite structure.

ENVIRONMENTAL IMPACT. See **LCA (Life Cycle Analysis/Assessment)**.

ENVIRONMENTALLY SENSITIVE AREAS.

1. Areas within wetlands as defined by federal, state, or local regulations;
2. Areas of steep slopes;
3. “Prime Farmland” as defined by the U.S. Department of Agriculture;
4. Areas of “critical habitat” for any federal or state threatened or endangered species;
5. Areas defined by state or local jurisdiction as environmentally sensitive; or,
6. Shoreline buffers that have important environmental functions as identified by the state or local jurisdiction, e.g., shoreline stability, pollutant removal, streamside shading, ecological flow protection.

EROSION CONTROLS. Measures that prevent soil from being removed by wind, water, ice, or other disturbance.

EXISTING BUILDING. A building erected prior to the date of the current adopted building code, or one for which a legal building occupancy permit has been issued.

EXISTING SUBDIVISION. An area of land, defined as “Site” in this Chapter, that has received all development approvals and has been platted and all infrastructure is complete at time of application to this Standard.

FENESTRATION. Products classified as either vertical fenestration or skylights.

SKYLIGHT. Glass or other transparent or translucent glazing material installed at a slope of less than 60 degrees (1.05 rad) from horizontal.

VERTICAL FENESTRATION. Windows (fixed or movable), opaque doors, glazed doors, glazed block and combination opaque/glazed doors composed of glass or other transparent or translucent glazing materials and installed at a slope of at least 60 degrees (1.05 rad) from horizontal.

FENESTRATION PRODUCT, FIELD-FABRICATED. A fenestration product whose frame is made at the construction site of standard dimensional lumber or other materials that were not previously cut, or otherwise formed with the specific intention of being used to fabricate a fenestration product or exterior door. Field fabricated does not include site-built fenestration.

FENESTRATION PRODUCT, SITE-BUILT. A fenestration designed to be made up of field-glazed or field-assembled units using specific factory cut or otherwise factory-formed framing and glazing units. Examples of site-built fenestration include storefront systems, curtain walls, and atrium roof systems.

FLOOR AREA, GROSS. The floor area within the inside perimeter of the exterior walls of the building under consideration, exclusive of vent shafts and courts, without deduction for corridors, stairways, ramps, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the useable area under the horizontal projection of the roof or floor above. The gross floor area shall not include shafts with no opening or interior courts.

FROST-PROTECTED SHALLOW FOUNDATION. A foundation that does not extend below the design frost depth and is protected against the effects of frost in compliance with SEI/ASCE 32-01 or the provisions for frost-protected shallow foundations of the IBC or IRC, as applicable.

GRADE PLANE. A reference plane representing the average of the finished ground level adjoining the building at all exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest points within the area between the building and the lot line or, where the lot line is more than 6 ft. (1830 mm) from the building, between the structure and a point 6 ft. (1830 mm) from the building.

GREYFIELD SITE. A previously developed site with little or no contamination or perceived contamination.

GREYWATER. Untreated wastewater that has not come into contact with wastewater from water closets, urinals, kitchen sinks, or dishwashers. Greywater includes, but is not limited to, wastewater from bathtubs, showers, lavatories, clothes washers, and laundry trays.

GRID-INTERACTIVE BATTERY STORAGE (GIBS). A battery storage system that provides electric system grid operators such as utilities, independent system operators (ISOs) and regional transmission organizations (RTOs), with automatic control that is capable of receiving and automatically responding to a signal for charge and discharge.

GRID-INTERACTIVE ELECTRIC THERMAL STORAGE (GETS). An energy storage system that provides electric system grid operators such as utilities, independent system operators (ISOs) and regional transmission organizations (RTOs), with variable control of a building's space heating and service water heating end uses.

GROUND SOURCE HEAT PUMP. A system that uses the earth or subsurface water as a heat sink for air conditioning and as a heat source for heating.

HARDSCAPE. Asphalt, concrete, masonry, stone, wood, and other non-plant elements external to the building shell on a landscape.

HEAT PUMP. An appliance having heating or heating/cooling capability, and which uses refrigerants to extract heat from air, liquid, or other sources.

HIGH-EFFICACY LAMPS. Compact fluorescent lamps (CFL); light emitting diode (LED); T-8 or smaller diameter linear fluorescent lamps; or lamps with a minimum efficacy of:

- 1) 60 lumens per watt for lamps over 40 watts,
- 2) 50 lumens per watt for lamps over 15 watts to 40 watts,
- or 3) 40 lumens per watt for lamps 15 watts or less.

HISTORIC BUILDINGS. Buildings that are listed in or are eligible for listing in the National Register of Historic Places (NRHP) or designated as being of historic or architectural significance under an appropriate state or local law.

HSPF (Heating Seasonal Performance Factor). The total seasonal heating output of a heat pump, in Btu, divided by the total electric energy input during the same period, in watt-hours using a defined test methodology.

HYDROZONING. A landscape practice that groups plants with similar watering needs together in an effort to conserve water.

ICF (INSULATING CONCRETE FORMS). A concrete forming system using stay-in-place forms of rigid foam plastic insulation, a hybrid of cement and foam insulation, a hybrid of cement and wood chips, or other insulating material for constructing cast-in-place concrete walls.

IMPERVIOUS SURFACE. Hard-covered ground area that prevents/retards the entry of water into the soil at that location, resulting in water flowing to another location. (Also see HARDSCAPE)

INDIRECT-FIRED WATER HEATER. A water storage tank, typically with no internal heating elements, that is connected by piping to an external heating source such as a gas or oil-fired boiler.

INFILL. A location including vacant or underutilized land that may apply to either a site or a lot and is located in an area served by existing infrastructure such as centralized water and sewer connections, roads, drainage, etc., and the site boundaries are adjacent to existing development on at least one side.

INTEGRATED PEST MANAGEMENT. A sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.

INVASIVE PLANTS. Plants for which the species are not native to the ecosystem under consideration and that cause, or are likely to cause, economic or environmental harm or harm to human, animal or plant health. For the purposes of compliance with this standard, invasive plants are those that are included on local, state, or regional lists of plants determined to cause environmental harm and shall not be limited to those plants covered by law or regulation.

JALOUSIE WINDOW. A window consisting of a series of overlapping horizontal frameless louvers which pivot simultaneously in a common frame and are actuated by one or more operating devices so that the bottom edge of each louver swings outward and the top edge swings inward during operation.

LANDSCAPE PRACTICE (LANDSCAPING). Any activity that modifies the visible features of an area of land. It may include:

1. Living elements, such as flora or fauna;
2. Natural elements such as terrain shape, elevation, or bodies of water;
3. Created or installed elements such as fences or other material objects;
4. Abstract elements such as the weather and lighting conditions.

LAVATORY FAUCET. A valve for dispensing hot and/or cold water to a basin used for washing hands and face, but not for food preparation.

LCA (Life Cycle Analysis/Assessment). An accounting and evaluation of the environmental aspects and potential impacts of materials, products, assemblies, or buildings throughout their life (from raw material acquisition through manufacturing, construction, use, operation, demolition, and disposal).

Level 2 Electric Vehicle Charging Station. A device that is used to supply electricity to a plug-in hybrid electric vehicle or a plug-in electric vehicle and is rated for use with 208 to 240 Volts AC input.

Level 3 Electric Vehicle Charging Station. A device that is used to supply electricity to a plug-in hybrid electric vehicle or a plug-in electric vehicle and is rated for use with 208 to 500 Volts, 3 phase electric AC input.

LOT. A portion or parcel of land considered as a unit.

LOW-IMPACT DEVELOPMENT. A storm water management approach that attempts to recreate the predevelopment hydrology of a site by using lot level topography and landscape to deter storm water runoff and promote soil infiltration and recharge.

LOW-VOC (PRODUCTS). Products or materials with volatile organic compound (VOC) emissions equal to or below the established thresholds as defined in the referenced VOC emissions requirements for each applicable section in this document. (Also see VOC.)

MAJOR COMPONENT.

1. All structural members and structural systems.
2. Building materials or systems that are typically applied as a part of over 50% of the surface area of the foundation, wall, floor, ceiling, or roof assemblies.

MANUFACTURED HOME CONSTRUCTION. Three-dimensional sections of the complete building, dwelling unit, or sleeping unit built in a factory in conformance with the HUD Manufactured Home Construction and Safety Standards ([24 CFR, Part 3280](#)) and transported to the jobsite to be joined together on a foundation.

MASS WALLS. Above-grade masonry or concrete walls having a mass greater than or equal to 30 pounds per square foot (146 kg/m²), solid wood walls having a mass greater than or equal to 20 pounds per square foot (98 kg/m²), and any other walls having a heat capacity greater than or equal to 6 Btu/ft²•°F [266 J/(m² • K)] with a minimum of 50% of the required R-value on the exterior side of the wall's centerline.

DEFINITIONS

MERV (Minimum Efficiency Reporting Value). Minimum efficiency-rated value for the effectiveness of air filters.

MINOR COMPONENT. Building materials or systems that are not considered a major component. (Also see Major Component.)

MIXED-USE BUILDING. A building that incorporates more than one use (e.g., residential, retail, commercial) in a single structure.

MIXED-USE DEVELOPMENT. A project that incorporates more than one use (e.g., residential, retail, commercial) on the same site.

MODULAR CONSTRUCTION. Three-dimensional sections of the complete building or dwelling unit built in a factory and transported to the jobsite to be joined together on a permanent foundation.

MULTIFAMILY BUILDING. A building containing multiple dwelling units or sleeping units and classified as R-2 under the IBC.

NET DEVELOPABLE AREA. The land on which buildings may be constructed. Any land where buildings cannot be constructed due to environmental restrictors or is used for infrastructure or public purposes such as parks, schools, etc., is not considered net developable area.

NEW CONSTRUCTION. Construction of a new building.

NON-RESIDENTIAL SPACES. Spaces not designated as residential in § 101.2.1.

OCCUPANCY SENSOR. Devices that generally use passive infrared and/or ultrasonic technology or a combination of multiple sensing technologies to automatically turn lights on and off or from one preset light level to another based on whether the sensor detects that a space is occupied.

ON-SITE RENEWABLE ENERGY SYSTEM. An energy generation system located on the building or building site that derives its energy from a renewable energy source.

OPEN SPACE. An area of land or water that (1) remains in its natural state, (2) is used for agriculture, or (3) is free from intensive development.

PANELIZED ASSEMBLIES. Factory-assembled wall panels, roof trusses, and/or other components installed on-site.

PERFORMANCE PATH. An alternative set of standards (to the Prescriptive Path) with defined performance metrics, as specified in Chapter 7 of this Standard.

PERMEABLE MATERIAL. A material that permits the passage of water vapor and/or liquid.

PLUMBING FIXTURE. A receptor or device that requires both a water-supply connection and a discharge to the drainage system, such as water closets, lavatories, bathtubs, and sinks.

PRECUT. Materials cut to final size prior to delivery to site and ready for assembly.

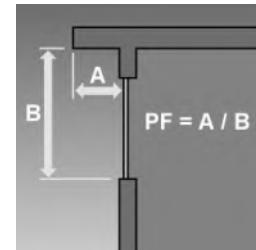
PRESCRIPTIVE PATH. A set of provisions in a code or standard that must be adhered to for compliance.

PRESERVATION. The process of applying measures to maintain and sustain the existing materials, integrity, and/or form of a building, including its structure and building artifacts.

PROGRAMMABLE COMMUNICATING THERMOSTAT. A whole building or whole dwelling unit/sleeping unit thermostat that can be monitored and controlled remotely.

PROJECTION FACTOR.

The ratio of the overhang width to the overhang height above the door threshold or window sill ($PF = A/B$).



Projection Factor

R-VALUE (THERMAL RESISTANCE). The inverse of the time rate of heat flow through a body from one of its bounding surfaces to the other surface for a unit temperature difference between the two surfaces, under steady state conditions, per unit area ($h \cdot ft^2 \cdot ^\circ F / Btu$) [$m^2 \cdot K / W$].

READILY ACCESSIBLE. Capable of being reached quickly for operation, renewal, or inspection without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders or access equipment.

RECLAIMED WATER. Non-potable water provided by a wastewater utility, treated to meet the requirements of the Authority Having Jurisdiction (AHJ) for the intended uses. The water may be sanitized to allow for above ground landscape irrigation or flush sanitary fixtures. May also be known as Recycled Water in some areas.

RECYCLE. To recover and reprocess manufactured goods into new products.

RECYCLED CONTENT. Resources containing post-consumer or pre-consumer (post-industrial) recycled content.

POST-CONSUMER RECYCLED CONTENT. Proportion of recycled material in a product generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product that can no longer be used for its intended purpose. This includes returns of material from the distribution chain.

PRE-CONSUMER (POST-INDUSTRIAL) RECYCLED CONTENT. Proportion of recycled material in a product diverted from the waste stream during the manufacturing process. Pre-consumer recycled content does not include reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

REGIONAL MATERIAL. Material that originates, is produced, grows naturally, or occurs naturally within: (1) 500 miles (804.7 km) of the construction site if transported by truck, or (2) 1,500 miles (2,414 km) of the construction site if transported for not less than 80% of the total transport distance by rail or water. Products that are assembled or produced from multiple raw materials are considered regional materials if the weighted average (by weight or volume) of the distance the raw materials have been transported meet the distance criteria.

REMODELING. The process of restoring or improving an existing building, dwelling unit, sleeping unit, or property.

RENEWABLE ENERGY. Energy derived from renewable energy sources.

RENEWABLE ENERGY SOURCE. Energy derived from solar radiation, wind, hydropower, waves, tides, biogas, biomass, or geothermal energy.

REPLACEMENT. The act or process of replacing material or systems.

REUSE. To divert a construction material, product, component, module, or a building from the construction and demolition waste stream, without recycling the material, in order to use it again.

SEDIMENT CONTROLS. Practices used on building sites to minimize the movement of sand, soil, and particulates or dust from construction from reaching waterways.

SEER (Seasonal Energy Efficiency Ratio). The total cooling output of an electric air conditioner (or heat pump) during its normal annual usage period for cooling, in Btu, divided by the total electric energy input during the same period, in watt-hours (Wh), expressed as Btu/Wh. SEER is the cooling performance equivalent measurement of HSPF.

SHGC (Solar Heat Gain Coefficient). The ratio of the solar heat gain entering the space through the fenestration assembly to the incident solar radiation. Solar heat gain includes directly transmitted solar heat and absorbed solar radiation which is then reradiated, conducted, or convected into the space.

SIP (Structural Insulated Panel). A structural sandwich panel that consists of a light-weight foam plastic core securely laminated between two thin, rigid wood structural panel facings; a structural panel that consists of lightweight foam plastic and cold-formed steel sheet or structural cold-formed steel members; or other similar non-interrupted structural panels.

SITE. Any area of land that is or will be developed into two or more parcels of land intended for multiple ownership, uses, or structures and designed to be part of an integrated whole such as a residential subdivision, mixed-use development, or master-planned community. Site, as defined, generally contains multiple lots. (Also see LOT)

SLEEPING UNIT. A room or space in which people sleep, which can also include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.

SMART APPLIANCE. A product that has the capability to receive, interpret, and act on a signal transmitted by a utility, third-party energy service provider, or home energy management device, and automatically adjust its operation depending on both the signal's contents and settings by the consumer. The product has this capability either built-in or added through an external device that easily connects to the appliance.

SOLID FUEL-BURNING APPLIANCE. A chimney connected device designed for purposes of heating, cooking, or both that burns solid fuel.

STEEP SLOPES. Slopes equal to or greater than 25 percent ($\geq 25\%$).

STORY. That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above.

DEFINITIONS

STORY ABOVE GRADE. Any story having its finished floor surface entirely above grade plane, or in which the finished surface of the floor next above is:

- More than 6 ft. (1829 mm) above grade plane; or
- More than 12 ft. (3658 mm) above the finished ground level at any point.

STRUCTURAL SYSTEMS. Load-bearing elements and systems that transfer lateral and vertical loads to the foundation and may include, but are not limited to, load-bearing walls (interior or exterior), roofs, and other structural elements.

SUBDIVISION. A tract, lot, or parcel of land divided into two or more lots, plats, sites, or other divisions of land.

SWPPP (Stormwater Pollution Prevention Plan). A site-specific, written document or report that identifies required features specifically represented in the National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP).

TERRAIN ADAPTIVE ARCHITECTURE. Architecture or landscape architecture where the design of the building or site has been specifically adapted to preserve unique features of the terrain.

UA. The total U-factor times area for a component or building.

URBAN. Areas within a designated census tract of 1,000 people per square mile or located within a Metropolitan Statistical Area primary city, as designated by the U.S. Census Bureau.

U-FACTOR (THERMAL TRANSMITTANCE). The coefficient of heat transmission (air to air) through a building envelope component or assembly, equal to the time rate of heat flow per unit area and unit temperature difference between the warm side and cold side air films ($\text{Btu/h} \cdot \text{ft}^2 \cdot ^\circ\text{F}$) [$\text{W}/(\text{m}^2 \cdot \text{K})$].

VAPOR RETARDER CLASS. A measure of the ability of a material or assembly to limit the amount of moisture that passes through that material or assembly. Vapor retarder class shall be defined using the desiccant method with Procedure A of ASTM E 96 as follows:

- Class I: 0.1 perm or less
- Class II: $0.1 < \text{perm} = 1.0$ perm
- Class III: $1.0 < \text{perm} = 10$ perm

VENTILATION. The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

VENTILATION AIR. That portion of supply air that comes from the outside (outdoors) plus any recirculated air that has been treated to maintain the desired quality of air within a designation space.

VOC (VOLATILE ORGANIC COMPOUNDS). A class of carbon-based molecules in substances and organic compounds that readily release gaseous vapors at room temperature as indoor pollutants and when reacting with other exterior pollutants can produce ground-level ozone.

WASTE HEAT. Heat discharged as a byproduct of one process to provide heat needed by a second process.

WATER FACTOR. The quantity of water, in gallons per cycle (Q), divided by a clothes washing machine clothes container capacity in cubic feet (C). The equation is $WF=Q/C$.

WATER-RESISTIVE BARRIER. A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.

WETLANDS. Areas that are inundated or saturated by the surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

WILDLIFE HABITAT/CORRIDOR. An ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. It is the natural environment in which an organism lives or the physical environment that surrounds (influences and is utilized by) a species population.

WOOD-BASED PRODUCT. Any material that consists of a majority of wood or constituents derived from wood (e.g., wood fiber) as measured by either weight or volume.



SECTION 3

COMPLIANCE METHOD

301 GENERAL

301.1 Environmental rating levels. The building, project, site, and/or development environmental rating level shall consist of all mandatory requirements plus points assessed using the point system specified within this chapter. The rating level shall be in accordance with § 302, § 303, § 304, or § 305, as applicable. The designation for accessory structures shall be in accordance with § 306.

301.1.1 Non-residential spaces. Non-residential spaces in mixed-use buildings shall comply with Chapter 13 (Commercial Spaces) of this Standard or ICC IgCC Section 501.3.7.2 and Chapters 6-10, excluding Section 6.3.1.

301.2 Awarding of points. Points shall be awarded as follows:

- (1) The maximum number of points that can be awarded for each practice is noted with that practice.
- (2) Point allocation for multifamily buildings shall be as prescribed in § 304.
- (3) The Adopting Entity shall allow the use of new and innovative products and practices deemed to meet the intent of this Standard. Points assigned for any new product or practice shall be determined by the Adopting Entity. A maximum of 20 points may be awarded at the discretion of the Adopting Entity. Innovative practices and products shall fall under Chapters 5-10 (Categories 1-6 in Table 303). Point values shall be determined by comparing the innovative product or practice to a product or practice already described in the Standard. The applicant shall supply demonstrable, quantified data to support the innovative product or practice and to determine the practice's functional equivalent in the Standard for the points to be awarded.

302 GREEN SUBDIVISIONS

302.1 Site design and development. The threshold points required for the environmental rating levels to qualify a new or existing subdivision as green under this Standard shall be in accordance with Table 302 and based on points in Chapter 4.

302.1.1 Site design and development obtaining thresholds in Table 302 are permitted to be verified, certified, and marketed as such prior to the verification of green buildings.

302.1.2 Developments are permitted to be marketed as a green subdivision. Developer shall provide clear explanation that the rating only applies to the development and not the buildings.

303 GREEN BUILDINGS

303.1 Compliance options. The criteria for new buildings shall be in accordance with § 303.2 for residential buildings, the residential portion of mixed-use buildings, or mixed-use buildings or § 303.3 for compliance for single-family homes, townhomes, and duplexes.

303.2 Buildings. The threshold points required for the environmental rating levels for a green building shall be in accordance with Table 303. To qualify for one of these rating levels, all of the following shall be satisfied:

- (1) The threshold number of points, in accordance with Table 303, shall be achieved as prescribed in Categories 1 through 6. The lowest level achieved in any category shall determine the overall rating level achieved for the building.
- (2) In addition to the threshold number of points in each category, all mandatory provisions of each category shall be implemented.
- (3) In addition to the threshold number of points prescribed in Categories 1 through 6 (which corresponds to Chapters 5-10), the additional points prescribed in Category 7 shall be achieved from any

Table 302
Threshold Point Ratings for Site Design and Development

Green Subdivision Category		Rating Level Points			
		One Star	Two Stars	Three Stars	Four Stars
Chapter 4	Site Design and Development	95	122	149	176

**Table 303
Threshold Point Ratings for Green Buildings**

Green Building Categories			Rating Level Points ^{(a) (b)}			
			BRONZE	SILVER	GOLD	EMERALD
1.	Chapter 5	Lot Design, Preparation, and Development	50	64	93	121
2.	Chapter 6	Resource Efficiency	43	59	89	119
3.	Chapter 7	Energy Efficiency	30	45	60	70
4.	Chapter 8	Water Efficiency	25	39	67	92
5.	Chapter 9	Indoor Environmental Quality	25	42	69	97
6.	Chapter 10	Operation, Maintenance, and Building Owner Education	8	10	11	12
7.		Additional Points from Any Category	50	75	100	100
Total Points:			231	334	489	611

- (a) In addition to the threshold number of points in each category, all mandatory provisions of each category shall be implemented.
- (b) For dwelling units greater than 4,000 sq. ft. (372 m²), the number of points in Category 7 (Additional Points from Any Category) shall be increased in accordance with Section 601.1. The "Total Points" shall be increased by the same number of points.

of the categories. Where deemed appropriate by the Adopting Entity based on regional conditions, additional points from Category 7 may be assigned to another category (or categories) to increase the threshold points required for that category (or categories). Points shall not be reduced by the Adopting Entity in any of the six other categories.

Exception: Where the builder is unable to control a majority of items in Chapter 5 due to timing and lack of relationship to the Lot Design, Preparation, and Development, green ratings on the home are permitted to be obtained by eliminating rating requirements and points from Chapter 5. Rating threshold requirements are permitted to be adjusted accordingly. Builders shall provide evidence of this impossibility to the Adopting Entity and provide disclaimer statement on marketing materials when this occurs.

303.3 Single-family homes, townhomes, and duplexes. Single-family homes, townhomes, and duplexes that meet all applicable requirements of Chapter 12 shall be deemed Certified.

304 GREEN MULTIFAMILY BUILDINGS

304.1 Multifamily buildings. All residential portions of a building shall meet the requirements of this Standard. Partial compliance shall not be allowed. Unless specifically addressed in other portions of this standard, all dwelling and sleeping units and residential common areas within a multifamily building shall meet all mandatory requirements. Where features similar to dwelling unit/sleeping unit features are installed in the common area, those features shall meet the standard of the dwelling and sleeping units. Green building practices for residential common areas may differ from

requirements for dwelling units/sleeping units. Points for the green building practices that apply to multiple units shall be credited once for the entire building. Where points are credited, including where a weighted average is used, practices shall be implemented in all dwelling and sleeping units, as applicable. Where application of a prescribed practice allows for a different number of points for different dwelling and sleeping units in a multifamily building, the fewer number of points shall be awarded, unless noted that a weighted average is used.

304.2 Alternative IgCC compliance. As an alternative, any multifamily or mixed-use building that complies with the ICC IgCC shall be designated as achieving the gold rating level. Additionally, acceptable air tightness of individual residential units shall be demonstrated by a blower door test. The testing and sampling procedure shall be in accordance with the ENERGY STAR Multifamily High Rise Program Testing and Verification Protocols, Version 1.0, Revision 03 - 2015, with an allowable maximum leakage of 0.3 cfm/sf of enclosure bounding the apartment at an induced pressure difference of 50 pascals.

305 GREEN REMODELING

305.1 Compliance. Compliance with § 305 shall be voluntary unless specifically adopted as mandatory by the Adopting Entity.

305.2 Whole-building rating criteria

305.2.1 Applicability. The provisions of § 305.2 shall apply to remodeling of existing buildings. In addition to the foundation, at least 50% of the structural systems of the existing building shall remain in place after the remodel for the building to be eligible for compliance under § 305.2. Recent new construction projects are not

eligible for verification under the remodel path. Projects that would be eligible must have their Certificate of Occupancy at least 5 years prior to NGBS registration.

305.2.1.1 Additions. For a remodeled building that includes an addition, the entire building including the addition shall comply with the criteria of § 305.2. The total above-grade conditioned area added during a remodel shall not exceed 75% of the existing building’s above-grade conditioned area. For multifamily buildings, the above-grade conditioned area shall be based on the entire building including all dwelling units/sleeping units and common areas.

305.2.2 Rating scope. The building rating achieved under § 305.2 and the associated compliance criteria apply to the entire building after the remodel including any additions.

305.2.3 Mandatory practices. Additions, alterations or repairs to an existing building, building system or portion thereof shall comply with the Mandatory requirements of Chapter 11. Unaltered portions of the existing building shall not be required to meet Mandatory requirements except when life safety or apparent moisture issues exist.

305.2.4 Rating level. A minimum rating level of Bronze shall be achieved in each of the following categories: Energy efficiency (§ 305.2.5), Water efficiency (§ 305.2.6), and Prescriptive practices (§ 305.2.7). The building rating level shall be the lowest rating level achieved in § 305.2.5, § 305.2.6, and § 305.2.7.

305.2.5 Energy efficiency. The building shall comply with § 305.2.5.1 or § 305.2.5.2.

305.2.5.1 Energy consumption reduction path. The energy efficiency rating level shall be based on the reduction in energy consumption resulting from the remodel in accordance with Table 305.2.5.1.

The reduction in energy consumption resulting from the remodel shall be based on the estimated annual energy cost savings or source energy savings as determined by a third-party energy audit and analysis or utility consumption data. The reduction shall be the percentage difference between the consumption per square foot before and after the remodel calculated as follows:

$$\left[\frac{\text{consumption per square foot before remodel} - \text{consumption per square foot after remodel}}{\text{consumption per square foot before remodel}} \right] * 100$$

The occupancy and lifestyle assumed and the method of making the energy consumption estimates shall be the same for estimates before and after the remodel. The building configuration for the after-remodel estimate shall include any additions to the building or other changes to the configuration of the conditioned space. For multifamily buildings, the energy consumption shall be based on the entire building including all dwelling units/sleeping units and common areas.

If a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the energy baseline (consumption per square foot before remodel) can be calculated based on data and building systems that was existing in the building up to 3 years prior project registration.

305.2.5.2 Prescriptive path. The building shall comply with Table 305.2.5.2 (Energy Rating Prescriptive Point Thresholds). Any practice listed in § 11.703 shall be eligible for contributing points toward Table 305.2.5.2 (Energy Rating Prescriptive Point Thresholds). The attributes of the existing building that were in compliance with the prescriptive practices of in § 11.703 prior to the remodel and remain in compliance after the remodel shall be eligible for contributing points to this section.

A building complying with § 305.2.5.2 Prescriptive Path for Energy shall obtain at least 30 points from § 11.703 and include a minimum of two practices from § 11.705.

**Table 305.2.5.1
Energy Reduction Level Thresholds**

	Rating Level			
	BRONZE	SILVER	GOLD	EMERALD
Reduction in energy consumption	15%	25%	35%	45%

**Table 305.2.5.2
Energy Prescriptive Point Thresholds**

	Rating Level			
	BRONZE	SILVER	GOLD	EMERALD
Section 11.703 prescriptive thresholds	30	45	60	70
<i>Points from § 11.703. and § 11.706 shall not count towards the total points for § 305.2.7.</i>				

**Table 305.2.6.1
Water Reduction Level Thresholds**

	Rating Level			
	BRONZE	SILVER	GOLD	EMERALD
Reduction in water consumption	20%	30%	40%	50%

**Table 305.2.6.2
Water Prescriptive Point Thresholds**

	Rating Level			
	BRONZE	SILVER	GOLD	EMERALD
Section 11.800 prescriptive thresholds	25	39	67	92
<i>Points from § 11.801 through § 11.803 shall not count toward the total points for § 305.2.7.</i>				

Points earned in § 11.705 and § 11.706 contribute to the energy points in Table 305.2.5.2 and support earning a higher certification level. Points from § 11.703, § 11.705 and § 11.706 do not count towards the required points in Table 305.2.7.

305.2.6 Water efficiency. The building shall comply with § 305.2.6.1 or § 305.2.6.2.

305.2.6.1 Water consumption reduction path. The water efficiency rating level shall be based on the reduction in water consumption resulting from the remodel in accordance with Table 305.2.6.1.

Water consumption shall be based on the estimated annual use as determined by a third-party audit and analysis or use of utility consumption data. The reduction shall be the percentage difference between the consumption before and after the remodel calculated as follows:

$$[(\text{consumption before remodel} - \text{consumption after remodel}) / \text{consumption before remodel}] * 100\%$$

The occupancy and lifestyle assumed and the method of making the water consumption estimates shall be the same for estimates before and after the remodel. The building configuration for the after-remodel estimate shall include any changes to the configuration of the building such as additions or new points of water use. For multifamily buildings, the water consumption shall be based on the entire building including all dwelling units and common areas.

Where a building can demonstrate through documentation approved by the Adopting Entity that the remodel activities started prior to project registration, the

water baseline (consumption before remodel) shall be calculated based on data and building systems that existed in the building up to 3 years prior project registration.

305.2.6.2. Prescriptive path. The building shall comply with Table 305.2.6.2 (Water Rating Prescriptive Point Thresholds). Any practice listed in § 11.801 shall be eligible for contributing points toward Table 305.2.6.2 (Water Rating Prescriptive Point Thresholds). The attributes of the existing building that were in compliance with the prescriptive practices of in § 11.802 prior to the remodel and remain in compliance after the remodel shall be eligible for contributing points to this section.

305.2.7 Prescriptive practices. The point thresholds for the environmental rating levels based on compliance with the Chapter 11 prescriptive practices shall be in accordance with Table 305.2.7. Any practice listed in Chapter 11, except for § 11.701 through § 11.706 and § 11.801 through § 11.803 shall be eligible for contributing points to the prescriptive threshold ratings. The attributes of the existing building that were in compliance with the prescriptive practices of Chapter 11 prior to the remodel and remain in compliance after the remodel shall be eligible for contributing points to the prescriptive threshold ratings.

306 GREEN ACCESSORY STRUCTURES

306.1 Applicability. The designation criteria for accessory structures shall be in accordance with Appendix C.

306.2 Compliance. Compliance with Appendix C shall be voluntary unless specifically adopted as mandatory. If specifically adopted, the adopting entity shall establish rules for compliance with Appendix C.

**Table 305.2.7
Prescriptive Threshold Point Ratings**

	Rating Level			
	BRONZE	SILVER	GOLD	EMERALD
Chapter 11 prescriptive thresholds	88	125	181	225



SECTION 4

SITE DESIGN AND DEVELOPMENT

M=Mandatory

GREEN BUILDING PRACTICES		POINTS
400	SITE DESIGN AND DEVELOPMENT	
<p>400.0 Intent. This section applies to land development for the eventual construction of buildings or additions thereto that contain dwelling units/sleeping units. The rating earned under § 302 based on practices herein, applies only to the site as defined in Chapter 2. The buildings on the site achieve a separate rating level or designation by complying with the provisions of § 303, § 304, § 305, or § 306, as applicable.</p>		
401	SITE SELECTION	
<p>401.0 Intent. The site is selected to minimize environmental impact by one or more of the following:</p>		
<p>401.1 Infill site. An infill site is selected.</p>		7
<p>401.2 Greyfield site. A greyfield site is selected.</p>		7
<p>401.3 Brownfield site. A brownfield site is selected.</p>		8
402	PROJECT TEAM, MISSION STATEMENT, AND GOALS	
<p>402.0 Intent. The site is designed and constructed by a team of qualified professionals trained in green development practices.</p>		
<p>402.1 Team. A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and development. The project’s green goals and objectives are written into a mission statement.</p>		4
<p>402.2 Training. Training is provided to on-site supervisors and team members regarding the green development practices to be used on the project.</p>		3
<p>402.3 Project checklist. A checklist of green development practices to be used on the project is created, followed, and completed by the project team regarding the site.</p>		M 4
<p>402.4 Development agreements. Through a developer agreement or equivalent, the developer requires purchasers of lots to construct the buildings in compliance with this Standard (or equivalent) certified to a minimum Bronze rating level.</p>		6
403	SITE DESIGN	
<p>403.0 Intent. The project is designed to avoid detrimental environmental impacts, minimize any unavoidable impacts, and mitigate impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features and environmental quality of the site.</p>		
<p><i>To acquire points allocated for the design, the intent of the design is implemented.</i></p>		

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GREEN BUILDING PRACTICES	POINTS
403.1 Natural resources. Natural resources are conserved by one or more of the following:	
(1) A natural resources inventory is used to create the site plan.	M 5
(2) A plan to protect and maintain priority natural resources/areas during construction is created. (Also see § 404 for guidance in forming the plan.).....	M 5
(3) Member of builder’s project team participates in a natural resources conservation program.	4
(4) Streets, buildings, and other built features are located to conserve high priority vegetation.	5
(5) Developer has a plan for removal or containment of invasive plants, as identified by a qualified professional, from the disturbed areas of the site.	3
(6) Developer has a plan for removal or containment of invasive plants, as identified by a qualified professional, on the undisturbed areas of the site.....	6
403.2 Building orientation. A minimum of 75% of the building sites are designed with the longer dimension of the structure to face within 20 degrees of south.	6
403.3 Slope disturbance. Slope disturbance is minimized by one or more of the following:	
(1) Hydrological/soil stability study is completed and used to guide the design of all buildings on the site.	5
(2) All or a percentage of roads are aligned with natural topography to reduce cut and fill.	
(a) greater than or equal to 10% to less than 25%	1
(b) greater than or equal to 25% to less than 75%	4
(c) greater than 75%.....	6
(3) Long-term erosion effects are reduced by the use of clustering, terracing, retaining walls, landscaping, and restabilization techniques.....	6
403.4 Soil disturbance and erosion. A site Stormwater Pollution Prevention Plan (SWPPP) is developed in accordance with applicable stormwater Construction General Permits. The plan includes one or more of the following:	
(1) Construction activities are scheduled to minimize length of time that soils are exposed.	4
(2) Utilities are installed by alternate means such as directional boring in lieu of open-cut trenching. Shared easements or common utility trenches are utilized to minimize earth disturbance. Low ground pressure equipment or temporary matting is used to minimize excessive soil consolidation.	5
(3) Limits of clearing and grading are demarcated.	4
403.5 Stormwater management. The stormwater management system is designed to use low-impact development/green infrastructure practices to preserve, restore or mitigate changes in site hydrology due to land disturbance and the construction of impermeable surfaces through the use of one or more of the following techniques:	
(1) A site assessment is conducted and a plan prepared and implemented that identifies important existing permeable soils, natural drainage ways and other water features, e.g., depressional storage, onsite to be preserved in order to maintain site hydrology.	7

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GREEN BUILDING PRACTICES	POINTS
(2) A hydrologic analysis is conducted that results in the design and installation of a stormwater management system that maintains the predevelopment (stable, natural) runoff hydrology of the site through the development or redevelopment process. Ensure that post construction runoff rate, volume and duration do not exceed predevelopment rates, volume and duration.	10
(3) Low-Impact Development/Green infrastructure stormwater management practices to promote infiltration and evapotranspiration are used to manage rainfall on the lot and prevent the off-lot discharge of runoff from all storms up to and including the volume of following storm events:	
(a) 80th percentile storm event	5
(b) 90th percentile storm event	8
(c) 95th percentile storm event	10
(4) Permeable materials are used for driveways, parking areas, walkways and patios according to the following percentages:	
<i>Points for vegetative paving systems are only awarded for location receiving more than 20 in. per year of annual average precipitation.</i>	
(a) greater than or equal to 10% to less than 25% (add 2 points for use of vegetative paving system)	2
(b) greater than or equal to 25 to less than 50% (add 4 points for use of vegetative paving system) ...	5
(c) greater than or equal to 50% (add 6 points for use of vegetative paving system)	10
403.6 Landscape plan. A landscape plan is developed to limit water and energy use in common areas while preserving or enhancing the natural environment utilizing one or more of the following:	
(1) A plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated.	6
(2) On-site native or regionally appropriate trees and shrubs are conserved, maintained, and reused for landscaping to the greatest extent possible.	6
(3) Non-invasive vegetation that is native or regionally appropriate for local growing conditions is selected to promote biodiversity.	7
(4) EPA WaterSense Water Budget Tool or equivalent is used when implementing the site vegetative design.	10
(5) Where turf is being planted, Turfgrass Water Conservation Alliance (TWCA) or equivalent third-party qualified water efficient grasses are used.	6
(6) For landscaped vegetated areas, the maximum percentage of all turf areas is:	
(a) 0%	10
(b) greater than 0% to less than or equal to 20%.....	8
(c) greater than 20% to less than or equal to 40%.....	6
(d) greater than 40% to less than or equal to 60%.....	4
(7) To improve pollinator habitat, at least 10% of planted areas are composed of flowering and nectar producing plant species. Invasive plant species shall not be utilized.	6
(8) Non-potable irrigation water is available to common areas	2

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GREEN BUILDING PRACTICES	POINTS
(9) Non-potable irrigation water is available to lots.	4
(10) Plants with similar watering needs are grouped (hydrozoning).....	4
(11) Species and locations for tree planting are identified and utilized to increase summer shading of streets, parking areas, and buildings and to moderate temperatures.	5
(12) Vegetative wind breaks or channels are designed as appropriate to local conditions.	4
(13) On-site tree trimmings or stump grinding of regionally appropriate trees are used to provide protective mulch during construction or as base for walking trails, and cleared trees are recycled as sawn lumber or pulp wood.....	4
(14) An integrated common area pest management plan to minimize chemical use in pesticides and fertilizers is developed.....	4
(15) Plans for the common area landscape watering system include a weather-based or soil moisture-based controller. Required irrigation systems are designed in accordance with the IA Landscape Irrigation Best Management Practices	6
(16) Trees that might otherwise be lost due to site construction are transplanted to other areas on-site or off-site using tree-transplanting techniques to ensure a high rate of survival.	4
(17) Greywater irrigation systems are used to water common areas. Greywater used for irrigation conforms to all criteria of § 803.1.	7
(18) Cisterns, rain barrels, and similar tanks are designed to intercept and store runoff. These systems may be above or below ground, and they may drain by gravity or be pumped. Stored water may be slowly released to a pervious area, and/or used for irrigation of lawn, trees, and gardens located in common areas.	6
(19) Spray irrigation	
(a) Is not present on slopes steeper than 25% (i.e., where the land rises more than 1 ft. vertically for every 4 ft. horizontally).	2
(b) Has been tested in accordance with the ASABE/ICC 802, "Landscape Irrigation Sprinkler and Emitter Standard" and there is documentation of the sprinklers achieving a lower quarter distribution uniformity of at least 0.65.	2
(c) Is installed to eliminate low head/point drainage and runoff.....	2
(d) Spray irrigation is not used.....	6
403.7 Wildlife habitat.	
(1) Measures are planned that will support wildlife habitat.	6
(2) The site is adjacent to a wildlife corridor, fish and game park, or preserved areas and is designed with regard for this relationship.....	3
(3) Outdoor lighting techniques are utilized with regard for wildlife.	3
403.8 Operation and maintenance plan. An operation and maintenance plan (manual) is prepared and outlines ongoing service of common open area, utilities (storm water, waste water), and environmental management activities.	6

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GREEN BUILDING PRACTICES	POINTS
403.9 Existing buildings. Following mitigation of any harmful materials, existing building(s) and structure(s) is/are preserved and reused, adapted, or disassembled for reuse or recycling of building materials.	
(1) Building reuse or adaptation.....	12
(2) Disassemble for reuse or recycling of building materials.	10
403.10 Existing and recycled materials. Existing pavements, curbs, and aggregates are salvaged and reincorporated into the development or recycled asphalt or concrete materials are used as follows. <i>[Points awarded for every 10% of total materials used for pavement, curb, and aggregate that meet the criteria of this practice. The percentage is consistently calculated on a weight, volume, or cost basis.]</i>	15 max
(1) Existing pavements, curbs, and aggregates are reincorporated into the development.	3
(2) Recycled asphalt or concrete with at least 50% recycled content is utilized in the project.	2
403.11 Demolition of existing building. A demolition waste management plan is developed, posted at the jobsite, and implemented to recycle and/or salvage for reuse a minimum of 50% of the nonhazardous demolition waste. <i>[1 additional point awarded for every 10% of nonhazardous demolition waste recycled and/or salvaged beyond 50%.]</i>	5 [10 max]
403.12 Environmentally sensitive areas. Environmentally sensitive areas are as follows:	
(1) Environmentally sensitive areas are avoided as follows:	
(a) less than 25% of environmentally sensitive areas left undeveloped.....	2
(b) greater than or equal to 25% to less than 75% of environmentally sensitive areas left undeveloped	4
(c) greater than or equal to 75% of environmentally sensitive areas left undeveloped	7
(2) Environmentally sensitive areas are permanently protected by a conservation easement or similar mechanism.....	10
404 SITE DEVELOPMENT AND CONSTRUCTION	
404.0 Intent. Environmental impact during construction is avoided to the extent possible; impacts that do occur are minimized, and any significant impacts are mitigated.	
404.1 On-site supervision and coordination. On-site supervision and coordination is provided during clearing, grading, trenching, paving, and installation of utilities to ensure that specified green development practices are implemented. (also see § 403.4)	5
404.2 Trees and vegetation. Designated trees and vegetation are preserved by one or more of the following:	
(1) Fencing or equivalent is installed to protect trees and other vegetation.....	4
(2) Trenching, significant changes in grade, compaction of soil, and other activities are avoided in critical root zones (canopy drip line) in “tree save” areas.	5
(3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering.....	4

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GREEN BUILDING PRACTICES	POINTS
404.3 Soil disturbance and erosion. On-site soil disturbance and erosion are minimized by implementation of one or more of the following:	
(1) Limits of clearing and grading are staked out prior to construction.	5
(2) “No disturbance” zones are created using fencing or flagging to protect vegetation and sensitive areas from construction vehicles, material storage, and washout.	4
(3) Sediment and erosion controls are installed and maintained.....	5
(4) Topsoil is stockpiled and covered with tarps, straw, mulch, chipped wood, vegetative cover, or other means capable of protecting it from erosion for later use to establish landscape plantings.	5
(5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area by laying lightweight geogrids, mulch, chipped wood, plywood, OSB (oriented strand board), metal plates, or other materials capable of weight distribution in the pathway of the equipment.	4
(6) Disturbed areas are stabilized within the EPA-recommended 14-day period.	4
(7) Soil is improved with organic amendments and mulch.....	4
404.4 Wildlife habitat. Measures are implemented to support wildlife habitat.	
(1) Wildlife habitat is maintained.	5
(2) Measures are instituted to establish or promote wildlife habitat.	5
(3) Open space is preserved as part of a wildlife corridor.	6
(4) Builder or member of builder’s project team participates in a wildlife conservation program.	5
405 INNOVATIVE PRACTICES	
405.0 Intent. Innovative site design, preparation, and development practices are used to enhance environmental performance. Waivers or variances from local development regulations are obtained, and innovative zoning practices are used to implement such practices, as applicable.	
405.1 Driveways and parking areas. Driveways and parking areas are minimized or mitigated by one or more of the following:	
(1) Off-street parking areas are shared or driveways are shared; on-street parking is utilized; and alleys (shared common area driveways) are used for rear-loaded garages.	5
(2) In multifamily projects, parking capacity is not to exceed the local minimum requirements.	5
(3) Structured parking is utilized to reduce the footprint of surface parking areas.	
(a) greater than or equal to 25% to less than 50%	3
(b) greater than or equal to 50% to less than 75%	5
(c) greater than 75%.....	8

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GREEN BUILDING PRACTICES	POINTS														
405.2 Street widths.															
(1) Street pavement widths are minimized per local code and are in accordance with Table 405.2.	6														
<p>Table 405.2 Maximum Street Widths</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Facility Type</th> <th style="text-align: center;">Maximum Width</th> </tr> </thead> <tbody> <tr> <td>Collector street with parking (one side only)</td> <td style="text-align: center;">31 feet</td> </tr> <tr> <td>Collector street without parking</td> <td style="text-align: center;">26 feet</td> </tr> <tr> <td>Local access with parking (one side only)</td> <td style="text-align: center;">27 feet</td> </tr> <tr> <td>Local access street without parking</td> <td style="text-align: center;">20 feet</td> </tr> <tr> <td>Queuing (one-lane) streets with parking</td> <td style="text-align: center;">24 feet</td> </tr> <tr> <td>Alleys and queuing (one-lane) streets without parking</td> <td style="text-align: center;">17 feet</td> </tr> </tbody> </table> <p>For SI: 1 foot = 304.8 mm</p>		Facility Type	Maximum Width	Collector street with parking (one side only)	31 feet	Collector street without parking	26 feet	Local access with parking (one side only)	27 feet	Local access street without parking	20 feet	Queuing (one-lane) streets with parking	24 feet	Alleys and queuing (one-lane) streets without parking	17 feet
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Local access street without parking	20 feet														
Queuing (one-lane) streets with parking	24 feet														
Alleys and queuing (one-lane) streets without parking	17 feet														
(2) A waiver was secured by the developer from the local jurisdiction to allow for construction of streets below minimum width requirement.	8														
405.3 Cluster development. Cluster development enables and encourages flexibility of design and development of land in such a manner as to preserve the natural and scenic qualities of the site by utilizing an alternative method for the layout, configuration and design of lots, buildings and structures, roads, utility lines and other infrastructure, parks, and landscaping.	10														
405.4 Planning. Innovative planning techniques are implemented in accordance with the following:															
(1) Innovative planning techniques are used or developed for permissible adjustments to population density, area, height, open space, mixed-use, or other provisions for the specific purpose of open space, natural resource preservation or protection and/or mass transit usage. Other innovative planning techniques may be considered on a case-by-case basis.	10														
(2) Provide common or public spaces of a minimum of 1/6 acre that are within 1/4 mile walk to 80% of planned and existing units and entrances to non-residential buildings. Both existing and newly constructed squares, parks, paseos, plazas, and similar uses qualify under this criterion.	10														
405.5 Wetlands. Constructed wetlands or other natural innovative wastewater or stormwater treatment technologies are used.	8														
405.6 Multi-modal transportation. Multi-modal transportation access is provided in accordance with one or more of the following:															
(1) A site is selected with a boundary within one-half mile (805 m) of pedestrian access to a mass transit system or within five miles of a mass transit station with available parking.	5														
(2) A site is selected where all lots within the site are located within one-half mile (805 m) of pedestrian access to a mass transit system.	7														
(3) A system of walkways, bikeways, street crossings, or pathways designed to promote connectivity to existing and planned community amenities are provided.															
(a) Create a network of sidewalks and paths that provide a minimum level of connectivity of at least 90 bikeway or pathway intersections per square mile.	5														
(b) Create a network of sidewalks and paths that provide a minimum level of connectivity of at least 140 bikeway or pathway intersections per square mile.	10														

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GREEN BUILDING PRACTICES	POINTS
(4) Dedicated bicycle parking and racks are indicated on the site plan and a minimum of six spaces are constructed for, multifamily buildings, and/or each developed common area. <i>[1 point awarded for every 6 spaces]</i>	1 [6 max]
(5) Bike sharing programs participate with the developer and facilities for bike sharing are planned for and constructed.....	5
(6) Car sharing programs participate with the developer and facilities for car sharing are planned for and constructed.....	5
(7) A site is selected within a census block group that, compared to its region, has above-average transit access to employment as calculated using the Transit Access Measures within the EPA’s Smart Location Database:	
(a) Access is within the top quartile for the region	10
(b) Access is within the second quartile for the region	4
(8) A site is selected within a census block group that, compared to its region, has above-average access to employment within a 45-minute drive as calculated using EPA’s Smart Location Database:	
(a) Access is within the top quartile for the region	6
(b) Access is within the second quartile for the region	2
405.7 Density. The average density on a net developable area basis is:	
(1) greater than or equal to 7 to less than 14 dwelling units/sleeping units per acre (per 4,047 m ²).....	5
(2) greater than or equal to 14 to less than 21 dwelling units/sleeping units per acre (per 4,047 m ²).....	7
(3) greater than or equal to 21 dwelling units/sleeping units per acre (per 4,047 m ²)	10
405.8 Mixed-use development. (1) Mixed-use development is incorporated, or (2) for single-use sites 20 acres or less in size, 80% of the units are within 1/2 mile walk of 5 non-residential uses and where a system of walkways, bikeways, street crossings or pathways is designed to promote connectivity to those uses.....	9
405.9 Open space. The community is situated within 1/2 mile of an area of open space available to the public or a portion of the gross area of the community is set aside as open space. <i>[Points awarded for every 10% of the community set aside as open space. If open space outside of the community is included, a maximum of 3 points are awarded.]</i>	2
405.10 Community garden(s). Local food production for residents or area consumers.....	
(a) A portion of the site of at least 250 sq. ft. is established as a community garden(s) for the residents of the site. <i>[1 point awarded per 250 sq. ft.]</i>	1 [3 max]
(b) Areas and physical provisions are provided for composting.....	1
(c) Signs designating the garden are posted	1

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GREEN BUILDING PRACTICES	POINTS
405.11 Insect mitigation. The site is designed to mitigate hazards from insect born disease.	
<i>To acquire points, the site must be documented to be at risk by an epidemiologist or qualified professional.</i>	
(a) Dense plant beds, shrubbery and woody plants are not planted within 5 ft. (1.5 m) of occupied buildings.....	6
(b) A minimum of a 5 ft. (1.5 m) border of paving, mulch, bare earth, or turfgrass is provided between woods or weedy areas and people trafficked or occupied areas, including playgrounds and dog parks.....	5
(c) Vegetation that is attractive to deer, as documented by a qualified professional, is not planted within 20 ft. (6 m) of buildings.....	3
(d) Paths or trails maintained through natural or non-maintained areas are a minimum of 5 ft. wide (1.5 m).....	3
(e) Conditions that are favorable to mosquito breeding, such as standing water, are not present on site.	2
405.12 Smoking prohibitions. Signs are provided prohibiting smoking at the following locations:	
(a) Smoking is prohibited within 25 ft. (7.5 m) of all building exterior doors and operable windows or building air intakes within 15 vertical feet (4.5 m) of grade or a walking surface.	3
(b) Smoking is prohibited in common areas unless otherwise designated as smoking areas.....	3

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SECTION 5

LOT DESIGN, PREPARATION, AND DEVELOPMENT

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GREEN BUILDING PRACTICES		POINTS
500	LOT DESIGN, PREPARATION, AND DEVELOPMENT	
500.0 Intent. This section applies to lot development for the eventual construction of residential buildings, multifamily buildings, or additions thereto that contain dwelling units or sleeping units.		
501	LOT SELECTION	
501.1 Lot. Lot is selected in accordance with § 501.1(1) or § 501.1(2).		
(1)	A lot is selected within a site certified to this Standard or equivalent	15
(2)	A lot is selected to minimize environmental impact by one or more of the following:	
(a)	An infill lot is selected.	10
(b)	A lot is selected that is a greyfield.	10
(c)	An EPA-recognized brownfield lot is selected.	15
501.2 Multi-modal transportation. A range of multi-modal transportation choices are promoted by one or more of the following:		
(1)	A lot is selected within one-half mile (805 m) of pedestrian access to a mass transit system	6
(2)	A lot is selected within five miles (8,046 m) of a mass transit station with provisions for parking.	3
(3)	Walkways, street crossings, and entrances designed to promote pedestrian activity are provided. New buildings are connected to existing sidewalks and areas of development.	5
(4)	A lot is selected within one-half mile (805 m) of six or more community resources. No more than two each of the following use category can be counted toward the total: Recreation, Retail, Civic, and Services. Examples of resources in each category include, but are not limited to the following: <i>Recreation: recreational facilities (such as pools, tennis courts, basketball courts), parks</i> <i>Retail: grocery store, restaurant, retail store.</i> <i>Civic: post office, place of worship, community center.</i> <i>Services: bank, daycare center, school, medical/dental office, laundromat/dry cleaners.</i>	4
OR		
A lot is selected within a census block group that, compared to its region, has above-average neighborhood walkability using an index within the EPA’s Smart Location Database:		
(a)	Walkability is within the top quartile for the region.....	5
(b)	Walkability is within the second quartile for the region.....	2
(5)	Bicycle use is promoted by building on a lot located within a community that has rights-of-way specifically dedicated to bicycle use in the form of paved paths or bicycle lanes, or on an infill lot located within 1/2 mile of a bicycle lane designated by the jurisdiction.	5

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GREEN BUILDING PRACTICES	POINTS
(6) Dedicated bicycle parking and racks are indicated on the site plan and constructed for mixed-use and multifamily buildings:	
(a) Minimum of 1 bicycle parking space per 3 residential units.....	2
(b) Minimum of 1 bicycle parking space per 2 residential units.....	4
(c) Minimum of 1 bicycle parking space per 1 residential unit.....	6
(d) Bicycle enclosed storage is provided or parking spaces are covered or otherwise protected from the elements.....	2 Additional
(7) Select a lot in a community where there is access to shared vehicle usage such as carpool drop-off areas, car-share services, and shuttle services to mass transit.....	5
(8) Lot is within 1/2 mile walking distance of where a bike sharing program is provided.....	5
502 PROJECT TEAM, MISSION STATEMENT, AND GOALS	
502.1 Project team, mission statement, and goals. A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and development. The project’s green goals and objectives are written into a mission statement.	4
503 LOT DESIGN	
503.0 Intent. The lot is designed to avoid detrimental environmental impacts first, to minimize any unavoidable impacts, and to mitigate for those impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features and environmental quality of the lot. <i>[Points awarded only if the intent of the design is implemented.]</i>	
503.1 Natural resources. Natural resources are conserved by one or more of the following:	
(1) A natural resources inventory is completed under the direction of a qualified professional.....	5
(2) A plan is implemented to conserve the elements identified by the natural resource inventory as high-priority resources.	6
(3) Items listed for protection in the natural resource inventory plan are protected under the direction of a qualified professional.	4
(4) Basic training in tree or other natural resource protection is provided for the on-site supervisor.	4
(5) All tree pruning on-site is conducted by a certified arborist or other qualified professional.	3
(6) Ongoing maintenance of vegetation on the lot during construction is in accordance with TCIA A300 or locally accepted best practices.....	4
(7) Where a lot adjoins a landscaped common area, a protection plan from construction activities next to the common area is implemented.	5
(8) Developer has a plan to design and construct the lot in accordance with the International Wildland-Urban Interface Code (IWUIC).	6
<i>Only applicable where the AHJ has not declared a wildland-urban interface area, but a fire protection engineer, certified fire marshal, or other qualified party has determined and documented the site as hazarded per the IWUIC.</i>	

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GREEN BUILDING PRACTICES	POINTS
503.2 Slope disturbance. Slope disturbance is minimized by one or more of the following:	
(1) The use of terrain adaptive architecture.	5
(2) Hydrological/soil stability study is completed and used to guide the design of all buildings on the lot.	5
(3) All or a percentage of driveways and parking are aligned with natural topography to reduce cut and fill.	
(a) greater than or equal to 10% to less than 25%.....	1
(b) greater than or equal to 25% to less than 75%.....	4
(c) greater than or equal to 75%.....	6
(4) Long-term erosion effects are reduced through the design and implementation of clustering, terracing, retaining walls, landscaping, or restabilization techniques.	6
(5) Underground parking uses the natural slope for parking entrances.	5
503.3 Soil disturbance and erosion. Soil disturbance and erosion are minimized by one or more of the following: (also see § 504.3)	
(1) Construction activities are scheduled such that disturbed soil that is to be left unworked for more than 21 days is stabilized within 14 days.	5
(2) At least 75% of total length of the utilities on the lot are designed to use one or more alternative means:	5
(a) tunneling instead of trenching.	
(b) use of smaller (low ground pressure) equipment or geomats to spread the weight of construction equipment.	
(c) shared utility trenches or easements.	
(d) placement of utilities under paved surfaces instead of yards.	
(3) Limits of clearing and grading are demarcated on the lot plan.	5
503.4 Stormwater management. The stormwater management system is designed to use low-impact development/green infrastructure practices to preserve, restore or mitigate changes in site hydrology due to land disturbance and the construction of impermeable surfaces through the use of one or more of the following techniques:	
(1) A site assessment is conducted and a plan prepared and implemented that identifies important existing permeable soils, natural drainage ways and other water features, e.g., depressional storage, onsite to be preserved in order to maintain site hydrology.	7
(2) A hydrologic analysis is conducted that results in the design of a stormwater management system that maintains the pre-development (stable, natural) runoff hydrology of the site through the development or redevelopment process. Ensure that post construction runoff rate, volume and duration do not exceed predevelopment rates, volume and duration.	10
(3) Low-Impact Development/Green infrastructure stormwater management practices to promote infiltration and evapotranspiration are used to manage rainfall on the lot and prevent the off-lot discharge of runoff from all storms up to and including the volume of following storm events:	
(a) 80th percentile storm event	5
(b) 90th percentile storm event	8
(c) 95th percentile storm event	10

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GREEN BUILDING PRACTICES	POINTS
(4) Permeable materials are used for driveways, parking areas, walkways, patios, and recreational surfaces and the like according to the following percentages:	
(a) greater than or equal to 10% to less than 25% (add 2 points for use of vegetative paving system)	2
(b) greater than or equal to 25% to less than 50% (add 4 points for use of vegetative paving system)	5
(c) greater than or equal to 50% (add 6 points for use of vegetative paving system)	10
<i>Points for vegetative paving systems are only awarded for locations receiving more than 20 in. per year of annual average precipitation.</i>	
(5) Complete gutter and downspout system directs storm water away from foundation to vegetated landscape area, a raingarden, or catchment system that provides for water infiltration.....	3
503.5 Landscape plan. A plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment. <i>[Where "front" only or "rear" only plan is implemented, only half of the points (rounding down to a whole number) are awarded for Items (1)-(8)]</i>	
(1) A plan is formulated and implemented that protects, restores, or enhances natural vegetation on the lot.	
(a) greater than or equal to 12% to less than 25% of the natural area	1
(b) greater than or equal to 25% to less than 50% of the natural area	2
(c) greater than or equal to 50% to less than 100% of the natural area	3
(d) 100% of the natural area	4
(2) Non-invasive vegetation that is native or regionally appropriate for local growing conditions is selected to promote biodiversity.	7
(3) To improve pollinator habitat, at least 10% of planted areas are composed of native or regionally appropriate flowering and nectar producing plant species. Invasive plant species shall not be utilized.	3
(4) EPA WaterSense Water Budget Tool or equivalent is used when implementing the site vegetative design.	5
(5) Where turf is being planted, Turfgrass Water Conservation Alliance (TWCA) or equivalent as determined by the adopting entity third-party qualified water efficient grasses are used.	3
(6) For landscaped vegetated areas, the maximum percentage of turf area is:	
(a) greater than 40% to less than or equal to 60%	2
(b) greater than 20% to less than or equal to 40%	3
(c) greater than 0% to less than or equal to 20%	4
(d) 0%	5
(7) Plants with similar watering needs are grouped (hydrozoning) and shown on the lot plan.....	5
(8) Summer shading by planting installed to shade a minimum of 30% of building walls. To conform to summer shading, the effective shade coverage (five years after planting) is the arithmetic mean of the shade coverage calculated at 10 am for eastward facing walls, noon for southward facing walls, and 3 pm for westward facing walls on the summer solstice.	5
(9) Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions.....	5

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GREEN BUILDING PRACTICES	POINTS
(10) Site or community generated tree trimmings or stump grinding of regionally appropriate trees are used on the lot to provide protective mulch during construction or for landscaping.	3
(11) An integrated pest management plan is developed to minimize chemical use in pesticides and fertilizers.	4
(12) Developer has a plan for removal or containment of invasive plants from the disturbed areas of the site.....	3
(13) Developer implements a plan for removal or containment of invasive plants on the undisturbed areas of the site.....	6
503.6 Wildlife habitat. Measures are planned to support wildlife habitat and include at least two of the following:	
(1) Plants and gardens that encourage wildlife, such as bird and butterfly gardens.	3
(2) Inclusion of a certified “backyard wildlife” program.	3
(3) The lot is adjacent to a wildlife corridor, fish and game park, or preserved areas and is designed with regard for this relationship.	3
(4) Outdoor lighting techniques are utilized with regard for wildlife.....	3
503.7 Environmentally sensitive areas. The lot is in accordance with one or both of the following:	
(1) The lot does not contain any environmentally sensitive areas that are disturbed by the construction.	4
(2) On lots with environmentally sensitive areas, mitigation and/or restoration is conducted to preserve ecosystem functions lost through development and construction activities.	4
503.8 Demolition of existing building. A demolition waste management plan is developed, posted at the jobsite, and implemented to recycle and/or salvage with a goal of recycling or salvaging a minimum of 50% of the nonhazardous demolition waste. <i>[1 additional point awarded for every 10% of nonhazardous demolition waste recycled and/or salvaged beyond 50%.]</i>	5 [10 max]
504 LOT CONSTRUCTION	
504.0 Intent. Environmental impact during construction is avoided to the extent possible; impacts that do occur are minimized and any significant impacts are mitigated.	
504.1 On-site supervision and coordination. On-site supervision and coordination are provided during on-the-lot clearing, grading, trenching, paving, and installation of utilities to ensure that specified green development practices are implemented. (also see § 503.3).....	4
504.2 Trees and vegetation. Designated trees and vegetation are preserved by one or more of the following:	
(1) Fencing or equivalent is installed to protect trees and other vegetation.....	3
(2) Trenching, significant changes in grade, and compaction of soil and critical root zones in all “tree save” areas as shown on the lot plan are avoided.....	5
(3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering.....	4

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GREEN BUILDING PRACTICES	POINTS
504.3 Soil disturbance and erosion implementation. On-site soil disturbance and erosion are minimized by one or more of the following in accordance with the SWPPP or applicable plan: (also see § 503.3)	
(1) Sediment and erosion controls are installed on the lot and maintained in accordance with the stormwater pollution prevention plan, where required.	5
(2) Limits of clearing and grading are staked out on the lot.	5
(3) “No disturbance” zones are created using fencing or flagging to protect vegetation and sensitive areas on the lot from construction activity.	5
(4) Topsoil from either the lot or the site development is stockpiled and stabilized for later use and used to establish landscape plantings on the lot.	5
(5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area (laying lightweight geogrids, mulch, chipped wood, plywood, OSB, metal plates, or other materials capable of weight distribution in the pathway of the equipment).	4
(6) Disturbed areas on the lot that are complete or to be left unworked for 21 days or more are stabilized within 14 days using methods as recommended by the EPA or in the approved SWPPP, where required.	3
(7) Soil is improved with organic amendments or mulch.	3
(8) Utilities on the lot are installed using one or more alternative means (e.g., tunneling instead of trenching, use of smaller equipment, use of low ground pressure equipment, use of geomats, shared utility trenches or easements).....	5
(9) Inspection reports of stormwater best management practices are available.	3
505 INNOVATIVE PRACTICES	
505.0 Intent. Innovative lot design, preparation, and development practices are used to enhance environmental performance. Waivers or variances from local development regulations are obtained and innovative zoning is used to implement such practices.	
505.1 Driveways and parking areas. Driveways and parking areas are minimized or mitigated by one or more of the following:	
(1) Off-street parking areas or driveways are shared. Waivers or variances from local development regulations are obtained to implement such practices, if required.	5
(2) In a multifamily project, parking capacity does not exceed the local minimum requirements.	5
(3) Structured parking is utilized to reduce the footprint of surface parking areas.	
(a) greater than or equal to 25% to less than 50%	4
(b) greater than or equal to 50% to less than 75%	5
(c) greater than or equal to 75%	6

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GREEN BUILDING PRACTICES	POINTS
505.2 Heat island mitigation. Heat island effect is mitigated by the following.	
(1) Hardscape: Not less than 50% of the surface area of the hardscape on the lot meets one or a combination of the following methods.....	5
(a) Shading of hardscaping: Shade is provided from existing or new vegetation (within five years) or from trellises. Shade of hardscaping is to be measured on the summer solstice at noon.	
(b) Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index (SRI) of 29 or greater. The SRI is calculated in accordance with ASTM E1980. A default SRI value of 35 for new concrete without added color pigment is permitted to be used instead of measurements.	
(c) Permeable hardscaping: Permeable hardscaping materials are installed.	
(2) Roofs: Not less than 75% of the exposed surface of the roof is vegetated using technology capable of withstanding the climate conditions of the jurisdiction and the microclimate conditions of the building lot. Invasive plant species are not permitted.	5
505.3 Density. The average density on the lot on a net developable area basis is:	
(1) greater than or equal to 7 to less than 14 dwelling units/sleeping units per acre (per 4,047 m ²)	4
(2) greater than or equal to 14 to less than 21 dwelling units/sleeping units per acre (per 4,047 m ²)	5
(3) greater than or equal to 21 to less than 35 dwelling units/sleeping units per acre (per 4,047 m ²)	6
(4) greater than or equal to 35 to less than 70 dwelling units/sleeping units per acre (per 4,047 m ²)	7
(5) greater than or equal to 70 dwelling units/sleeping units per acre (per 4,047 m ²)	8
505.4 Mixed-use development.	
(1) The lot contains a mixed-use building.	8
505.5 Multifamily or mixed-use community garden(s). Local food production to residents or area consumers.	3
(a) A portion of the lot of at least 250 sq. ft. is established as community garden(s) for the residents of the site. <i>[3 points awarded per 250 sq. ft.]</i>	3 [9 max]
(b) Locate the project within a 0.5-mile walking distance of an existing or planned farmers market/ farm stand that is open or will operate at least once a week for at least five months of the year..	3
(c) Areas and physical provisions are provided for composting.	1
(d) Signs designating the garden area are posted.	1
505.6 Multi-unit plug-in electric vehicle charging. Plug-in electric vehicle charging capability is provided for not fewer than 2% of parking stalls. <i>[An additional 2 points can be earned for each percentage point above 2% for a maximum of 10 points] ...</i>	4 [10 max]
Fractional values shall be rounded up to the nearest whole number. Electrical capacity in main electric panels supports Level 2 charging (208/240V- up to 80 amps or in accordance with SAE J1772). Each stall is provided with conduit and wiring infrastructure from the electric panel to support Level 2 charging (208/240V- up to 80 amps or in accordance with SAE J1772) service to the designated stalls, and stalls are equipped with either Level 2 charging AC grounded outlets (208/240V- up to 80 amps or in accordance with SAE J1772) or Level 2 charging stations (208/240V- up to 80 amps or in accordance with SAE J1772) by a third-party charging station.	

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GREEN BUILDING PRACTICES	POINTS
<p>505.7 Multi-unit residential CNG vehicle fueling. CNG vehicle residential fueling appliances are provided for at least 1% of the parking stalls. The CNG fueling appliances shall be listed in accordance with ANSI/CSA NGV 5.1 and installed in accordance with the appliance manufacturer’s installation instructions.</p>	4
<p>505.8 Street network. Project is located in an area of high intersection density.</p>	5
<p>505.9 Smoking prohibitions. Signs are provided on multifamily and mixed-use lots prohibiting smoking at the following locations:</p>	
<p>(a) Smoking is prohibited within 25 ft. (7.5 m) of all building exterior doors and operable windows or building air intakes within 15 vertical feet (4.5 m) of grade or a walking surface.</p>	3
<p>(b) Smoking is prohibited on decks, balconies, patios and other occupied exterior spaces.</p>	3
<p>(c) Smoking is prohibited at all parks, playgrounds, and community activity or recreational spaces...</p>	3
<p>505.10 Exercise and recreational space. For multifamily buildings, on-site dedicated recreation space for exercise or play opportunities for adults and/or children open and accessible to residents is provided.</p>	
<p>(a) A dedicated area of at least 400 sq. ft. is provided inside the building with adult exercise and/or children’s play equipment.</p>	3
<p>(b) A courtyard, garden, terrace, or roof space at least 10% of the lot area that can serve as outdoor space for children’s play and /or adult activities is provided.</p>	3
<p>(c) Active play/recreation areas are illuminated at night to extend opportunities for physical activity into the evening.</p>	3

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SECTION 6

RESOURCE EFFICIENCY

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GREEN BUILDING PRACTICES		POINTS
601	QUALITY OF CONSTRUCTION MATERIALS AND WASTE	
<p>601.0 Intent. Design and construction practices that minimize the environmental impact of the building materials are incorporated, environmentally efficient building systems and materials are incorporated, and waste generated during construction is reduced.</p> <p>601.1 Conditioned floor area. Finished floor area of a dwelling unit or sleeping unit is limited. Finished floor area is calculated in accordance with ANSI Z765 for single family and ANSI/BOMA Z65.4 for multifamily buildings. Only the finished floor area for stories above grade plane is included in the calculation. <i>[For every 100 sq. ft. (9.29 m²) over 4,000 sq. ft. (372 m²), 1 point is to be added to rating level points shown in Table 303, Category 7 for each rating level.]</i></p> <p>(1) less than or equal to 700 sq. ft. (65 m²) 14</p> <p>(2) less than or equal to 1,000 sq. ft. (93 m²) 12</p> <p>(3) less than or equal to 1,500 sq. ft. (139 m²) 9</p> <p>(4) less than or equal to 2,000 sq. ft. (186 m²) 6</p> <p>(5) less than or equal to 2,500 sq. ft. (232 m²) 3</p> <p>(6) greater than 4,000 sq. ft. (372 m²) M</p> <p>Multifamily Building Note: For a multifamily building, a weighted average of the individual unit sizes is used for this practice.</p> <p>601.2 Material usage. Structural systems are designed, or construction techniques are implemented, to reduce and optimize material usage. 9 max</p> <p>(1) Minimum structural member or element sizes necessary for strength and stiffness in accordance with advanced framing techniques or structural design standards are selected. 3</p> <p>(2) Higher-grade or higher-strength of the same materials than commonly specified for structural elements and components in the building are used and element or component sizes are reduced accordingly..... 3</p> <p>(3) Performance-based structural design is used to optimize lateral force-resisting systems..... 3</p> <p>601.3 Building dimensions and layouts. Building dimensions and layouts are designed to reduce material cuts and waste. This practice is used for a minimum of 80% of the following areas:</p> <p>(1) floor area 3</p> <p>(2) wall area 3</p> <p>(3) roof area 3</p> <p>(4) cladding or siding area 3</p> <p>(5) penetrations or trim area 1</p>		

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GREEN BUILDING PRACTICES	POINTS
601.4 Framing and structural plans. Detailed framing or structural plans, material quantity lists and on-site cut lists for framing, structural materials, and sheathing materials are provided.	4
601.5 Prefabricated components. Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90% for the following system or building:.....	13 max
(1) floor system	4
(2) wall system	4
(3) roof system	4
(4) modular construction for the entire building located above grade	13
(5) manufactured home construction for the entire building located above grade	13
601.6 Stacked stories. Stories above grade are stacked, such as in 1½-story, 2-story, or greater structures. The area of the upper story is a minimum of 50% of the area of the story below based on areas with a minimum ceiling height of 7 ft. (2,134 mm).....	8 max
(1) first stacked story	4
(2) for each additional stacked story	2
601.7 Prefinished materials. Prefinished building materials or assemblies listed below have no additional site-applied finishing material are installed.	12 max
(a) interior trim not requiring paint or stain.	
(b) exterior trim not requiring paint or stain.	
(c) window, skylight, and door assemblies not requiring paint or stain on one of the following surfaces:	
i. exterior surfaces	
ii. interior surfaces	
(d) interior wall coverings or systems, floor systems, and/or ceiling systems not requiring paint or stain or other type of finishing application.	
(e) exterior wall coverings or systems, floor system, and/or ceiling systems not requiring paint or stain or other type of finishing application.	
(1) Percent of prefinished building materials or assemblies installed: <i>[Points awarded for each type of material or assembly.]</i>	
(a) greater than or equal to 35% to less than 50%	1
(b) greater than or equal to 50% to less than 90%	2
(c) greater than or equal to 90%	5
601.8 Foundations. A foundation system that minimizes soil disturbance, excavation quantities, and material usage, such as frost-protected shallow foundations, isolated pier and pad foundations, deep foundations, post foundations, or helical piles is selected, designed, and constructed. The foundation is used on 50% or more of the building footprint.	3

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POINTS

GREEN BUILDING PRACTICES

602 ENHANCED DURABILITY AND REDUCED MAINTENANCE

602.0 Intent. Design and construction practices are implemented that enhance the durability of materials and reduce in-service maintenance.

602.1 Moisture management – building envelope

602.1.1 Capillary breaks

602.1.1.1 A capillary break and vapor retarder are installed at concrete slabs in accordance with IRC Sections R506.2.2 and R506.2.3 or IBC Sections 1907 and 1805.4.1. **M**

602.1.1.2 A capillary break between the footing and the foundation wall is provided to prevent moisture migration into foundation wall. **3**

602.1.2 Foundation waterproofing. Enhanced foundation waterproofing is installed using one or both of the following: **4**

- (1) rubberized coating, or
- (2) drainage mat

602.1.3 Foundation drainage

602.1.3.1 Where required by the IRC or IBC for habitable and usable spaces below grade, exterior drain tile is installed..... **M**

602.1.3.2 Interior and exterior foundation perimeter drains are installed and sloped to discharge to daylight, dry well, or sump pit..... **4**

602.1.4 Crawlspace

602.1.4.1 Vapor retarder in unconditioned vented crawlspace is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 in. (152 mm) and are taped.

- (1) Floors. Minimum 6-mil vapor retarder installed on the crawlspace floor and extended at least 6 in. up the wall and is attached and sealed to the wall. **6**
- (2) Walls. Dampproof walls are provided below finished grade. **M**

602.1.4.2 Crawlspace that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per sq. ft. of horizontal area and one of the following is implemented:

- (1) a concrete slab over 6-mil polyethylene sheeting, or other Class I vapor retarder installed in accordance with IRC Section 408.3 or Section 506. **8**
- (2) 6-mil polyethylene sheeting, or other Class I vapor retarder installed in accordance with IRC Section 408.3 or Section 506. **M**

602.1.5 Termite barrier. Continuous physical foundation termite barrier provided:

- (1) In geographic areas that have moderate to heavy infestation potential in accordance with Figure 6(3), a no or low toxicity treatment is also installed. **4**
- (2) In geographic areas that have a very heavy infestation potential in accordance with Figure 6(3), in addition a low toxicity bait and kill termite treatment plan is selected and implemented. **4**

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GREEN BUILDING PRACTICES	POINTS
602.1.6 Termite-resistant materials. In areas of termite infestation probability as defined by Figure 6(3), termite-resistant materials are used as follows:	
(1) In areas of slight to moderate termite infestation probability: for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 2 ft. (610 mm) above the top of the foundation.....	2
(2) In areas of moderate to heavy termite infestation probability: for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 3 ft. (914 mm) above the top of the foundation.....	4
(3) In areas of very heavy termite infestation probability: for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings.	6
602.1.7 Moisture control measures	
602.1.7.1 Moisture control measures are in accordance with the following:	
(1) Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.	2
(2) Insulation in cavities is dry in accordance with manufacturer’s instructions when enclosed (e.g., with drywall).	M 2
(3) The moisture content of lumber is sampled to ensure it does not exceed 19% prior to the surface and/or cavity enclosure.	4
602.1.7.2 Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied.....	2
602.1.7.3 Building envelope assemblies are designed for moisture control based on documented hygrothermal simulation or field study analysis. Hygrothermal analysis is required to incorporate representative climatic conditions, interior conditions and include heating and cooling seasonal variation. ..	4
602.1.8 Water-resistive barrier. Where required by the IRC, or IBC, a water-resistive barrier and/or drainage plane system is installed behind exterior veneer and/or siding.	M
602.1.9 Flashing. Flashing is provided as follows to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer’s instructions, the flashing manufacturer’s instructions, or as detailed by a registered design professional.	
(1) Flashing is installed at all the following locations, as applicable:	M
(a) around exterior fenestrations, skylights, and doors;	
(b) at roof valleys;	
(c) at all building-to-deck, -balcony, -porch, and -stair intersections;	
(d) at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets;	
(e) at ends of and under masonry, wood, or metal copings and sills;	
(f) above projecting wood trim;	
(g) at built-in roof gutters; and	
(h) drip edge is installed at eave and rake edges.	

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GREEN BUILDING PRACTICES	POINTS
(2) All window and door head and jamb flashing is either self-adhered flashing complying with AAMA 711 or liquid applied flashing complying with AAMA 714 and installed in accordance with fenestration or flashing manufacturer’s installation instructions.	2
(3) Pan flashing is installed at sills of all exterior windows and doors.	3
(4) Seamless, preformed kickout flashing or prefabricated metal with soldered seams is provided at all roof-to-wall intersections. The type and thickness of the material used for roof flashing including but not limited kickout and step flashing is commensurate with the anticipated service life of the roofing material.	3
(5) A rainscreen wall design as follows is used for exterior wall assemblies.	4 max
(a) A system designed with minimum 1/4-in. air space exterior to the water-resistive barrier, vented to the exterior at top and bottom of the wall, and integrated with flashing details; or	4
(b) A cladding material or a water-resistive barrier with enhanced drainage, meeting 75% drainage efficiency determined in accordance with ASTM E2273.	2
(6) Through-wall flashing is installed at transitions between wall cladding materials or wall construction types.....	2
(7) Flashing is installed at expansion joints in stucco walls.	2
602.1.10 Exterior doors. Entries at exterior door assemblies, inclusive of side lights (if any), are covered by one of the following methods to protect the building from the effects of precipitation and solar radiation. Either a storm door or a projection factor of 0.375 minimum is provided. Eastern- and western-facing entries in Climate Zones 1, 2, and 3, as determined in accordance with Figure 6(1) or Appendix A, have either a storm door or a projection factor of 1.0 minimum, unless protected from direct solar radiation by other means (e.g., screen wall, vegetation). <i>[2 points awarded per exterior door]</i>	2 [6 max]
(a) installing a porch roof or awning	
(b) extending the roof overhang	
(c) recessing the exterior door	
(d) Installing a storm door	
602.1.11 Tile backing materials. Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.	M
602.1.12 Roof overhangs. Roof overhangs, in accordance with Table 602.1.12, are provided over a minimum of 90% of exterior walls to protect the building envelope.	4

Table 602.1.12
Minimum Roof Overhang for One- & Two-Story Buildings

Inches of Rainfall ⁽¹⁾	Eave Overhang (In.)	Rake Overhang (In.)
≤40	12	12
>41 and ≤70	18	12
>70	24	12

(1) Annual mean total rainfall in inches is in accordance with Figure 6(2).
For SI: 12 in. = 304.8 mm

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GREEN BUILDING PRACTICES	POINTS
<p>602.1.13 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the IRC or IBC at roof eaves of pitched roofs and extends a minimum of 24 in. (610 mm) inside the exterior wall line of the building.....</p>	M
<p>602.1.14 Architectural features. Architectural features that increase the potential for water intrusion are avoided:</p> <p>(1) All horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application. ...</p> <p>(2) No roof configurations that create horizontal valleys in roof design.</p> <p>(3) No recessed windows and architectural features that trap water on horizontal surfaces.</p>	M 1 2 2
<p>602.1.15 Kitchen and vanity cabinets. All kitchen and vanity cabinets are certified in accordance with the ANSI/KCMA A161.1 performance standard or equivalent.</p>	2
<p>602.2 Roof surfaces. A minimum of 90% of roof surfaces, not used for roof penetrations and associated equipment, on-site renewable energy systems such as photovoltaics or solar thermal energy collectors, or rooftop decks, amenities and walkways, are constructed of one or more of the following:.....</p> <p>(1) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent.</p> <p>(2) a vegetated roof system.</p> <p>(3) Minimum initial SRI of 78 for low-sloped roof (a slope less than 2:12) and a minimum initial SRI of 29 for a steep-sloped roof (a slope equal to or greater than 2:12). The SRI is calculated in accordance with ASTM E1980. Roof products are certified and labeled.</p>	3
<p>602.3 Roof water discharge. A gutter and downspout system or splash blocks and effective grading are provided to carry water a minimum of 5 ft. (1524 mm) away from perimeter foundation walls.</p>	4
<p>602.4 Finished grade</p> <p>602.4.1 Finished grade at all sides of a building is sloped to provide a minimum of 6 in. (152 mm) of fall within 10 ft. (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 in. (152 mm) of fall within 10 ft. (3048 mm), the final grade is sloped away from the edge of the building at a minimum slope of 2%.</p> <p>602.4.2 The final grade is sloped away from the edge of the building at a minimum slope of 5%.</p> <p>602.4.3 Water is directed to drains or swales to ensure drainage away from the structure.</p>	M 1 1
<p>603 REUSED OR SALVAGED MATERIALS</p>	
<p>603.0 Intent. Practices that reuse or modify existing structures, salvage materials for other uses, or use salvaged materials in the building’s construction are implemented.</p>	
<p>603.1 Reuse of existing building. Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use. <i>[1 point awarded for every 200 sq. ft. (18.5 m²) of floor area.].....</i></p>	1 [12 max]
<p>603.2 Salvaged materials. Reclaimed and/or salvaged materials and components are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1% of the total construction cost. <i>[1 point awarded per 1% of salvaged materials used based on the total construction cost. Materials, elements, or components awarded points under § 603.1 shall not be awarded points under § 603.2.].....</i></p>	1 [9 max]

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GREEN BUILDING PRACTICES

POINTS

603.3 Scrap materials. Sorting and reuse of scrap building material is facilitated (e.g., a central storage area or dedicated bins are provided).

4

604 RECYCLED-CONTENT BUILDING MATERIALS

604.1 Recycled content. Building materials with recycled content are used for two minor and/or two major components of the building.

per Table 604.1

**Table 604.1
Recycled Content**

Material Percentage Recycled Content	Points For 2 Minor	Points For 2 Major
25% to less than 50%	1	2
50% to less than 75%	2	4
more than 75%	3	6

605 RECYCLED CONSTRUCTION WASTE

605.0 Intent. Waste generated during construction is recycled.

605.1 Hazardous waste. The construction and waste management plan shall include information on the proper handling and disposal of hazardous waste. Hazardous waste is properly handled and disposed.

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605.2 Construction waste management plan. A construction waste management plan is developed, posted at the jobsite, and implemented, diverting through reuse, salvage, recycling, or manufacturer reclamation, a minimum of 50% (by weight) of nonhazardous construction and demolition waste from disposal. For this practice, land-clearing debris is not considered construction waste. Materials used as alternative daily cover are considered construction waste and do not count toward recycling or salvaging.

For buildings following the new construction path that also have a renovation component, the waste management plan includes the recycling of 95% of electronic waste components (such as printed circuit boards from computers, building automation systems, HVAC, fire and security control boards) by an E-Waste recycling facility.

6

Exceptions: 1) Waste materials generated from land clearing, soil and sub-grade excavation and vegetative debris shall not be in the calculations; and 2) a recycling facility (traditional or E-Waste) offering material receipt documentation is not available within 50 miles of the jobsite.

605.3 On-site recycling. On-site recycling measures following applicable regulations and codes are implemented, such as the following:

7

- (a) Materials are ground or otherwise safely applied on-site as soil amendment or fill. A minimum of 50% (by weight) of construction and land-clearing waste is diverted from landfill.
- (b) Alternative compliance methods approved by the Adopting Entity.
- (c) Compatible untreated biomass material (lumber, posts, beams, etc.) are set aside for combustion if a solid fuel-burning appliance per § 901.2.1(2) will be available for on-site renewable energy.

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GREEN BUILDING PRACTICES		POINTS
605.4 Recycled construction materials. Construction materials (e.g., wood, cardboard, metals, drywall, plastic, asphalt roofing shingles, or concrete) are recycled offsite.		6 max
(1) a minimum of two types of materials are recycled		3
(2) for each additional recycled material type		1
606	RENEWABLE MATERIALS	
606.0 Intent. Building materials derived from renewable resources are used.		
606.1 Biobased products. The following biobased products are used:		8 max
(a) certified solid wood in accordance with § 606.2		
(b) engineered wood		
(c) bamboo		
(d) cotton		
(e) cork		
(f) straw		
(g) natural fiber products made from crops (soy-based, corn-based)		
(h) other biobased materials with a minimum of 50% biobased content (by weight or volume)		
(1) Two types of biobased materials are used, each for more than 0.5% of the project’s projected building material cost.		3
(2) Two types of biobased materials are used, each for more than 1% of the project’s projected building material cost.		6
(3) For each additional biobased material used for more than 0.5% of the project’s projected building material cost.		1 [2 max]
606.2 Wood-based products. Wood or wood-based products are certified to the requirements of one of the following:		
(a) American Forest Foundation’s <i>American Tree Farm System</i> ® (ATFS)		
(b) Canadian Standards Association’s <i>Sustainable Forest Management System Standards</i> (CSA Z809)		
(c) <i>Forest Stewardship Council</i> (FSC)		
(d) <i>Program for Endorsement of Forest Certification Systems</i> (PEFC)		
(e) <i>Sustainable Forestry Initiative</i> ® Program (SFI)		
(f) National Wood Flooring Association’s <i>Responsible Procurement Program</i> (RPP)		
(g) other product programs mutually recognized by PEFC		
(h) A manufacturer’s fiber procurement system that has been audited by an approved agency as compliant with the provisions of ASTM D7612 as a responsible or certified source. Government or tribal forestlands whose water protection programs have been evaluated by an approved agency as compliant with the responsible source designation of ASTM D7612 are exempt from auditing in the manufacturers’ fiber procurement system.		

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GREEN BUILDING PRACTICES	POINTS
(1) A minimum of two responsible or certified wood-based products are used for minor components of the building.	3
(2) A minimum of two responsible or certified wood-based products are used in major components of the building.	4
606.3 Manufacturing energy. Materials manufactured using a minimum of 33% of the primary manufacturing process energy derived from (1) renewable sources, (2) combustible waste sources, or (3) renewable energy credits (RECs) are used for major components of the building. <i>[2 points awarded per material.]</i>	2 [6 max]
607 RECYCLING AND WASTE REDUCTION	
607.1 Recycling and composting. Recycling and composting by the occupant are facilitated by one or more of the following methods:	
(1) A readily accessible space(s) for recyclable material containers is provided and identified on the floorplan of the house or dwelling unit or a readily accessible area(s) outside the living space is provided for recyclable material containers and identified on the site plan for the house or building. The area outside the living space shall accommodate recycling bin(s) for recyclable materials accepted in local recycling programs.	2
(2) A readily accessible space(s) for compostable material containers is provided and identified on the floorplan of the house or dwelling unit or a readily accessible area(s) outside the living space is provided for compostable material containers and identified on the site plan for the house or building. The area outside the living space shall accommodate composting container(s) for locally accepted materials, or, accommodate composting container(s) for on-site composting.	4
607.2 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink.	1
608 RESOURCE-EFFICIENT MATERIALS	
608.1 Resource-efficient materials. Products containing fewer materials are used to achieve the same end-use requirements as conventional products, including but not limited to: <i>[3 points awarded per each material]</i>	3 [9 max]
(1) lighter, thinner brick with bed depth less than 3 in. and/or brick with coring of more than 25%.	
(2) engineered wood or engineered steel products.	
(3) roof or floor trusses.	
609 REGIONAL MATERIALS	
609.1 Regional materials. Regional materials are used for major and/or minor components of the building.	10 max
(1) Major component <i>[2 points awarded per each component]</i>	2
(2) Minor component <i>[1 point awarded per each component]</i>	1
<i>For a component to comply with this practice, a minimum of 75% of all products in that component category must be sourced regionally, e.g., stone veneer category – 75% or more of the stone veneer on a project must be sourced regionally.</i>	

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GREEN BUILDING PRACTICES		POINTS
610	LIFE CYCLE ASSESSMENT	
<p>610.1 Life cycle assessment. A life cycle assessment (LCA) tool is used to select environmentally preferable products, assemblies, or, entire building designs. Points are awarded in accordance with § 610.1.1 or § 610.1.2. Only one method of analysis or tool may be utilized. The reference service life for the building is 60 years for any life cycle analysis tool. Results of the LCA are reported in the manual required in § 1001.1 or § 1002.1(1) of this Standard in terms of the environmental impacts listed in this practice and it is stated if operating energy was included in the LCA.</p>		15 max
<p>610.1.1 Whole-building life cycle assessment. A whole-building LCA is performed in conformance with ASTM E2921 using ISO 14044 compliant life cycle assessment.....</p>		15 max
<p>(1) Execute LCA at the whole building level through a comparative analysis between the final and reference building designs as set forth under Standard Practice, ASTM E2921. The assessment criteria includes the following environmental impact categories:</p> <ul style="list-style-type: none"> (a) Primary energy use (b) Global warming potential (c) Acidification potential (d) Eutrophication potential (e) Ozone depletion potential (f) Smog potential. 		8
<p>(2) Execute LCA on regulated loads throughout the building operations life cycle stage. Conduct simulated energy performance analyses in accordance with § 702.2.1 ICC IECC analysis (IECC Section 405) in establishing the comparative performance of final versus reference building designs. Primary energy use savings and global warming potential avoidance from simulation analyses results are determined using energy supplier, utility, or EPA electricity generation and other fuels energy conversion factors and electricity generation and other fuels emission rates for the locality or Sub-Region in which the building is located.....</p>		5
<p>(3) Execute full LCA, including use-phase, through calculation of operating energy impacts (c) – (f) using local or regional emissions factors from energy supplier, utility, or EPA.</p>		2
<p>610.1.2 Life cycle assessment for a product or assembly. An environmentally preferable product or assembly is selected for an application based upon the use of an LCA tool that incorporates data methods compliant with ISO 14044 or other recognized standards that compare the environmental impact of products or assemblies.</p>		10 max

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610.1.2.1 Product LCA. A product with improved environmental impact measures compared to another product(s) intended for the same use is selected. The environmental impact measures used in the assessment are selected from the following:

per Table 610.1.2.1 [10 max]

- (a) Primary energy use
- (b) Global warming potential
- (c) Acidification potential
- (d) Eutrophication potential
- (e) Ozone depletion potential
- (f) Smog potential

[Points are awarded for each product/system comparison where the selected product/system improved upon the environmental impact measures by an average of 15%.]

**Table 610.1.2.1
Product LCA**

4 Impact Measures	5 Impact Measures
POINTS	
2	3

610.1.2.2 Building assembly LCA. A building assembly with improved environmental impact measures compared to an alternative assembly of the same function is selected. The full life cycle, from resource extraction to demolition and disposal (including but not limited to on-site construction, maintenance and replacement, material and product embodied acquisition, and process and transportation energy), is assessed. The assessment includes all structural elements, insulation, and wall coverings of the assembly. The assessment does not include electrical and mechanical equipment and controls, plumbing products, fire detection and alarm systems, elevators, and conveying systems. The following types of building assemblies are eligible for points under this practice:

per Table 610.1.2.2 [10 max]

- (a) exterior walls
- (b) roof/ceiling
- (c) interior walls or ceilings
- (d) intermediate floors

The environmental impact measures used in the assessment are selected from the following:

- (a) Primary energy use
- (b) Global warming potential
- (c) Acidification potential
- (d) Eutrophication potential
- (e) Ozone depletion potential
- (f) Smog potential

[Points are awarded based on the number of types of building assemblies that improve upon environmental impact measures by an average of 15%.]

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GREEN BUILDING PRACTICES

POINTS

**Table 610.1.2.2
Building Assembly LCA**

Number of Types of Building Assemblies	4 Impact Measures	5 Impact Measures
	POINTS	
2 types	3	6
3 types	4	8
4 types	5	10

611 PRODUCT DECLARATIONS

611.1 Product declarations. A minimum of 10 different products installed in the building project, at the time of certificate of occupancy, comply with one of the following sub-sections. Declarations, reports, and assessments are submitted and contain documentation of the critical peer review by an independent third party, results from the review, the reviewer’s name, company name, contact information, and date of the review.....

5

611.1.1 Industry-wide declaration. A Type III industry-wide environmental product declaration (EPD) is submitted for each product. Where the program operator explicitly recognizes the EPD as representative of the product group on a National level, it is considered industry-wide. In the case where an industry-wide EPD represents only a subset of an industry group, as opposed to being industry-wide, the manufacturer is required to be explicitly recognized as a participant by the EPD program operator. All EPDs are required to be consistent with ISO Standards 14025 and 21930 with at least a cradle-to-gate scope.

Each product complying with § 611.1.1 shall be counted as one product for compliance with § 611.1.

611.1.2 Product Specific Declaration. A product specific Type III EPD is submitted for each product. The product specific declaration shall be manufacturer specific for an individual product or product family. All Type III EPDs are required to be certified as complying, at a minimum, with the goal and scope for the cradle-to-gate requirements in accordance with ISO Standards 14025 and 21930.

Each product complying with § 611.1.2 shall be counted as two products for compliance with § 611.1.

612 INNOVATIVE PRACTICES

612.1 Manufacturer’s environmental management system concepts. Product manufacturer’s operations and business practices include environmental management system concepts, and the production facility is registered to ISO 14001 or equivalent. The aggregate value of building products from registered ISO 14001 or equivalent production facilities is 1% or more of the estimated total building materials cost.

[1 point awarded per percent.].....

1 [10 max]

612.2 Sustainable products. One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit or the sleeping unit, as applicable. Products are certified by a third-party agency accredited to ISO 17065.....

9 max

(1) greater than or equal to 50% of carpet installed (by square feet) is certified to NSF 140 or equivalent.....

3

(2) greater than or equal to 50% of resilient flooring installed (by square feet) is certified to NSF 332 or equivalent.....

3

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GREEN BUILDING PRACTICES	POINTS
(3) greater than or equal to 50% of the insulation installed (by square feet) is certified to UL 2985 or equivalent.	3
(4) greater than or equal to 50% of interior wall coverings installed (by square feet) is certified to NSF 342 or equivalent.	3
(5) greater than or equal to 50% of the gypsum board installed (by square feet) is certified to UL 100 or equivalent.	3
(6) greater than or equal to 50% of the door leafs installed (by number of door leafs) is certified to UL 102 or equivalent.	3
(7) greater than or equal to 50% of the tile installed (by square feet) is certified to TCNA A138.1 Specifications for Sustainable Ceramic Tiles, Glass Tiles and Tile Installation Materials or equivalent..	3
612.3 Universal design elements. Dwelling incorporates one or more of the following universal design elements. Conventional industry construction tolerances are permitted.	12 max
(1) Any no-step entrance into the dwelling which 1) is accessible from a substantially level parking or drop-off area (no more than 2%) via an accessible path which has no individual change in elevation or other obstruction of more than 1-1/2 in. in height with the pitch not exceeding 1 in 12; and 2) provides a minimum 32-in. wide clearance into the dwelling.	3
(2) Minimum 36-in. wide accessible route from the no-step entrance into at least one visiting room in the dwelling and into at least one full or half bathroom which has a minimum 32-in. clear door width and a 30-in. by 48-in. clear area inside the bathroom outside the door swing.	3
(3) Minimum 36-in. wide accessible route from the no-step entrance into at least one bedroom which has a minimum 32-in. clear door width.	3
(4) Blocking or equivalent installed in the accessible bathroom walls for future installation of grab bars at water closet and bathing fixture, if applicable.	1
(5) All interior and exterior door handles are levers rather than knobs.	1
(6) All sink, lavatory and showering controls comply with ICC A117.1.	1
(7) Interior convenience Power receptacles, communication connections (for cable, phone, Ethernet, etc.) and switches are placed between 15 in. and 48 in. above the finished floor. Additional switches to control devices and systems (such as alarms, home theaters and other equipment) not required by the local building code may be installed as desired.	1
(8) All light switches are rocker-type switches or other similar switches that can be operated by pressing them (with assistive devices). Toggle-type switches may not be used.	1
(9) Any of the following systems are automated and can be controlled with a wireless device or voice-activated device: HVAC, all permanently-installed lighting, alarm system, window treatments, or door locks. <i>[1 point awarded per system]</i>	1 [5 max]

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GREEN BUILDING PRACTICES		POINTS
613	RESILIENT CONSTRUCTION	
613.1 Intent.	Design and construction practices developed by a licensed design professional or equivalent are implemented to enhance the resilience and durability of the structure (above building code minimum design loads) so the structure can better withstand forces generated by flooding, snow, wind, or seismic activity (as applicable) and reduce the potential for the loss of life and property.	
613.2 Minimum structural requirements (base design).	The building is designed and constructed in compliance with structural requirements in the IBC or IRC as applicable.....	2
613.3 Enhanced resilience (10% above base design).	Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 10% higher than the base design.	3
613.4 Enhanced resilience (20% above base design).	Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 20% higher than the base design.	5
613.5 Enhanced resilience (30% above base design).	Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 30% higher than the base design.	10
613.6 Enhanced resilience (40% above base design).	Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 40% higher than the base design.	12
613.7 Enhanced resilience (50% above base design).	Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 50% higher than the base design.	15

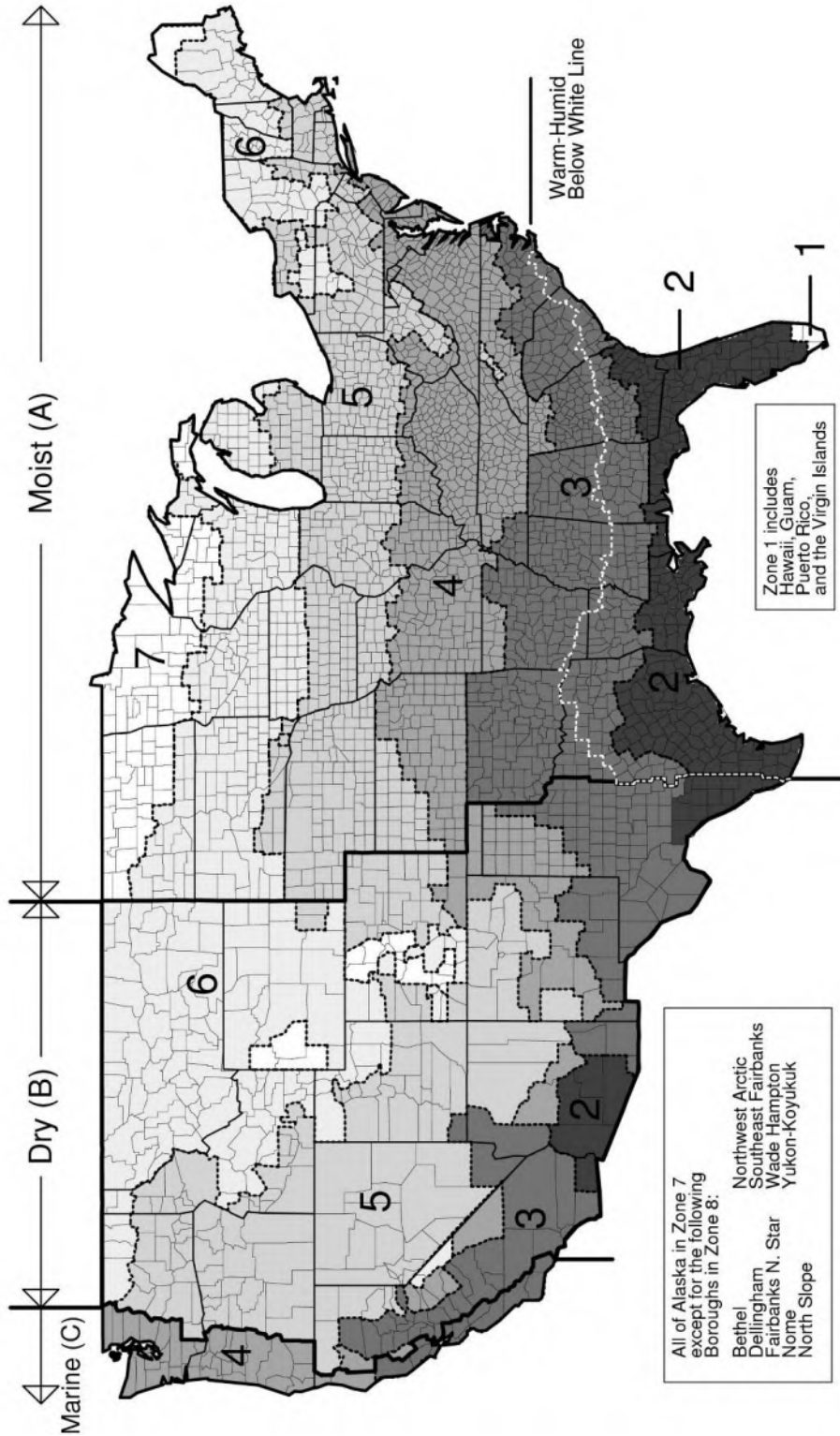


FIGURE 6(1)

CLIMATE ZONES

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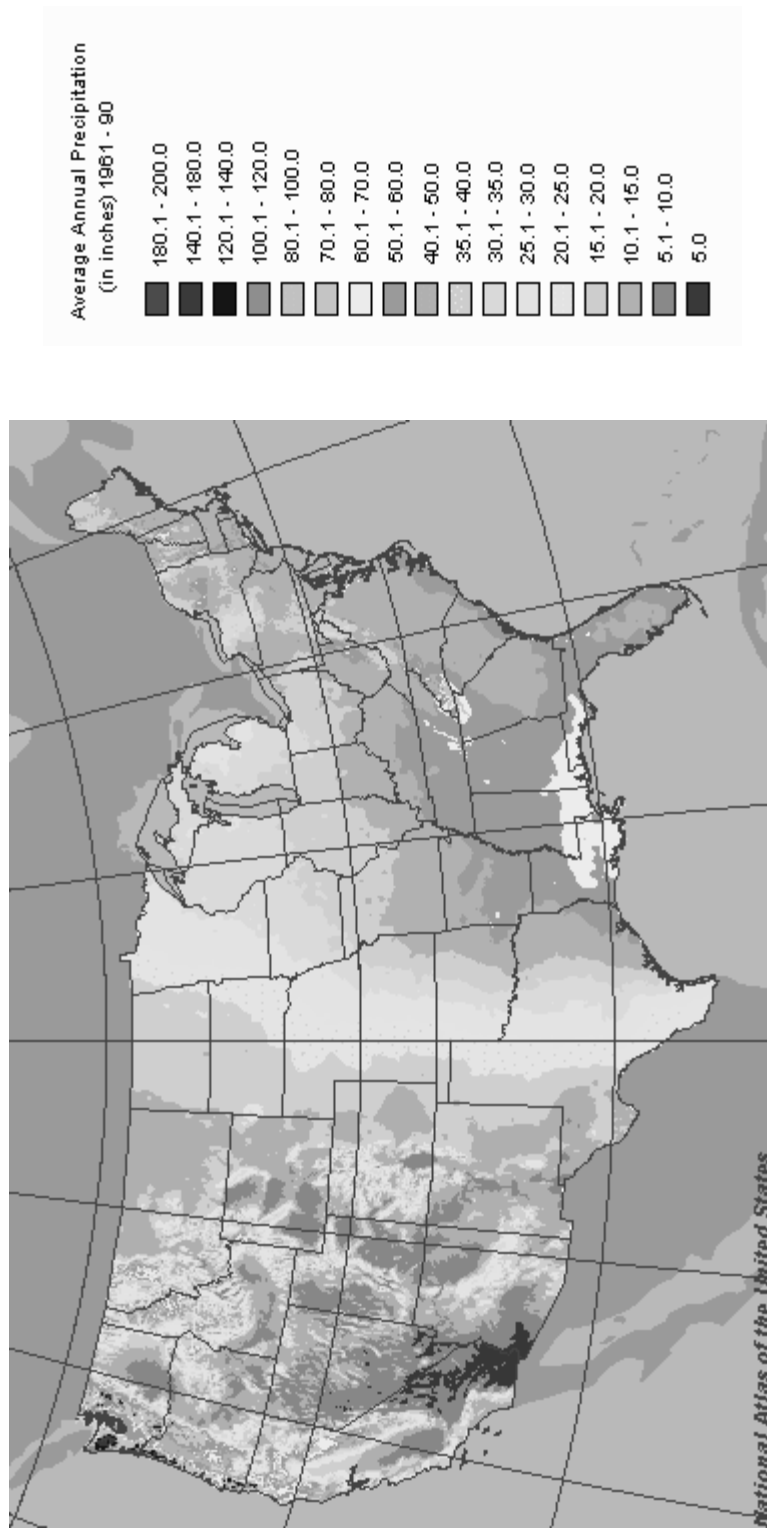


FIGURE 6(2)
AVERAGE ANNUAL PRECIPITATION (inches)

(Source: www.nationalatlas.gov)

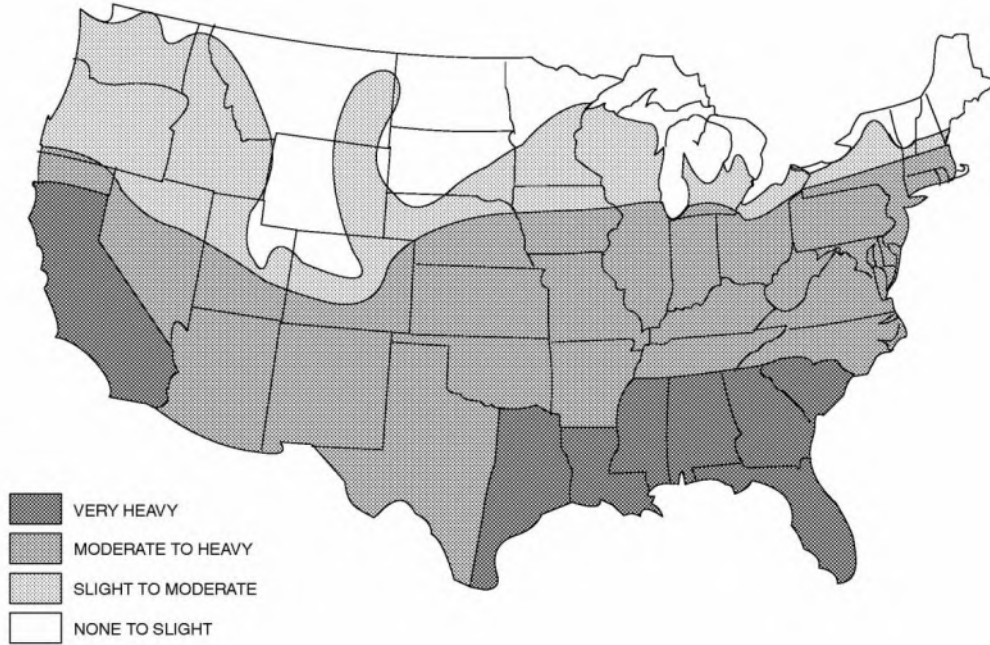


FIGURE 6(3)

TERMITE INFESTATION PROBABILITY MAP

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SECTION 7

ENERGY EFFICIENCY

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GREEN BUILDING PRACTICES

POINTS

701 MINIMUM ENERGY EFFICIENCY REQUIREMENTS

701.1 Mandatory requirements. The building shall comply with § 702 (Performance Path), § 703 (Prescriptive Path), or § 704 (ERI Target Path). Items listed as “mandatory” in § 701.4 apply to all Paths. Unless otherwise noted, buildings in the Tropical Climate Zone shall comply with Climate Zone 1 requirements.

701.1.1 Minimum Performance Path requirements. A building complying with § 702 shall include a minimum of two practices from § 705, or a minimum of one practice from § 705 and a minimum of one practice from § 706.

701.1.2 Minimum Prescriptive Path requirements. A building complying with § 703 shall obtain a minimum of 30 points from § 703 and shall include a minimum of two practices from § 705, or a minimum of one practice from § 705 and a minimum of one practice from § 706.

701.1.3 ERI Target Path requirements. A building complying with § 704 shall obtain a minimum of 30 points from § 704 and shall include a minimum of two practices from § 705, or a minimum of one practice from § 705 and a minimum of one practice from § 706.

701.1.4 Alternative Bronze and Silver level compliance. As an alternative, any building that qualifies as an ENERGY STAR Version 3.0 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev. 03 building or demonstrates compliance with the ICC IECC or IRC Chapter 11 achieves the Bronze level for Chapter 7. As an alternative, any building that qualifies as an ENERGY STAR Version 3.1 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev. 03 (with the baseline at ASHRAE 90.1-2010) building achieves the Silver level for Chapter 7. As an alternative in the Tropical Climate Zone, any building that meets all the requirements in ICC IECC Section R401.2.1 (Tropical Zone) achieves the Silver level for Chapter 7. The buildings achieving compliance under § 701.1.4 are not eligible for achieving a rating level above Silver.

701.1.5 Alternative Gold level compliance. As an alternative, any building within the scope of the NGBS that complies with Chapter 7 of the ICC IgCC achieves the Gold level for Chapter 7. Additionally, acceptable air tightness of individual residential units shall be demonstrated by a blower door test. The testing and sampling procedure shall be in accordance with the ENERGY STAR Multifamily High Rise Program Testing and Verification Protocols, Version 1.0, Revision 03 - 2015, with an allowable maximum leakage of 0.3 cfm/sf of enclosure bounding the apartment at an induced pressure difference of 50 pascals.

701.1.6 Alternative Gold level compliance for tropical zones. One- or two-family dwelling in the tropical zone at an elevation less than 2,400 ft. (731.5 m) above sea level that complies with the following shall achieve the Gold level for Chapter 7:

- (1) The residence complies with ICC IECC R401.2.1 Tropical zone.
- (2) The residence includes a minimum of 2 kW of PV and a minimum of 6 kWh of battery storage.
- (3) Any air conditioning has a minimum of 18 SEER.

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GREEN BUILDING PRACTICES	POINTS
(4) Solar, wind or other renewable energy source supplies not less than 90% of the energy for service water heating.	
(5) Glazing in conditioned spaces has a solar heat gain coefficient of less than or equal to 0.25, or has an overhang with a projection factor equal to or greater than 0.30.	
(6) The exterior roof/ceiling complies with at least two of the following: <ul style="list-style-type: none"> (a) Minimum roof reflectance and emittance in ICC IECC Table C402.3. (b) Roof or ceiling has insulation with an R-value of R-15 or greater. (c) Includes a radiant barrier. 	
(7) Walls comply with at least one of the following: <ul style="list-style-type: none"> (a) Walls have an overhang with a projection factor equal to or greater than 0.30. (b) Walls have insulation with an R-value of R-13 or greater. (c) Walls have a solar reflectance of 0.64. 	
(8) A ceiling fan is provided for bedrooms and the largest space that is not used as a bedroom; alternately a whole house fan is provided.	
(9) Wiring sufficient for a Level 2 (208/240V 40-80 amp) electric vehicle charging station is installed on the building site.	
701.2 Emerald level points. The Performance Path (§ 702) or the ERI Target Path (§ 704) shall be used to achieve the Emerald level.	
701.3 Adopting entity review. A review by the Adopting Entity or designated third party shall be conducted to verify design and compliance with Chapter 7.	
701.4 Mandatory practices	
701.4.1 HVAC systems	
701.4.1.1 HVAC system sizing. Space heating and cooling system is sized according to heating and cooling loads calculated using ACCA Manual J or equivalent. Equipment is selected using ACCA Manual S or equivalent.	M
701.4.1.2 Radiant and hydronic space heating. Where installed as a primary heat source in the building, radiant or hydronic space heating system is designed, installed, and documented, using industry-approved guidelines and standards (e.g., ACCA Manual J, AHRI I=B=R, ACCA 5 QI, or an accredited design professional’s and manufacturer’s recommendation).	M
701.4.2 Duct systems	
701.4.2.1 Duct air sealing. Ducts are air sealed. All duct sealing materials are in conformance with UL 181A or UL 181B specifications and are installed in accordance with manufacturer’s instructions.	M
701.4.2.2 Ducts and Plenums. Building framing cavities are not used as ducts or plenums.	M
701.4.2.3 Duct system sizing. Duct system is sized and designed in accordance with ACCA Manual D or equivalent.	M

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GREEN BUILDING PRACTICES	POINTS
<p>701.4.3 Insulation and air sealing.</p> <p>701.4.3.1 Building thermal envelope air sealing. The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film, or solid material:</p> <ul style="list-style-type: none"> (a) All joints, seams and penetrations (b) Site-built windows, doors, and skylights (c) Openings between window and door assemblies and their respective jambs and framing (d) Utility penetrations (e) Dropped ceilings or chases adjacent to the thermal envelope (f) Knee walls (g) Walls, ceilings, and floors separating conditioned spaces from unconditioned spaces (h) Behind tubs and showers on exterior walls (i) Common walls between dwelling units or sleeping units (j) Attic access openings (k) Joints of framing members at rim joists (l) Top and bottom plates (m) Other sources of infiltration 	M
<p>701.4.3.2 Air barrier, air sealing, building envelope testing, and insulation. Building envelope air barrier, air sealing envelope tightness, and insulation installation is verified to be in accordance with this Section and § 701.4.3.2.1. Insulation installation other than Grade 1 is not permitted.....</p> <p>(1) Testing. Building envelope tightness is tested. Testing is conducted in accordance with ASTM E779 using a blower door at a test pressure of 1.04 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances. Testing is conducted under the following conditions:</p> <ul style="list-style-type: none"> (a) Exterior windows and doors, fireplace and stove doors are closed, but not sealed; (b) Dampers are closed, but not sealed, including exhaust, intake, make-up air, backdraft and flue dampers; (c) Interior doors are open; (d) Exterior openings for continuous ventilation systems and heat recovery ventilators are closed and sealed; (e) Heating and cooling systems are turned off; (f) HVAC duct terminations are not sealed; and (g) Supply and return registers are not sealed. 	M
<p>Multifamily Building Note: Testing by dwelling units, sleeping units, groups of dwelling units, groups of sleeping units, or the building as a whole is acceptable.</p>	
<p>(2) Visual inspection. The air barrier and insulation items listed in Table 701.4.3.2(2) are field verified by visual inspection.</p>	

Table 701.4.3.2(2)
Air Barrier and Insulation Installation

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within comers and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.
Windows, skylights and doors	The space between window/doorjamb and framing, and skylights and framing shall be sealed.	
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.
Floors (including above garage and cantilevered floors)	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Where provided instead of floor insulation, insulation shall be permanently attached to the crawlspace walls.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.	
Narrow cavities		Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the drywall.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.
Plumbing and wiring		Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate them from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.	
HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.	
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

M=Mandatory

GREEN BUILDING PRACTICES	POINTS
<p>701.4.3.2.1 Grade I insulation installations. Field-installed insulation products to ceilings, walls, floors, band joists, rim joists, conditioned attics, basements, and crawlspaces, except as specifically noted, are verified by a third-party as Grade I in accordance with the following:</p> <ol style="list-style-type: none"> (1) Inspection is conducted before insulation is covered. (2) Air-permeable insulation is enclosed on all six sides and is in substantial contact with the sheathing material on one or more sides (interior or exterior) of the cavity. Air permeable insulation in ceilings is not required to be enclosed when the insulation is installed in substantial contact with the surfaces it is intended to insulate. (3) Cavity insulation uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging). (4) Cavity insulation compression or incomplete fill amounts to 2% or less, presuming the compressed or incomplete areas are a minimum of 70% of the intended fill thickness; occasional small gaps are acceptable. (5) Exterior rigid insulation has substantial contact with the structural framing members or sheathing materials and is tightly fitted at joints. (6) Cavity insulation is split, installed, and/or fitted tightly around wiring and other services. (7) Exterior sheathing is not visible from the interior through gaps in the cavity insulation. (8) Faced batt insulation is permitted to have side-stapled tabs, provided the tabs are stapled neatly with no buckling, and provided the batt is compressed only at the edges of each cavity, to the depth of the tab itself. (9) Where properly installed, ICFs, SIPs, and other wall systems that provide integral insulation are deemed in compliance with this section. 	<p>M</p>
<p>701.4.3.3 Multifamily air leakage alternative. Multifamily buildings four or more stories in height and in compliance with ICC IECC Section C402.5 (Air leakage-thermal envelope) are deemed to comply with § 701.4.3.1 and §701.4.3.2.</p>	
<p>701.4.3.4 Fenestration air leakage. Windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per sq. ft. (1.5 L/s/m²), and swinging doors no more than 0.5 cfm per sq. ft. (2.6 L/s/m²), when tested in accordance with NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled. For site-built fenestration, a test report by an accredited, independent laboratory verifying compliance with the applicable infiltration rate shall be submitted to demonstrate compliance with this practice. This practice does not apply to field-fabricated fenestration products.</p>	<p>M</p>
<p>Exception: For Tropical Zones Only, Jalousie windows are permitted to be used as a conditioned space boundary and shall have an air infiltration rate of not more than 1.3 cfm per sq. ft.</p>	
<p>701.4.3.5 Lighting in building thermal envelope. Luminaires installed in the building thermal envelope which penetrate the air barrier are sealed to limit air leakage between conditioned and unconditioned spaces. All luminaires installed in the building thermal envelope which penetrate the air barrier are IC-rated and labeled as meeting ASTM E283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All luminaires installed in the building thermal envelope which penetrate the air barrier are sealed with a gasket or caulk between the housing and the interior of the wall or ceiling covering.....</p>	<p>M</p>

M=Mandatory

GREEN BUILDING PRACTICES		POINTS
<p>701.4.4 High-efficacy lighting. Lighting efficacy in dwelling units or sleeping units is in accordance with one of the following:</p> <p>(1) A minimum of 75% of the total hard-wired lighting fixtures or the bulbs in those fixtures qualify as high efficacy or equivalent.</p> <p>(2) Lighting power density, measured in watts/square foot, is 1.1 or less.</p> <p>701.4.5 Boiler piping. Boiler piping in unconditioned space supplying and returning heated water or steam is insulated.</p>	M	
702 PERFORMANCE PATH		
<p>702.1 Point allocation. Points from § 702 (Performance Path) shall not be combined with points from § 703 (Prescriptive Path) or § 704 (ERI Target Path).</p> <p>702.2 Energy performance levels</p> <p>702.2.1 ICC IECC analysis. Energy efficiency features are implemented to achieve energy cost or source energy performance that meets the ICC IECC. A documented analysis using software in accordance with ICC IECC Section R405, or ICC IECC Section C407.2 through C407.5, applied as defined in the ICC IECC, is required.</p> <p>702.2.2 Energy performance analysis. Energy savings levels above the ICC IECC are determined through an analysis that includes improvements in building envelope, air infiltration, heating system efficiencies, cooling system efficiencies, duct sealing, water heating system efficiencies, lighting, appliances, and on-site renewable energy. Points are assigned using the following formula:</p> <p>Points = 30 + (percent above ICC IECC) * 2</p> <p><i>Multifamily Building Note: Modeling is completed building-wide using one of the following methods: whole building energy modeling, a unit-by-unit approach, or a building average of a unit-by-unit approach.</i></p> <p>702.2.3 Tropical standard reference design. For the Tropical Climate Zone, the standard reference design shall use the specifications in ICC IECC Section R401.2.1 (Tropical Zone).</p>	M for § 702	
703 PRESCRIPTIVE PATH		
<p>703.1 Mandatory practices</p> <p>703.1.1 Building thermal envelope compliance. The building thermal envelope is in compliance with § 703.1.1.1 or § 703.1.1.2.</p> <p>Exception: Section 703.1.1 is not required for Tropical Climate Zone.</p> <p>703.1.1.1 Maximum UA and SHGC. For ICC IECC residential buildings, the total building UA is less than or equal to the total maximum UA as computed by ICC IECC Section R402.1.5. The SHGC requirements for fenestration in Table R402.1.2 are also met. For ICC IECC commercial buildings, the total UA is less than or equal to the sum of the UA for ICC IECC Tables C402.1.4 and C402.4, including the U-factor times the area and C-factor or F-factor times the perimeter. The SHGC requirements for fenestration in Table C402.4 are also met. The total UA proposed and baseline calculations are documented. REScheck or COMcheck is deemed to provide UA calculation documentation.</p>	30	M for § 703

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703.1.1.2 Prescriptive R-values and fenestration requirements. The building thermal envelope is in accordance with the insulation and fenestration requirements of ICC IECC Table R402.1.2 or Table C402.1.3. The fenestration U-factors and SHGC's are in accordance with Table 703.2.5.1 or ICC IECC Table C402.4.

703.1.2 Building envelope leakage. The building thermal envelope is in accordance with ICC IECC R402.4.1.2 or C402.5 as applicable.

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Exception: Section 703.1.2 is not required for Tropical Climate Zone.

703.1.3 Duct testing. The duct system is in accordance with ICC IECC R403.3.2 through R403.3.5 as applicable.

M for § 703

703.2 Building envelope

703.2.1 UA improvement. The total building thermal envelope UA is less than or equal to the baseline total UA resulting from the U-factors provided in Table 703.2.1(a) or ICC IECC Tables C402.1.4 and C402.4, as applicable. Where insulation is used to achieve the UA improvement, the insulation installation is in accordance with Grade 1 meeting § 701.4.3.2.1 as verified by a third-party. Total UA is documented using a REScheck, COMcheck, or equivalent report to verify the baseline and the UA improvement.....

Per Table 703.2.1(b)

**Table 703.2.1(a)
Baseline U-Factors^a**

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor ^b	Floor U-Factor	Basement Wall U-Factor	Crawlspace Wall U-Factor ^c
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091 ^c	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

- a. Non-fenestration U-factors shall be obtained from measurement, calculation, or an approved source.
- b. Where more the half the insulation is on the interior, the mass wall U-factors is a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except in Marine, and the same as the frame wall U-factor in Marine Zone 4 and Zones 5 through 8.
- c. Basement wall U-factor of 0.360 in warm-humid locations.

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POINTS

Table 703.2.1(b)
Points for Improvement in Total Building Thermal Envelope UA
Compared to Baseline UA

Minimum UA Improvement	Climate Zone							
	1 ^a	2	3	4	5	6	7	8
	POINTS							
0 to <5%	0	0	0	0	0	0	0	0
5% to <10%	2	3	3	3	3	3	3	3
10% to <15%	3	6	5	6	6	6	5	7
15% to <20%	5	9	8	9	9	9	8	10
20% to <25%	6	12	10	12	12	12	11	13
25% to <30%	8	15	13	16	14	15	14	17
30% to <35%	10	18	16	19	17	18	16	20
≥35%	11	21	18	22	20	21	19	23

a. Tropical Climate Zone: Points are Climate Zone 1 points divided by 2 and rounded down

Exception: For the Tropical Climate Zone, crawl space, basement, and floor u-factors are excluded from the total building thermal envelope UA improvement calculation.

703.2.2 Mass walls. More than 75% of the above-grade exterior opaque wall area of the building is mass walls.....

Per Table 703.2.2

Table 703.2.2
Exterior Mass Walls

Mass thickness	Climate Zone			
	1-4	5	6	7-8
	POINTS			
≥3 in. to <6 in.	1	0	0	0
>6 in.	3	2	2	0

703.2.3 A radiant barrier with an emittance of 0.05 or less is used in the attic. The product is tested in accordance with ASTM C1371 and installed in accordance with the manufacturer’s instructions.....

Per Table 703.2.3

Table 703.2.3
Radiant Barriers

Climate Zone	POINTS
Tropical	3
1	2
2-3	3
4-5	1
6-8	0

[In climate zones 1-3, 1 point maximum for multifamily buildings four or more stories in height.]

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703.2.4 Building envelope leakage. The maximum building envelope leakage rate is in accordance with Table 703.2.4(a) or Table 703.2.4(b) and whole building ventilation is provided in accordance with § 902.2.1.....

Per Table 703.2.4(a) or 703.2.4(b)

**Table 703.2.4(a)
Building Envelope Leakage**

Max Envelope Leakage Rate (ACH50)	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
4	1	2	-	-	-	-	-	-
3	2	4	-	-	-	-	-	-
2	3	5	3	4	4	6	8	7
1	4	7	5	7	7	10	15	11

**Table 703.2.4(b)
Building Envelope Leakage**

Max Envelope Leakage Rate (ELR50)	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.28	1	2	-	-	-	-	-	-
0.23	2	4	-	-	-	-	-	-
0.18	3	5	3	4	4	6	8	7
0.13	4	7	5	7	7	10	15	11

Where ELR50 = CFM50 / Shell Area
CFM50 = cubic feet per minute at 50 Pa

Points not awarded if points are taken under § 705.6.2.1.

703.2.5 Fenestration

703.2.5.1 NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) on an area-weighted average basis do not exceed the values in Table 703.2.5.1. Area weighted averages are calculated separately for the categories of 1) windows and exterior doors and 2) skylights and tubular daylighting devices (TDDs). Decorative fenestration elements with a combined total maximum area of 15 sq. ft. (1.39 m²) or 10% of the total glazing area, whichever is less, are not required to comply with this practice.....

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Table 703.2.5.1
Fenestration Specifications

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1	0.50	0.25
2	0.40	0.25
3	0.32	0.25
4	0.32	0.40
5 to 8	0.30*	Any
Skylights and TDDs (maximum certified ratings)		
1	0.75	0.30
2	0.65	0.30
3	0.55	0.30
4	0.55	0.40
5 to 8	0.55	Any

Exception: For Sun-tempered designs meeting the requirements of § 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

*Exception: A maximum U-factor of 0.32 shall apply in climate zones 5-8 to vertical fenestration products installed in buildings located: (i) above 4000 feet in elevation above sea level or (ii) in windborne debris regions where protection of openings is provided by fenestration as required under IRC section R301.2.1.2.

703.2.5.1.1 Dynamic glazing. Dynamic glazing is permitted to satisfy the SHGC requirements of Table 703.2.5.1 provided the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4 and the dynamic glazing is automatically controlled to modulate the amount of solar gain into the space in multiple steps. Fenestration with dynamic glazing is considered separately from other fenestration and area-weighted averaging with fenestration that does not use dynamic glazing is not permitted. Dynamic glazing is not required to be automatically controlled or comply with minimum SHGC ratio when both the lower and higher labeled SHGC already comply with the requirements of Table 703.2.5.1.

703.2.5.2 The NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 703.2.5.2(a), (b), or (c). Decorative fenestration elements with a combined total maximum area of 15 sq. ft. (1.39 m²) or 10% of the total glazing area, whichever is less, are not required to comply with this practice.

Table 703.2.5.2(a)
Enhanced Fenestration Specifications

Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
1	0.40	0.25	0.60	0.28	1
2	0.40	0.25	0.60	0.28	1
3	0.30	0.25	0.53	0.28	2
4	0.30	0.40	0.53	0.35	3
5	0.27	Any	0.50	Any	3
6	0.27	Any	0.50	Any	4
7	0.27	Any	0.50	Any	4
8	0.27	Any	0.50	Any	4

Exception: For Sun-tempered designs meeting the requirements of § 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

Per Table
703.2.5.2(a),
or
703.2.5.2(b),
or
703.2.5.2(c)

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Table 703.2.5.2(b)
Enhanced Fenestration Specifications

Climate Zone	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
1	0.38	0.25	0.55	0.28	2
2	0.38	0.25	0.53	0.28	3
3	0.30	0.25	0.50	0.28	4
4	0.28	0.40	0.50	0.35	4
5	0.25	Any	0.48	Any	4
6	0.25	Any	0.48	Any	5
7	0.25	Any	0.46	Any	5
8	0.25	Any	0.46	Any	4

Exception: For Sun-tempered designs meeting the requirements of § 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

Table 703.2.5.2(c)
Enhanced Fenestration Specifications

Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
4	0.25	0.40	0.45	0.40	6
5-8	0.22	Any	0.42	Any	6

[Points for multifamily buildings four or more stories in height are awarded at 3 times the point value listed in Table 703.2.5.2(c)]

703.2.5.2.1 Dynamic glazing. Dynamic glazing is permitted to satisfy the SHGC requirements of Tables 703.2.5.2(a), 703.2.5.2(b), and 703.2.5.2(c) provided the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4, and the dynamic glazing is automatically controlled to modulate the amount of solar gain into the space in multiple steps. Fenestration with dynamic glazing is considered separately from other fenestration, and area-weighted averaging with fenestration that does not use dynamic glazing is not permitted. Dynamic glazing is not required to be automatically controlled or comply with minimum SHGC ratio when both the lower and higher labeled SHGC already comply with the requirements of Tables 703.2.5.2(a), 703.2.5.2(b), and 703.2.5.2(c).

703.3 HVAC equipment efficiency

703.3.0 Multiple heating and cooling systems. For multiple heating or cooling systems in one home, practices 703.3.1 through 703.3.6 apply to the system that supplies 80% or more of the total installed heating or cooling capacity. Where multiple systems each serve less than 80% of the total installed heating or cooling capacity, points under Sections 703.3.1 through 703.3.6 are awarded either for the system eligible for the fewest points or the weighted average of the systems. The weighted average shall be calculated in accordance with the following equation and be based upon the efficiency and capacity of the equipment as selected in accordance with ACCA Manual S with its loads calculated in accordance with ACCA Manual J.

$$\text{Weighted Average} = [(E_{\text{unit } 1} * C_{\text{unit } 1}) + (E_{\text{unit } 2} * C_{\text{unit } 2}) + \dots + (E_{\text{unit } n} * C_{\text{unit } n})] / (C_{\text{unit } 1} + C_{\text{unit } 2} + \dots + C_{\text{unit } n})$$

where:

E = Rated AHRI efficiency for unit

C = Rated heating or cooling capacity for unit

n = Unit count

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703.3.1 Combination space heating and water heating system (combo system) is installed using either a coil from the water heater connected to an air handler to provide heat for the building, dwelling unit or sleeping unit, or a space heating boiler using an indirect-fired water heater. Devices have a minimum combined annual efficiency of 0.80 and a minimum water heating recovery efficiency of 0.87.

4

703.3.2 Furnace and/or boiler efficiency is in accordance with one of the following:

- (1) Gas and propane heaters:

Per Table 703.3.2(1)(a) or 703.3.2(1)(b)

**Table 703.3.2(1)(a)
Gas and Propane Heaters**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥90% AFUE	0	2	3	6	6	9	10	12
≥92% AFUE	0	2	4	7	8	10	12	14
≥94% AFUE	0	3	4	9	9	12	14	16
≥96% AFUE	1	3	5	10	10	14	16	19
≥98% AFUE	1	3	6	11	12	16	18	21

**Table 703.3.2(1)(b)
Gas and Propane Heaters for Multifamily Buildings Four or More Stories in Height**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥90% AFUE	0	4	4	8	8	10	11	13
≥92% AFUE	0	4	4	9	10	11	12	14
≥94% AFUE	0	5	5	10	11	12	14	16
≥96% AFUE	0	5	5	12	12	13	15	17
≥98% AFUE	0	6	6	13	13	14	16	18

- (2) Oil furnace:

Per Table 703.3.2(2)

**Table 703.3.2(2)
Oil Furnace**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥85% AFUE	0	1	2	3	3	4	5	6
≥90% AFUE	0	2	3	6	6	9	10	12

- (3) Gas boiler:

Per Table 703.3.2(3)

**Table 703.3.2(3)
Gas Boiler**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥85% AFUE	0	1	1	2	3	4	4	4
≥90% AFUE	0	1	2	4	6	7	8	6
≥94% AFUE	0	2	3	5	8	9	10	8
≥96% AFUE	0	2	4	6	9	11	12	10

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(4) Oil boiler:

Table 703.3.2(4)
Oil Boiler

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥85% AFUE	0	1	1	3	3	4	4	5
≥90% AFUE	1	2	3	5	6	7	9	10

Per Table 703.3.2(4)

703.3.3 Heat pump heating efficiency is in accordance with Table 703.3.3(1) or Table 703.3.3(2) or Table 703.3.3(3). Refrigerant charge is verified for compliance with manufacturer's instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table 703.3.3(1) or 703.3.3(2) or 703.3.3(3)

Table 703.3.3(1)
Electric Heat Pump Heating

Efficiency	Climate Zone					
	1	2	3	4	5	6-8 ^a
	POINTS					
≥8.5 HSPF (11.5 EER)	0	1	1	2	2	2
≥9.0 HSPF (12.5 EER)	0	2	4	5	6	10
≥9.5 HSPF	0	3	7	7	11	18
≥10.0 HSPF	1	5	10	10	15	26
≥12.0 HSPF	1	6	11	11	17	28

Table 703.3.3(2)
Electric Heat Pump Heating for Multifamily Buildings Four or More
Stories in Height

Efficiency	Climate Zone					
	1	2	3	4	5	6-8 ^a
	POINTS					
≥8.5 HSPF (11.5 EER)	0	3	4	8	11	13

Table 703.3.3(3)
Gas Engine-Driven Heat Pump Heating

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
≥1.3 COP at 47°F	2	7	11	14	16	18

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703.3.4 Cooling efficiency is in accordance with Table 703.3.4(1) or Table 703.3.4(2). Refrigerant charge is verified for compliance with manufacturer's instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table
703.3.4(1) or
703.3.4(2)

Table 703.3.4(1)

Electric Air Conditioner and Heat Pump Cooling^a

Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥15 SEER (12.5 EER)	6	4	2	1	1	1	1	0
≥17 SEER (12.5 EER)	11	9	7	3	3	2	2	0
≥19 SEER (12.5 EER)	19	12	10	6	4	4	4	0
≥21 SEER	26	15	14	8	6	6	5	0
≥25 SEER	29	18	17	10	8	8	6	0

a. Tropical Climate Zone: where none of the occupied space is air conditioned and where ceiling fans are provided for bedrooms and the largest space which is not used as a bedroom, 20 points is awarded.

Table 703.3.4(2)

Gas Engine-Driven Heat Pump Cooling

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
>1.2 COP at 95°F	3	6	3	1	1	0

703.3.5 Water source cooling and heating efficiency is in accordance with Table 703.3.5. Refrigerant charge is verified for compliance with manufacturer's instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table
703.3.5

Table 703.3.5

Water Source Cooling and Heating

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
≥15 EER, ≥4.0 COP	14	18	22	30	37	37

703.3.6 Ground source heat pump is installed by a Certified Geothermal Service Contractor in accordance with Table 703.3.6. Refrigerant charge is verified for compliance with manufacturer's instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table
703.3.6

Table 703.3.6

Ground Source Heat Pump^a

Efficiency	Climate Zone				
	1	2	3	4	5-8
	POINTS				
≥16.0 EER, ≥3.6 COP	1	1	2	16	22
≥24.0 EER, ≥4.3 COP	24	29	22	31	35
≥28.0 EER, ≥4.8 COP	42	46	35	42	44

a. The ground loop is sized to account for the ground conductance and the expected minimum incoming water temperature to achieve rated performance.

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GREEN BUILDING PRACTICES	POINTS																								
<p>703.3.7 ENERGY STAR, or equivalent, ceiling fans are installed. <i>[Points awarded per building.]</i></p> <p><i>[For Tropical Climate Zone and Climate Zones 2B, 3B, and 4B: points awarded per fan where AC is not installed in the dwelling unit or sleeping unit (Max 8 points)]</i></p> <p><i>Where points are awarded in § 703.3.8 for these specific climate zones, points shall not be awarded in § 703.3.7.</i></p>	1																								
<p>703.3.8 Whole-building or whole-dwelling unit or whole-sleeping unit fan(s) with insulated louvers and a sealed enclosure is installed. <i>[Points awarded per building.]</i></p> <p style="text-align: center;">Table 703.3.8 Whole Dwelling Unit Fan</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3" style="text-align: center;">Climate Zone</th> </tr> <tr> <th style="text-align: center;">1-3, Tropical</th> <th style="text-align: center;">4-6</th> <th style="text-align: center;">7-8</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">POINTS</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> </tr> </tbody> </table>	Climate Zone			1-3, Tropical	4-6	7-8	POINTS			4	3	0	Per Table 703.3.8												
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<p>703.4 Duct systems</p> <p>703.4.1 All space heating is provided by a system(s) that does not include air ducts.</p> <p style="text-align: center;">Table 703.4.1 Ductless Heating System</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="6" style="text-align: center;">Climate Zone</th> </tr> <tr> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">5</th> <th style="text-align: center;">6-8</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="text-align: center;">POINTS</td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> <td style="text-align: center;">6</td> <td style="text-align: center;">8</td> <td style="text-align: center;">8</td> </tr> </tbody> </table> <p><i>[No points awarded for multifamily buildings four or more stories in height.]</i></p>	Climate Zone						1	2	3	4	5	6-8	POINTS						0	2	4	6	8	8	Per Table 703.4.1
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POINTS																									
0	2	4	6	8	8																				
<p>703.4.2 All space cooling is provided by a system(s) that does not include air ducts.</p> <p style="text-align: center;">Table 703.4.2 Ductless Cooling System</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="6" style="text-align: center;">Climate Zone</th> </tr> <tr> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">5</th> <th style="text-align: center;">6-8</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="text-align: center;">POINTS</td> </tr> <tr> <td style="text-align: center;">8</td> <td style="text-align: center;">8</td> <td style="text-align: center;">4</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> </tbody> </table> <p><i>[No points awarded for multifamily buildings four or more stories in height.]</i></p>	Climate Zone						1	2	3	4	5	6-8	POINTS						8	8	4	2	1	0	Per Table 703.4.2
Climate Zone																									
1	2	3	4	5	6-8																				
POINTS																									
8	8	4	2	1	0																				
<p>703.4.3 Ductwork is in accordance with all of the following:</p> <ol style="list-style-type: none"> (1) Building cavities are not used as return ductwork. (2) Heating and cooling ducts and mechanical equipment are installed within the conditioned building space. (3) Ductwork is not installed in exterior walls. <p style="text-align: center;">Table 703.4.3 Ducts</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="6" style="text-align: center;">Climate Zone</th> </tr> <tr> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">5</th> <th style="text-align: center;">6-8</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="text-align: center;">POINTS</td> </tr> <tr> <td style="text-align: center;">8</td> <td style="text-align: center;">10</td> <td style="text-align: center;">8</td> <td style="text-align: center;">8</td> <td style="text-align: center;">8</td> <td style="text-align: center;">4</td> </tr> </tbody> </table> <p><i>[No points awarded for multifamily buildings four or more stories in height.]</i></p>	Climate Zone						1	2	3	4	5	6-8	POINTS						8	10	8	8	8	4	Per Table 703.4.3
Climate Zone																									
1	2	3	4	5	6-8																				
POINTS																									
8	10	8	8	8	4																				

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GREEN BUILDING PRACTICES

POINTS

703.4.4 Duct Leakage. The entire central HVAC duct system, including air handlers and register boots, is tested by a third party for total leakage at a pressure differential of 0.1 in. w.g. (25 Pa) and maximum air leakage is equal to or less than 6% of the system design flow rate or 4 cu-ft per minute per 100 sq. ft. of conditioned floor area.

Per Table 703.4.4

**Table 703.4.4
Duct Leakage**

Ductwork location	Climate Zone					
	1	2	3	4	5	6-8
POINTS						
ductwork <i>entirely outside</i> the building's thermal envelope	4	5	4	3	2	1
ductwork <i>entirely inside</i> the building's thermal envelope	1	1	1	1	1	1
ductwork <i>inside and outside</i> the building's thermal envelope	3	4	3	2	1	1

Points not awarded if points are taken under § 705.6.2.3.

703.5 Water heating system

703.5.1 Water heater Uniform Energy Factor (UEF) is in accordance with the following:

[Where multiple systems are used, points awarded based on the system with the lowest efficiency.]

Water heater design is based on only 1 (one) water heater per dwelling unit, based on approved methods from ICC IPC, ASPE, or manufacturer specifications. All table values are based on water heaters with medium water draws as defined by the DOE test procedures (55 gallons per day).

- (1) Gas water heating

Per Tables 703.5.1(1)(a) through 703.5.1(1)(e)

Table 703.5.1(1)(a)

Gas Water Heating

Storage Water Heater, Rated Storage Volume > 20 Gallons and ≤ 55 Gallons, Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
POINTS								
0.65 to <0.78	2	2	2	2	2	2	2	1
≥0.78	3	3	3	3	3	3	3	2

Table 703.5.1(1)(b)

Gas Water Heating

Storage Water Heater, Rated Storage Volume > 55 Gallons and ≤ 100 Gallons, Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
POINTS								
≥0.78	1	1	1	1	1	1	1	1

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GREEN BUILDING PRACTICES

POINTS

Table 703.5.1(1)(c)
Gas Water Heating
Storage Water Heater with Input Rate Greater than 75,000 Btu/h (Commercial)

Thermal Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.90 to < 0.95	6	6	5	3	3	3	3	2
≥0.95	7	7	5	4	4	4	4	2

Table 703.5.1(1)(d)
Gas Water Heating
Storage Water Heater with Input Rate Greater than 75,000 Btu/h (Commercial),
In Buildings with High-Capacity Service Water-Heating Systems
(1,000,000 Btu/h or Greater)

Thermal Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.92 to < 0.95	1	1	1	1	1	1	1	1
≥0.95	2	2	2	2	2	2	2	1

Table 703.5.1(1)(e)
Gas Water Heating
Instantaneous Water Heater, Rated Storage Volume < 2 Gallons
and Input Rate of > 50,000 Btu/h, Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.89 to < 0.94	2	2	2	1	1	1	1	1
≥0.94	3	3	2	2	2	2	2	1

(2) Electric water heating

Table 703.5.1(2)(a)
Storage Water Heater, Rated Storage Volume ≥ 20 Gallons and ≤ 55 Gallons,
Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.94 to <1.0	1	1	1	1	1	1	1	1
1.0 to <1.5	4	2	2	2	1	1	1	1
1.5 to <2.0	7	4	3	2	2	2	1	1
2.0 to <2.2	14	8	7	5	4	4	2	2
2.2 to <2.5	17	9	8	6	5	4	3	3
2.5 to <3.0	18	12	10	8	6	6	3	3
≥3.0	22	16	13	11	8	8	4	3

Per Tables
703.5.1(2)(a)
through
703.5.1(2)(e)

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GREEN BUILDING PRACTICES

POINTS

Table 703.5.1(2)(b)
Storage Water Heater, Rated Storage Volume ≥ 55 Gallons and ≤ 120 Gallons,
Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
2.2 to <2.5	6	4	3	3	2	2	1	1
2.5 to <3.0	7	5	4	3	3	3	2	2
3.0 to <3.5	8	5	5	4	3	3	3	2
≥3.5	9	6	6	5	4	4	3	2

Table 703.5.1(2)(c)
Electric Tabletop Water Heating
(Tabletop Water Heater, Rated Storage Volume ≥ 20 Gallons and ≤ 120 Gallons,
Medium Water Draw)

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.91	1	1	1	1	1	1	1	1

Table 703.5.1(2)(d)
Electric Instantaneous Water Heating^a
(Instantaneous Electric Water Heater, Rated Storage Volume < 2 Gallons,
Medium Water Draw)

Uniform Energy Factor or Thermal Efficiency ^b	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.97	2	2	2	2	2	2	2	2

a. Applies to any size water heater.

b. Electric instantaneous water heaters have either a Uniform Energy Factor (capacity less than or equal to 12 kW) or a Thermal Efficiency (capacity greater than 12 kW).

Table 703.5.1(2)(e)
Electric Grid Enabled Water Heating
(Grid Enabled Storage Water Heater, Rated Storage Volume ≥ 75 Gallons,
Medium Water Draw)

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.95	1	1	1	1	1	1	1	1

(3) Oil water heating

Table 703.5.1(3)
Oil Water Heating
(Oil Water Heating, < 50 Gallons, Medium Water Draw)

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.62	1	1	1	1	1	1	1	1

Per Table 703.5.1(3)

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GREEN BUILDING PRACTICES

POINTS

703.5.2 Desuperheater is installed by a qualified installer or is pre-installed in the factory.

Per Table 703.5.2

**Table 703.5.2
Desuperheater**

Climate Zone						
1	2	3	4	5	6	7-8
POINTS						
23	17	9	7	5	4	2

703.5.3 Drain-water heat recovery system is installed. *[Points awarded per building.]*

2

703.5.4 Indirect-fired water heater storage tanks heated from boiler systems are installed.

1

703.5.5 Solar water heater. SRCC (Solar Rating & Certification Corporation) OG 300 rated, or equivalent, solar domestic water heating system is installed. Solar Energy Factor (SEF) as defined by SRCC is in accordance with Table 703.5.5(a) and Table 703.5.5(b).

Per Table 703.5.5(a) or 703.5.5(b)

**Table 703.5.5(a)
Storage Water Heater, Rated Storage Volume of Backup Water Heater
is ≥ 0.1 Gallon and ≤ 55 Gallons, Medium Water Draw**

SEF	Climate Zone						
	Tropical & 1	2	3	4	5	6	7-8
POINTS							
SEF ≥ 1.3	1	2	3	5	6	7	6
SEF ≥ 1.51	2	2	4	6	9	10	10
SEF ≥ 1.81	2	3	5	9	13	14	14
SEF ≥ 2.31	4	5	8	14	19	21	20
SEF ≥ 3.01	5	7	11	21	27	31	30

**Table 703.5.5(b)
Storage Water Heater, Rated Storage Volume of Backup Water Heater
is >55 Gallons, Medium Water Draw**

SEF	Climate Zone						
	Tropical & 1	2	3	4	5	6	7-8
POINTS							
SEF ≥ 1.3	1	1	2	3	4	5	4
SEF ≥ 1.51	1	1	2	4	6	7	7
SEF ≥ 1.81	1	2	4	6	8	10	9
SEF ≥ 2.31	2	3	5	10	13	14	13
SEF ≥ 3.01	4	5	7	14	18	20	20

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GREEN BUILDING PRACTICES

POINTS

Per Table 703.6.1(1)

Per Table 703.6.2(1)

Per Table 703.6.2(1)

4

703.6 Lighting and appliances

703.6.1 Hard-wired lighting. Hard-wired lighting is in accordance with one of the following:

- (1) A minimum percent of the total hard-wired interior luminaires or lamps qualify as ENERGY STAR, DesignLights Consortium (DLC), or applicable equivalent.

**Table 703.6.1(1)
Hard-wired Lighting**

Minimum percent of fixtures	Climate Zone							
	1	2	3	4	5	6	7	8
95%	3	3	3	2	2	2	2	2

- (2) A minimum of 80% of the exterior lighting wattage has a minimum efficacy of 61 lumens per watt or is solar-powered. 1
- (3) In multifamily buildings, common area lighting power density (LPD) is less than 0.51 Watts per square foot. 7

703.6.2 Appliances. ENERGY STAR or equivalent appliance(s) are installed:

- (1) Refrigerator

**Table 703.6.2(1)
Refrigerator**

Climate Zone							
1	2	3	4	5	6	7	8
1	1	1	1	1	1	1	1

- (2) Dishwasher 1
- (3) Washing machine 4

703.7 Passive solar design

703.7.1 Sun-tempered design. Building orientation, sizing of glazing, and design of overhangs are in accordance with all of the following:..... 4

- (1) The long side (or one side if of equal length) of the building faces within 20 degrees of true south.
- (2) Vertical glazing area is between 5% and 7% of the gross conditioned floor area on the south face [also see § 703.7.1(8)] and glazing U-factors meet Table 703.2.5.2(a).
- (3) Vertical glazing area is less than 2% of the gross conditioned floor area on the west face, and glazing meets Table 703.2.5.2(a).
- (4) Vertical glazing area is less than 4% of the gross conditioned floor area on the east face, and glazing meets Table 703.2.5.2(a).
- (5) Vertical glazing area is less than 8% of the gross conditioned floor area on the north face, and glazing meets Table 703.2.5.2(a).

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GREEN BUILDING PRACTICES

POINTS

- (6) Skylights, where installed, are in accordance with the following:
 - (a) shades and insulated wells are used, and all glazing meets Table 703.2.5.2(a).
 - (b) horizontal skylights are less than 0.5% of finished ceiling area.
 - (c) sloped skylights on slopes facing within 45 degrees of true south, east, or west are less than 1.5% of the finished ceiling area.
- (7) Overhangs, adjustable canopies, awnings, or trellises provide shading on south-facing glass for the appropriate climate zone in accordance with Table 703.7.1(7):

**Table 703.7.1(7)
South-Facing Window Overhang Depth**

		Vertical distance between bottom of overhang and top of window sill				
		≤7' 4"	≤6' 4"	≤5' 4"	≤4' 4"	≤3' 4"
Climate Zone	1 & 2 & 3	2' 8"	2' 8"	2' 4"	2' 0"	2' 0"
	4 & 5 & 6	2' 4"	2' 4"	2' 0"	2' 0"	1' 8"
	7 & 8	2' 0"	1' 8"	1' 8"	1' 4"	1' 0"

For SI: 1 in. = 25.4 mm

- (8) The south facing windows have an SHGC of 0.40 or higher.
- (9) Return air or transfer grilles/ducts are in accordance with § 705.4.

Multifamily Building Note: *The site is designed such that at least 40% of the multifamily dwelling or sleeping units have one south facing wall (within 15 degrees) containing at least 50% of glazing for entire unit, Effective shading is required for passive solar control on all south facing glazing. The floor area of at least 15 ft. from the south facing perimeter glazing is massive and exposed to capture solar heat during the day and reradiate at night.*

703.7.2 Window shading. Automated solar protection or dynamic glazing is installed to provide shading for windows.....

1

703.7.3 Passive cooling design. Passive cooling design features are in accordance with at least three of the following: [1 additional point awarded for each additional item.].....

3 [6 max]

- (1) Exterior shading is provided on east and west windows using one or a combination of the following:
 - (a) vine-covered trellises with the vegetation separated a minimum of 1 ft. (305 mm) from face of building.
 - (b) moveable awnings or louvers.
 - (c) covered porches.
 - (d) attached or detached conditioned/unconditioned enclosed space that provides full shade of east and west windows (e.g., detached garage, shed, or building).
- (2) Overhangs are installed to provide shading on south-facing glazing in accordance with § 703.7.1(7).

Points not awarded if points are taken under § 703.7.1.

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GREEN BUILDING PRACTICES

POINTS

- (3) Windows and/or venting skylights are located to facilitate cross and stack effect ventilation.
- (4) Solar reflective roof or radiant barrier is installed in climate zones 1, 2, or 3 and roof material achieves a 3-year aged criteria of 0.50.
- (5) Internal exposed thermal mass is a minimum of 3 in. (76 mm) in thickness. Thermal mass consists of concrete, brick, and/or tile fully adhered to a masonry base or other masonry material in accordance with one or a combination of the following:
 - (a) A minimum of 1 sq. ft. (0.09 m²) of exposed thermal mass of floor per 3 sq. ft. (2.8 m²) of gross finished floor area.
 - (b) A minimum of 3 sq. ft. (2.8 m²) of exposed thermal mass in interior walls or elements per sq. ft. (0.09 m²) of gross finished floor area.
- (6) Roofing material is installed with a minimum 0.75 in. (19 mm) continuous air space offset from the roof deck from eave to ridge.

703.7.4 Passive solar heating design. In addition to the sun-tempered design features in § 703.7.1, all of the following are implemented: *[Points shall not be awarded in the Tropical Climate Zone]*.....

4

- (1) Additional glazing, no greater than 12%, is permitted on the south wall. This additional glazing is in accordance with the requirements of § 703.7.1.
- (2) Additional thermal mass for any room with south-facing glazing of more than 7% of the finished floor area is provided in accordance with the following:
 - (a) Thermal mass is solid and a minimum of 3 in. (76 mm) in thickness. Where two thermal mass materials are layered together (e.g., ceramic tile on concrete base) to achieve the appropriate thickness, they are fully adhered to (touching) each other.
 - (b) Thermal mass directly exposed to sunlight is provided in accordance with the following minimum ratios:
 - (i) Above latitude 35 degrees: 5 sq. ft. (0.465 m²) of thermal mass for every 1 sq. ft. (0.093 m²) of south-facing glazing.
 - (ii) Latitude 30 degrees to 35 degrees: 5.5 sq. ft. (0.51 m²) of thermal mass for every 1 sq. ft. (0.093 m²) of south-facing glazing.
 - (iii) Latitude 25 degrees to 30 degrees: 6 sq. ft. (0.557 m²) of thermal mass for every 1 sq. ft. (0.093 m²) of south-facing glazing.
 - (c) Thermal mass not directly exposed to sunlight is permitted to be used to achieve thermal mass requirements of § 703.7.4 (2) based on a ratio of 40 sq. ft. (3.72 m²) of thermal mass for every 1 sq. ft. (0.093 m²) of south-facing glazing.
- (3) In addition to return air or transfer grilles/ducts required by § 703.7.1(9), provisions for forced airflow to adjoining areas are implemented as needed.

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GREEN BUILDING PRACTICES		POINTS
704	ERI TARGET PATH	
<p>704.1 ERI target compliance. Compliance with the energy chapter shall be permitted to be based on the EPA National ERI Target Procedure for ENERGY STAR Certified Homes. Points from § 704 (ERI Target) shall not be combined with points from § 702 (Performance Path) or § 703 (Prescriptive Path).</p> <p>Dwelling ratings shall be submitted to a Rating Certification Body approved by the Adopting Entity for calculating points under this section.</p> <p>704.2 Point calculation. Points for § 704 shall be computed based on Step “1” of the EPA National ERI Target Procedure. Points shall be computed individually for each building as follows:</p> <p>Points = 30 + (ENERGY STAR National ERI Target - National ERI Points) * 2</p>		
705	ADDITIONAL PRACTICES	
<p>705.1 Application of additional practice points. Points from § 705 can be added to points earned in § 702 (Performance Path), § 703 (Prescriptive Path), § 704 (ERI Target Path), or § 701.1.4 (Alternative Bronze and Silver level compliance).</p> <p>705.2 Lighting</p> <p>705.2.1 Lighting controls</p> <p><i>[Percentages for point thresholds are based on lighting not required for means of egress or security lighting as defined by local building codes.]</i></p> <p>705.2.1.1 Interior lighting. In dwelling units or sleeping units, permanently installed interior lighting fixtures are controlled with an occupancy sensor, or dimmer:</p> <p>(1) greater than or equal to 50% to less than 75% of lighting fixtures..... 1</p> <p>(2) a minimum of 75% of lighting fixtures. 2</p> <p>705.2.1.2 Exterior lighting. Photo or motion sensors are installed on 75% of outdoor lighting fixtures to control lighting. <i>[Percentages for point thresholds do not include lighting equipped with photovoltaics.]</i>..... 1</p> <p>705.2.1.3 Multifamily common areas</p> <p>(1) In a multifamily building, occupancy sensors, or dimmers are installed in common areas (except corridors and stairwells).</p> <p>(a) greater than or equal to 50% to less than 75% of lighting fixtures. 1</p> <p>(b) a minimum of 75% of lighting fixtures. 2</p> <p>(2) In a multifamily building, occupancy controls are installed to automatically reduce light levels in interior corridors and exit stairwells when the space is unoccupied. Light levels are reduced by:</p> <p>(a) greater than or equal to 50% to less than 75% or to local minimum requirements 2</p> <p>(b) a minimum of 75% 3</p>		

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GREEN BUILDING PRACTICES	POINTS
705.2.1.4 In a multifamily building, occupancy controls are installed to automatically reduce light levels in garages and parking structures when the space is unoccupied. Light levels are reduced by:	
(1) greater than or equal to 50% to less than 75% or to local minimum requirements	2
(2) a minimum of 75%.....	3
705.2.2 TDDs and skylights. A tubular daylighting device (TDD) or a skylight that meets the requirements of Table 703.2.5.2(a) is installed in rooms without windows. <i>[Points awarded per building.]</i>	2
705.2.3 Lighting outlets. Occupancy sensors are installed for a minimum of 80% of hard-wired lighting outlets in the interior living space.	1
705.2.4 Recessed luminaires. The number of recessed luminaires that penetrate the thermal envelope is less than 1 per 400 sq. ft. (37.16 m ²) of total conditioned floor area and they are in accordance with § 701.4.3.5.	1
705.3 Induction cooktop. Induction cooktop is installed.....	1
705.4 Return ducts and transfer grilles. Return ducts or transfer grilles are installed in every room with a door. Return ducts or transfer grilles are not required for bathrooms, kitchens, closets, pantries, and laundry rooms.	2
705.5 HVAC design and installation	
705.5.1 Meet one or both of the following:	
(1) HVAC contractor is certified by the Air Conditioning Contractors of America’s Quality Assured Program (ACCA/QA) or by an EPA-recognized HVAC Quality Installation Training Oversight Organization (H-QUITO) or equivalent.	1
(2) HVAC installation technician(s) is certified by North American Technician Excellence, Inc. (NATE) or equivalent.	1
705.5.2 Performance of the heating and/or cooling system is verified by the HVAC contractor in accordance with all of the following:	3
(1) Start-up procedure is performed in accordance with the manufacturer’s instructions.	
(2) Refrigerant charge is verified by super-heat and/or sub-cooling method.	
(3) Burner is set to fire at input level listed on nameplate.	
(4) Air handler setting/fan speed is set in accordance with manufacturer’s instructions.	
(5) Total airflow is within 10% of design flow.	
(6) Total external system static does not exceed equipment capability at rated airflow.	
705.5.3 HVAC Design is verified by 3rd party as follows:	
(1) The ENERGY STAR HVAC Design and Rater Design Review Checklists are completed and correct.	3
(2) HVAC Installation is inspected and conforms to HVAC design documents and plans.....	3

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GREEN BUILDING PRACTICES	POINTS
<p>705.6 Installation and performance verification</p> <p>705.6.1 Third-party on-site inspection is conducted to verify compliance with all of the following, as applicable. Minimum of two inspections are performed: one inspection after insulation is installed and prior to covering, and another inspection upon completion of the building. Where multiple buildings or dwelling units of the same model or sleeping units of the same model are built by the same builder, a representative sample inspection of a minimum of 15% of the buildings or dwelling units or sleeping units is permitted.</p> <p>(1) Ducts are installed in accordance with the IRC or IMC and ducts are sealed.</p> <p>(2) Building envelope air sealing is installed.</p> <p>(3) Insulation is installed in accordance with § 701.4.3.2.1.</p> <p>(4) Windows, skylights, and doors are flashed, caulked, and sealed in accordance with manufacturer’s instructions and in accordance with § 701.4.3.</p> <p>705.6.2 Testing. Testing is conducted to verify performance.</p> <p>705.6.2.1 Air leakage validation of building or dwelling units or sleeping units. A visual inspection is performed as described in § 701.4.3.2(2) and air leakage testing is performed in accordance with ASTM E779 or ASTM E1827.</p> <p><i>Points awarded only for buildings where building envelope leakage testing is not required by ICC IECC. Points not awarded if points are taken under § 703.2.4.</i></p> <p>(1) A blower door test.</p> <p>(2) Third-party verification is completed.....</p> <p>705.6.2.2 HVAC airflow testing. Balanced HVAC airflows are demonstrated by flow hood or other acceptable flow measurement tool by a third party. Test results are in accordance with the following:</p> <p>(1) Measured flow at each supply and return register meets or exceeds the requirements in ACCA 5 QI Section 5.2.....</p> <p>(2) Total airflow meets or exceeds the requirements in ACCA 5 QI Section 5.2.</p> <p>705.6.2.3 HVAC duct leakage testing. One of the following is achieved:</p> <p><i>Points awarded only for buildings where duct leakage testing is not required by ICC IECC. Points not awarded if points are taken under § 703.4.4.</i></p> <p>(1) Duct leakage is in accordance with ICC IECC R403.3.3 and R403.3.4.....</p> <p>(2) Duct leakage is in accordance with ICC IECC R403.3.3 and R403.3.4, and testing is conducted by an independent third party.....</p>	<p>3</p> <p>3</p> <p>3</p> <p>3</p> <p>5</p> <p>3</p> <p>3</p> <p>3</p> <p>5</p> <p>3</p> <p>5</p>

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GREEN BUILDING PRACTICES	POINTS
<p>705.6.3 Insulating hot water pipes. Insulation with a minimum thermal resistance (R-value) of at least R-3 is applied to the following, as applicable: <i>[Points awarded only where these practices are not required by ICC IECC.]</i></p> <ul style="list-style-type: none"> (a) piping 3/4-in. and larger in outside diameter (b) piping serving more than one dwelling unit or sleeping unit (c) piping located outside the conditioned space (d) piping from the water heater to a distribution manifold (e) piping located under a floor slab (f) buried piping (g) supply and return piping in recirculation systems other than demand recirculation systems 	1
<p>705.6.4 Potable hot water demand re-circulation system.</p> <p>705.6.4.1 Potable hot water demand re-circulation system is installed in a single-family unit.....</p> <p>705.6.4.2 Potable hot water demand re-circulation system(s) that serves every unit in a multifamily building is installed in place of a standard circulation pump and control.</p>	1 2
<p>705.7 Submetering system. In multifamily buildings, an advanced electric and fossil fuel submetering system is installed to monitor electricity and fossil fuel consumption for each unit. The device provides consumption information on a monthly or near real-time basis. The information is available to the occupants at a minimum on a monthly basis.</p>	1
<p>706 INNOVATIVE PRACTICES</p>	
<p>706.1 Energy consumption control. A whole-building, whole-dwelling unit, or whole-sleeping unit device or system is installed that controls or monitors energy consumption.....</p> <ul style="list-style-type: none"> (1) programmable communicating thermostat with the capability to be controlled remotely (2) energy-monitoring device or system..... (3) energy management control system..... (4) programmable thermostat with control capability based on occupant presence or usage pattern (5) lighting control system 	3 max 1 1 3 1 1
<p>706.2 Renewable energy service plan. Renewable energy service plan is provided as follows:</p> <ul style="list-style-type: none"> (1) Builder selects a renewable energy service plan provided by the local electrical utility for interim (temporary) electric service, or purchases renewable energy certificates (RECs) to cover electricity used. The builder’s local administrative office has renewable energy service or has otherwise been paired with RECs. Green-e Certified (or equivalent) is required for renewable electricity purchases.... (2) The buyer of the building selects one of the following renewable energy service plans provided by the utility prior to occupancy of the building with a minimum two-year commitment. <ul style="list-style-type: none"> (a) less than 50% of the dwelling’s projected electricity and gas use is provided by renewable energy.. (b) greater than or equal to 50% of the dwelling’s projected electricity and gas use is provided by renewable energy..... 	1 1 2

GREEN BUILDING PRACTICES	POINTS
<p>706.3 Smart appliances and systems. Smart appliances and systems are installed as follows: <i>[1 point awarded if at least 3 smart appliances are installed; 1 additional point awarded for 6 or more.] ..</i></p> <ul style="list-style-type: none"> (1) Refrigerator (2) Freezer (3) Dishwasher (4) Clothes Dryer (5) Clothes Washer (6) Room Air Conditioner (7) HVAC Systems (8) Service Hot Water Heating Systems <p><i>[Items (7) and (8) are permitted to count as two appliances each for the purpose of awarding points.]</i></p> <p style="background-color: #cccccc;"><i>Where points awarded in § 706.3, points shall not be awarded in § 706.7 and § 706.10.</i></p> <p>706.4 Pumps</p> <p>706.4.1 Pool, spa, and water features equipped with filtration pumps as follows:</p> <ul style="list-style-type: none"> (1) Electronically controlled variable-speed pump(s) is installed (full load efficiency of 90% or greater). .. (2) Electronically controlled variable-speed pump(s) is installed (full load efficiency of 90% or greater) in a pool <p>706.4.2 Sump pump(s), with electrically commutated motors (ECMs) or permanent split capacitor (PSC) motors, is installed (full load efficiency of 90% or greater).</p> <p>706.5 On-site renewable energy system. One of the following options is implemented:</p> <ul style="list-style-type: none"> (1) Building is Solar-Ready in compliance with ICC IECC Appendix A Solar Ready Provisions. (2) An on-site renewable energy system(s) is installed on the property. (3) An on-site renewable energy system(s) and a battery energy storage system are installed on the property. <i>[2 points awarded per kW or renewable energy system plus 1 per each 2 kWh or battery energy storage system]</i> <p style="background-color: #cccccc;"><i>Points awarded shall not be combined with points for renewable energy in another section of this chapter. Points shall not be awarded for solar thermal or geothermal systems that provide space heating, space cooling, or water heating, points for these systems are awarded in § 703. Where on-site renewable energy is included in § 702 Performance Path or 704 ERI Target Path, § 706.5 shall not be awarded. The solar-ready zone roof area in item (1) is area per dwelling unit. Points in item (2) and (3) shall be divided by the number of dwelling units.</i></p> <p style="background-color: #cccccc;">Multifamily Building Note: Conditioned common area and non-residential space is excluded for the purpose of calculating number of units.</p>	<p style="text-align: right;">M=Mandatory</p> <p style="text-align: right;">1 [2 max]</p> <p style="text-align: right;">1</p> <p style="text-align: right;">3</p> <p style="text-align: right;">1</p> <p style="text-align: right;">1</p> <p style="text-align: right;">2 per kW</p> <p style="text-align: right;">2 per kW</p>

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GREEN BUILDING PRACTICES	POINTS
706.6 Parking garage efficiency. Structured parking garages are designed to require no mechanical ventilation for fresh air requirements.	2
706.7 Grid-interactive electric thermal storage system. A grid-interactive electric thermal storage system is installed.	
(1) Grid-Interactive Water Heating System.....	1
(2) Grid-Interactive Space Heating and Cooling System	1
<i>Where points are awarded in § 706.7, points shall not be awarded in § 706.3 and § 706.10.</i>	
706.8 Electrical vehicle charging station. A Level 2 (208/240V 40-80 amp) or Level 3 electric vehicle charging station is installed on the building site. (Note: Charging station shall not be included in the building energy consumption.)	2
706.9 CNG vehicle fueling station. A CNG vehicle residential fueling appliance is installed on the building site. The CNG fueling appliances shall be listed in accordance with ANSI/CSA NGV 5.1 and installed in accordance to the appliance manufacturer’s installation instructions. (Note: The fueling appliance shall not be included in the building energy consumption.)	1
706.10 Automatic demand response. Automatic demand response system is installed that curtails energy usage upon a signal from the utility or an energy service provider is installed.	1
<i>Where points are awarded in § 706.10, points shall not be awarded in § 706.3 and § 706.7.</i>	
706.11 Grid-interactive battery storage system. A grid-interactive battery storage system of no less than 6 kWh of available capacity is installed.	2
706.12 Smart ventilation. A whole-building ventilation system is installed with automatic ventilation controls to limit ventilation during periods of extreme temperature, extreme humidity, and/or during times of peak utility loads and is in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4.	1
706.13 Alternative refrigerant. Use of the following in mechanical space cooling systems for dwellings.	
(1) Use alternative refrigerant with a GWP less than 1,000	1
(2) Do not use refrigerants.....	2
706.14 Third-party utility benchmarking service.	
(1) For a multifamily building, the owner has contracted with a third-party utility benchmarking service with at least five (5) years of experience in utility data management and analysis to perform a monthly analysis of whole-building energy and water consumption for a minimum of one (1) year. ...	3
(2) The building owner commits to reporting energy data using EPA’s ENERGY STAR Portfolio Manager for a minimum of three (3) years.	1
706.15 Entryway air seal. For multifamily buildings, where not required by the building or energy code, to slow the movement of unconditioned air from outdoors to indoors at the main building entrance, the following is installed:	
(1) Building entry vestibule	2
(2) Revolving entrance doors.	2



SECTION 8

WATER EFFICIENCY

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GREEN BUILDING PRACTICES

POINTS

801 INDOOR AND OUTDOOR WATER USE

801.0 Intent. Implement measures that reduce indoor and outdoor water usage. Implement measures that include collection and use of alternative sources of water. Implement measures that treat water on site.

801.1 Mandatory requirements. The building shall comply with § 802 (Prescriptive Path) and § 803 (Innovative Practices) or § 804 (Performance Path). Points from § 804 (Performance Path) shall not be combined with points from § 802 (Prescriptive Path) or § 803 (Innovative Practices). The mandatory provisions of § 802 (Prescriptive Path) are required when using the Water Rating Index of § 804 (Performance Path) for Chapter 8 Water Efficiency compliance.

802 PRESCRIPTIVE PATH

802.1 Indoor hot water usage. Indoor hot water supply system is in accordance with one of the practices listed in items (1) through (5). The maximum water volume from the source of hot water to the termination of the fixture supply is determined in accordance with Tables 802.1(1) or 802.1(2). The maximum pipe length from the source of hot water to the termination of the fixture supply is 50 ft.

Where more than one water heater or where more than one type of hot water supply system, including multiple circulation loops, is used, points are awarded only for the system that qualifies for the minimum number of points. Systems with circulation loops are eligible for points only if pumps are demand controlled. Circulation systems with timers or aquastats and constant-on circulation systems are not eligible to receive points. Points awarded only if the pipes are insulated in accordance with § 705.6.3.

- (1) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 128 ounces (1 gallon or 3.78 liters)..... **8**
- (2) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 64 ounces (0.5 gallon or 1.89 liters) **12**
- (3) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 32 ounces (0.25 gallon or 0.945 liters)..... **20**
- (4) A demand controlled hot water priming pump is installed on the main supply pipe of the circulation loop and the maximum volume from this supply pipe to the furthest fixture is 24 ounces (0.19 gallons or 0.71 liters). **24**
 - (a) The volume in the circulation loop (supply) from the water heater or boiler to the branch for the furthest fixture is no more than 128 ounces (1 gallon or 3.78 liters)..... **4 Additional**
- (5) A central hot water recirculation system is implemented in multifamily buildings in which the hot water line distance from the recirculating loop to the engineered parallel piping system (i.e., manifold system) is less than 30 ft. (9,144 mm) and the parallel piping to the fixture fittings contains a maximum of 64 ounces (1.89 liters) (115.50 cubic in.) (0.50 gallons)..... **9**

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GREEN BUILDING PRACTICES

POINTS

- (6) Tankless water heater(s) with at least 0.5 gallon (1.89 liters) of storage are installed, or a tankless water heater that ramps up to at least 110°F within 5 seconds is installed. The storage may be internal or external to the tankless water heater.

1 Additional

**Table 802.1(1)
Maximum Pipe Length Conversion Table^a**

Nominal Pipe Size (in.)	Liquid Ounces per Foot of Length	Main, Branch, and Fixture Supply System Volume Category			Branch and Fixture Supply Volume from Circulation Loop
		128 ounces (1 gallons) [per 802.1(1)]	64 ounces (0.5 gallon) [per 802.1(2)]	32 ounces (0.25 gallon) [per 802.1(3)]	24 ounces (0.19 gallon) [per 802.1(4)]
		Maximum Pipe Length (feet)			
1/4 ^b	0.33	50	50	50	50
5/16 ^b	0.5	50	50	50	48
3/8 ^b	0.75	50	50	43	32
1/2	1.5	50	43	21	16
5/8	2	50	32	16	12
3/4	3	43	21	11	8
7/8	4	32	16	8	6
1	5	26	13	6	5
1 1/4	8	16	8	4	3
1 1/2	11	12	6	3	2
2	18	7	4	2	1

- a. Maximum pipe length figures apply when the entire pipe run is one nominal diameter only. Where multiple pipe diameters are used, the combined volume shall not exceed the volume limitation in § 802.1.
- b. The maximum flow rate through 1/4 in. nominal piping shall not exceed 0.5 gpm. The maximum flow rate through 5/16 in. nominal piping shall not exceed 1 gpm. The maximum flow rate through 3/8 in. nominal piping shall not exceed 1.5 gpm.

**Table 802.1(2)
Common Hot Water Pipe Internal Volumes**

OUNCES OF WATER PER FOOT OF PIPE											
Size Nominal, In.	Copper Type M	Copper Type L	Copper Type K	CPVC CTS SDR 11	CPVC SCH 40	CPVC SCH 80	PE-RT SDR 9	Composite ASTM F 1281	PEX CTS SDR 9	PP SDR 7.4 F2389	PP SDR 9 F2389
3/8	1.06	0.97	0.84	N/A	1.17	N/A	0.64	0.63	0.64	N/A	N/A
1/2	1.69	1.55	1.45	1.25	1.89	1.46	1.18	1.31	1.18	1.72	1.96
3/4	3.43	3.22	2.90	2.67	3.38	2.74	2.35	3.39	2.35	2.69	3.06
1	5.81	5.49	5.17	4.43	5.53	4.57	3.91	5.56	3.91	4.41	5.01
1 ¼	8.70	8.36	8.09	6.61	9.66	8.24	5.81	8.49	5.81	6.90	7.83
1 ½	12.18	11.83	11.45	9.22	13.2	11.38	8.09	13.88	8.09	10.77	12.24
2	21.08	20.58	20.04	15.79	21.88	19.11	13.86	21.48	13.86	17.11	19.43

GREEN BUILDING PRACTICES	POINTS
<p>802.2 Water-conserving appliances. ENERGY STAR or equivalent water-conserving appliances are installed.</p> <p>(1) dishwasher 2</p> <p>(2) clothes washer, or 13</p> <p>(3) clothes washer with an Integrated Water Factor of 3.8 or less 18</p> <p><i>Multifamily Building Note: Washing machines are installed in individual units or provided in common areas of multifamily buildings.</i></p> <p>802.3 Water usage metering. Water meters are installed meeting the following:</p> <p>(1) Single-Family Buildings: Water Usage Metering:.....</p> <p style="padding-left: 20px;">(a) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site. 2 per unique use meter</p> <p style="padding-left: 20px;">(b) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered)..... 2 per sensor package</p> <p>(2) Multifamily Buildings: Water Usage Metering:</p> <p style="padding-left: 20px;">(a) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site. 2 per unique use meter</p> <p style="padding-left: 20px;">(b) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered)..... 2 per sensor package</p> <p style="background-color: #cccccc;"><i>Points earned in § 802.3(2) shall not exceed 50% of the total points earned for Chapter 8.</i></p> <p>802.4 Showerheads. Showerheads are in accordance with the following:</p> <p>(1) The total maximum combined flow rate of all showerheads in a shower compartment with floor area of 2,600 sq. in. or less is equal or less than 2.0 gpm. For each additional 1,300 sq. in. or any portion thereof of shower compartment floor area, an additional 2.0 gpm combined showerhead flow rate is allowed. Showerheads shall comply with ASME A112.18.1/CSA B125.1 and shall meet the performance criteria of the EPA WaterSense Specification for showerheads. Showerheads shall be served by an automatic compensating valve that complies with ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and is specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead. [4 points awarded for first compartment; 1 point for each additional compartment in dwelling]..... 4 [7 max]</p> <p style="background-color: #cccccc;"><i>Points awarded per shower compartment. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.</i></p> <p>(2) All shower compartments in the dwelling unit(s) or sleeping unit(s) and common areas meet the requirements of 802.4(1) and all showerheads are in accordance with one of the following:</p> <p style="padding-left: 20px;">(a) maximum of 1.8 gpm 6 Additional</p> <p style="padding-left: 20px;">(b) maximum of 1.5 gpm 10 Additional</p>	<p>M=Mandatory</p>

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GREEN BUILDING PRACTICES	POINTS
(3) Any shower control that can shut off water flow without affecting temperature is installed. [1 Point awarded per shower control]	1 [3 max]
For SI: 1 gallon per minute = 3.785 L/m	
802.5 Faucets	
802.5.1 Install water-efficient lavatory faucets with flow rates not more than 1.5 gpm (5.68 L/m), tested in compliance with ASME A112.18.1/CSA B125.1 and meeting the performance criteria of the EPA WaterSense High-Efficiency Lavatory Faucet Specification:	
(1) Flow rate ≤ 1.5 gpm [All faucets in a bathroom are in compliance]	1 [3 max]
<i>[1 point awarded for each bathroom. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]</i>	
(2) Flow rate ≤ 1.2 gpm [All faucets in a bathroom are in compliance]	2 [6 max]
<i>[2 points awarded for each bathroom. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]</i>	
(3) Flow rate ≤ 1.5 gpm for all lavatory faucets in the dwelling unit(s) or sleeping unit(s)	6 Additional
(4) Flow rate ≤ 1.5 gpm for all lavatory faucets in the dwelling unit(s), and at least one bathroom has faucets with flow rates ≤ 1.2 gpm	8 Additional
(5) Flow rate ≤ 1.2 gpm for all lavatory faucets in the dwelling unit(s)	12 Additional
802.5.2 Water-efficient residential kitchen faucets are installed in accordance with ASME A112.18.1/CSA B125.1. Residential kitchen faucets may temporarily increase the flow above the maximum rate but not to exceed 2.2 gpm.	
(1) All residential kitchen faucets have a maximum flow rate of 1.8 gpm.	3
(2) All residential kitchen faucets have a maximum flow rate of 1.5 gpm.	1 Additional
802.5.3 Self-closing valve, motion sensor, metering, or pedal-activated faucet is installed to enable intermittent on/off operation. [1 point awarded per fixture.]	1 [3 max]
802.5.4 Water closets and urinals are in accordance with the following:	
<i>Points awarded for § 802.5.4(2) or § 802.5.4(3), not both.</i>	
(1) Gold and Emerald levels: All water closets and urinals are in accordance with § 802.5.4.....	M
(2) A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less in accordance with ASME A112.19.2/CSA B45.1 or ASME A112.19.14 as applicable. Tank-type water closets shall be in accordance with the performance criteria of the EPA WaterSense Specification for Tank-Type Toilets. <i>[Points awarded per fixture. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]</i>	4 [12 max]
(3) All water closets are in accordance with § 802.5.4(2).	17

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GREEN BUILDING PRACTICES	POINTS
(4) All water closets are in accordance with § 802.5.4(2) and one or more of the following are installed:	
(a) Water closets that have an effective flush volume of 1.2 gallons or less. <i>[Points awarded per toilet. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]</i>	2 Additional [6 Add'l max]
(b) One or more urinals with a flush volume of 0.5 gallons (1.9L) or less when tested in accordance with ASME A112.19.2/CSA B45.1.....	2 Additional
(c) One or more composting or waterless toilets and/or non-water urinals. Non-water urinals shall be tested in accordance with ASME A112.19.2/CSA B45.1.	12 Additional
802.6 Irrigation systems	
802.6.1 Where an irrigation system is installed, an irrigation plan and implementation are executed by a qualified professional or equivalent.	M
802.6.2 Irrigation sprinkler nozzles shall be tested according to ANSI standard ASABE/ICC 802 Landscape Irrigation Sprinkler and Emitter Standard by an accredited third-party laboratory.	6
802.6.3 Drip irrigation is installed.	13 max
(1) Drip irrigation is installed for all landscape beds.	4
(2) Subsurface drip is installed for all turf grass areas.	4
(3) Drip irrigation zones specifications show plant type by name and water use/need for each emitter <i>[Points awarded only if specifications are implemented.]</i>	5
802.6.4 The irrigation system(s) is controlled by a smart controller or no irrigation is installed. <i>[Points are not additive.]</i>	
(1) Irrigation controllers shall be in accordance with the performance criteria of the EPA WaterSense program	10
(2) No irrigation is installed and a landscape plan is developed in accordance with § 503.5, as applicable.	15
802.6.5 Commissioning and water use reduction for irrigation systems. <i>[Points are not additive per each section.]</i>	
(1) All irrigation zones utilize pressure regulation so emission devices (sprinklers and drip emitters) operate at manufacturer’s recommended operating pressure.	3
(2) Where dripline tubing is installed, a filter with mesh size in accordance with the manufacturer’s recommendation is installed on all drip zones.	3
(3) Utilize spray bodies that incorporate an in-stem or external flow shut-off device.	3
(4) For irrigation systems installed on sloped sites, either an in-stem or external check valve is utilized for each spray body.....	3
(5) Where an irrigation system is installed, a flow sensing device is installed to monitor and alert the controller when flows are outside design range.....	3

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802.7 Rainwater collection and distribution. Rainwater collection and distribution is provided.	
802.7.1 Rainwater is used for irrigation in accordance with one of the following:	
(1) Rainwater is diverted for landscape irrigation without impermeable water storage	5
(2) Rainwater is diverted for landscape irrigation with impermeable water storage in accordance with one of the following:	
(a) 50 – 499 gallon storage capacity	5
(b) 500 – 2,499 gallon storage capacity	10
(c) 2,500 gallon or larger storage capacity (system is designed by a professional certified by the ARCSA or equivalent).....	15
(d) All irrigation demands are met by rainwater capture (documentation demonstrating the water needs of the landscape are provided and the system is designed by a professional certified by the ARCSA or equivalent).	25
802.7.2 Rainwater is used for indoor domestic demand as follows. The system is designed by a professional certified by the ARCSA or equivalent.	
(1) Rainwater is used to supply an indoor appliance or fixture for any locally approved use. <i>[Points awarded per appliance or fixture.]</i>	5 [15 max]
(2) Rainwater provides for total domestic demand.....	25
802.8 Sediment filters. Water filter is installed to reduce sediment and protect plumbing fixtures for the whole building or the entire dwelling unit.	1
802.9 Water treatment devices.	
802.9.1 Water softeners shall not be installed where the supplied water hardness is less than 8.0 grains per gallon measured as total calcium carbonate equivalents. Water softeners shall be listed to NSF 44 and a rated salt efficiency of 3,400 grains of total hardness per 1.0 pound of salt based on sodium chloride equivalency. Devices shall not discharge more than 4.0 gallons of water per 1,000 grains of hardness removed during the service or recharge cycle.	
(1) No water softener.	5
(2) Water softener installed to supply softened water only to domestic water heater.....	2
802.9.2 Reverse Osmosis (R/O) water treatment systems shall be listed to NSF 58 and shall include automatic shut-off valve to prevent water discharge when storage tank is full.	
(1) No R/O system.....	3
(2) Combined capacity of all R/O systems does not exceed 0.75 gallons.....	1
802.10 Pools and spas.	
802.10.1 Pools and Spas with water surface area greater than 36 sq. ft. and connected to a water supply shall have a dedicated meter to measure the amount of water supplied to the pool or spa.	
(1) Automated motorized non-permeable pool cover that covers the entire pool surface.	10

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GREEN BUILDING PRACTICES

803 INNOVATIVE PRACTICES

803.1 Reclaimed, grey, or recycled water. Reclaimed, grey, or recycled water is used as permitted by applicable code.

*Points awarded for either § 803.1(1) or § 803.1(2), not both.
Points awarded for either § 803.6 or § 803.1, not both.*

- (1) each water closet flushed by reclaimed, grey, or recycled water
[Points awarded per fixture or appliance.].....
- (2) irrigation from reclaimed, grey, or recycled water on-site

5 [20 max]
10
3 per roughed in system

803.2 Reclaimed water, greywater, or rainwater pre-piping. Reclaimed, greywater, or rainwater systems are rough plumbed (and permanently marked, tagged or labeled) into buildings for future use.

803.3 Automatic leak detection and control devices. One of the following devices is installed. Where a fire sprinkler system is present, ensure the device will be installed to not interfere with the operation of the fire sprinkler system.

- (1) automatic water leak detection and control devices.
- (2) automatic water leak detection and shutoff devices.

2

803.4 Engineered biological system or intensive bioremediation system. An engineered biological system or intensive bioremediation system is installed and the treated water is used on site. Design and implementation are approved by appropriate regional authority.

20

803.5 Recirculating humidifier. Where a humidifier is required, a recirculating humidifier is used in lieu of a traditional “flow through” type.

1

803.6 Advanced wastewater treatment system. Advanced wastewater (aerobic) treatment system is installed and treated water is used on site. [Points awarded for either § 803.6 or § 803.1, not both.]

20

804 PERFORMANCE PATH

804.1 Performance Path. The index score for the Performance Path shall be calculated in accordance with Appendix D Water Rating Index (WRI) or equivalent methodology.

804.2 Water efficiency rating levels. In lieu of threshold levels for Chapter 8 in Table 303, rating levels for § 804.1 are in accordance with Table 804.2.

**Table 804.2
Maximum WRI Scores for NGBS Certification in Chapter 8**

BRONZE	SILVER	GOLD	EMERALD
70	60	50	40

804.3 Water efficiency NGBS points equivalency. The additional points for use with Table 303 from the Chapter 8 Water Efficiency Category are determined in accordance with Equation 804.3.

Equation 804.3
NGBS = WRI x (-2.29) + 181.7

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SECTION 9

INDOOR ENVIRONMENTAL QUALITY

M=Mandatory

GREEN BUILDING PRACTICES		POINTS
901	POLLUTANT SOURCE CONTROL	
901.0 Intent. Pollutant sources are controlled.		
901.1 Space and water heating options		
901.1.1 Natural draft furnaces, boilers, or water heaters are not located in conditioned spaces, including conditioned crawlspaces, unless located in a mechanical room that has an outdoor air source and is sealed and insulated to separate it from the conditioned space(s).		5
<i>Points are awarded only for buildings that use natural draft combustion space or water heating equipment.</i>		
901.1.2 Air handling equipment or return ducts are not located in the garage, unless placed in isolated, air-sealed mechanical rooms with an outside air source.		5
901.1.3 The following combustion space heating or water heating equipment is installed within conditioned space:		
(1) all furnaces or all boilers		
(a) power-vent furnace(s) or boiler(s).....		3
(b) direct-vent furnace(s) or boiler(s).....		5
(2) all water heaters		
(a) power-vent water heater(s).....		3
(b) direct-vent water heater(s).....		5
901.1.4 Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the NFPA 54, ICC IFGC, or the applicable local gas appliance installation code. Gas-fired fireplaces within dwelling units or sleeping units and direct heating equipment are vented to the outdoors. Alcohol burning devices and kerosene heaters are vented to the outdoors.		M
901.1.5 Natural gas and propane fireplaces are direct vented, have permanently fixed glass fronts or gasketed doors, and comply with CSA Z21.88/CSA 2.33 or CSA Z21.50b/CSA 2.22b.....		7
901.1.6 The following electric equipment is installed:		
(1) heat pump air handler in unconditioned space		2
(2) heat pump air handler in conditioned space		5
901.2 Solid fuel-burning appliances		
901.2.1 Solid fuel-burning fireplaces, inserts, stoves and heaters are code compliant and are in accordance with the following requirements:		M
(1) Site-built masonry wood-burning fireplaces use outside combustion air and include a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.....		4

GREEN BUILDING PRACTICES	M=Mandatory POINTS
(2) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are an EPA Phase 2 Emission Level Qualified Model.	6
(3) Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100(3).	6
(4) Pellet (biomass) stoves and furnaces are in accordance with ASTM E1509 or are EPA certified.....	6
(5) Masonry heaters are in accordance with the definitions in ASTM E1602 and IBC Section 2112.1.	6
901.2.2 Fireplaces, woodstoves, pellet stoves, or masonry heaters are not installed.	6
901.3 Garages. Garages are in accordance with the following:	
(1) Attached garage	
(a) Doors installed in the common wall between the attached garage and conditioned space are tightly sealed and gasketed.	M 2
(b) A continuous air barrier is provided separating the garage space from the conditioned living spaces.	M 2
(c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors and is designed and installed for continuous operation or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with ASHRAE Standard 62.2-2007 Section 7.3.	8
(2) A carport is installed, the garage is detached from the building, or no garage is installed.....	10
901.4 Wood materials. A minimum of 85% of material within a product group (i.e., wood structural panels, countertops, composite trim/doors, custom woodwork, and/or component closet shelving) is manufactured in accordance with the following:	10 max
(1) Structural plywood used for floor, wall, and/or roof sheathing is compliant with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing is compliant with DOC PS 2. The panels are made with moisture-resistant adhesives. The trademark indicates these adhesives as follows: Exposure 1 or Exterior for plywood, and Exposure 1 for OSB.	M
(2) Particleboard and MDF (medium density fiberboard) is manufactured and labeled in accordance with CPA A208.1 and CPA A208.2, respectively. <i>[Points awarded per product group.]</i>	2
(3) Hardwood plywood in accordance with HPVA HP-1. <i>[Points awarded per product group.]</i>	2
(4) Particleboard, MDF, or hardwood plywood is in accordance with CPA 4. <i>[Points awarded per product group.]</i>	3
(5) Composite wood or agrifiber panel products contain no added urea-formaldehyde or are in accordance with the CARB Composite Wood Air Toxic Contaminant Measure Standard. <i>[Points awarded per product group.]</i>	4
(6) Non-emitting products. <i>[Points awarded per product group.]</i>	4
901.5 Cabinets. A minimum of 85% of installed cabinets are in accordance with one or both of the following: <i>[Where both of the following practices are used, only 3 points are awarded.]</i>	
(1) All parts of the cabinet are made of solid wood or non-formaldehyde emitting materials such as metal or glass.....	5

GREEN BUILDING PRACTICES	M=Mandatory POINTS
<p>(2) The composite wood used in wood cabinets is in accordance with CARB Composite Wood Air Toxic Contaminant Measure Standard or equivalent as certified by a third-party program such as, but not limited to, those in Appendix B.....</p>	3
<p>901.6 Carpets. Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures.</p>	M
<p>901.7 Floor materials. The following types of finished flooring materials are used. The materials have emission levels in accordance with CDPH/EHLB Standard Method v1.1. Product is tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO 17065, such as, but not limited to, those in Appendix B. <i>[1 point awarded for every 10% of conditioned floor space using one of the below materials. When carpet cushion meeting the emission limits of the practice is also installed, the percentage of compliant carpet area is calculated at 1.33 times the actual installed area.]</i>.....</p>	1 [8 max]
<p>(1) Hard surface flooring: Prefinished installed hard-surface flooring is installed. Where post-manufacture coatings or surface applications have not been applied, the following hard surface flooring types are deemed to comply with the emission requirements of this practice:</p> <ul style="list-style-type: none"> (a) Ceramic tile flooring (b) Organic-free, mineral-based flooring (c) Clay masonry flooring (d) Concrete masonry flooring (e) Concrete flooring (f) Metal flooring <p>(2) Carpet and carpet cushion are installed.</p>	
<p>901.8 Wall coverings. A minimum of 10% of the interior wall surfaces are covered and a minimum of 85% of wall coverings are in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the CDPH/EHLB Standard Method v1.1 is in its scope. The product is certified by a third-party program accredited to ISO 17065, such as, but not limited to, those in Appendix B.</p>	4
<p>901.9 Interior architectural coatings. A minimum of 85% of the interior architectural coatings are in accordance with either § 901.9.1 or § 901.9.3, not both. A minimum of 85% of architectural colorants are in accordance with § 901.9.2.</p> <p>Exception: Interior architectural coatings that are formulated to remove formaldehyde and other aldehydes in indoor air and are tested and labeled in accordance with ISO 16000-23, Indoor air – Part 23: Performance test for evaluating the reduction of formaldehyde concentrations by sorptive building materials.</p>	
<p>901.9.1 Site-applied interior architectural coatings, which are inside the water proofing envelope, are in accordance with one or more of the following:</p> <ul style="list-style-type: none"> (1) Zero VOC as determined by EPA Method 24 (VOC content is below the detection limit for the method) (2) GreenSeal GS-11 (3) CARB <i>Suggested Control Measure for Architectural Coatings</i> (see Table 901.9.1) 	5

**Table 901.9.1
VOC Content Limits For Architectural Coatings^{a,b,c}**

Coating Category	LIMIT^d (g/l)
Flat Coatings	50
Non-flat Coatings	100
Non-flat High-Gloss Coatings	150
Specialty Coatings:	
Aluminum Roof Coatings	400
Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350
Bond Breakers	350
Concrete Curing Compounds	350
Concrete/Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Floor Coatings	100
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings	120 ^e
Magnesite Cement Coatings	450
Mastic Texture Coatings	100
Metallic Pigmented Coatings	500
Multi-Color Coatings	250
Pre-Treatment Wash Primers	420
Primers, Sealers, and Undercoaters	100
Reactive Penetrating Sealers	350
Recycled Coatings	250
Roof Coatings	50
Rust Preventative Coatings	250
Shellacs, Clear	730
Shellacs, Opaque	550
Specialty Primers, Sealers, and Undercoaters	100
Stains	250
Stone Consolidants	450
Swimming Pool Coatings	340
Traffic Marking Coatings	100
Tub and Tile Refinish Coatings	420
Waterproofing Membranes	250
Wood Coatings	275
Wood Preservatives	350
Zinc-Rich Primers	340

- a. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
- b. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008.
- c. Table 901.9.1 architectural coating regulatory category and VOC content compliance determination shall conform to the California Air Resources Board Suggested Control Measure for Architectural Coatings dated February 1, 2008.
- d. Limits are expressed as VOC Regulatory (except as noted), thinned to the manufacturer’s maximum thinning recommendation, excluding any colorant added to tint bases.
- e. Limit is expressed as VOC actual.

GREEN BUILDING PRACTICES		M=Mandatory POINTS								
<p>901.9.2 Architectural coating colorant additive VOC content is in accordance with Table 901.9.2. [Points for 901.9.2 are awarded only if base architectural coating is in accordance with § 901.9.1.].....</p>		1								
<p>Table 901.9.2 VOC Content Limits for Colorants</p> <table border="1" style="margin: auto;"> <thead> <tr> <th style="text-align: center;">Colorant</th> <th style="text-align: center;">LIMIT (g/l)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Architectural Coatings, excluding IM Coatings</td> <td style="text-align: center;">50</td> </tr> <tr> <td style="text-align: center;">Solvent-Based IM</td> <td style="text-align: center;">600</td> </tr> <tr> <td style="text-align: center;">Waterborne IM</td> <td style="text-align: center;">50</td> </tr> </tbody> </table>			Colorant	LIMIT (g/l)	Architectural Coatings, excluding IM Coatings	50	Solvent-Based IM	600	Waterborne IM	50
Colorant	LIMIT (g/l)									
Architectural Coatings, excluding IM Coatings	50									
Solvent-Based IM	600									
Waterborne IM	50									
<p>901.9.3 Site-applied interior architectural coatings, which are inside the waterproofing envelope, are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the CDPH/EHLB Standard Method v1.1 in its scope of accreditation. The product is certified by a third-party program accredited to ISO 17065, such as, but not limited to, those found in Appendix B.</p>		8								
<p>901.10 Interior adhesives and sealants. A minimum of 85% of site-applied adhesives and sealants located inside the waterproofing envelope are in accordance with one of the following, as applicable.</p> <p>(1) The emission levels are in accordance with CDPH/EHLB Standard Method v1.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the CDPH/EHLB Standard Method v1.1 is in its scope of accreditation. The product is certified by a third-party program accredited to ISO 17065, such as, but not limited to, those found in Appendix B.</p> <p>(2) GreenSeal GS-36.</p> <p>(3) SCAQMD Rule 1168 in accordance with Table 901.10(3), excluding products that are sold in 16-ounce containers or less and are regulated by the California Air Resources Board (CARB) Consumer Products Regulations.</p>		8 5 5								
<p>901.11 Insulation. Emissions of 85% of wall, ceiling, and floor insulation materials are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the CDPH/EHLB Standard Method v1.1 is in its scope of accreditation. Insulation is certified by a third-party program accredited to ISO 17065, such as, but not limited to, those in Appendix B.</p>		4								
<p>901.12 Furniture and furnishings. In a multifamily building, all furniture in common areas shall have VOC emission levels in accordance with ANSI/BIFMA e3-Furniture Sustainability Standard Sections 7.6.1 and 7.6.2, tested in accordance with ANSI/BIFMA Standard Method M7.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the ANSI/BIFMA Standard Method M7.1 is in its scope of accreditation. Furniture and Furnishings are certified by a third-party program accredited to ISO 17065, such as, but not limited to, those in Appendix B.....</p>		2								
<p>901.13 Carbon monoxide (CO) alarms. A carbon monoxide (CO) alarm is provided in accordance with the IRC Section R315.</p>		M								
<p>901.14 Building entrance pollutants control. Pollutants are controlled at all main building entrances by one of the following methods:</p> <p>(1) Exterior grilles or mats are installed in a fixed manner and may be removable for cleaning.....</p> <p>(2) Interior grilles or mats are installed in a fixed manner and may be removable for cleaning.</p>		1 1								

GREEN BUILDING PRACTICES

Table 901.10(3)
Site Applied Adhesive and Sealants VOC Limits^{a,b}

ADHESIVE OR SEALANT	VOC LIMIT (g/l)
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single ply roof membrane adhesives	250
Architectural sealants	250
Architectural sealant primer	
Non-porous	250
Porous	775
Modified bituminous sealant primer	500
Other sealant primers	750
CPVC solvent cement	490
PVC solvent cement	510
ABS solvent cement	325
Plastic cement welding	250
Adhesive primer for plastic	550
Contact adhesive	80
Special purpose contact adhesive	250
Structural wood member adhesive	140

- a. VOC limit less water and less exempt compounds in grams/liter
- b. For low-solid adhesives and sealants, the VOC limit is expressed in grams/liter of material as specified in Rule 1168. For all other adhesives and sealants, the VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds as specified in Rule 1168.

901.15 Non-smoking areas. Environmental tobacco smoke is minimized by one or more of the following:

- (1) All interior common areas of a multifamily building are designated as non-smoking areas with posted signage. **1**
- (2) Exterior smoking areas of a multifamily building are designated with posted signage and located a minimum of 25 ft. from entries, outdoor air intakes, and operable windows. **1**

902 POLLUTANT CONTROL

902.0 Intent. Pollutants generated in the building are controlled.

902.1 Spot ventilation

902.1.1 Spot ventilation is in accordance with the following:

- (1) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms.
[1 point awarded only if a window complying with IRC Section R303.3 is provided in addition to mechanical ventilation.]

M [1 max]

GREEN BUILDING PRACTICES	M=Mandatory POINTS
(2) Clothes dryers (except listed and labeled condensing ductless dryers) are vented to the outdoors. ...	M
(3) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation.	8
902.1.2 Bathroom and/or laundry exhaust fan is provided with an automatic timer and/or humidistat:....	11 max
(1) for first device	5
(2) for each additional device.....	2
902.1.3 Kitchen range, bathroom, and laundry exhaust are verified to air flow specification. Ventilation airflow at the point of exhaust is tested to a minimum of:	8
(a) 100 cfm (47.2 L/s) intermittent or 25 cfm (11.8 L/s) continuous for kitchens, and	
(b) 50 cfm (23.6 L/s) intermittent or 20 cfm (9.4 L/s) continuous for bathrooms and/or laundry	
902.1.4 Exhaust fans are ENERGY STAR, as applicable.	12 max
(1) ENERGY STAR, or equivalent, fans [<i>Points awarded per fan.</i>].....	2
(2) ENERGY STAR, or equivalent, fans operating at or below 1 sone [<i>Points awarded per fan.</i>]	3
902.1.5 Fenestration in spaces other than those identified in § 902.1.1 through § 902.1.4 are designed for stack effect or cross-ventilation in accordance with all of the following:	3
(1) Operable windows, operable skylights, or sliding glass doors with a total area of at least 15% of the total conditioned floor area are provided.	
(2) Insect screens are provided for all operable windows, operable skylights, and sliding glass doors.	
(3) A minimum of two operable windows or sliding glass doors are placed in adjacent or opposite walls. If there is only one wall surface in that space exposed to the exterior, the minimum windows or sliding glass doors may be on the same wall.	
902.1.6 Ventilation for Multifamily Common Spaces. Systems are implemented and are in accordance with the specifications of ASHRAE 62.1 and an explanation of the operation and importance of the ventilation system is included in § 1002.1 and § 1002.2 of this Standard.	3
902.2 Building ventilation systems	
902.2.1 One of the following whole building ventilation systems is implemented and is in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4 and an explanation of the operation and importance of the ventilation system is included in either § 1001.1 or § 1002.2. [<i>*Mandatory where the maximum air infiltration rate is less than 5.0 ACH50</i>]	M *
(1) Exhaust or supply fan(s) ready for continuous operation and with appropriately labeled controls	3
(2) Balanced exhaust and supply fans with supply intakes located in accordance with the manufacturer’s guidelines so as to not introduce polluted air back into the building	6
(3) Heat-recovery ventilator	7
(4) Energy-recovery ventilator	8
(5) Ventilation air is preconditioned by a system not specified above	10
902.2.2 Ventilation airflow is tested to achieve the design fan airflow in accordance with ANSI/RESNET/ICC 380 and § 902.2.1.	4

GREEN BUILDING PRACTICES	M=Mandatory POINTS
<p>902.2.3 MERV filters 8 to 13 are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 8 to 13 filters.</p>	2
<p>902.2.4 MERV filters 14 or greater are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of the filter used.</p>	3
<p>902.3 Radon reduction measures. Radon reduction measures are in accordance with IRC Appendix F or § 902.3.1. Radon Zones as identified by the AHJ or, if the zone is not identified by the AHJ, as defined in Figure 9(1).</p>	
<p>(1) Buildings located in Zone 1</p>	
<p style="padding-left: 20px;">(a) a passive radon system is installed.....</p>	M
<p style="padding-left: 20px;">(b) an active radon system is installed.....</p>	12
<p>(2) Buildings located in Zone 2 or Zone 3</p>	
<p style="padding-left: 20px;">(a) a passive radon system is installed.....</p>	6
<p style="padding-left: 20px;">(b) an active radon system is installed.....</p>	12
<p>902.3.1 Radon reduction option. This option requires § 902.3.1.1 through § 902.3.1.7.</p>	
<p>902.3.1.1 Soil-gas barriers and base course. A base course in accordance with IRC Section 506.2.2 shall be installed below slabs and foundations. There shall be a continuous gas-permeable base course under each soil-gas retarder that is separated by foundation walls or footings. Between slabs and the base course, damp proofing or water proofing shall be installed in accordance with IRC Section 406. Punctures, tears and gaps around penetrations of the soil-gas retarder shall be repaired or covered with an additional soil-gas retarder. The soil-gas retarder shall be a continuous 6-mil (0.15 mm) polyethylene or an approved equivalent.</p>	
<p>902.3.1.2 Soil gas collection. There shall be an unobstructed path for soil gas flow between the void space installed in the base course and the vent through the roof. Soil gases below the foundation shall be collected by a perforated pipe with a diameter of not less than 4 in. (10 cm) and not less than 5 ft. (1.5 m) in total length. A tee fitting or equivalent method shall provide two horizontal openings to the radon collection. The tee fitting shall be designed to prevent clogging of the radon collection path. Alternately the soil gas collection shall be by approved radon collection mats or an equivalent approved method.</p>	
<p>902.3.1.3 Soil gas entry routes. Openings in slabs, soil-gas retarders, and joints such as, but not limited to, plumbing, ground water control systems, soil-gas vent pipes, piping and structural supports, shall be sealed against air leakage at the penetrations. The sealant shall be a polyurethane caulk, expanding foam or other approved method. Foundation walls shall comply with IRC Section 103.2.3. Sumps shall be sealed in accordance with IRC Section 103.2.2. Sump pits and sump lids intended for ground water control shall not be connected to the sub-slab soil-gas exhaust system.</p>	
<p>902.3.1.4 Soil gas vent. A gas-tight pipe vent shall extend from the soil gas permeable layer through the roof. The vent pipe size shall not be reduced at any location as it goes from gas collection to the roof. Exposed and visible interior vent pipes shall be identified with not less than one label reading “Radon Reduction System” on each floor and in habitable attics.</p>	

M=Mandatory
POINTS

GREEN BUILDING PRACTICES

902.3.1.5 Vent pipe diameter. The minimum vent pipe diameter shall be as specified in Table 902.3.1.5.

**Table 902.3.1.5
Maximum Vented Foundation Area**

Maximum area vented	Nominal pipe diameter
2,500 ft ² (232 m ²)	3 in. (7.6 cm)
4,000 ft ² (372 m ²)	4 in. (10 cm)
Unlimited	6 in. (15.2 cm)

902.3.1.6 Multiple vented areas. In dwellings where interior footings or other barriers separate the soil-gas permeable layer, each area shall be fitted with an individual vent pipe. Vent pipes shall connect to a single vent that terminates above the roof or each individual vent pipe shall terminate separately above the roof.

902.3.1.7 Fan. Each sub-slab soil-gas exhaust system shall include a fan, or dedicated space for the post-construction installation of a fan. The electrical supply for the fan shall be located within 6 ft. (1.8 m) of the fan. Fan is not required to be on a dedicated circuit.

902.3.2 Radon testing. Radon testing is mandatory for Zone 1.

Exceptions: 1) Testing is not mandatory where the authority having jurisdiction has defined the radon zone as Zone 2 or 3; and 2) testing is not mandatory where the occupied space is located above an unenclosed open space.

- (1) Testing specifications. Testing is performance as specified in (a) through (j). Testing of a representative sample shall be permitted for multifamily buildings only. **8**
 - (a) Testing is performed after the residence passes its airtightness test.
 - (b) Testing is performed after the radon control system installation is complete. If the system has an active fan, the residence shall be tested with the fan operating.
 - (c) Testing is performed at the lowest level within a dwelling unit which will be occupied, even if the space is not finished.
 - (d) Testing is not performed in a closet, hallway, stairway, laundry room, furnace room, kitchen or bathroom.
 - (e) Testing is performed with a commercially available test kit or with a continuous radon monitor that can be calibrated. Testing shall be in accordance with the testing device manufacturer’s instructions.
 - (f) Testing shall be performed by the builder, a registered design professional, or an approved third party.
 - (g) Testing shall extend at least 48 hours or to the minimum specified by the manufacturer, whichever is longer.
 - (h) Written radon test results shall be provided by the test lab or testing party. Written test results shall be included with construction documents.
 - (i) An additional pre-paid test kit shall be provided for the homeowner to use when they choose. The test kit shall include mailing or emailing the results from the testing lab to the homeowner.
 - (j) Where the radon test result is 4 pCi/L or greater, the fan for the radon vent pipe shall be installed.
- (2) Testing results. A radon test done in accordance with 902.3.2(1) and completed before occupancy receives a results of 2 pCi/L or less. **6**

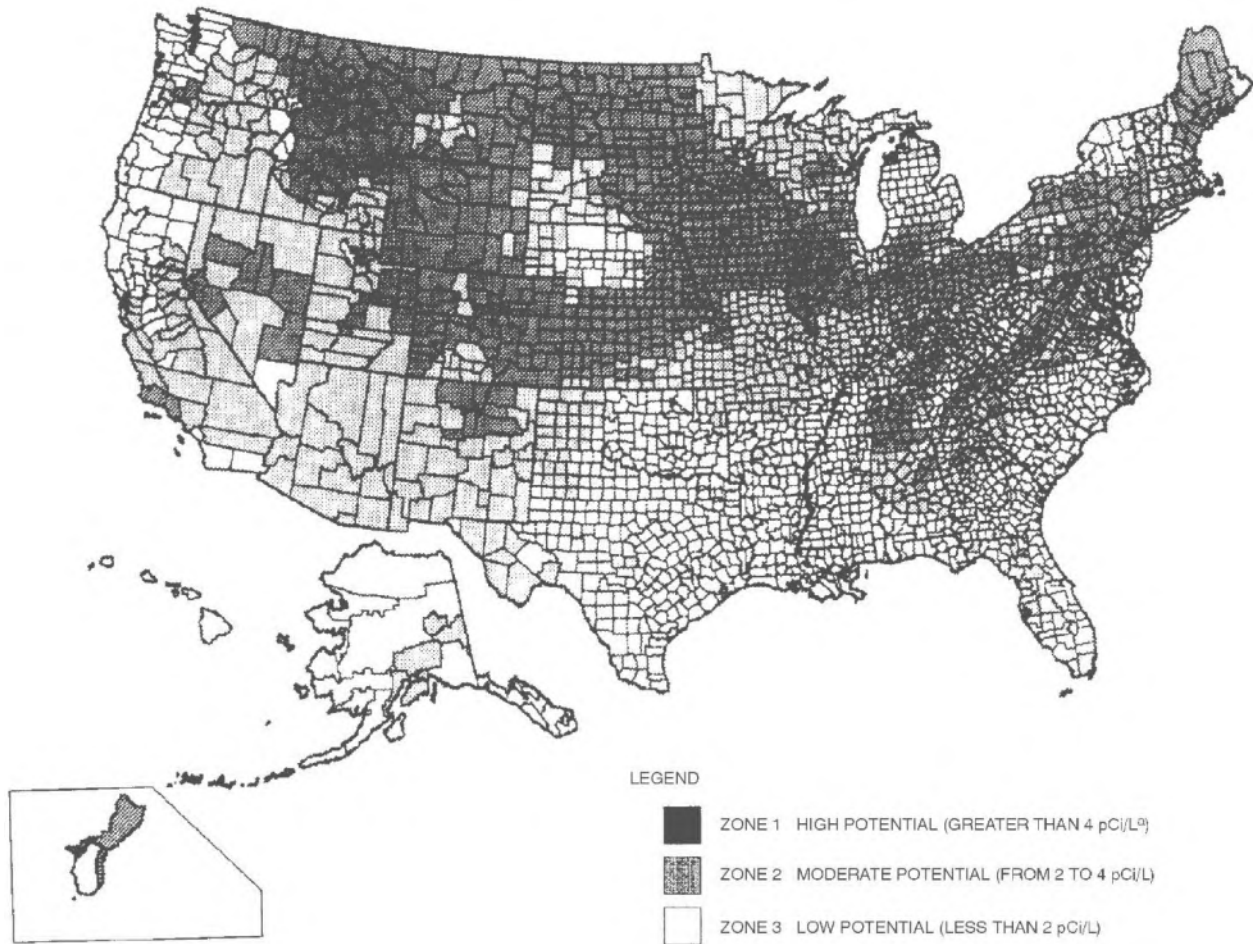
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M=Mandatory

GREEN BUILDING PRACTICES		POINTS
902.4 HVAC system protection. One of the following HVAC system protection measures is performed.		3
(1) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.		
(2) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned and the filter is replaced if necessary.		
(3) If HVAC systems are to be operated, during construction, all return grilles have a temporary MERV 8 or higher filter installed in a manner ensuring no leakage around the filter.		
902.5 Central vacuum systems. Central vacuum system is installed and vented to the outside.		3
902.6 Living space contaminants. The living space is sealed in accordance with § 701.4.3.1 to prevent unwanted contaminants.		M
903 MOISTURE MANAGEMENT: VAPOR, RAINWATER, PLUMBING, HVAC		
903.0 Intent. Moisture and moisture effects are controlled.		
903.1 Plumbing		
903.1.1 Cold water pipes in unconditioned spaces are insulated to a minimum of R-4 with pipe insulation or other covering that adequately prevents condensation.		2
903.1.2 Plumbing is not installed in unconditioned spaces.		5
903.2 Duct insulation. Ducts are in accordance with one of the following.		
(1) All HVAC ducts, plenums, and trunks are located in conditioned space.		1
(2) All HVAC ducts, plenums, and trunks are located in conditioned space and all HVAC ducts are insulated to a minimum of R4.		3
903.3 Relative humidity. In climate zones 1A, 2A, 3A, 4A, and 5A as defined by Figure 6(1), equipment is installed to maintain relative humidity (RH) at or below 60% using one of the following: <i>[Points not awarded in other climate zones.]</i>		7
(1) additional dehumidification system(s)		
(2) central HVAC system equipped with additional controls to operate in dehumidification mode		
904 INDOOR AIR QUALITY		
904.0 Intent. IAQ is protected by best practices to control ventilation, moisture, pollutant sources and sanitation.		
904.1 Indoor Air Quality (IAQ) during construction. Wood is dry before close-in (§ 602.1.7.1(3)), materials comply with emission criteria (§ 901.4-901.11), sources of water infiltration or condensation observed during construction have been eliminated, accessible interior surfaces are dry and free of visible suspect growth (per ASTM D7338 Section 6.3), and water damage (per ASTM D7338 Section 7.4.3).		2
904.2 Indoor Air Quality (IAQ) Post Completion. Verify there are no moisture, mold, and dust issues per § 602.1.7.1(3), § 901.4 - 901.11, ASTM D7338 Section 6.3, and ASTM D7338 Section 7.4.3.		3

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<p>904.3 Microbial growth & moisture inspection and remediation. A visual inspection is performed to confirm the following:</p> <p>(1) Verify that no visible signs of discoloration and microbial growth on ceilings, walls or floors, or other building assemblies; or if minor microbial growth is observed (less than within a total area of 25 sq. ft. in homes or multifamily buildings, reference EPA Document 402-K-02-003 (A Brief Guide to Mold, Moisture, and Your Home) for guidance on how to properly remediate the issue. If microbial growth is observed, on a larger scale in homes or multifamily buildings (greater than 25 sq. ft.), reference EPA Document 402-K-01-001 (Mold Remediation in Schools and Commercial Buildings) for guidance on how to properly remediate the issue.</p> <p>(2) Verify that there are no visible signs of water damage or pooling. If signs of water damage or pooling are observed, verify that the source of the leak has been repaired, and that damaged materials are either properly dried or replaced as needed.</p>		<p>M</p> <p>M</p>
<p>905 INNOVATIVE PRACTICES</p>		
<p>905.1 Humidity monitoring system. A humidity monitoring system is installed with a mobile base unit that displays readings of temperature and relative humidity. The system has a minimum of two remote sensor units. One remote sensor unit is placed permanently inside the conditioned space in a central location, excluding attachment to exterior walls, and another remote sensor unit is placed permanently outside of the conditioned space.</p>		<p>2</p>
<p>905.2 Kitchen exhaust. A kitchen exhaust unit(s) that equals or exceeds 400 cfm (189 L/s) is installed, and make-up air is provided.</p>		<p>2</p>
<p>905.3 Enhanced air filtration. Meet all of the following.</p> <p>(1) Design for and install a secondary filter rack space for activated carbon filters.</p> <p>(2) Provide the manufacturer’s recommended filter maintenance schedule to the homeowner or building manager.</p>		<p>2</p>
<p>905.4 Sound barrier. Provide room-to-room privacy between bedrooms and adjacent living spaces within dwelling units or homes by achieving an articulation index (AI) between 0 and 0.15 per the criteria below.</p>		<p>1 SF / 4 MF</p>
<p><i>Articulation Index 0 to 0.05 = STC greater than 55 (NIC greater than 47)</i> <i>Articulation Index 0.05 to 0.15 = STC 52 to 55 (NIC 44 to 47)</i></p>		
<p>905.5 Evaporative coil mold prevention. For buildings with a mechanical system for cooling, ultraviolet lamps are installed on the cooling coils and drain pans of the mechanical system supplies. Lamps produce ultraviolet radiation at a wavelength of 254 nm so as not to generate ozone. Lamps have ballasts housed in a NEMA-rated enclosure.</p>		<p>2</p>



a. pCi/L standard for picocuries per liter of radon gas. The U.S. Environmental Protection Agency (EPA) recommends that all homes that measure 4 pCi/L and greater be mitigated.

The EPA and the U.S. Geological Survey have evaluated the radon potential in the United States and have developed a map of radon zones designed to assist *building officials* in deciding whether radon-resistant features are applicable in new construction.

The map assigns each of the 3,141 counties in the United States to one of three zones based on radon potential. Each zone designation reflects the average short-term radon measurement that can be expected to be measured in a building without the implementation of radon control methods. The radon zone designation of highest priority is Zone 1. More detailed information can be obtained from state-specific booklets (EPA-402-R-93-021 through 070) available through state radon offices or from EPA regional offices.

FIGURE 9(1)
EPA MAP OF RADON ZONES

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SECTION 10

OPERATION, MAINTENANCE, AND BUILDING OWNER EDUCATION

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GREEN BUILDING PRACTICES		POINTS
1001	HOMEOWNER'S MANUAL AND TRAINING GUIDELINES FOR ONE- AND TWO-FAMILY DWELLINGS	
1001.0 Intent. Information on the building's use, maintenance, and green components is provided.		
1001.1 Homeowner's manual. A homeowner's manual is provided and stored in a permanent location in the dwelling that includes the following, as available and applicable. <i>[1 point awarded per two items. Points awarded for non-mandatory items.]</i>		1 [8 max]
(1)	A National Green Building Standard certificate with a web link and completion document.	M
(2)	List of green building features (can include the National Green Building Standard checklist).....	M
(3)	Product manufacturer's manuals or product data sheet for installed major equipment, fixtures, and appliances. If product data sheet is in the building owners' manual, manufacturer's manual may be attached to the appliance in lieu of inclusion in the building owners' manual.	M
(4)	Maintenance checklist.	
(5)	Information on local recycling and composting programs.	
(6)	Information on available local utility programs that purchase a portion of energy from renewable energy providers.	
(7)	Explanation of the benefits of using energy-efficient lighting systems [e.g., compact fluorescent light bulbs, light emitting diode (LED)] in high-usage areas.	
(8)	A list of practices to conserve water and energy.	
(9)	Information on the importance and operation of the home's fresh air ventilation system.	
(10)	Local public transportation options.	
(11)	A diagram showing the location of safety valves and controls for major building systems.	
(12)	Where frost-protected shallow foundations are used, owner is informed of precautions including: <ul style="list-style-type: none"> (a) instructions to not remove or damage insulation when modifying landscaping. (b) providing heat to the building as required by the IRC or IBC. (c) keeping base materials beneath and around the building free from moisture caused by broken water pipes or other water sources. 	
(13)	A list of local service providers that offer regularly scheduled service and maintenance contracts to ensure proper performance of equipment and the structure (e.g., HVAC, water-heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).	
(14)	A photo record of framing with utilities installed. Photos are taken prior to installing insulation, clearly labeled, and included as part of the building owners' manual.	
(15)	List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.	

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GREEN BUILDING PRACTICES

POINTS

- (16) Information on organic pest control, fertilizers, deicers, and cleaning products.
- (17) Information on native landscape materials and/or those that have low water requirements.
- (18) Information on methods of maintaining the building’s relative humidity in the range of 30% to 60%.
- (19) Instructions for inspecting the building for termite infestation.
- (20) Instructions for maintaining gutters and downspouts and importance of diverting water a minimum of 5 ft. away from foundation.
- (21) A narrative detailing the importance of maintenance and operation in retaining the attributes of a green-built building.
- (22) Where stormwater management measures are installed on the lot, information on the location, purpose, and upkeep of these measures.
- (23) Explanation of and benefits from green cleaning in the home.
- (24) Retrofit energy calculator that provides baseline for future energy retrofits.

1001.2 Training of initial homeowners. Initial homeowners are familiarized with the role of occupants in achieving green goals. Training is provided to the responsible party(ies) regarding equipment operation and maintenance, control systems, and occupant actions that will improve the environmental performance of the building. These include:

M 8

- (1) HVAC filters
- (2) Thermostat operation and programming
- (3) Lighting controls
- (4) Appliances operation
- (5) Water heater settings and hot water use
- (6) Fan controls
- (7) Recycling and composting practices
- (8) Whole-dwelling mechanical ventilation systems

1002 CONSTRUCTION, OPERATION, AND MAINTENANCE MANUALS AND TRAINING FOR MULTIFAMILY BUILDINGS

1002.0 Intent. Manuals are provided to the responsible parties (owner, management, tenant, and/or maintenance team) regarding the construction, operation, and maintenance of the building. Paper or digital format manuals are to include information regarding those aspects of the building’s construction, maintenance, and operation that are within the area of responsibilities of the respective recipient. One or more responsible parties are to receive a copy of all documentation for archival purposes.

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GREEN BUILDING PRACTICES	POINTS
<p>1002.1 Building construction manual. A building construction manual, including five or more of the following, is compiled and distributed in accordance with § 1002.0. <i>[Points awarded for non-mandatory items.]</i>.....</p>	<p>1 per 2 items</p>
(1) A narrative detailing the importance of constructing a green building, including a list of green building attributes included in the building. This narrative is included in all responsible parties' manuals.	M
(2) A local green building program certificate as well as a copy of the <i>National Green Building Standard</i> ®, as adopted by the Adopting Entity, and the individual measures achieved by the building.....	M
(3) Warranty, operation, and maintenance instructions for all equipment, fixtures, appliances, and finishes...	M
(4) Record drawings of the building.	
(5) A record drawing of the site including stormwater management plans, utility lines, landscaping with common name and genus/species of plantings.	
(6) A diagram showing the location of safety valves and controls for major building systems.	
(7) A list of the type and wattage of light bulbs installed in light fixtures.	
(8) A photo record of framing with utilities installed. Photos are taken prior to installing insulation and clearly labeled.	
<p>1002.2 Operations manual. Operations manuals are created and distributed to the responsible parties in accordance with § 1002.0. Between all of the operation manuals, five or more of the following options are included. <i>[Points awarded for non-mandatory items.]</i>.....</p>	<p>1 per 2 items</p>
(1) A narrative detailing the importance of operating and living in a green building. This narrative is included in all responsible parties' manuals.	M
(2) A list of practices to conserve water and energy (e.g., turning off lights when not in use, switching the rotation of ceiling fans in changing seasons, purchasing ENERGY STAR appliances and electronics).....	M
(3) Information on methods of maintaining the building's relative humidity in the range of 30% to 60%.	
(4) Information on opportunities to purchase renewable energy from local utilities or national green power providers and information on utility and tax incentives for the installation of on-site renewable energy systems.	
(5) Information on local and on-site recycling and hazardous waste disposal programs and, if applicable, building recycling and hazardous waste handling and disposal procedures.	
(6) Local public transportation options.	
(7) Explanation of the benefits of using compact fluorescent light bulbs, LEDs, or other high-efficiency lighting.	
(8) Information on native landscape materials and/or those that have low water requirements.	
(9) Information on the radon mitigation system, where applicable.	
(10) A procedure for educating tenants in rental properties on the proper use, benefits, and maintenance of green building systems including a maintenance staff notification process for improperly functioning equipment.	
(11) Information on the importance and operation of the building's fresh air ventilation system.	

GREEN BUILDING PRACTICES		POINTS
<p>1002.5 Multifamily occupant manual. An occupant manual is compiled and distributed in accordance with § 1002.0. <i>[Points awarded for non-mandatory items.]</i></p>		1 per 2 items
(1) NGBS certificate	M	
(2) List of green building features	M	
(3) Operations manuals for all appliances and occupant operated equipment including lighting and ventilation controls, thermostats, etc.	M	
(4) Information on recycling and composting programs.		
(5) Information on purchasing renewable energy from utility.		
(6) Information on energy efficient replacement lamps.		
(7) List of practices to save water and energy.		
(8) Local public transportation options.		
(9) Explanation of benefits of green cleaning.		
<p>1002.6 Training of multifamily occupants. Prepare a training outline, video or website that familiarizes occupants with their role in maintaining the green goals of the project. Include all equipment that the occupant(s) is expected to operate, including but not limited to:</p>		1 per 2 items
(1) Lighting controls		
(2) Ventilation controls		
(3) Thermostat operation and programming		
(4) Appliances operation		
(5) Recycling and composting		
(6) HVAC filters		
(7) Water heater setting and hot water use		
1003 PUBLIC EDUCATION		
<p>1003.0 Intent. Increase public awareness of the <i>National Green Building Standard</i>® and projects constructed in accordance with the NGBS to help increase demand for high-performance homes.</p>		
<p>1003.1 Public education. One or more of the following is implemented:</p>		2 max
(1) Signage. Signs showing the project is designed and built in accordance with the NGBS are posted on the construction site.	1	
(2) Certification Plaques. NGBS certification plaques with rating level attained are placed in a conspicuous location near the utility area of the home or, in a conspicuous location near the main entrance of a multifamily building.	1	
(3) Education. A URL for the NGBS is included on site signage, builder website (or property website for multifamily buildings), and marketing materials for homes certified under the NGBS.	1	

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GREEN BUILDING PRACTICES		POINTS
1004 POST OCCUPANCY PERFORMANCE ASSESSMENT		
<p>1004.0 Intent. A verification system for post occupancy assessment of the building is intended to be a management tool for the building owner to determine if energy or water usage have deviated from expected levels so that inspection and correction action can be taken.</p> <p>1004.1 Verification system. A verification system plan is provided in the building owner’s manual (§ 1001 or § 1002). The verification system provides methods for demonstrating continued energy and water savings that are determined from the building’s initial year of occupancy of water and energy consumption as compared to annualized consumption at least every four years.</p>		
(1) Verification plan is developed to monitor post-occupancy energy and water use and is provided in the building owner’s manual.		1
(2) Verification system is installed in the building to monitor post-occupancy energy and water use.		3
1005 INNOVATIVE PRACTICES		
<p>1005.1 Appraisals. One or more of the following is implemented:</p>		
(1) Energy rating or projected usage data is posted in an appropriate location in the home, or public posting so that an appraiser can access the energy data for an energy efficiency property valuation. ..		2
(2) An Appraisal Institute Form 820.05 “Residential Green and Energy Addendum” or Form 821 “Commercial Green and energy Efficient Addendum” that consider NGBS, LEED, ENERGY STAR certifications and equivalent programs, is completed for the appraiser by a qualified professional or builder to use in performing the valuation of the property.		2
(3) NGBS certification information or one of the Appraisal Institute Forms cited in § 1005.1(2) is uploaded to a multiple listing service (MLS) or equivalent database so that appraisers can access it to compare property valuations.		2

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SECTION 11

REMODELING

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GREEN BUILDING PRACTICES

POINTS

Note: Where applicable, section numbering in Chapter 11 parallels a corresponding practice in a previous chapter.

11.500 LOT DESIGN, PREPARATION, AND DEVELOPMENT

11.500.0 Intent. This section applies to the lot and changes to the lot due to remodeling of an existing building.

11.501 LOT SELECTION

11.501.2 Multi-modal transportation. A range of multi-modal transportation choices are promoted by one or more of the following:

- (1) The building is located within one-half mile (805 m) of pedestrian access to a mass transit system. ... **6**
- (2) The building is located within five miles (8,046 m) of a mass transit station with provisions for parking. **3**
- (3) The building is located within one-half mile (805 m) of six or more community resources. No more than two each of the following use category can be counted toward the total: Recreation, Retail, Civic, and Services. Examples of resources in each category include, but are not limited to the following: **4**

Recreation: recreational facilities (such as pools, tennis courts, basketball courts), parks.

Retail: grocery store, restaurant, retail store.

Civic: post office, place of worship, community center.

Services: bank, daycare center, school, medical/dental office, Laundromat/dry cleaners.

OR

A lot is selected within a census block group that, compared to its region, has above-average neighborhood walkability using an index within the EPA's Smart Location Database:

- (a) Walkability is within the top quartile for the region..... **5**
- (b) Walkability is within the second quartile for the region..... **2**
- (4) The building is on a lot located within a community that has rights-of-way specifically dedicated to bicycle use in the form of paved paths or bicycle lanes, or is on an infill lot located within 1/2 mile of a bicycle lane designated by the jurisdiction. **5**
- (5) Dedicated bicycle parking and racks are constructed for mixed-use and multifamily buildings:
 - (a) Minimum of 1 bicycle parking space per 3 residential units **2**
 - (b) Minimum of 1 bicycle parking space per 2 residential units **4**
 - (c) Minimum of 1 bicycle parking space per 1 residential unit. **6**
 - (d) Bicycle enclosed storage is provided or parking spaces are covered or otherwise protected from the elements **2 Additional**
- (6) The remodel includes the new development and implementation of a community scale bike sharing. **3**

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GREEN BUILDING PRACTICES	POINTS
(7) The remodel includes the new development and implementation of a community scale motorized vehicle sharing program.	5
11.502 PROJECT TEAM, MISSION STATEMENT, AND GOALS	
11.502.1 Project team, mission statement, and goals. A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and development. The project’s green goals and objectives are written into a mission statement.	4
11.503 LOT DESIGN	
11.503.0 Intent. The lot is designed to avoid detrimental environmental impacts first, to minimize any unavoidable impacts, and to mitigate for those impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features and environmental quality of the lot. <i>[Points awarded only if the intent of the design is implemented.]</i>	
11.503.1 Natural resources. Natural resources are conserved by one or more of the following:	
(1) A natural resources inventory is completed under the direction of a qualified professional.	5
(2) A plan is implemented to conserve the elements identified by the natural resource inventory as high-priority resources.	6
(3) Items listed for protection in the natural resource inventory plan are protected under the direction of a qualified professional.	4
(4) Basic training in tree or other natural resource protection is provided for the on-site supervisor.	4
(5) All tree pruning on-site is conducted by a certified arborist or other qualified professional.	3
(6) Ongoing maintenance of vegetation on the lot during construction is in accordance with TCIA A300 or locally accepted best practices.....	4
(7) Where a lot adjoins a landscaped common area, a protection plan from the remodeling construction activities next to the common area is implemented.....	5
(8) Developer has a plan to design and construct the lot in accordance with the International Wildland-Urban Interface Code (IWUIC). <i>[Only applicable where the AHJ has not declared a wildland-urban interface area, but a fire protection engineer, certified fire marshal, or other qualified party has determined and documented the site as hazarded per the IWUIC.]</i>	6
11.503.2 Slope disturbance. Slope disturbance is minimized by one or more of the following:	
(1) The use of terrain-adaptive architecture.	5
(2) Hydrological/soil stability study is completed and used to guide the design of any additions to buildings on the lot.....	5
(3) All or a percentage of new driveways and parking are aligned with natural topography to reduce cut and fill.	
(a) greater than or equal to 10% to less than 25%	1
(b) greater than or equal to 25% to less than 75%	4
(c) greater than or equal to 75%	6

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GREEN BUILDING PRACTICES	POINTS
(4) Long-term erosion effects are reduced through the design and implementation of clustering, terracing, retaining walls, landscaping, or restabilization techniques.	6
(5) Underground parking uses the natural slope for parking entrances.	5
11.503.3 Soil disturbance and erosion. Soil disturbance and erosion are minimized by one or more of the following: (also see § 11.504.3)	
(1) Remodeling construction activities are scheduled such that disturbed soil that is to be left unworked for more than 21 days is stabilized within 14 days.	2
(2) The new utilities on the lot are designed to use one or more alternative means:	2
(a) tunneling instead of trenching.	
(b) use of smaller (low ground pressure) equipment or geomats to spread the weight of construction equipment.	
(c) shared utility trenches or easements.	
(d) placement of utilities under paved surfaces instead of yards.	
(3) Limits of new clearing and grading are demarcated on the lot plan.	5
11.503.4 Stormwater Management. The stormwater management system is designed to use low-impact development/green infrastructure practices to preserve, restore or mitigate changes in site hydrology due to land disturbance and the construction of impermeable surfaces through the use of one or more of the following techniques:	
(1) A site assessment is conducted and a plan prepared and implemented that identifies important existing permeable soils, natural drainage ways and other water features, e.g., depressional storage, onsite to be preserved in order to maintain site hydrology.	7
(2) Low-Impact Development/Green infrastructure stormwater management practices to promote infiltration and evapotranspiration are used to manage rainfall on the lot and prevent the off-lot discharge of runoff from all storms up to and including the volume of following storm events:	
(a) 80th percentile storm event	5
(b) 90th percentile storm event	8
(c) 95th percentile storm event	10
(3) Permeable materials are used for driveways, parking areas, walkways, patios, and recreational surfaces and the like according to the following percentages:	
(a) greater than or equal to 10% to less than 25% (add 2 points for use of vegetative paving system)	2
(b) greater than or equal to 25% to less than 50% (add 4 points for use of vegetative paving system)	5
(c) greater than or equal to 50% (add 6 points for use of vegetative paving system)	10
<i>[Points for vegetative paving systems are only awarded for locations receiving more than 20 in. per year of annual average precipitation.]</i>	
(4) Complete gutter and downspout system directs storm water away from foundation to vegetated landscape area, a raingarden, or catchment system that provides for water infiltration.	8

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11.503.5 Landscape plan. A plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment. <i>[Where "front" only or "rear" only plan is implemented, only half of the points (rounding down to a whole number) are awarded for Items (1)-(8)]</i>	
(1) A plan is formulated and implemented that protects, restores, or enhances natural vegetation on the lot.	
(a) greater than or equal to 12% to less than 25% of the natural area	1
(b) greater than or equal to 25% to less than 50% of the natural area	2
(c) greater than or equal to 50% to less than 100% of the natural area	3
(d) 100% of the natural area	4
(2) Non-invasive vegetation that is native or regionally appropriate for local growing conditions is selected to promote.	4
(3) To improve pollinator habitat, at least 10% of planted areas are composed of native or regionally appropriate flowering and nectar producing plant species. Invasive plant species shall not be utilized.	3
(4) EPA WaterSense Water Budget Tool or equivalent is used when implementing the site vegetative design.	5
(5) Where turf is being planted, Turfgrass Water Conservation Alliance (TWCA) or equivalent as determined by the adopting entity third-party qualified water efficient grasses are used.	3
(6) For landscaped vegetated areas, the maximum percentage of all turf areas is:	
(a) greater than 40% to less than or equal to 60%	2
(b) greater than 20% to less than or equal to 40%	3
(c) greater than 0% to less than or equal to 20%	4
(d) 0%	5
(7) Plants with similar watering needs are grouped (hydrozoning) and shown on the lot plan.....	5
(8) Summer shading by planting installed to shade a minimum of 30% of building walls. To conform to summer shading, the effective shade coverage (five years after planting) is the arithmetic mean of the shade coverage calculated at 10 am for eastward facing walls, noon for southward facing walls, and 3 pm for westward facing walls on the summer solstice.	5
(9) Vegetative wind breaks or channels are designed to protect the lot and immediate surrounding lots as appropriate for local conditions.....	4
(10) Site- or community-generated tree trimmings or stump grinding of regionally appropriate trees are used on the site to provide protective mulch during construction or for landscaping.	3
(11) An integrated pest management plan is developed to minimize chemical use in pesticides and fertilizers.....	4
(12) Developer has a plan for removal or containment of invasive plants from the disturbed areas of the site..	3
(13) Developer implements a plan for removal or containment of invasive plants on the undisturbed areas of the site.	6

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<p>11.503.6 Wildlife habitat. Measures are planned to support wildlife habitat and include at least two of the following:</p> <ul style="list-style-type: none"> (1) Plants and gardens that encourage wildlife, such as bird and butterfly gardens. 3 (2) Inclusion of a certified “backyard wildlife” program. 3 (3) The lot is adjacent to a wildlife corridor, fish and game park, or preserved areas and is designed with regard for this relationship. 3 (4) Outdoor lighting techniques are utilized with regard for wildlife. 3 <p>11.503.7 Environmentally sensitive areas. The lot is in accordance with one or both of the following:</p> <ul style="list-style-type: none"> (1) The lot does not contain any environmentally sensitive areas that are disturbed during remodeling. 4 (2) On lots with environmentally sensitive areas, mitigation and/or restoration is conducted to preserve ecosystem functions lost through remodeling activities. 4 	
11.504 LOT CONSTRUCTION	
<p>11.504.0 Intent. Environmental impact during construction is avoided to the extent possible; impacts that do occur are minimized, and any significant impacts are mitigated.</p> <p>11.504.1 On-site supervision and coordination. On-site supervision and coordination are provided during on-lot-lot clearing, grading, trenching, paving, and installation of utilities to ensure that specified green development practices are implemented. (also see § 11.503.3) 4</p> <p>11.504.2 Trees and vegetation. Designated trees and vegetation are preserved by one or more of the following:</p> <ul style="list-style-type: none"> (1) Fencing or equivalent is installed to protect trees and other vegetation..... 3 (2) Trenching, significant changes in grade, and compaction of soil and critical root zones in all “tree save” areas as shown on the lot plan are avoided..... 5 (3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering..... 4 <p>11.504.3 Soil disturbance and erosion implementation. On-site soil disturbance and erosion during remodeling are minimized by one or more of the following in accordance with the SWPPP or applicable plan: (also see § 11.503.3)</p> <ul style="list-style-type: none"> (1) Sediment and erosion controls are installed on the lot and maintained in accordance with the stormwater pollution prevention plan, where required..... 5 (2) Limits of clearing and grading are staked out on the lot. 5 (3) “No disturbance” zones are created using fencing or flagging to protect vegetation and sensitive areas on the lot from construction activity..... 5 (4) Topsoil from either the lot or the site development is stockpiled and stabilized for later use and used to establish landscape plantings on the lot. 5 (5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area (laying lightweight geogrids, mulch, chipped wood, plywood, OSB, metal plates, or other materials capable of weight distribution in the pathway of the equipment). 4 	

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GREEN BUILDING PRACTICES	POINTS
(6) Disturbed areas on the lot that are complete or to be left unworked for 21 days or more are stabilized within 14 days using methods as recommended by the EPA, or in the approved SWPPP, where required.....	3
(7) Soil is improved with organic amendments and mulch.....	3
(8) Newly installed utilities on the lot are installed using one or more alternative means (e.g., tunneling instead of trenching, use of smaller equipment, use of low ground pressure equipment, use of geomats, shared utility trenches or easements).	5
11.505 INNOVATIVE PRACTICES	
<p>11.505.0 Intent. Innovative lot design, preparation and development practices are used to enhance environmental performance. Waivers or variances from local development regulations are obtained, and innovative zoning is used to implement such practices.</p> <p>11.505.1 Driveways and parking areas. Driveways and parking areas are minimized or mitigated by one or more of the following:</p> <p>(1) Off-street parking areas or driveways are shared. Waivers or variances from local development regulations are obtained to implement such practices, if required.</p> <p>(2) In a multifamily project, parking capacity does not exceed the local minimum requirements.</p> <p>(3) Structured parking is utilized to reduce the footprint of surface parking areas.</p> <p style="padding-left: 20px;">(a) greater than or equal to 25% to less than 50%</p> <p style="padding-left: 20px;">(b) greater than or equal to 50% to less than 75%</p> <p style="padding-left: 20px;">(c) greater than or equal to 75%</p> <p>11.505.2 Heat island mitigation. Heat island effect is mitigated by one or both of the following.</p> <p>(1) Hardscape: Not less than 50% of the surface area of the hardscape on the lot meets one or a combination of the following methods.</p> <p style="padding-left: 20px;">(a) Shading of hardscaping: Shade is provided from existing or new vegetation (within five years) or from trellises. Shade of hardscaping is to be measured on the summer solstice at noon.</p> <p style="padding-left: 20px;">(b) Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index (SRI) of 29 or greater. The SRI is calculated in accordance with ASTM E1980. A default SRI value of 35 for new concrete without added color pigment is permitted to be used instead of measurements.</p> <p style="padding-left: 20px;">(c) Permeable hardscaping: Permeable hardscaping materials are installed.</p> <p>(2) Roofs: Not less than 75% of the exposed surface of the roof is vegetated using technology capable of withstanding the climate conditions of the jurisdiction and the microclimate of the building lot. Invasive plant species are not permitted.</p>	
	5

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GREEN BUILDING PRACTICES	POINTS
11.505.3 Density. The average density on the lot on a net developable area basis is:	
(1) greater than or equal to 7 to less than 14 dwelling units/sleeping units per acre (per 4,047 m ²)	4
(2) greater than or equal to 14 to less than 21 dwelling units/sleeping units per acre (per 4,047 m ²)	5
(3) greater than or equal to 21 to less than 35 dwelling units/sleeping units per acre (per 4,047 m ²)	6
(4) greater than or equal to 35 to less than 70 dwelling units/sleeping units per acre (per 4,047 m ²)	7
(5) greater than or equal to 70 dwelling units/sleeping units per acre (per 4,047 m ²).....	8
11.505.4 Mixed-use development.	8
(1) The lot contains a mixed-use building.	5
11.505.5 Multifamily or mixed-use community garden(s). Local food production to residents or area consumers.	3
(a) A portion of the lot of at least 250 sq. ft. is established as community garden(s) for the residents of the site. <i>[3 points awarded per 250 sq. ft.]</i>	3 [9 max]
(b) Locate the project within a 0.5-mile walking distance of an existing or planned farmers market/ farm stand that is open or will operate at least once a week for at least five months of the year.	3
(c) Areas and physical provisions are provided for composting.	1
(d) Signs designating the garden area are posted.	1
11.505.6 Multi-unit plug-in electric vehicle charging. Plug-in electric vehicle charging capability is provided for not fewer than 2% of parking stalls. <i>[An additional 2 points can be earned for each percentage point above 2% for a maximum of 10 points]</i>	4 [10 max]
Fractional values shall be rounded up to the nearest whole number. Electrical capacity in main electric panels supports Level 2 charging (208/240V – up to 80 amps or in accordance with SAE J1772). Each stall is provided with conduit and wiring infrastructure from the electric panel to support Level 2 charging (208/240V – up to 80 amps or in accordance with SAE J1772) service to the designated stalls, and stalls are equipped with either Level 2 charging AC grounded outlets (208/240V – up to 80 amps or in accordance with SAE J1772) or Level 2 charging stations (208-240V – up to 80 amps or in accordance with SAE J1772) by a third-party charging station.	
11.505.7 Multi-unit residential CNG vehicle fueling. CNG vehicle residential fueling appliances are provided for at least 1% of the parking stalls. The CNG fueling appliances shall be listed in accordance with ANSI/CSA NGV 5.1 and installed in accordance to the appliance manufacturer’s installation instructions.....	4
11.505.8 Street network. Project is located in an area of high intersection density.	5
11.505.9 Smoking prohibitions. Signs are provided on multifamily and mixed-use lots prohibiting smoking at the following locations:	
(a) Smoking is prohibited within 25 ft. (7.5 m) of all building exterior doors and operable windows or building air intakes within 15 vertical feet (4.5 m) of grade or a walking surface.	3
(b) Smoking is prohibited on decks, balconies, patios and other occupied exterior spaces.....	3
(c) Smoking is prohibited at all parks, playgrounds, and community activity or recreational spaces..	3

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GREEN BUILDING PRACTICES	POINTS
<p>11.505.10 Recreational space. For multifamily buildings, on-site dedicated recreation space for exercise or play opportunities for adults and/or children open and accessible to residents is provided.</p> <p>(a) A dedicated area of at least 400 sq. ft. is provided inside the building with adult exercise and/or children’s play equipment.....</p> <p>(b) A courtyard, garden, terrace, or roof space at least 10% of the lot area that can serve as outdoor space for children’s play and /or adult activities is provided.....</p> <p>(c) Active play/recreation areas are illuminated at night to extend opportunities for physical activity into the evening.....</p>	<p>3</p> <p>3</p> <p>3</p>
<p>11.505.11 Battery storage system. A battery storage system of not less than 6 kWh of available capacity is installed that stores electric energy from an on-site renewable electric generation system or is grid-interactive or can perform both functions.</p>	<p>2</p>
<p>11.601 QUALITY OF CONSTRUCTION MATERIALS AND WASTE</p>	
<p>11.601.0 Intent. Design and construction practices that minimize the environmental impact of the building materials are incorporated, environmentally efficient building systems and materials are incorporated, and waste generated during construction is reduced.</p> <p>11.601.1 Conditioned floor area. Finished floor area of a dwelling unit or sleeping unit after the remodeling is limited. Finished floor area is calculated in accordance with ANSI Z765 for single family and ANSI/BOMA Z65.4 for multifamily buildings. Only the finished floor area for stories above grade plane is included in the calculation. <i>[For every 100 sq. ft. (9.29 m²) over 4,000 sq. ft. (372 m²), 1 point is to be added the threshold points shown in Table 305.3.7 for each rating level.]</i></p> <p>(1) less than or equal to 700 sq. ft. (65 m²).....</p> <p>(2) less than or equal to 1,000 sq. ft. (93 m²).....</p> <p>(3) less than or equal to 1,500 sq. ft. (139 m²).....</p> <p>(4) less than or equal to 2,000 sq. ft. (186 m²).....</p> <p>(5) less than or equal to 2,500 sq. ft. (232 m²).....</p> <p>(6) greater than 4,000 sq. ft. (372 m²)</p>	<p>14</p> <p>12</p> <p>9</p> <p>6</p> <p>3</p> <p>M</p>
<p>Multifamily Building Note: For a multifamily building, a weighted average of the individual unit sizes is used for this practice.</p>	
<p>11.601.2 Material usage. Newly installed structural systems are designed, or construction techniques are implemented, to reduce and optimize material usage. <i>[Points awarded only when the newly installed portion of each structural system comprises at least 25% of the total area of that structural system after the remodel]</i></p> <p>(1) Minimum structural member or element sizes necessary for strength and stiffness in accordance with advanced framing techniques or structural design standards are selected.....</p> <p>(2) Higher-grade or higher-strength of the same materials than commonly specified for structural elements and components in the building are used and element or component sizes are reduced accordingly.....</p> <p>(3) Performance-based structural design is used to optimize lateral force-resisting systems.</p>	<p>9 max</p> <p>3</p> <p>3</p> <p>3</p>

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GREEN BUILDING PRACTICES	POINTS
11.601.3 Building dimensions and layouts. Building dimensions and layouts are designed to reduce material cuts and waste. This practice is used for a minimum of 80% of the newly installed areas: <i>[Points awarded only when the newly installed area of the building comprises at least 25% of the total area of that element of the building after the remodel]</i>	
(1) floor area.....	3
(2) wall area.....	3
(3) roof area.....	3
(4) cladding or siding area	3
(5) penetrations or trim area.....	1
11.601.4 Framing and structural plans. Detailed framing or structural plans, material quantity lists and on-site cut lists for newly installed framing, structural materials, and sheathing materials are provided....	4
11.601.5 Prefabricated components. Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90% for the following system or building: <i>[Points awarded only when the newly installed system comprises at least 25% of the total area of that system of the building after the remodel]</i>	13 max
(1) floor system	4
(2) wall system.....	4
(3) roof system	4
(4) modular construction for any new construction located above grade.....	13
11.601.6 Stacked stories. Stories above grade are stacked, such as in 1½-story, 2-story, or greater structures. The area of the upper story is a minimum of 50% of the area of the story below, based on areas with a minimum ceiling height of 7 ft. (2,134 mm).	8 max
(1) first stacked story.....	4
(2) for each additional stacked story.....	2
11.601.7 Prefinished materials. Prefinished building materials or assemblies listed below have no additional site-applied finishing material are installed.	12 max
(a) interior trim not requiring paint or stain.	
(b) exterior trim not requiring paint or stain.	
(c) window, skylight, and door assemblies not requiring paint or stain on one of the following surfaces: <ul style="list-style-type: none"> i. exterior surfaces ii. interior surfaces 	
(d) interior wall coverings or systems, floor systems, and/or ceiling systems not requiring paint or stain or other type of finishing application.	
(e) exterior wall coverings or systems, floor systems, and/or ceiling systems not requiring paint or stain or other type of finishing application.	
(1) Percent of prefinished building materials or assemblies installed: <i>[Points awarded for each type of material or assembly.]</i>	
(a) greater than or equal to 35% to less than 50% (after the remodel).....	1
(b) greater than or equal to 50% to less than 90% (after the remodel).....	2
(c) greater than or equal to 90% (after the remodel)	5

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GREEN BUILDING PRACTICES	POINTS
<p>11.601.8 Foundations. A foundation system that minimizes soil disturbance, excavation quantities and material usage, such as frost-protected shallow foundations, isolated pier and pad foundations, deep foundations, post foundations, or helical piles is selected, designed, and constructed. The foundation is used on 25% or more of the building footprint after the remodel.</p>	3
11.602 ENHANCED DURABILITY AND REDUCED MAINTENANCE	
<p>11.602.0 Intent. Design and construction practices are implemented that enhance the durability of materials and reduce in-service maintenance.</p>	
<p>11.602.1 Moisture management – building envelope</p>	
<p>11.602.1.1 Capillary breaks</p>	
<p>11.602.1.1.1 A capillary break and vapor retarder are installed at concrete slabs in accordance with IRC Sections R506.2.2 and R506.2.3 or IBC Sections 1910 and 1805.4.1. <i>[*This practice is not mandatory for existing slabs without apparent moisture problem.]</i></p>	M*
<p>11.602.1.1.2 A capillary break to prevent moisture migration into foundation wall is provided between the footing and the foundation wall on all new foundations, and on not less than 25% of the total length of the foundation after the remodel.</p>	3
<p>11.602.1.2 Foundation waterproofing. Enhanced foundation waterproofing is installed on all new foundations, and on not less than 25% of the total length of the foundation after the remodel using one or both of the following:</p>	4
<p>(1) rubberized coating, or (2) drainage mat</p>	
<p>11.602.1.3 Foundation drainage</p>	
<p>11.602.1.3.1 Where required by the IRC or IBC for habitable and usable spaces below grade, exterior drain tile is installed. <i>[*This practice is not mandatory for existing slabs without apparent moisture problem.]</i></p>	M*
<p>11.602.1.3.2 Interior and exterior foundation perimeter drains are installed and sloped to discharge to daylight, dry well, or sump pit on all new foundations and not less than 25% of the total length of the foundation after the remodel.</p>	4
<p>11.602.1.4 Crawlspace.</p>	
<p>11.602.1.4.1 Vapor retarder for all new unconditioned vented crawlspace foundations and not less than 25% of the total area after the remodel is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 in. (152 mm) and are taped.</p>	
<p>(1) Floors. Minimum 6 mil vapor retarder installed on the crawlspace floor and extended at least 6 in. up the wall and is attached and sealed to the wall.</p>	6
<p>(2) Walls. Dampproof walls are provided below finished grade. <i>[*This practice is not mandatory for existing walls without apparent moisture problem.]</i></p>	M*

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GREEN BUILDING PRACTICES	POINTS
11.602.1.4.2 For all new foundations and not less than 25% of the total area of the crawlspace after the remodel, crawlspace that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per sq. ft. of horizontal area and one of the following is implemented:	
(1) a concrete slab over 6 mil polyethylene sheeting or other Class I vapor retarder installed in accordance with IRC Section 408.3 or Section 506.	8
(2) 6 mil polyethylene sheeting or other Class I vapor retarder installed in accordance with IRC Section 408.3 or Section 506. <i>[*This practice is not mandatory for existing foundations without apparent moisture problem.]</i>	M*
11.602.1.5 Termite barrier. Continuous physical foundation termite barrier provided:	
(1) In geographic areas that have moderate to heavy infestation potential in accordance with Figure 6(3), a no or low toxicity treatment is also installed.	4
(2) In geographic areas that have a very heavy infestation potential in accordance with Figure 6(3), in addition a low toxicity bait and kill termite treatment plan is selected and implemented.	4
11.602.1.6 Termite-resistant materials. In areas of termite infestation probability as defined by Figure 6(3), termite-resistant materials are used as follows:	
(1) In areas of slight to moderate termite infestation probability: for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 2 ft. (610 mm) above the top of the foundation.	2
(2) In areas of moderate to heavy termite infestation probability: for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings within the first 3 ft. (914 mm) above the top of the foundation.	4
(3) In areas of very heavy termite infestation probability: for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, exterior decks, and exterior claddings.	6
11.602.1.7 Moisture control measures	
11.602.1.7.1 Moisture control measures are in accordance with the following:	
(1) Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.	2
(2) Insulation in cavities is dry in accordance with manufacturer’s instructions when enclosed (e.g., with drywall).	M 2
(3) The moisture content of lumber is sampled to ensure it does not exceed 19% prior to the surface and/or cavity enclosure.	4
11.602.1.7.2 Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied.	2
11.602.1.7.3 Building envelope assemblies that are designed for moisture control based on documented hygrothermal simulation or field study analysis. Hygrothermal analysis is required to incorporate representative climatic conditions, interior conditions and include heating and cooling seasonal variation. ...	4
11.602.1.8 Water-resistive barrier. Where required by the IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind newly installed exterior veneer and/or siding and where there is evidence of a moisture problem.	M

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GREEN BUILDING PRACTICES	POINTS
<p>11.602.1.9 Flashing. Flashing is provided as follows to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer’s instructions, the flashing manufacturer’s instructions, or as detailed by a registered design professional.</p> <p><i>[Points awarded only when practices (2)-(7) are implemented in all newly installed construction and not less than 25% of the applicable building elements for the entire building after the remodel.]</i></p> <p>(1) Flashing is installed at all the following locations, as applicable: <i>[*These practices are not mandatory for existing building elements without apparent moisture problem.]</i></p> <ul style="list-style-type: none"> (a) around exterior fenestrations, skylights and doors; (b) at roof valleys; (c) at all building-to-deck, -balcony, -porch, and -stair intersections; (d) at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets; (e) at ends of and under masonry, wood, or metal copings and sills; (f) above projecting wood trim; (g) at built-in roof gutters; and (h) drip edge is installed at eave and rake edges. <p>(2) All window and door head and jamb flashing is either self-adhered flashing complying with AAMA 711 or liquid applied flashing complying with AAMA 714 and installed in accordance with flashing fenestration or manufacturer’s installation instructions.</p> <p>(3) Pan flashing is installed at sills of all exterior windows and doors</p> <p>(4) Seamless, preformed kickout flashing, or prefabricated metal with soldered seams is provided at all roof-to-wall intersections. The type and thickness of the material used for roof flashing including but not limited kickout and step flashing is commensurate with the anticipated service life of the roofing material.</p> <p>(5) A rainscreen wall design as follows is used for exterior wall assemblies</p> <ul style="list-style-type: none"> (a) a system designed with minimum ¼-in. air space exterior to the water-resistive barrier, vented to the exterior at top and bottom of the wall and integrated with flashing details, or (b) a cladding material or a water-resistive barrier with enhanced drainage, meeting 75% drainage efficiency determined in accordance with ASTM E2273. <p>(6) Through-wall flashing is installed at transitions between wall cladding materials, or wall construction types.</p> <p>(7) Flashing is installed at expansion joints in stucco walls.....</p>	<p>M*</p> <p>2</p> <p>3</p> <p>3</p> <p>4 max</p> <p>4</p> <p>2</p> <p>2</p> <p>2</p>

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11.602.1.10 Exterior doors. Entries at exterior door assemblies, inclusive of side lights (if any), are covered by one of the following methods to protect the building from the effects of precipitation and solar radiation. Either a storm door or a projection factor of 0.375 minimum is provided. Eastern- and western-facing entries in Climate Zones 1, 2, and 3, as determined in accordance with Figure 6(1) or Appendix A, have either a storm door or a projection factor of 1.0 minimum, unless protected from direct solar radiation by other means (e.g., screen wall, vegetation).

[2 points awarded per exterior door] **2 [6 max]**

- (a) installing a porch roof or awning
- (b) extending the roof overhang
- (c) recessing the exterior door
- (d) Installing a storm door

11.602.1.11 Tile backing materials. Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.

[*This practice is not mandatory for existing tile surfaces without apparent moisture problem.] **M***

11.602.1.12 Roof overhangs. Roof overhangs, in accordance with Table 11.602.1.12, are provided over a minimum of 90% of exterior walls to protect the building envelope. **4**

Table 11.602.1.12

Minimum Roof Overhang for One- & Two-Story Buildings		
Inches of Rainfall ⁽¹⁾	Eave Overhang (In.)	Rake Overhang (In.)
≤40	12	12
>41 and ≤70	18	12
>70	24	12

(1) Annual mean total rainfall in inches is in accordance with Figure 6(2).

For SI: 12 in. = 304.8 mm

11.602.1.13 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the IRC or IBC at roof eaves of pitched roofs and extends a minimum of 24 in. (610 mm) inside the exterior wall line of the building. **M**

11.602.1.14 Architectural features. Architectural features that increase the potential for the water intrusion are avoided:

- (1) All horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application. ... **M 1**
- (2) No roof configurations that create horizontal valleys in roof design. **2**
- (3) No recessed windows and architectural features that trap water on horizontal surfaces..... **2**

11.602.1.15 Kitchen and vanity cabinets. All kitchen and vanity cabinets are certified in accordance with the ANSI/KCMA A161.1 performance standard or equivalent..... **2**

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GREEN BUILDING PRACTICES	POINTS
<p>11.602.2 Roof surfaces. A minimum of 90% of roof surfaces, not used for roof penetrations and associated equipment, on-site renewable energy systems such as photovoltaics or solar thermal energy collectors, or rooftop decks, amenities and walkways, are constructed of one or more of the following: ...</p> <p>(1) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent</p> <p>(2) a vegetated roof system</p> <p>(3) Minimum initial SRI of 78 for low-sloped roof (a slope less than 2:12) and a minimum initial SRI of 29 for a steep-sloped roof (a slope equal to or greater than 2:12). The SRI is calculated in accordance with ASTM E1980. Roof products are certified and labeled.</p>	3
<p>11.602.3 Roof water discharge. A gutter and downspout system or splash blocks and effective grading are provided to carry water a minimum of 5 ft. (1524 mm) away from perimeter foundation walls.</p>	4
<p>11.602.4 Finished grade</p> <p>11.602.4.1 Finished grade at all sides of a building is sloped to provide a minimum of 6 in. (152 mm) of fall within 10 ft. (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 in. (152 mm) of fall within 10 ft. (3048 mm), the final grade is sloped away from the edge of the building at a minimum slope of 2%.</p>	M
<p>11.602.4.2 The final grade is sloped away from the edge of the building at a minimum slope of 5%.</p>	1
<p>11.602.4.3 Water is directed to drains or swales to ensure drainage away from the structure.</p>	1
<p>11.603 REUSED OR SALVAGED MATERIALS</p>	
<p>11.603.0 Intent. Practices that reuse or modify existing structures, salvage materials for other uses, or use salvaged materials in the building’s construction are implemented.</p>	
<p>11.603.1 Reuse of existing building. Major elements or components of existing buildings and structures are reused, modified, or deconstructed for later use. <i>[1 Point awarded for every 200 sq. ft. (18.5 m²) of floor area.]</i></p>	1 [12 max]
<p>11.603.2 Salvaged materials. Reclaimed and/or salvaged materials and components are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1% of the total construction cost. <i>[1 Point awarded per 1% of salvaged materials used based on the total construction cost. Materials, elements, or components awarded points under § 11.603.1 shall not be awarded points under § 11.603.2.]</i> .</p>	1 [9 max]
<p>11.603.3 Scrap materials. Sorting and reuse of scrap building material is facilitated (e.g., a central storage area or dedicated bins are provided).</p>	4

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11.604 RECYCLED-CONTENT BUILDING MATERIALS

11.604.1 Recycled content. Building materials with recycled content are used for two minor and/or two major components of the building.

Per Table 11.604.1

Table 11.604.1 Recycled Content

Table with 3 columns: Material Percentage Recycled Content, Points For 2 Minor, Points For 2 Major. Rows include 25% to less than 50%, 50% to less than 75%, and more than 75%.

11.605 RECYCLED CONSTRUCTION WASTE

11.605.0 Intent. Waste generated during construction is recycled.

11.605.1 Hazardous waste. The construction waste management plan shall include information on the proper handling and disposal of hazardous waste. Hazardous waste is properly handled and disposed.....

M

11.605.2 Construction waste management plan. A construction waste management plan is developed, posted at the jobsite, and implemented, diverting through methods such as reuse, salvage, recycling, or manufacturer reclamation, a minimum of 50% (by weight) of nonhazardous construction and demolition waste from disposal. For this practice, land-clearing debris is not considered a construction waste. Materials used as alternative daily cover are considered construction waste and do not count toward recycling or salvaging.

6

For remodeling projects or demolition of an existing facility, the waste management plan includes the recycling of 95% of electronic waste components (such as printed circuit boards from computers, building automation systems, HVAC, fire and security control boards), by an E-Waste recycling facility.

Exceptions: 1) Waste materials generated from land clearing, soil and sub-grade excavation and vegetative debris shall not be in the calculations; and 2) a recycling facility (traditional or E-Waste) offering material receipt documentation is not available within 50 miles of the jobsite.

11.605.3 On-site recycling. On-site recycling measures following applicable regulations and codes are implemented, such as the following:

7

- (a) Materials are ground or otherwise safely applied on-site as soil amendment or fill. A minimum of 50% (by weight) of construction and land-clearing waste is diverted from landfill.
(b) Alternative compliance methods approved by the Adopting Entity.
(c) Compatible untreated biomass material (lumber, posts, beams etc.) are set aside for combustion if a Solid Fuel Burning Appliance per § 11.901.2.1(2) will be available for on-site renewable energy.

11.605.4 Recycled construction materials. Construction materials (e.g., wood, cardboard, metals, drywall, plastic, asphalt roofing shingles, or concrete) are recycled offsite.

6 max

(1) a minimum of two types of materials are recycled

3

(2) for each additional recycled material type

1

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GREEN BUILDING PRACTICES	POINTS
11.606 RENEWABLE MATERIALS	
11.606.0 Intent. Building materials derived from renewable resources are used.	
11.606.1 Biobased products. The following biobased products are used:	8 max
(a) certified solid wood in accordance with § 11.606.2	
(b) engineered wood	
(c) bamboo	
(d) cotton	
(e) cork	
(f) straw	
(g) natural fiber products made from crops (soy-based, corn-based)	
(h) other biobased materials with a minimum of 50% biobased content (by weight or volume)	
(1) Two types of biobased materials are used, each for more than 0.5% of the project’s projected building material cost.	3
(2) Two types of biobased materials are used, each for more than 1% of the project’s projected building material cost.	6
(3) For each additional biobased material used for more than 0.5% of the project’s projected building material cost.	1 [2 max]
11.606.2 Wood-based products. Wood or wood-based products are certified to the requirements of one of the following recognized product programs:	
(a) American Forest Foundation’s <i>American Tree Farm System</i> ® (ATFS)	
(b) Canadian Standards Association’s <i>Sustainable Forest Management System Standards</i> (CSA Z809)	
(c) <i>Forest Stewardship Council</i> (FSC)	
(d) <i>Program for Endorsement of Forest Certification Systems</i> (PEFC)	
(e) <i>Sustainable Forestry Initiative</i> ® Program (SFI)	
(f) <i>National Wood Flooring Association’s Responsible Procurement Program</i> (RPP)	
(g) other product programs mutually recognized by PEFC	
(h) A manufacturer’s fiber procurement system that has been audited by an approved agency as compliant with the provisions of ASTM D7612 as a responsible or certified source. Government or tribal forestlands whose water protection programs have been evaluated by an approved agency as compliant with the responsible source designation of ASTM D7612 are exempt from auditing in the manufacturer’s fiber procurement system.	
(1) A minimum of two responsible or certified wood-based products are used for minor components of the building.....	3
(2) A minimum of two responsible or certified wood-based products are used in major components of the building.....	4

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11.606.3 Manufacturing energy. Materials are used for major components of the building that are manufactured using a minimum of 33% of the primary manufacturing process energy derived from renewable sources, combustible waste sources, or renewable energy credits (RECs).
[2 points awarded per material]

2 [6 max]

11.607 RECYCLING AND WASTE REDUCTION

11.607.1 Recycling and composting. Recycling and composting by the occupant are facilitated by one or more of the following methods:

(1) A readily accessible space(s) for recyclable material containers is provided and identified on the floorplan of the house or dwelling unit or a readily accessible area(s) outside the living space is provided for recyclable material containers and identified on the site plan for the house or building. The area outside the living space shall accommodate recycling bin(s) for recyclable materials accepted in local recycling programs

3

(2) A readily accessible space(s) for compostable material containers is provided and identified on the floorplan of the house or dwelling unit or a readily accessible area(s) outside the living space is provided for compostable material containers and identified on the site plan for the house or building. The area outside the living space shall accommodate composting container(s) for locally accepted materials, or, accommodate composting container(s) for on-site composting.

4

11.607.2 Food waste disposers. A minimum of one food waste disposer is installed at the primary kitchen sink.

1

11.608 RESOURCE-EFFICIENT MATERIALS

11.608.1 Resource-efficient materials. Products containing fewer materials are used to achieve the same end-use requirements as conventional products, including but not limited to:
[3 points awarded per each material]

3 [9 max]

- (1) lighter, thinner brick with bed depth less than 3 in. and/or brick with coring of more than 25%.
- (2) engineered wood or engineered steel products.
- (3) roof or floor trusses.

11.609 REGIONAL MATERIALS

11.609.1 Regional materials. Regional materials are used for major and/or minor components of the building. *[2 points awarded per each major component and 1 per each minor component]*

10 max

(1) Major component *[2 points awarded per each component]*

2

(2) Minor component *[1 point awarded per each component]*

1

For a component to comply with this practice, a minimum of 75% of all products in that component category must be sourced regionally, e.g., stone veneer category – 75% or more of the stone veneer on a project must be sourced regionally.

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GREEN BUILDING PRACTICES	POINTS
11.610 LIFE CYCLE ASSESSMENT	
<p>11.610.1 Life cycle assessment. A life cycle assessment (LCA) tool is used to select environmentally preferable products, assemblies, or, entire building designs. Points are awarded in accordance with § 11.610.1.1 or § 11.610.1.2. Only one method of analysis or tool may be utilized. A reference service life for the building is 60 years for any life cycle analysis tool. Results of the LCA are reported in the manual required in § 11.1001.1 or § 11.1002.1(1) of this Standard in terms of the environmental impacts listed in this practice and it is stated if operating energy was included in the LCA.</p>	15 max
<p>11.610.1.1 Whole-building life cycle assessment. A whole-building LCA is performed in conformance with ASTM E2921 using ISO 14044 compliant life cycle assessment.</p>	15 max
<p>(1) Execute LCA at the whole building level through a comparative analysis between the final and reference building designs as set forth under Standard Practice, ASTM E2921. The assessment criteria includes the following environmental impact categories:</p> <ul style="list-style-type: none"> (a) Primary energy use (b) Global warming potential (c) Acidification potential (d) Eutrophication potential (e) Ozone depletion potential (f) Smog potential 	8
<p>(2) Execute LCA on regulated loads throughout the building operations life cycle stage. Conduct simulated energy performance analyses in accordance with § 702.2.1 ICC IECC analysis (IECC Section 405) in establishing the comparative performance of final versus reference building designs. Primary energy use savings and global warming potential avoidance from simulation analyses results are determined using energy supplier, utility, or EPA electricity generation and other fuels energy conversion factors and electricity generation and other fuels emission rates for the locality or Sub-Region in which the building is located.</p>	5
<p>(3) Execute full LCA, including use-phase, through calculation of operating energy impacts (c) – (f) using local or regional emissions factors from energy supplier, utility, or EPA.</p>	2
<p>11.610.1.2 Life cycle assessment for a product or assembly. An environmentally preferable product or assembly is selected for an application based upon the use of an LCA tool that incorporates data methods compliant with ISO 14044 or other recognized standards that compare the environmental impact of products or assemblies.</p>	10 max
<p>11.610.1.2.1 Product LCA. A product with improved environmental impact measures compared to another product(s) intended for the same use is selected. The environmental impact measures used in the assessment are selected from the following:</p> <ul style="list-style-type: none"> (a) Primary energy use (b) Global warming potential (c) Acidification potential (d) Eutrophication potential (e) Ozone depletion potential (f) Smog potential 	Per Table 11.610.1.2.1 [10 max]
<p><i>[Points awarded for each product/system comparison where the selected product/system improved upon the environmental impact measures by an average of 15%.]</i></p>	

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**Table 11.610.1.2.1
Product LCA**

4 Impact Measures	5 Impact Measures
POINTS	
2	3

11.610.1.2.2 Assembly LCA. An assembly with improved environmental impact measures compared to a functionally comparable assembly is selected. The full life cycle, from resource extraction to demolition and disposal (including but not limited to on-site construction, maintenance and replacement, material and product embodied acquisition, and process and transportation energy), is assessed. The assessment does not include electrical and mechanical equipment and controls, plumbing products, fire detection and alarm systems, elevators, and conveying systems. The following functional building elements are eligible for points under this practice:

Per Table 11.610.1.2.2 [10 max]

- (a) exterior walls
- (b) roof/ceiling
- (c) interior walls or ceilings
- (d) intermediate floors

The environmental impact measures used in the assessment are selected from the following:

- (a) Primary energy use
- (b) Global warming potential
- (c) Acidification potential
- (d) Eutrophication potential
- (e) Ozone depletion potential
- (f) Smog potential

[Points are awarded based on the number of functional building elements that improve upon environmental impact measures by an average of 15%.]

**Table 11.610.1.2.2
Assembly LCA**

	4 Impact Measures	5 Impact Measures
	POINTS	
2 functional building elements	3	6
3 functional building elements	4	8
4 functional building elements	5	10

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GREEN BUILDING PRACTICES	POINTS
11.611 PRODUCT DECLARATIONS	
<p>11.611.1 Product declarations. A minimum of 10 different products installed in the building project, at the time of certificate of occupancy, comply with one of the following sub-sections. Declarations, reports, and assessments are submitted and contain documentation of the critical peer review by an independent third party, results from the review, the reviewer’s name, company name, contact information, and date of the review.</p>	5
<p>11.611.1.1 Industry-wide declaration. A Type III industry-wide environmental product declaration (EPD) is submitted for each product. Where the program operator explicitly recognizes the EPD as representative of the product group on a National level, it is considered industry-wide. In the case where an industry-wide EPD represents only a subset of an industry group, as opposed to being industry-wide, the manufacturer is required to be explicitly recognized as a participant by the EPD program operator. All EPDs are required to be consistent with ISO Standards 14025 and 21930 with at least a cradle-to-gate scope.</p> <p style="background-color: #cccccc; padding: 2px;"><i>[Each product complying with § 11. 611.1.1 shall be counted as one product for compliance with § 611.1]</i></p>	
<p>11.611.1.2 Product Specific Declaration. A product specific Type III EPD is submitted for each product. The product specific declaration shall be manufacturer specific for an individual product or product family. All Type III EPDs are required to be certified as complying, at a minimum, with the goal and scope for the cradle-to-gate requirements in accordance with ISO Standards 14025 and 21930.</p> <p style="background-color: #cccccc; padding: 2px;"><i>[Each product complying with § 11. 611.1.2 shall be counted as two products for compliance with § 611.1]</i></p>	
11.612 INNOVATIVE PRACTICES	
<p>11.612.1 Manufacturer’s environmental management system concepts. Product manufacturer’s operations and business practices include environmental management system concepts, and the production facility is registered to ISO 14001 or equivalent. The aggregate value of building products from registered ISO 14001 or equivalent production facilities is 1% or more of the estimated total building materials cost. <i>[1 point awarded per percent]</i>.....</p>	1 [10 max]
<p>11.612.2 Sustainable products. One or more of the following products are used for at least 30% of the floor or wall area of the entire dwelling unit or sleeping unit, as applicable. Products are certified by a third-party agency accredited to ISO 17065.</p>	9 max
<p>(1) greater than or equal to 50% of carpet installed (by square feet) is certified to NSF 140 or equivalent.</p>	3
<p>(2) greater than or equal to 50% of resilient flooring installed (by square feet) is certified to NSF 332 or equivalent.</p>	3
<p>(3) greater than or equal to 50% of the insulation installed (by square feet) is certified to UL 2985 or equivalent.</p>	3
<p>(4) greater than or equal to 50% of interior wall coverings installed (by square feet) is certified to NSF 342 or equivalent.....</p>	3
<p>(5) greater than or equal to 50% of the gypsum board installed (by square feet) is certified to UL 100 or equivalent.</p>	3

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GREEN BUILDING PRACTICES	POINTS
(6) greater than or equal to 50% of the door leafs installed (by number of door leafs) is certified to UL 102 or equivalent.	3
(7) greater than or equal to 50% of the tile installed (by square feet) is certified to TCNA A138.1 Specifications for Sustainable Ceramic Tiles, Glass Tiles and Tile Installation Materials or equivalent..	3
11.612.3 Universal design elements. Dwelling incorporates one or more of the following universal design elements. Conventional industry tolerances are permitted.	12 max
(1) Any no-step entrance into the dwelling which 1) is accessible from a substantially level parking or drop-off area (no more than 2%) via an accessible path which has no individual change in elevation or other obstruction of more than 1-1/2 in. in height with the pitch not exceeding 1 in 12; and 2) provides a minimum 32-in. wide clearance into the dwelling.	3
(2) Minimum 36-in. wide accessible route from the no-step entrance into at least one visiting room in the dwelling and into at least one full or half bathroom which has a minimum 32-in. clear door width and a 30-in. by 48-in. clear area inside the bathroom outside the door swing.	3
(3) Minimum 36-in. wide accessible route from the no-step entrance into at least one bedroom which has a minimum 32-in. clear door width.	3
(4) Blocking or equivalent installed in the accessible bathroom walls for future installation of grab bars at water closet and bathing fixture, if applicable.	1
(5) All interior and exterior door handles are levers rather than knobs.	1
(6) All sink, lavatory and showering controls comply with ICC A117.1.	1
(7) Interior convenience power receptacles, communication connections (for cable, phone, Ethernet, etc.) and switches are placed between 15 in. and 48 in. above the finished floor. Additional switches to control devices and systems (such as alarms, home theaters and other equipment) not required by the local building code may be installed as desired.	1
(8) All light switches are rocker-type switches or other similar switches that can be operated by pressing them (with assistive devices) – no toggle-type switches may be used.	1
(9) Anyone of the following systems are automated and can be controlled with a wireless device or voice-activated device: HVAC, all permanently installed lighting, alarm system, window treatments, or door locks. [1 point awarded per system]	1 [5 max]
11.613 RESILIENT CONSTRUCTION	
11.613.1 Intent. Design and construction practices developed by a licensed design professional or equivalent are implemented to enhance the resilience and durability of the structure (above building code minimum design loads) so the structure can better withstand forces generated by flooding, snow, wind, or seismic activity (as applicable) and reduce the potential for the loss of life and property.	
11.613.2 Minimum structural requirements (base design). The building is designed and constructed in compliance with structural requirements in the IBC or IRC as applicable.	2
11.613.3 Enhanced resilience (10% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 10% higher than the base design.....	3

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GREEN BUILDING PRACTICES	POINTS
11.613.4 Enhanced resilience (20% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 20% higher than the base design.	5
11.613.5 Enhanced resilience (30% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 30% higher than the base design.	10
613.13.6 Enhanced resilience (40% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 40% higher than the base design.	12
11.613.7 Enhanced resilience (50% above base design). Design and construction practices are implemented to enhance the resilience and durability of the structure by designing and building to forces generated by flooding, snow, wind, or seismic (as applicable) that are 50% higher than the base design.	15
11.701 MINIMUM ENERGY EFFICIENCY REQUIREMENTS	
11.701.4 Mandatory practices	
11.701.4.0 Minimum energy efficiency requirements. Additions, alterations, or renovations to an existing building, building system or portion thereof shall comply with the provisions of the ICC IECC as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with the ICC IECC. An addition complies with the ICC IECC if the addition complies or if the existing building and addition comply with the ICC IECC as a single building.	M
11.701.4.1 HVAC systems	
11.701.4.1.1 HVAC system sizing. Newly installed or modified space heating and cooling system is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent. New equipment is selected using ACCA Manual S or equivalent.	M
11.701.4.1.2 Radiant and hydronic space heating. Where installed as a primary heat source in the building, new radiant or hydronic space heating system is designed, installed, and documented, using industry-approved guidelines and standards (e.g., ACCA Manual J, AHRI I=B=R, ANSI/ACCA 5 QI, or an accredited design professional's and manufacturer's recommendation).	M
11.701.4.2 Duct systems	
11.701.4.2.1 Duct air sealing. Ducts that are newly installed, modified, or are exposed during the remodel are air sealed. All duct sealing materials are in conformance with UL 181A or UL 181B specifications and are installed in accordance with manufacturer's instructions.	M
11.701.4.2.2 Ducts and plenums. Building framing cavities are not used as ducts or plenums. Existing building cavities currently used as supply ducts exposed during the remodel are lined.	M
11.701.4.2.3 Duct system sizing. New or modified duct system is sized and designed in accordance with ACCA Manual D or equivalent.	M

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11.701.4.3 Insulation and air sealing

11.701.4.3.1 Building thermal envelope air sealing. The building thermal envelope exposed or created during the remodel is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film or solid material:

M

- (a) All joints, seams and penetrations
- (b) Site-built windows, doors and skylights
- (c) Openings between window and door assemblies and their respective jambs and framing
- (d) Utility penetrations
- (e) Dropped ceilings or chases adjacent to the thermal envelope
- (f) Knee walls
- (g) Walls, ceilings, and floors separating conditioned spaces from unconditioned spaces
- (h) Behind tubs and showers on exterior walls
- (i) Common walls between dwelling units or sleeping units
- (j) Attic access openings
- (k) Joints of framing members at rim joists
- (l) Top and bottom plates
- (m) Other sources of infiltration

11.701.4.3.2 Air barrier, air sealing, building envelope testing and insulation. For portions of the building envelope that are exposed or created during the remodel, building envelope air tightness and insulation installation is verified to be in accordance with this Section and § 11.701.4.3.2.1. Insulation installation other than Grade 1 is not permitted.

M

- (1) **Testing.** Building envelope tightness is tested. Testing is conducted in accordance with ASTM E779 using a blower door at a test pressure of 1.04 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. Testing is conducted under the following conditions:
- (a) Exterior windows and doors, fireplace and stove doors are closed, but not sealed;
 - (b) Dampers are closed, but not sealed, including exhaust, intake, make-up air, backdraft, and flue dampers;
 - (c) Interior doors are open;
 - (d) Exterior openings for continuous ventilation systems and heat recovery ventilators are closed and sealed;
 - (e) Heating and cooling system(s) is turned off;
 - (f) HVAC duct terminations are not sealed; and
 - (g) Supply and return registers are not sealed.

Multifamily Building Note: Testing by dwelling units, sleeping units, groups of dwelling units, groups of sleeping units, or the building as a whole is acceptable.

- (2) **Visual inspection.** The air barrier and insulation items listed in Table 11.701.4.3.2(2) are field verified by visual inspection.

Table 11.701.4.3.2(2)
Air Barrier and Insulation Installation

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within comers and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.
Windows, skylights and doors	The space between window/doorjamb and framing, and skylights and framing shall be sealed.	
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.
Floors (including above garage and cantilevered floors)	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Where provided instead of floor insulation, insulation shall be permanently attached to the crawlspace walls.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.	
Narrow cavities		Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the drywall.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.
Plumbing and wiring		Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate them from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.	
HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.	
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

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11.701.4.3.2.1 Grade I insulation installation. Field-installed insulation products to ceilings, walls, floors, band joists, rim joists, conditioned attics, basements, and crawlspaces, except as specifically noted, are verified by a third-party as Grade I in accordance with the following:

M

- (1) Inspection is conducted before insulation is covered.
- (2) Air-permeable insulation is enclosed on all six sides and is in substantial contact with the sheathing material on one or more sides (interior or exterior) of the cavity. Air permeable insulation in ceilings is not required to be enclosed when the insulation is installed in substantial contact with the surfaces it is intended to insulate.
- (3) Cavity insulation uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging).
- (4) Cavity insulation compression or incomplete fill amounts to 2% or less, presuming the compressed or incomplete areas are a minimum of 70% of the intended fill thickness; occasional small gaps are acceptable.
- (5) Exterior rigid insulation has substantial contact with the structural framing members or sheathing materials and is tightly fitted at joints.
- (6) Cavity insulation is split, installed, and/or fitted tightly around wiring and other services.
- (7) Exterior sheathing is not visible from the interior through gaps in the cavity insulation.
- (8) Faced batt insulation is permitted to have side-stapled tabs, provided the tabs are stapled neatly with no buckling, and provided the batt is compressed only at the edges of each cavity, to the depth of the tab itself.
- (9) Where properly installed, ICFs, SIPs, and other wall systems that provide integral insulation are deemed in compliance with this section.

11.701.4.3.3 Multifamily air leakage alternative. Multifamily buildings four or more stories in height and in compliance with ICC IECC section C402.5 (Air leakage-thermal envelope) are deemed to comply with § 11.701.4.3.1 and § 11.701.4.3.2.

11.701.4.3.4 Fenestration air leakage. Newly installed Windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per sq. ft. (1.5 L/s/m²), and swinging doors no more than 0.5 cfm per sq. ft. (2.6 L/s/m²), when tested in accordance with NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled. For site-built fenestration, a test report by an accredited, independent laboratory verifying compliance with the applicable infiltration rate shall be submitted to demonstrate compliance with this practice. This practice does not apply to field-fabricated fenestration products.....

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Exception: For Tropical Zones only, jalousie windows are permitted to be used as a conditioned space boundary and shall have an air infiltration rate of not more than 1.3 cfm per sq. ft.

11.701.4.3.5 Lighting and building thermal envelope. Newly installed luminaires installed in the building thermal envelope which penetrate the air barrier are sealed to limit air leakage between conditioned and unconditioned spaces. All luminaires are IC-rated and labeled as meeting ASTM E283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All luminaires installed in the building thermal envelope which penetrate the air barrier are sealed with a gasket or caulk between the housing and the interior of the wall or ceiling covering.

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<p>11.701.4.4 High-efficacy lighting. A minimum of 90% of newly installed hard-wired lighting fixtures or the bulbs in those fixtures shall be high efficacy</p>	M
<p>11.701.4.5 Boiler piping. Boiler piping in unconditioned space supplying and returning heated water or steam that is accessible during the remodel is insulated. Exception: where condensing boilers are installed, insulation is not required for return piping.....</p>	M
<p>11.701.4.6 Fenestration specifications. The NFRC-certified U-factor and SHGC of newly installed windows, exterior doors, skylights, and tubular daylighting devices (TDDs) do not exceed the values in Table 703.2.5.1.</p>	M
<p>11.701.4.7 Replacement fenestration. Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the NFRC-certified U-factor and SHGC of the replacement fenestration unit do not exceed the values in Table 703.2.5.1.</p>	M
11.703 PRESCRIPTIVE PATH	
<p>11.703.1 Mandatory practices</p>	30
<p>11.703.1.1 Building thermal envelope compliance. The building thermal envelope is in compliance with § 11.703.1.1.1 or § 11.703.1.1.2.</p> <p>Exception: Section 11.703.1.1 is not required for Tropical Climate Zone.</p> <p>11.703.1.1.1 Maximum UA. For ICC IECC residential, the total building UA is less than or equal to the total maximum UA as computed by ICC IECC Section R402.1.5. For ICC IECC commercial, the total UA is less than or equal to the sum of the UA for ICC IECC Tables C402.1.4 and C402.4, including the U-factor times the area and C-factor or F-factor times the perimeter. The total UA proposed and baseline calculations are documented. REScheck or COMcheck is deemed to provide UA calculation documentation.</p> <p>11.703.1.1.2 Prescriptive R-value and fenestration requirements. The building thermal envelope is in accordance with the insulation and fenestration requirements of ICC IECC R502.1.1.1. The SHGC is in accordance with the ICC IECC requirements.</p> <p>11.703.1.2 Building envelope leakage. The building thermal envelope is in accordance with ICC IECC R502.1.1.1 or R503.1.1 as applicable.</p> <p>Exception: Section 11.703.1.2 is not required for Tropical Climate Zone.</p> <p>11.703.1.3 Duct testing. The duct system is in accordance with ICC IECC R403.3.2 through R403.3.5 as applicable.</p>	M for § 11.703

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11.703.2 Building envelope

11.703.2.1 UA improvement. The total building thermal envelope UA is less than or equal to the baseline total UA resulting from the U-factors provided in Table 11.703.2.1(a) or ICC IECC Tables C402.1.4 and C402.4, as applicable. Where insulation is used to achieve the UA improvement, the insulation installation is in accordance with Grade 1 meeting § 11.701.4.3.2.1 as verified by a third-party. Total UA is documented using a REScheck, COMcheck, or equivalent report to verify the baseline and the UA improvement.

Per Table 11.703.2.1(b)

**Table 11.703.2.1(a)
Baseline U-Factors^a**

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor ^b	Floor U-Factor	Basement Wall U-Factor	Crawlspace Wall U-Factor ^c
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091 ^c	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

- a. Non-fenestration U-factors shall be obtained from measurement, calculation, or an approved source.
- b. Where more the half the insulation is on the interior, the mass wall U-factors is a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except in Marine, and the same as the frame wall U-factor in Marine Zone 4 and Zones 5 through 8.
- c. Basement wall U-factor of 0.360 in warm-humid locations.

**Table 11.703.2.1(b)
Points for Improvement in Total Building Thermal Envelope UA
Compared to Baseline UA**

Minimum UA Improvement	Climate Zone							
	1 ^a	2	3	4	5	6	7	8
	POINTS							
0 to <5%	0	0	0	0	0	0	0	0
5% to <10%	2	3	3	3	3	3	3	3
10% to <15%	3	6	5	6	6	6	5	7
15% to <20%	5	9	8	9	9	9	8	10
20% to <25%	6	12	10	12	12	12	11	13
25% to <30%	8	15	13	16	14	15	14	17
30% to <35%	10	18	16	19	17	18	16	20
≥35%	11	21	18	22	20	21	19	23

a. Tropical Climate Zone: Points are Climate Zone 1 points divided by 2 and rounded down

Exception: For the Tropical Climate Zone, crawl space, basement, and floor u-factors are excluded from the total building thermal envelope UA improvement calculation.

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11.703.2.2 Mass walls. More than 75% of the above-grade exterior opaque wall area of the building is mass walls.

Per Table 11.703.2.2

**Table 11.703.2.2
Exterior Mass Walls**

Mass thickness	Climate Zone			
	1-4	5	6	7-8
	POINTS			
≥3 in. to <6 in.	1	0	0	0
>6 in.	3	2	2	0

11.703.2.3 A radiant barrier with an emittance of 0.05 or less is used in the attic. The product is tested in accordance with ASTM C1371 and installed in accordance with the manufacturer’s instructions.

Per Table 11.703.2.3

**Table 11.703.2.3
Radiant Barriers**

Climate Zone	POINTS
Tropical	3
1	2
2-3	3
4-5	1
6-8	0

[In climate zones 1-3, 1 point maximum for multifamily buildings four or more stories in height.]

11.703.2.4 Building envelope leakage. The maximum building envelope leakage rate is in accordance with Table 11.703.2.4(a) or Table 11.703.2.4(b) and whole building ventilation is provided in accordance with § 11.902.2.1.

Per Table 11.703.2.4(a) or 11.703.2.4(b)

**Table 11.703.2.4(a)
Building Envelope Leakage**

Max Envelope Leakage Rate (ACH50)	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
4	1	2	-	-	-	-	-	-
3	2	4	-	-	-	-	-	-
2	3	5	3	4	4	6	8	7
1	4	7	5	7	7	10	15	11

**Table 11.703.2.4(b)
Building Envelope Leakage**

Max Envelope Leakage Rate (ELR50)	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.28	1	2	-	-	-	-	-	-
0.23	2	4	-	-	-	-	-	-
0.18	3	5	3	4	4	6	8	7
0.13	4	7	5	7	7	10	15	11

Where ELR50 = CFM50 / Shell Area
CFM50 = cubic feet per minute at 50 Pa

[Points not awarded if points are taken under § 11.705.6.2.1.]

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11.703.2.5 Fenestration

11.703.2.5.1 NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) on an area-weighted average basis do not exceed the values in Table 11.703.2.5.1. Area weighted averages are calculated separately for the categories of 1) windows and exterior doors and 2) skylights and tubular daylighting devices (TDDs). Decorative fenestration elements with a combined total maximum area of 15 sq. ft. (1.39 m²) or 10% of the total glazing area, whichever is less, are not required to comply with this practice.....

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**Table 11.703.2.5.1
Fenestration Specifications**

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1	0.50	0.25
2	0.40	0.25
3	0.32	0.25
4	0.32	0.40
5 to 8	0.30*	Any
	Skylights and TDDs (maximum certified ratings)	
1	0.75	0.30
2	0.65	0.30
3	0.55	0.30
4	0.55	0.40
5 to 8	0.55	Any

Exception: For Sun-tempered designs meeting the requirements of § 11.703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

**Exception: A maximum U-factor of 0.32 shall apply in climate zones 5-8 to vertical fenestration products installed in buildings located: (i) above 4000 feet in elevation above sea level or (ii) in windborne debris regions where protection of openings is provided by fenestration as required under IRC section R301.2.1.2.*

11.703.2.5.1.1 Dynamic glazing. Dynamic glazing is permitted to satisfy the SHGC requirements of Table 11.703.2.5.1 provided the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4 and the dynamic glazing is automatically controlled to modulate the amount of solar gain into the space in multiple steps. Fenestration with dynamic glazing is considered separately from other fenestration and area-weighted averaging with fenestration that does not use dynamic glazing is not permitted. Dynamic glazing is not required to be automatically controlled or comply with minimum SHGC ratio when both the lower and higher labeled SHGC already comply with the requirements of Table 11.703.2.5.1.

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11.703.2.5.2 The NFRC-certified (or equivalent) U-factor and SHGC of windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with Table 11.703.2.5.2(a), (b), or (c). Decorative fenestration elements with a combined total maximum area of 15 sq. ft. (1.39 m²) or 10% of the total glazing area, whichever is less, are not required to comply with this practice.

Per Table 11.703.2.5.2(a), or 11.703.2.5.2 (b), or 11.703.2.5.2 (c)

**Table 11.703.2.5.2(a)
Enhanced Fenestration Specifications**

Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
1	0.40	0.25	0.60	0.28	1
2	0.40	0.25	0.60	0.28	1
3	0.30	0.25	0.53	0.28	2
4	0.30	0.40	0.53	0.35	3
5	0.27	Any	0.50	Any	3
6	0.27	Any	0.50	Any	4
7	0.27	Any	0.50	Any	4
8	0.27	Any	0.50	Any	4

Exception: For Sun-tempered designs meeting the requirements of § 11.703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

**Table 11.703.2.5.2(b)
Enhanced Fenestration Specifications**

Climate Zone	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
1	0.38	0.25	0.55	0.28	2
2	0.38	0.25	0.53	0.28	3
3	0.30	0.25	0.50	0.28	4
4	0.28	0.40	0.50	0.35	4
5	0.25	Any	0.48	Any	4
6	0.25	Any	0.48	Any	5
7	0.25	Any	0.46	Any	5
8	0.25	Any	0.46	Any	4

Exception: For Sun-tempered designs meeting the requirements of § 11.703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

**Table 11.703.2.5.2(c)
Enhanced Fenestration Specifications**

Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
4	0.25	0.40	0.45	0.40	6
5-8	0.22	Any	0.42	Any	6

[Points for multifamily buildings four or more stories in height are awarded at 3 times the point value listed in Table 11.703.2.5.2(c)]

11.703.2.5.2.1 Dynamic glazing. Dynamic glazing is permitted to satisfy the SHGC requirements of Tables 11.703.2.5.2(a), 11.703.2.5.2(b), and 11.703.2.5.2(c) provided the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4, and the dynamic glazing is automatically controlled to

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modulate the amount of solar gain into the space in multiple steps. Fenestration with dynamic glazing is considered separately from other fenestration, and area-weighted averaging with fenestration that does not use dynamic glazing is not permitted. Dynamic glazing is not required to be automatically controlled or comply with minimum SHGC ratio when both the lower and higher labeled SHGC already comply with the requirements of Tables 11.703.2.5.2(a), 11.703.2.5.2(b), and 11.703.2.5.2(c).

11.703.3 HVAC equipment efficiency

11.703.3.0 Multiple heating and cooling systems. For multiple heating or cooling systems in one home, practices 11.703.3.1 through 11.703.3.6 apply to the system that supplies 80% or more of the total installed heating or cooling capacity. Where multiple systems each serve less than 80% of the total installed heating or cooling capacity, points under Sections 11.703.3.1 through 11.703.3.6 are awarded either for the system eligible for the fewest points or the weighted average of the systems. The weighted average shall be calculated in accordance with the following equation and be based upon the efficiency and capacity of the equipment as selected in accordance with ACCA Manual S with its loads calculated in accordance with ACCA Manual J.

$$\text{Weighted Average} = [(E_{\text{unit } 1} * C_{\text{unit } 1}) + (E_{\text{unit } 2} * C_{\text{unit } 2}) + \dots + (E_{\text{unit } n} * C_{\text{unit } n})] / (C_{\text{unit } 1} + C_{\text{unit } 2} + \dots + C_{\text{unit } n})$$

where:

E = Rated AHRI efficiency for unit

C = Rated heating or cooling capacity for unit

n = Unit count

11.703.3.1 Combination space heating and water heating system (combo system) is installed using either a coil from the water heater connected to an air handler to provide heat for the building, dwelling unit or sleeping unit, or a space heating boiler using an indirect-fired water heater. Devices have a minimum combined annual efficiency of 0.80 and a minimum water heating recovery efficiency of 0.87. 4

11.703.3.2 Furnace and/or boiler efficiency is in accordance with one of the following:

- (1) Gas and propane heaters:

**Table 11.703.3.2(1)(a)
Gas and Propane Heaters**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥90% AFUE	0	2	3	6	6	9	10	12
≥92% AFUE	0	2	4	7	8	10	12	14
≥94% AFUE	0	3	4	9	9	12	14	16
≥96% AFUE	1	3	5	10	10	14	16	19
≥98% AFUE	1	3	6	11	12	16	18	21

**Table 11.703.3.2(1)(b)
Gas and Propane Heaters for Multifamily Buildings Four or More Stories in Height**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥90% AFUE	0	4	4	8	8	10	11	13
≥92% AFUE	0	4	4	9	10	11	12	14
≥94% AFUE	0	5	5	10	11	12	14	16
≥96% AFUE	0	5	5	12	12	13	15	17
≥98% AFUE	0	6	6	13	13	14	16	18

Per Table
11.703.3.2(1)(a)
or
11.703.3.2(1)(b)

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(2) Oil furnace:

**Table 11.703.3.2(2)
Oil Furnace**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥85% AFUE	0	1	2	3	3	4	5	6
≥90% AFUE	0	2	3	6	6	9	10	12

Per Table 11.703.3.2(2)

(3) Gas boiler:

**Table 11.703.3.2(3)
Gas Boiler**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥85% AFUE	0	1	1	2	3	4	4	4
≥90% AFUE	0	1	2	4	6	7	8	6
≥94% AFUE	0	2	3	5	8	9	10	8
≥96% AFUE	0	2	4	6	9	11	12	10

Per Table 11.703.3.2(3)

(4) Oil boiler:

**Table 11.703.3.2(4)
Oil Boiler**

AFUE	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥85% AFUE	0	1	1	3	3	4	4	5
≥90% AFUE	1	2	3	5	6	7	9	10

Per Table 11.703.3.2(4)

11.703.3.3 Heat pump heating efficiency is in accordance with Table 11.703.3.3(1) or Table 11.703.3.3(2) or Table 11.703.3.3(3). Refrigerant charge is verified for compliance with manufacturer’s instructions utilizing a method in ACCA 5 QI Section 4.3.

**Table 11.703.3.3(1)
Electric Heat Pump Heating**

Efficiency	Climate Zone					
	1	2	3	4	5	6-8 ^a
	POINTS					
≥8.5 HSPF (11.5 EER)	0	1	1	2	2	2
≥9.0 HSPF (12.5 EER)	0	2	4	5	6	10
≥9.5 HSPF	0	3	7	7	11	18
≥10.0 HSPF	1	5	10	10	15	26
≥12.0 HSPF	1	6	11	11	17	28

Per Table 11.703.3.3(1) or 11.703.3.3(2) or 11.703.3.3(3)

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POINTS

Table 11.703.3.3(2)
Electric Heat Pump Heating for Multifamily Buildings Four or More Stories in Height

Efficiency	Climate Zone					
	1	2	3	4	5	6-8 ^a
	POINTS					
≥8.5 HSPF (11.5 EER)	0	3	4	8	11	13

Table 11.703.3.3(3)
Gas Engine-Driven Heat Pump Heating

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
≥1.3 COP at 47°F	2	7	11	14	16	18

11.703.3.4 Cooling efficiency is in accordance with Table 11.703.3.4(1) or Table 11.703.3.4(2). Refrigerant charge is verified for compliance with manufacturer’s instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table 11.703.3.4(1) or 11.703.3.4(2)

Table 11.703.3.4(1)
Electric Air Conditioner and Heat Pump Cooling^a

Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥15 SEER (12.5 EER)	6	4	2	1	1	1	1	0
≥17 SEER (12.5 EER)	11	9	7	3	3	2	2	0
≥19 SEER (12.5 EER)	19	12	10	6	4	4	4	0
≥21 SEER	26	15	14	8	6	6	5	0
≥25 SEER	29	18	17	10	8	8	6	0

a. Tropical Climate Zone: where none of the occupied space is air conditioned and where ceiling fans are provided for bedrooms and the largest space which is not used as a bedroom, 20 points is awarded.

Table 11.703.3.4(2)
Gas Engine-Driven Heat Pump Cooling

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
>1.2 COP at 95°F	3	6	3	1	1	0

11.703.3.5 Water source cooling and heating efficiency is in accordance with Table 11.703.3.5. Refrigerant charge is verified for compliance with manufacturer’s instructions utilizing a method in ACCA 5 QI Section 4.3.

Per Table 11.703.3.5

Table 11.703.3.5
Water Source Cooling and Heating

Efficiency	Climate Zone					
	1	2	3	4	5	6-8
	POINTS					
≥15 EER, ≥4.0 COP	14	18	22	30	37	37

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POINTS

Per Table 11.703.3.6

1

Per Table 11.703.3.8

Per Table 11.703.4.1

Per Table 11.703.4.2

11.703.3.6 Ground source heat pump is installed by a Certified Geothermal Service Contractor in accordance with Table 11.703.3.6. Refrigerant charge is verified for compliance with manufacturer’s instructions utilizing a method in ACCA 5 QI Section 4.3.

**Table 11.703.3.6
Ground Source Heat Pump^a**

Efficiency	Climate Zone				
	1	2	3	4	5-8
	POINTS				
≥16.0 EER, ≥3.6 COP	1	1	2	16	22
≥24.0 EER, ≥4.3 COP	24	29	22	31	35
≥28.0 EER, ≥4.8 COP	42	46	35	42	44

a. The ground loop is sized to account for the ground conductance and the expected minimum incoming water temperature to achieve rated performance.

11.703.3.7 ENERGY STAR, or equivalent, ceiling fans are installed. *[Points awarded per building.]*.....

[For Tropical Climate Zone and Climate Zones 2B, 3B, and 4B: points awarded per fan where AC is not installed in the dwelling unit or sleeping unit (Max 8 points), and where points awarded in § 11.703.3.8 for these specific climate zones, points shall not be awarded in § 11.703.3.7.]

11.703.3.8 Whole-building or whole-dwelling unit or whole-sleeping unit fan(s) with insulated louvers and a sealed enclosure is installed. *[Points awarded per building.]*

**Table 11.703.3.8
Whole Dwelling Unit Fan**

Climate Zone		
1-3, Tropical	4-6	7-8
POINTS		
4	3	0

11.703.4 Duct systems

11.703.4.1 All space heating is provided by a system(s) that does not include air ducts.

**Table 11.703.4.1
Ductless Heating System**

Climate Zone					
1	2	3	4	5	6-8
POINTS					
0	2	4	6	8	8

11.703.4.2 All space cooling is provided by a system(s) that does not include air ducts.

**Table 11.703.4.2
Ductless Cooling System**

Climate Zone					
1	2	3	4	5	6-8
POINTS					
8	8	4	2	1	0

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GREEN BUILDING PRACTICES

POINTS

Per Table 11.703.4.3

Per Table 11.703.4.4

11.703.4.3 Ductwork is in accordance with all of the following:

- (1) Building cavities are not used as return ductwork.
- (2) Heating and cooling ducts and mechanical equipment are installed within the conditioned building space.
- (3) Ductwork is not installed in exterior walls.

**Table 11.703.4.3
Ducts**

Climate Zone					
1	2	3	4	5	6-8
POINTS					
8	10	8	8	8	4

11.703.4.4 Duct Leakage. The entire central HVAC duct system, including air handlers and register boots, is tested by a third party for total leakage at a pressure differential of 0.1 in. w.g. (25 Pa) and maximum air leakage is equal to or less than 6% of the system design flow rate or 4 cu-ft per minute per 100 sq. ft. of conditioned floor area.

**Table 11.703.4.4
Duct Leakage**

Ductwork location	Climate Zone					
	1	2	3	4	5	6-8
POINTS						
ductwork <i>entirely outside</i> the building's thermal envelope	4	5	4	3	2	1
ductwork <i>entirely inside</i> the building's thermal envelope	1	1	1	1	1	1
ductwork <i>inside and outside</i> the building's thermal envelope	3	4	3	2	1	1

Points not awarded if points are taken under § 11.705.6.2.3.

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11.703.5 Water heating system

11.703.5.1 Water heater Uniform Energy Factor (UEF) is in accordance with the following:

[Where multiple systems are used, points awarded based on the system with the lowest efficiency.]

Water heater design is based on only 1 (one) water heater per dwelling unit, based on approved methods from ICC IPC, ASPE, or manufacturer specifications. All table values are based on water heaters with medium water draws as defined by the DOE test procedures (55 gallons per day).

(1) Gas water heating

Per Table
11.703.5.1(1)(a)
through
11.703.5.1(1)(e)

Table 11.703.5.1(1)(a)
Gas Water Heating
Storage Water Heater, Rated Storage Volume > 20 Gallons and ≤ 55 Gallons,
Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.65 to <0.78	2	2	2	2	2	2	2	1
≥0.78	3	3	3	3	3	3	3	2

Table 11.703.5.1(1)(b)
Gas Water Heating
Storage Water Heater, Rated Storage Volume > 55 Gallons and ≤ 100 Gallons,
Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.78	1	1	1	1	1	1	1	1

Table 11.703.5.1(1)(c)
Gas Water Heating
Storage Water Heater with Input Rate Greater than 75,000 Btu/h (Commercial)

Thermal Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.90 to < 0.95	6	6	5	3	3	3	3	2
≥0.95	7	7	5	4	4	4	4	2

Table 11.703.5.1(1)(d)
Gas Water Heating
Storage Water Heater with Input Rate Greater than 75,000 Btu/h (Commercial),
In Buildings with High-Capacity Service Water-Heating Systems
(1,000,000 Btu/h or Greater)

Thermal Efficiency	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.92 to < 0.95	1	1	1	1	1	1	1	1
≥0.95	2	2	2	2	2	2	2	1

M=Mandatory

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Table 11.703.5.1(1)(e)
Gas Water Heating
Instantaneous Water Heater, Rated Storage Volume < 2 Gallons
and Input Rate of > 50,000 Btu/h, Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.89 to <0.94	2	2	2	1	1	1	1	1
≥0.94	3	3	2	2	2	2	2	1

(2) Electric water heating

Table 11.703.5.1(2)(a)
Storage Water Heater, Rated Storage Volume ≥ 20 Gallons and ≤ 55 Gallons,
Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
0.94 to <1.0	1	1	1	1	1	1	1	1
1.0 to <1.5	4	2	2	2	1	1	1	1
1.5 to <2.0	7	4	3	2	2	2	1	1
2.0 to <2.2	14	8	7	5	4	4	2	2
2.2 to <2.5	17	9	8	6	5	4	3	3
2.5 to <3.0	18	12	10	8	6	6	3	3
≥3.0	22	16	13	11	8	8	4	3

Table 11.703.5.1(2)(b)
Storage Water Heater, Rated Storage Volume ≥ 55 Gallons and ≤ 120 Gallons,
Medium Water Draw

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
2.2 to <2.5	6	4	3	3	2	2	1	1
2.5 to <3.0	7	5	4	3	3	3	2	2
3.0 to <3.5	8	5	5	4	3	3	3	2
≥3.5	9	6	6	5	4	4	3	2

Table 11.703.5.1(2)(c)
Electric Tabletop Water Heating
(Tabletop Water Heater, Rated Storage Volume ≥ 20 Gallons and ≤ 120 Gallons,
Medium Water Draw)

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.91	1	1	1	1	1	1	1	1

Per Table 11.703.5.1(2)(a) through 11.703.5.1(2)(e)

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GREEN BUILDING PRACTICES

POINTS

Table 11.703.5.1(2)(d)
Electric Instantaneous Water Heating^a
(Instantaneous Electric Water Heater, Rated Storage Volume < 2 Gallons,
Medium Water Draw)

Uniform Energy Factor or Thermal Efficiency ^b	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.97	2	2	2	2	2	2	2	2

a. Applies to any size water heater.

b. Electric instantaneous water heaters have either a Uniform Energy Factor (capacity less than or equal to 12 kW) or a Thermal Efficiency (capacity greater than 12 kW).

Table 11.703.5.1(2)(e)
Electric Grid Enabled Water Heating
(Grid Enabled Storage Water Heater, Rated Storage Volume ≥ 75 Gallons,
Medium Water Draw)

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.95	1	1	1	1	1	1	1	1

(3) Oil water heating

Table 11.703.5.1(3)
Oil Water Heating
(Oil Water Heating, < 50 Gallons, Medium Water Draw)

Uniform Energy Factor	Climate Zone							
	1	2	3	4	5	6	7	8
	POINTS							
≥0.62	1	1	1	1	1	1	1	1

Per Table 11.703.5.1(3)

11.703.5.2 Desuperheater is installed by a qualified installer or is pre-installed in the factory.

Table 11.703.5.2
Desuperheater

Climate Zone						
1	2	3	4	5	6	7-8
POINTS						
23	17	9	7	5	4	2

Per Table 11.703.5.2

11.703.5.3 Drain-water heat recovery system is installed. *[Points awarded per building.]*.....

2

11.703.5.4 Indirect-fired water heater storage tanks heated from boiler systems are installed.....

1

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11.703.5.5 Solar water heater. SRCC (Solar Rating & Certification Corporation) OG 300 rated, or equivalent, solar domestic water heating system is installed. Solar Energy Factor (SEF) as defined by SRCC is in accordance with Table 11.703.5.5(a) and Table 11.703.5.5(b).

Per Table 11.703.5.5(a) or 11.703.5.5(b)

Table 11.703.5.5(a)
Storage Water Heater, Rated Storage Volume of Backup Water Heater is ≥ 0.1 Gallon and ≤ 55 Gallons, Medium Water Draw

SEF	Climate Zone						
	Tropical &1	2	3	4	5	6	7-8
POINTS							
SEF ≥ 1.3	1	2	3	5	6	7	6
SEF ≥ 1.51	2	2	4	6	9	10	10
SEF ≥ 1.81	2	3	5	9	13	14	14
SEF ≥ 2.31	4	5	8	14	19	21	20
SEF ≥ 3.01	5	7	11	21	27	31	30

Table 11.703.5.5(b)
Storage Water Heater, Rated Storage Volume of Backup Water Heater is >55 Gallons, Medium Water Draw

SEF	Climate Zone						
	Tropical &1	2	3	4	5	6	7-8
POINTS							
SEF ≥ 1.3	1	1	2	3	4	5	4
SEF ≥ 1.51	1	1	2	4	6	7	7
SEF ≥ 1.81	1	2	4	6	8	10	9
SEF ≥ 2.31	2	3	5	10	13	14	13
SEF ≥ 3.01	4	5	7	14	18	20	20

11.703.6 Lighting and appliances

11.703.6.1 Hard-wired lighting. Hard-wired lighting is in accordance with one of the following:

- (1) A minimum percent of the total hard-wired interior luminaires or lamps qualify as ENERGY STAR, DesignLights Consortium (DLC), or applicable equivalent.

Per Table 11.703.6.1(1)

Table 11.703.6.1(1)
Hard-wired Lighting

Minimum percent of fixtures	Climate Zone							
	1	2	3	4	5	6	7	8
POINTS								
95%	3	3	3	2	2	2	2	2

- (2) A minimum of 80% of the exterior lighting wattage has a minimum efficacy of 61 lumens per watt or is solar-powered.....
- (3) In multifamily buildings, common area lighting power density (LPD) is less than 0.51 Watts per square foot.....

1
7

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11.703.6.2 Appliances. ENERGY STAR or equivalent appliance(s) are installed:

- (1) Refrigerator

Per Table
11.703.6.2(1)

**Table 11.703.6.2(1)
Refrigerator**

Climate Zone							
1	2	3	4	5	6	7	8
POINTS							
1	1	1	1	1	1	1	1

- (2) Dishwasher 1
- (3) Washing machine 4

11.703.7 Passive solar design

11.703.7.1 Sun-tempered design. Building orientation, sizing of glazing, and design of overhangs are in accordance with all of the following:..... 4

- (1) The long side (or one side if of equal length) of the building faces within 20 degrees of true south.
- (2) Vertical glazing area is between 5% and 7% of the gross conditioned floor area on the south face [also see § 11.703.7.1(8)] and glazing U-factors meet Table 11.703.2.5.2(a).
- (3) Vertical glazing area is less than 2% of the gross conditioned floor area on the west face, and glazing meets Table 11.703.2.5.2(a).
- (4) Vertical glazing area is less than 4% of the gross conditioned floor area on the east face, and glazing meets Table 11.703.2.5.2(a).
- (5) Vertical glazing area is less than 8% of the gross conditioned floor area on the north face, and glazing meets Table 11.703.2.5.2(a).
- (6) Skylights, where installed, are in accordance with the following:
 - (a) shades and insulated wells are used, and all glazing meets Table 11.703.2.5.2(a).
 - (b) horizontal skylights are less than 0.5% of finished ceiling area.
 - (c) sloped skylights on slopes facing within 45 degrees of true south, east, or west are less than 1.5% of the finished ceiling area.
- (7) Overhangs, adjustable canopies, awnings, or trellises provide shading on south-facing glass for the appropriate climate zone in accordance with Table 11.703.7.1(7):

**Table 11.703.7.1(7)
South-Facing Window Overhang Depth**

		Vertical distance between bottom of overhang and top of window sill				
		≤7' 4"	≤6' 4"	≤5' 4"	≤4' 4"	≤3' 4"
Climate Zone	1 & 2 & 3	2' 8"	2' 8"	2' 4"	2' 0"	2' 0"
	4 & 5 & 6	2' 4"	2' 4"	2' 0"	2' 0"	1' 8"
	7 & 8	2' 0"	1' 8"	1' 8"	1' 4"	1' 0"

For SI: 1 in. = 25.4 mm

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- (8) The south facing windows have an SHGC of 0.40 or higher.
- (9) Return air or transfer grilles/ducts are in accordance with § 11.705.4.

Multifamily Building Note: *The site is designed such that at least 40% of the multifamily dwelling or sleeping units have one south facing wall (within 15 degrees) containing at least 50% of glazing for entire unit, Effective shading is required for passive solar control on all south facing glazing. The floor area of at least 15 ft. from the south facing perimeter glazing is massive and exposed to capture solar heat during the day and reradiate at night.*

11.703.7.2 Window shading. Automated solar protection or dynamic glazing is installed to provide shading for windows. **1**

11.703.7.3 Passive cooling design. Passive cooling design features are in accordance with at least three of the following: *[1 additional point awarded for each additional item.]*..... **3 [6 max]**

- (1) Exterior shading is provided on east and west windows using one or a combination of the following:
 - (a) vine-covered trellises with the vegetation separated a minimum of 1 ft. (305 mm) from face of building.
 - (b) moveable awnings or louvers.
 - (c) covered porches.
 - (d) attached or detached conditioned/unconditioned enclosed space that provides full shade of east and west windows (e.g., detached garage, shed, or building).
- (2) Overhangs are installed to provide shading on south-facing glazing in accordance with § 11.703.7.1(7).

Points not awarded if points are taken under § 11.703.7.1.

- (3) Windows and/or venting skylights are located to facilitate cross and stack effect ventilation.
- (4) Solar reflective roof or radiant barrier is installed in climate zones 1, 2, or 3 and roof material achieves a 3-year aged criteria of 0.50.
- (5) Internal exposed thermal mass is a minimum of 3 in. (76 mm) in thickness. Thermal mass consists of concrete, brick, and/or tile fully adhered to a masonry base or other masonry material in accordance with one or a combination of the following:
 - (a) A minimum of 1 sq. ft. (0.09 m²) of exposed thermal mass of floor per 3 sq. ft. (2.8 m²) of gross finished floor area.
 - (b) A minimum of 3 sq. ft. (2.8 m²) of exposed thermal mass in interior walls or elements per sq. ft. (0.09 m²) of gross finished floor area.
- (6) Roofing material is installed with a minimum 0.75 in. (19 mm) continuous air space offset from the roof deck from eave to ridge.

11.703.7.4 Passive solar heating design. In addition to the sun-tempered design features in § 11.703.7.1, all of the following are implemented: *[Points shall not be awarded in the Tropical Climate Zone]*..... **4**

- (1) Additional glazing, no greater than 12%, is permitted on the south wall. This additional glazing is in accordance with the requirements of § 11.703.7.1.

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<p>(2) Additional thermal mass for any room with south-facing glazing of more than 7% of the finished floor area is provided in accordance with the following:</p> <p>(a) Thermal mass is solid and a minimum of 3 in. (76 mm) in thickness. Where two thermal mass materials are layered together (e.g., ceramic tile on concrete base) to achieve the appropriate thickness, they are fully adhered to (touching) each other.</p> <p>(b) Thermal mass directly exposed to sunlight is provided in accordance with the following minimum ratios:</p> <p>(i) Above latitude 35 degrees: 5 sq. ft. (0.465 m²) of thermal mass for every 1 sq. ft. (0.093 m²) of south-facing glazing.</p> <p>(ii) Latitude 30 degrees to 35 degrees: 5.5 sq. ft. (0.51 m²) of thermal mass for every 1 sq. ft. (0.093 m²) of south-facing glazing.</p> <p>(iii) Latitude 25 degrees to 30 degrees: 6 sq. ft. (0.557 m²) of thermal mass for every 1 sq. ft. (0.093 m²) of south-facing glazing.</p> <p>(c) Thermal mass not directly exposed to sunlight is permitted to be used to achieve thermal mass requirements of § 11.703.7.4(2) based on a ratio of 40 sq. ft. (3.72 m²) of thermal mass for every 1 sq. ft. (0.093 m²) of south-facing glazing.</p> <p>(3) In addition to return air or transfer grilles/ducts required by § 11.703.7.1(9), provisions for forced airflow to adjoining areas are implemented as needed.</p>	
11.705 ADDITIONAL PRACTICES	
<p>11.705.1 Application of additional practice points. Points from § 11.705 can be added to points earned in § 11.703 (Prescriptive Path).</p> <p>11.705.2 Lighting</p> <p>11.705.2.1 Lighting controls</p> <p><i>Percentages for point thresholds are based on lighting not required for means of egress or security lighting as defined by local building codes.</i></p> <p>11.705.2.1.1 Interior lighting. In dwelling units or sleeping units, permanently installed interior lighting fixtures are controlled with an occupancy sensor, or dimmer:</p> <p>(1) greater than 50% to less than 75% of lighting fixtures.....</p> <p>(2) a minimum of 75% of lighting fixtures.....</p> <p>11.705.2.1.2 Exterior lighting. Photo or motion sensors are installed on 75% of outdoor lighting fixtures to control lighting. <i>[Percentages for point thresholds do not include lighting equipped with photovoltaics.]</i></p> <p>11.705.2.1.3 Multifamily common areas</p> <p>(1) In a multifamily building, occupancy sensors, or dimmers are installed in common areas (except corridors and stairwells).</p> <p>(a) greater than 50% to less than 75% of lighting fixtures.....</p> <p>(b) a minimum of 75% of lighting fixtures.</p>	<p>1</p> <p>2</p> <p>1</p> <p>1</p> <p>2</p>

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(2) In a multifamily building, occupancy controls are installed to automatically reduce light levels in interior corridors and exit stairwells when the space is unoccupied. Light levels are reduced by:	
(a) greater than 50% to less than 75% or to local minimum requirements	2
(b) a minimum of 75%	3
11.705.2.1.4 In a multifamily building, occupancy controls are installed to automatically reduce light levels in garages and parking structures when the space is unoccupied. Light levels are reduced by:	
(1) greater than 50% to less than 75% or to local minimum requirements	2
(2) a minimum of 75%	3
11.705.2.2 TDDs and skylights. A tubular daylighting device (TDD) or a skylight that meets the requirements of Table 11.703.2.5.2(a) is installed in rooms without windows. <i>[Points awarded per building.]</i>	2
11.705.2.3 Lighting outlets. Occupancy sensors are installed for a minimum of 80% of hard-wired lighting outlets in the interior living space.	1
11.705.2.4 Recessed luminaires. The number of recessed luminaires that penetrate the thermal envelope is less than 1 per 400 sq. ft. (37.16 m ²) of total conditioned floor area and they are in accordance with § 11.701.4.3.5.	1
11.705.3 Induction cooktop. Induction cooktop is installed.	1
11.705.4 Return ducts and transfer grilles. Return ducts or transfer grilles are installed in every room with a door. Return ducts or transfer grilles are not required for bathrooms, kitchens, closets, pantries, and laundry rooms.	2
11.705.5 HVAC design and installation	
11.705.5.1 Meet one or both of the following:	
(1) HVAC contractor is certified by the Air Conditioning Contractors of America’s Quality Assured Program (ACCA/QA) or by an EPA-recognized HVAC Quality Installation Training Oversight Organization (H-QUITO) or equivalent.....	1
(2) HVAC installation technician(s) is certified by North American Technician Excellence, Inc. (NATE) or equivalent.	1
11.705.5.2 Performance of the heating and/or cooling system is verified by the HVAC contractor in accordance with all of the following:	3
(1) Start-up procedure is performed in accordance with the manufacturer’s instructions.	
(2) Refrigerant charge is verified by super-heat and/or sub-cooling method.	
(3) Burner is set to fire at input level listed on nameplate.	
(4) Air handler setting/fan speed is set in accordance with manufacturer’s instructions.	
(5) Total airflow is within 10% of design flow.	
(6) Total external system static does not exceed equipment capability at rated airflow.	

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11.705.5.3 HVAC Design is verified by 3rd party as follows:	
(1) The ENERGY STAR HVAC Design and Rater Design Review Checklists are completed and correct.	3
(2) HVAC Installation is inspected and conforms to HVAC design documents and plans.	3
11.705.6 Installation and performance verification	
11.705.6.1 Third-party on-site inspection is conducted to verify compliance with all of the following, as applicable. Minimum of two inspections are performed: one inspection after insulation is installed and prior to covering, and another inspection upon completion of the building. Where multiple buildings or dwelling units of the same model or sleeping units of the same model are built by the same builder, a representative sample inspection of a minimum of 15% of the buildings or dwelling units or sleeping units is permitted.	3
(1) Ducts are installed in accordance with the IRC or IMC and ducts are sealed.	
(2) Building envelope air sealing is installed.	
(3) Insulation is installed in accordance with § 11.701.4.3.2.1.	
(4) Windows, skylights, and doors are flashed, caulked, and sealed in accordance with manufacturer’s instructions and in accordance with § 11.701.4.3.	
11.705.6.2 Testing. Testing is conducted to verify performance.	
11.705.6.2.1 Air leakage validation of building or dwelling units or sleeping units. A visual inspection is performed as described in § 11.701.4.3.2(2) and air leakage testing is performed in accordance with ASTM E779, ASTM E1827, or ANSI 380. <i>[Points awarded only for buildings where building envelope leakage testing is not required by the ICC IECC.]</i> <i>[Points not awarded if points are taken under § 11.703.2.4.]</i>	
(1) A blower door test.	3
(2) Third-party verification is completed.	5
11.705.6.2.2 HVAC airflow testing. Balanced HVAC airflows are demonstrated by flow hood or other acceptable flow measurement tool by a third party. Test results are in accordance with the following:	
(1) Measured flow at each supply and return register meets or exceeds the requirements in ACCA 5 QI Section 5.2.	5
(2) Total airflow meets or exceeds the requirements in ACCA 5 QI Section 5.2.	3
11.705.6.2.3 HVAC duct leakage testing. One of the following is achieved: <i>[Points awarded only for buildings where duct leakage testing is not required by ICC IECC.]</i> <i>[Points not awarded if points are taken under § 11.703.4.4.]</i>	
(1) Duct leakage is in accordance with ICC IECC R403.3.3 and R403.3.4.	3
(2) Duct leakage is in accordance with ICC IECC R403.3.3 and R403.3.4, and testing is conducted by an independent third party.	5

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<p>11.705.6.3 Insulating hot water pipes. Insulation with a minimum thermal resistance (R-value) of at least R-3 is applied to the following, as applicable: <i>[Points awarded only where these practices are not required by ICC IECC.]</i></p> <ul style="list-style-type: none"> (a) piping 3/4-in. and larger in outside diameter (b) piping serving more than one dwelling unit or sleeping unit (c) piping located outside the conditioned space (d) piping from the water heater to a distribution manifold (e) piping located under a floor slab (f) buried piping (g) supply and return piping in recirculation systems other than demand recirculation systems 	1
<p>11.705.6.4 Potable hot water demand re-circulation system.</p> <p>11.705.6.4.1 Potable hot water demand re-circulation system is installed in a single-family unit.</p> <p>11.705.6.4.2 Potable hot water demand re-circulation system(s) that serves every unit in a multifamily building is installed in place of a standard circulation pump and control.....</p>	1 2
<p>11.705.7 Submetering system. In multifamily buildings, an advanced electric and fossil fuel submetering system is installed to monitor electricity and fossil fuel consumption for each unit. The device provides consumption information on a monthly or near real-time basis. The information is available to the occupants at a minimum on a monthly basis.....</p>	1
11.706 INNOVATIVE PRACTICES	
<p>11.706.1 Energy consumption control. A whole-building, whole-dwelling unit, or whole-sleeping unit device or system is installed that controls or monitors energy consumption.</p> <ul style="list-style-type: none"> (1) programmable communicating thermostat with the capability to be controlled remotely (2) energy-monitoring device or system (3) energy management control system (4) programmable thermostat with control capability based on occupant presence or usage pattern (5) lighting control system..... 	3 max 1 1 3 1 1
<p>11.706.2 Renewable energy service plan. Renewable energy service plan is provided as follows:</p> <ul style="list-style-type: none"> (1) Builder selects a renewable energy service plan provided by the local electrical utility for interim (temporary) electric service, or purchases renewable energy certificates (RECs) to cover electricity used. The builder’s local administrative office has renewable energy service or has otherwise been paired with RECs. Green-e Certified (or equivalent) is required for renewable electricity purchases. ... (2) The buyer of the building selects one of the following renewable energy service plans provided by the utility prior to occupancy of the building with a minimum two-year commitment. <ul style="list-style-type: none"> (a) less than 50% of the dwelling’s projected electricity and gas use is provided by renewable energy . (b) greater than or equal to 50% of the dwelling’s projected electricity and gas use is provided by renewable energy 	1 1 2

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<p>11.706.3 Smart appliances and systems. Smart appliances and systems are installed as follows: <i>[1 point awarded if at least 3 smart appliances are installed; 1 additional point awarded for 6 or more.]...</i></p> <ul style="list-style-type: none"> (1) Refrigerator (2) Freezer (3) Dishwasher (4) Clothes Dryer (5) Clothes Washer (6) Room Air Conditioner (7) HVAC Systems (8) Service Hot Water Heating Systems <p><i>[Items (7) and (8) are permitted to count as two appliances each for the purpose of awarding points.]</i></p> <p><i>Where points awarded in § 11.706.3, points shall not be awarded in § 11.706.7 and § 11.706.10.</i></p>	<p>M=Mandatory</p> <p>1 [2 max]</p>
<p>11.706.4 Pumps</p> <p>11.706.4.1 Pool, spa, and water features equipped with filtration pumps as follows:</p> <ul style="list-style-type: none"> (1) Electronically controlled variable-speed pump(s) is installed (full load efficiency of 90% or greater).... (2) Electronically controlled variable-speed pump(s) is installed (full load efficiency of 90% or greater) in a pool <p>11.706.4.2 Sump pump(s), with electrically commutated motors (ECMs) or permanent split capacitor (PSC) motor, is installed (full load efficiency of 90% or greater).</p> <p>11.706.5 On-site renewable energy system. One of the following options is implemented:</p> <ul style="list-style-type: none"> (1) Building is Solar-Ready in compliance with ICC IECC Appendix A Solar Ready Provisions. (2) An on-site renewable energy system(s) is installed on the property. (3) An on-site renewable energy system(s) and a battery energy storage system are installed on the property. <i>[2 points awarded per kW or renewable energy system plus 1 per each 2 kWh or battery energy storage system]</i> <p><i>Points shall not be awarded in this section for solar thermal or geothermal systems that provide space heating, space cooling, or water heating, points for these systems are awarded in § 11.703. Points awarded in this section shall not be combined with points for renewable energy in another section of this chapter. The solar-ready zone roof area in item (1) is area per dwelling unit. Points in item (2) and (3) shall be divided by the number of dwelling units.</i></p> <p>Multifamily Building Note: <i>Conditioned common area and non-residential space is excluded for the purpose of calculating number of units.</i></p>	<p>1</p> <p>3</p> <p>1</p> <p>1</p> <p>2 per kW</p> <p>2 per kW</p>
<p>11.706.6 Parking garage efficiency. Structured parking garages are designed to require no mechanical ventilation for fresh air requirements.</p>	<p>2</p>

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11.706.7 Grid-interactive electric thermal storage system. A grid-interactive electric thermal storage system is installed.	
(1) Grid-Interactive Water Heating System	1
(2) Grid-Interactive Space Heating and Cooling System.....	1
<i>Where points are awarded in § 11.706.7, points shall not be awarded in § 11.706.3 and § 11.706.10.</i>	
11.706.8 Electrical vehicle charging station. A Level 2 (208/240V 40-80 amp) or Level 3 electric vehicle charging station is installed on the building site. (Note: Charging station shall not be included in the building energy consumption.)	2
11.706.9 CNG vehicle fueling station. A CNG vehicle residential fueling appliance is installed on the building site. The CNG fueling appliances shall be listed in accordance with ANSI/CSA NGV 5.1 and installed in accordance to the appliance manufacturer’s installation instructions. (Note: The fueling appliance shall not be included in the building energy consumption.)	1
11.706.10 Automatic demand response. Automatic demand response system is installed that curtails energy usage upon a signal from the utility or an energy service provider is installed.	1
<i>Where points are awarded in § 11.706.10, points shall not be awarded in § 11.706.3 and § 11.706.7.</i>	
11.706.11 Grid-interactive battery storage system. A grid-interactive battery storage system of no less than 6 kWh of available capacity is installed.	2
11.706.12 Smart ventilation. A whole-building ventilation system is installed with automatic ventilation controls to limit ventilation during periods of extreme temperature, extreme humidity, and/or during times of peak utility loads and is in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4.....	1
11.706.13 Alternative refrigerant. Use of the following in mechanical space cooling systems for dwellings.	
(1) Use alternative refrigerant with a GWP less than 1,000.....	1
(2) Do not use refrigerants	2
11.706.14 Third-party utility benchmarking service.	
(1) For a multifamily building, the owner has contracted with a third-party utility benchmarking service with at least five (5) years of experience in utility data management and analysis to perform a monthly analysis of whole-building energy and water consumption for a minimum of one (1) year....	3
(2) The building owner commits to reporting energy data using EPA’s ENERGY STAR Portfolio Manager for a minimum of three (3) years.	1
11.706.15 Entryway air seal. For multifamily buildings, where not required by the building or energy code, to slow the movement of unconditioned air from outdoors to indoors at the main building entrance, the following is installed:	
(1) Building entry vestibule.	2
(2) Revolving entrance doors.	2

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11.801 INDOOR AND OUTDOOR WATER USE

11.801.0 Intent. Implement measures that reduce indoor and outdoor water usage. Implement measures that include collection and use of alternative sources of water. Implement measures that treat water on site.

11.801.1 Mandatory requirements. The building shall comply with § 11.802 (Prescriptive Path) and § 11.803 (Innovative Practices). Points from § 11.804 (Performance Path) shall not be combined with points from § 11.802 (Prescriptive Path) or § 11.803 (Innovative Practices).

11.802 PRESCRIPTIVE PATH

11.802.1 Indoor hot water usage. Indoor hot water supply system is in accordance with one of the practices listed in items (1) through (5). The maximum water volume from the source of hot water to the termination of the fixture supply is determined in accordance with Tables 11.802.1(1) or 11.802.1(2). The maximum pipe length from the source of hot water to the termination of the fixture supply is 50 ft.

Where more than one water heater or where more than one type of hot water supply system, including multiple circulation loops, is used, points are awarded only for the system that qualifies for the minimum number of points. Systems with circulation loops are eligible for points only if pumps are demand controlled. Circulation systems with timers or aquastats and constant-on circulation systems are not eligible to receive points. Points awarded only if the pipes are insulated in accordance with § 11.705.6.3.

- | | |
|--|---------------------|
| (1) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 128 ounces (1 gallon or 3.78 liters). | 8 |
| (2) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 64 ounces (0.5 gallon or 1.89 liters). | 12 |
| (3) The maximum volume from the water heater to the termination of the fixture supply at furthest fixture is 32 ounces (0.25 gallon or 0.945 liters). | 20 |
| (4) A demand controlled hot water priming pump is installed on the main supply pipe of the circulation loop and the maximum volume from this supply pipe to the furthest fixture is 24 ounces (0.19 gallons or 0.71 liters). | 24 |
| (a) The volume in the circulation loop (supply) from the water heater or boiler to the branch for the furthest fixture is no more than 128 ounces (1 gallon or 3.78 liters). | 4 Additional |
| (5) A central hot water recirculation system is implemented in multifamily buildings in which the hot water line distance from the recirculating loop to the engineered parallel piping system (i.e., manifold system) is less than 30 ft. (9,144 mm) and the parallel piping to the fixture fittings contains a maximum of 64 ounces (1.89 liters) (115.50 cubic in.) (0.50 gallons). | 9 |
| (6) Tankless water heater(s) with at least 0.5 gallon (1.89 liters) of storage are installed, or a tankless water heater that ramps up to at least 110°F within 5 seconds is installed. The storage may be internal or external to the tankless water heater. | 1 Additional |

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**Table 11.802.1(1)
Maximum Pipe Length Conversion Table^a**

Nominal Pipe Size (in.)	Liquid Ounces per Foot of Length	Main, Branch, and Fixture Supply System Volume Category			Branch and Fixture Supply Volume from Circulation Loop
		128 ounces (1 gallons) [per 11.802.1(1)]	64 ounces (0.5 gallon) [per 11.802.1(2)]	32 ounces (0.25 gallon) [per 11.802.1(3)]	24 ounces (0.19 gallon) [per 11.802.1(4)]
		Maximum Pipe Length (feet)			
1/4 ^b	0.33	50	50	50	50
5/16 ^b	0.5	50	50	50	48
3/8 ^b	0.75	50	50	43	32
1/2	1.5	50	43	21	16
5/8	2	50	32	16	12
3/4	3	43	21	11	8
7/8	4	32	16	8	6
1	5	26	13	6	5
1 1/4	8	16	8	4	3
1 1/2	11	12	6	3	2
2	18	7	4	2	1

- a. Maximum pipe length figures apply when the entire pipe run is one nominal diameter only. Where multiple pipe diameters are used, the combined volume shall not exceed the volume limitation in § 11.801.1.
- b. The maximum flow rate through 1/4 in. nominal piping shall not exceed 0.5 gpm. The maximum flow rate through 5/16 in. nominal piping shall not exceed 1 gpm. The maximum flow rate through 3/8 in. nominal piping shall not exceed 1.5 gpm.

**Table 11.802.1(2)
Common Hot Water Pipe Internal Volumes**

Size Nominal, In.	OUNCES OF WATER PER FOOT OF PIPE										
	Copper Type M	Copper Type L	Copper Type K	CPVC CTS SDR 11	CPVC SCH 40	CPVC SCH 80	PE-RT SDR 9	Composite ASTM F 1281	PEX CTS SDR 9	PP SDR 7.4 F2389	PP SDR 9 F2389
3/8	1.06	0.97	0.84	N/A	1.17	N/A	0.64	0.63	0.64	N/A	N/A
1/2	1.69	1.55	1.45	1.25	1.89	1.46	1.18	1.31	1.18	1.72	1.96
3/4	3.43	3.22	2.90	2.67	3.38	2.74	2.35	3.39	2.35	2.69	3.06
1	5.81	5.49	5.17	4.43	5.53	4.57	3.91	5.56	3.91	4.41	5.01
1 ¼	8.70	8.36	8.09	6.61	9.66	8.24	5.81	8.49	5.81	6.90	7.83
1 ½	12.18	11.83	11.45	9.22	13.2	11.38	8.09	13.88	8.09	10.77	12.24
2	21.08	20.58	20.04	15.79	21.88	19.11	13.86	21.48	13.86	17.11	19.43

11.802.2 Water-conserving appliances. ENERGY STAR or equivalent water-conserving appliances are installed.

- (1) dishwasher **2**
- (2) clothes washer, or **13**
- (3) clothes washer with an Integrated Water Factor of 3.8 or less **18**

Multifamily Building Note: Washing machines are installed in individual units or provided in common areas of multifamily buildings.

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GREEN BUILDING PRACTICES	POINTS
<p>11.802.3 Water usage metering. Water meters are installed meeting the following:</p> <p>(1) Single-Family Buildings: Water Usage Metering:.....</p> <p style="padding-left: 20px;">(a) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site.....</p> <p style="padding-left: 20px;">(b) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered).</p> <p>(2) Multifamily Buildings: Water Usage Metering:</p> <p style="padding-left: 20px;">(a) Where not otherwise required by the local AHJ, installation of a meter for water consumed from any source associated with the building or building site.....</p> <p style="padding-left: 20px;">(b) Each water meter shall be capable of communicating water consumption data remotely for the dwelling unit occupant and be capable of providing daily data with electronic data storage and reporting capability that can produce reports for daily, monthly, and yearly water consumption. (Fire sprinkler systems are not required to be metered).</p> <p><i>[Points earned in § 11.802.3(2) shall not exceed 50% of the total points earned for the Indoor and Outdoor Water Use Category]</i></p> <p>11.802.4 Showerheads. Showerheads are in accordance with the following:</p> <p>(1) The total maximum combined flow rate of all showerheads in a shower compartment with floor area of 2,600 sq. in. or less is equal or less than 2.0 gpm. For each additional 1,300 sq. in. or any portion thereof of shower compartment floor area, an additional 2.0 gpm combined showerhead flow rate is allowed. Showerheads shall comply with ASME A112.18.1/CSA B125.1 and shall meet the performance criteria of the EPA WaterSense Specification for showerheads. Showerheads shall be served by an automatic compensating valve that complies with ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and is specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead. <i>[4 points awarded for first compartment; 1 point for each additional compartment in dwelling]</i></p> <p style="background-color: #cccccc;"><i>Points awarded per shower compartment. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.</i></p> <p>(2) All shower compartments in the dwelling unit(s) or sleeping unit(s) and common areas meet the requirements of § 11.802.4(1) and all showerheads are in accordance with one of the following:</p> <p style="padding-left: 20px;">(a) maximum of 1.8 gpm.....</p> <p style="padding-left: 20px;">(b) maximum of 1.5 gpm.....</p> <p>(3) Any shower control that can shut off water flow without affecting temperature is installed. <i>[1 point awarded per shower control]</i></p> <p>For SI: 1 gallon per minute = 3.785 L/m</p>	<p>2 per unique meter</p> <p>2 per sensor package</p> <p>2 per unique use meter</p> <p>2 per sensor package</p> <p>4 [7 max]</p> <p>6 Additional</p> <p>10 Additional</p> <p>1 [3 max]</p>

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GREEN BUILDING PRACTICES	POINTS
11.802.5 Faucets	
11.802.5.1 Install water-efficient lavatory faucets with flow rates not more than 1.5 gpm (5.68 L/min), tested in compliance with ASME A112.18.1/CSA B125.1 and meeting the performance criteria of the EPA WaterSense High-Efficiency Lavatory Faucet Specification:	
(1) Flow rate ≤ 1.5 gpm <i>[All faucets in a bathroom are in compliance]</i> <i>[1 point awarded for each bathroom. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]</i>	1 [3 max]
(2) Flow rate ≤ 1.20 gpm <i>[All faucets in a bathroom are in compliance]</i> <i>[2 Points awarded for each bathroom. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]</i>	2 [6 max]
(3) Flow rate ≤ 1.5 gpm for all lavatory faucets in the dwelling unit(s) or sleeping unit(s).....	6 Additional
(4) Flow rate ≤ 1.5 gpm for all lavatory faucets in the dwelling unit(s), and at least one bathroom has faucets with flow rates ≤ 1.20 gpm.....	8 Additional
(5) Flow rate ≤ 1.20 gpm for all lavatory faucets in the dwelling unit(s).....	12 Additional
11.802.5.2 Water-efficient residential kitchen faucets are installed in accordance with ASME A112.18.1/CSA B125.1. Residential kitchen faucets may temporarily increase the flow above the maximum rate but not to exceed 2.2 gpm.	
(1) All residential kitchen faucets have a maximum flow rate of 1.8 gpm.	3
(2) All residential kitchen faucets have a maximum flow rate of 1.5 gpm.	1 Additional
11.802.5.3 Self-closing valve, motion sensor, metering, or pedal-activated faucet is installed to enable intermittent on/off operation. <i>[1 point awarded per fixture]</i>	1 [3 max]
11.802.5.4 Water closets and urinals are in accordance with the following:	
<i>Points awarded for § 11.803.5.4(2) or § 11.802.5.4(3), not both.</i>	
(1) Gold and Emerald levels: All water closets and urinals are in accordance with § 11.801.5.	M
(2) A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less in accordance with ASME A112.19.2/CSA B45.1 or ASME A112.19.14 as applicable. Tank-type water closets shall be in accordance with the performance criteria of the EPA WaterSense Specification for Tank-Type Toilets <i>[Points awarded per fixture. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]</i>	4 [12 max]
(3) All water closets are in accordance with § 11.802.5.4(2).	17
(4) All water closets are in accordance with § 11.802.5.4(2) and one or more of the following are installed: (a) Water closets that have an effective flush volume of 1.2 gallons or less. <i>[Points awarded per toilet. In multifamily buildings, the average of the points assigned to individual dwelling units or sleeping units may be used as the number of points awarded for this practice, rounded to the nearest whole number.]</i>	2 Additional [6 Add'l max]

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(b) One or more urinals with a flush volume of 0.5 gallons (1.9L) or less when tested in accordance with ASME A112.19.2/CSA B45.1.	2 Additional
(c) One or more composting or waterless toilets and/or non-water urinals. Non-water urinals shall be tested in accordance with ASME A112.19.2/CSA B45.1.	12 Additional
11.802.6 Irrigation systems	
11.802.6.1 Where an irrigation system is installed, an irrigation plan and implementation are executed by a qualified professional or equivalent.	M
11.802.6.2 Irrigation sprinkler nozzles shall be tested according to ANSI standard ASABE/ICC 802 Landscape Irrigation Sprinkler and Emitter Standard by an accredited third-party laboratory.	6
11.802.6.3 Drip irrigation is installed.	13 max
(1) Drip irrigation is installed for all landscape beds.	4
(2) Subsurface drip is installed for all turf grass areas.	4
(3) Drip irrigation zones specifications show plant type by name and water use/need for each emitter [Points awarded only if specifications are implemented.]	5
11.802.6.4 The irrigation system(s) is controlled by a smart controller or no irrigation is installed. [Points are not additive.]	
(1) Irrigation controllers shall be in accordance with the performance criteria of the EPA WaterSense program.	10
(2) No irrigation is installed and a landscape plan is developed in accordance with § 11.503.5, as applicable.	15
11.802.6.5 Commissioning and water use reduction for irrigation systems. [Points are not additive per each section.]	
(1) All irrigation zones utilize pressure regulation so emission devices (sprinklers and drip emitters) operate at manufacturer’s recommended operating pressure.	3
(2) Where dripline tubing is installed, a filter with mesh size in accordance with the manufacturer’s recommendation is installed on all drip zones.	3
(3) Utilize spray bodies that incorporate an in-stem or external flow shut-off device.	3
(4) For irrigation systems installed on sloped sites, either an in-stem or external check valve is utilized for each spray body.	3
(5) Where an irrigation system is installed, a flow sensing device is installed to monitor and alert the controller when flows are outside design range.	3
11.802.7 Rainwater collection and distribution. Rainwater collection and distribution is provided.	
11.802.7.1 Rainwater is used for irrigation in accordance with one of the following:	
(1) Rainwater is diverted for landscape irrigation without impermeable water storage.	5
(2) Rainwater is diverted for landscape irrigation with impermeable water storage in accordance with one of the following:	
(a) 50 – 499 gallon storage capacity.	5

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GREEN BUILDING PRACTICES	POINTS
(b) 500 – 2,499 gallon storage capacity.....	10
(c) 2,500 gallon or larger storage capacity (system is designed by a professional certified by the ARCSA or equivalent)	15
(d) All irrigation demands are met by rainwater capture (documentation demonstrating the water needs of the landscape are provided and the system is designed by a professional certified by the ARCSA or equivalent).....	25
11.802.7.2 Rainwater is used for indoor domestic demand as follows. The system is designed by a professional certified by the ARCSA or equivalent.	
(1) Rainwater is used to supply an indoor appliance or fixture for any locally approved use. <i>[Points awarded per appliance or fixture.]</i>	5 [15 max]
(2) Rainwater provides for total domestic demand. Where rainwater is used as potable water the potable rainwater system shall meet the requirements of IRC Sections P2906 and Section P2912.	25
The following shall also apply:	
(a) The following roof materials shall not be used to collect rainwater: shingles with fire retardant, copper, and materials that contain asbestos. Materials that contain lead, including but not limited to flashings and roof jacks, shall be prohibited.	
(b) Potable water supplies shall be protected against cross connection with rainwater as specified in IRC Section P2902.1.	
(c) Disinfection shall be provided by at least one of the following:	
(i) Ultraviolet (UV) light providing at least 40 mJ/cm ² at 254 nm for the highest water flow rate. A UV sensor with visible alarm, audible alarm, or water shutoff shall be triggered when the UV light is below the minimum at the sensor. In addition, filtration no greater than 5 µm shall be located upstream of the UV light or	
(ii) filtration no greater than 0.2 µm, or	
(iii) other approved disinfection	
(d) Materials and systems that collect, convey, pump, or store rainwater for potable rainwater systems shall comply with NSF 53, NSF 61 or equivalent.	
(e) The quality of the water at the point of use shall be verified in accordance with the requirements of the jurisdiction.	
(f) The rainwater storage shall not admit sunlight.	
(g) Potable rainwater pipe shall not be required to be purple after the point that the water is disinfected.	
11.802.8 Sediment filters. Water filter is installed to reduce sediment and protect plumbing fixtures for the whole building or the entire dwelling unit or the sleeping unit.	1
11.802.9 Water treatment devices.	
11.802.9.1 Water Softeners shall not be installed where the supplied water hardness is less than 8.0 grains per gallon measured as total calcium carbonate equivalents. Water softeners shall be listed to NSF 44 and a rated salt efficiency of 3,400 grains of total hardness per 1.0 pound of salt based on	

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sodium chloride equivalency. Devices shall not discharge more than 4.0 gallons of water per 1,000 grains of hardness removed during the service or recharge cycle.	
(1) No water softener.....	5
(2) Water softener installed to supply softened water only to domestic water heater.....	2
11.802.9.2 Reverse Osmosis (R/O) water treatment systems shall be listed to NSF 58 and shall include automatic shut-off valve to prevent water discharge when storage tank is full.	
(1) No R/O system.....	3
(2) Combined capacity of all R/O systems does not exceed 0.75 gallons.....	1
11.802.10 Pools and spas.	
11.802.10.1 Pools and Spas with water surface area greater than 36 sq. ft. and connected to a water supply shall have a dedicated meter to measure the amount of water supplied to the pool or spa.	
(1) Automated motorized non-permeable pool cover that covers the entire pool surface.....	10
11.803 INNOVATIVE PRACTICES	
11.803.1 Reclaimed, grey, or recycled water. Reclaimed, grey, or recycled water is used as permitted by applicable code.	
<i>Points awarded for either § 11.803.1(1) or § 11.803.1(2), not both.</i>	
<i>Points awarded for either § 11.803.6 or § 11.803.1, not both.</i>	
(1) each water closet flushed by reclaimed, grey, or recycled water <i>[Points awarded per fixture or appliance.]</i>	5 [20 max]
(2) irrigation from reclaimed, grey, or recycled water on-site.....	10
11.803.2 Reclaimed water, greywater, or rainwater pre-piping. Reclaimed, greywater, or rainwater systems are rough plumbed (and permanently marked, tagged or labeled) into buildings for future use.	3 per roughed in system
11.803.3 Automatic leak detection and control devices. One of the following devices is installed. Where a fire sprinkler system is present, ensure the device will be installed to not interfere with the operation of the fire sprinkler system.	2
(1) automatic water leak detection and control devices	
(2) automatic water leak detection and shutoff devices	
11.803.4 Engineered biological system or intensive bioremediation system. An engineered biological system or intensive bioremediation system is installed and the treated water is used on site. Design and implementation are approved by appropriate regional authority.	20
11.803.5 Recirculating humidifier. Where a humidifier is required, a recirculating humidifier is used in lieu of a traditional “flow through” type.	1
11.803.6 Advanced wastewater treatment system. Advanced wastewater (aerobic) treatment system is installed and treated water is used on site.	20
<i>Points awarded for either § 11.803.6 or § 11.803.1, not both.</i>	

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11.901 POLLUTANT SOURCE CONTROL	
11.901.0 Intent. Pollutant sources are controlled.	
11.901.1 Space and water heating options	
11.901.1.1 Natural draft furnaces, boilers, or water heaters are not located in conditioned spaces, including conditioned crawlspaces, unless located in a mechanical room that has an outdoor air source, and is sealed and insulated to separate it from the conditioned space(s). <i>[Points are awarded only for buildings that use natural draft combustion space or water heating equipment.]</i>	5
11.901.1.2 Air handling equipment or return ducts are not located in the garage, unless placed in isolated, air-sealed mechanical rooms with an outside air source.	5
11.901.1.3 The following combustion space heating or water heating equipment is installed within conditioned space:	
(1) all furnaces or all boilers	
(a) power-vent furnace(s) or boiler(s).....	3
(b) direct-vent furnace(s) or boiler(s).....	5
(2) all water heaters	
(a) power-vent water heater(s).....	3
(b) direct-vent water heater(s).....	5
11.901.1.4 Newly installed gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the NFPA 54, ICC IFGC, or the applicable local gas appliance installation code. Gas-fired fireplaces within dwelling units or sleeping units and direct heating equipment are vented to the outdoors. Alcohol burning devices and kerosene heaters are vented to the outdoors.	M
11.901.1.5 Natural gas and propane fireplaces are direct vented, have permanently fixed glass fronts or gasketed doors, and comply with CSA Z21.88/CSA 2.33 or CSA Z21.50/CSA 2.22.	7
11.901.1.6 The following electric equipment is installed:	
(1) heat pump air handler in unconditioned space	2
(2) heat pump air handler in conditioned space	5
11.901.2 Solid fuel-burning appliances.	
11.901.2.1 Newly installed solid fuel-burning fireplaces, inserts, stoves and heaters are code compliant and are in accordance with the following requirements:	M
(1) Site-built masonry wood-burning fireplaces are equipped with outside combustion air and a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.	
(2) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are an EPA Phase 2 Emission Level Qualified Model.	
(3) Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100(3).	

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(4) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified.	
(5) Masonry heaters are in accordance with the definitions in ASTM E1602 and IBC Section 2112.1.	
(6) Removal of or rendering unusable an existing fireplace or fuel burning appliance that is not in accordance with § 11.901.2.1 or replacement of each fireplace or appliance that is not in accordance with § 11.901.2.1 with a compliant appliance.	
11.901.2.2 Fireplaces, woodstoves, pellet stoves, or masonry heaters are not installed.	6
11.901.3 Garages. Garages are in accordance with the following:	
(1) Attached garage	
(a) Where installed in the common wall between the attached garage and conditioned space, the door is tightly sealed and gasketed.	M 2
(b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces.	M 2
(c) For one- and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted, or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors, designed and installed for continuous operation, or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1 hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with ASHRAE Standard 62.2-2007 Section 7.3.	8
(2) A carport is installed, the garage is detached from the building, or no garage is installed.	10
11.901.4 Wood materials. A minimum of 85% of newly installed material within a product group (i.e., wood structural panels, countertops, composite trim/doors, custom woodwork, and/or component closet shelving) is manufactured in accordance with the following:	10 max
(1) Structural plywood used for floor, wall, and/or roof sheathing is compliant with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing is compliant with DOC PS 2. The panels are made with moisture-resistant adhesives. The trademark indicates these adhesives as follows: Exposure 1 or Exterior for plywood, and Exposure 1 for OSB.	M
(2) Particleboard and MDF (medium density fiberboard) is manufactured and labeled in accordance with CPA A208.1 and CPA A208.2, respectively. <i>[Points awarded per product group.]</i>	2
(3) Hardwood plywood in accordance with HPVA HP-1. <i>[Points awarded per product group.]</i>	2
(4) Particleboard, MDF, or hardwood plywood is in accordance with CPA 4. <i>[Points awarded per product group.]</i>	3
(5) Composite wood or agrifiber panel products contain no added urea-formaldehyde or are in accordance with the <i>CARB Composite Wood Air Toxic Contaminant Measure Standard</i> . <i>[Points awarded per product group.]</i>	4
(6) Non-emitting products. <i>[Points awarded per product group.]</i>	4
11.901.5 Cabinets. A minimum of 85% of newly installed cabinets are in accordance with one or both of the following: <i>[Where both of the following practices are used, only three points are awarded.]</i>	
(1) All parts of the cabinet are made of solid wood or non-formaldehyde emitting materials such as metal or glass.	5

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<p>(2) The composite wood used in wood cabinets are in accordance with CARB Composite Wood Air Toxic Contaminant Measure Standard or equivalent as certified by a program such as but not limited to, those in Appendix B.</p>	3
<p>11.901.6 Carpets. Carpets are in accordance with the following:</p> <p>(1) Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures.</p>	M
<p>11.901.7 Floor materials. The following types of finished flooring materials are used. The materials have emission levels in accordance with CDPH/EHLB Standard Method v1.1. Product is tested by a laboratory with the CDPH/EHLB Standard Method v1.1 within the laboratory scope of accreditation to ISO/IEC 17025 and certified by a third-party program accredited to ISO 17065, such as, but not limited to, those in Appendix B. <i>[1 point awarded for every 10% of conditioned floor space using one of the below materials. When carpet cushion meeting the emission limits of the practice is also installed, the percentage of compliant carpet area is calculated at 1.33 times the actual installed area.]</i></p> <p>(1) Hard surface flooring: Prefinished installed hard-surface flooring is installed. Where post-manufacture coatings or surface applications have not been applied, the following hard surface flooring types are deemed to comply with the emission requirements of this practice:</p> <ul style="list-style-type: none"> (a) Ceramic tile flooring (b) Organic-free, mineral-based flooring (c) Clay masonry flooring (d) Concrete masonry flooring (e) Concrete flooring (f) Metal flooring (g) Glass <p>(2) Carpet and carpet cushion are installed.</p>	1 [8 max]
<p>11.901.8 Wall coverings. When at least 10% of the interior wall surfaces are covered, a minimum of 85% of wall coverings are in accordance with the emission concentration limits of CDPH/EHLB Standard Method v1.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the CDPH/EHLB Standard Method v1.1 is in its scope of accreditation. The product is certified by a third-party program accredited to ISO 17065, such as, but not limited to, those in Appendix B.</p>	4
<p>11.901.9 Interior architectural coatings. A minimum of 85% of newly applied interior architectural coatings are in accordance with either § 11.901.9.1 or § 11.901.9.3, not both. A minimum of 85% of architectural colorants are in accordance with § 11.901.9.2.</p> <p>Exception: Interior architectural coatings that are formulated to remove formaldehyde and other aldehydes in indoor air and are tested and labeled in accordance with ISO 16000-23, Indoor air – Part 23: Performance test for evaluating the reduction of formaldehyde concentrations by sorptive building materials.</p>	
<p>11.901.9.1 Site-applied interior architectural coatings, which are inside the waterproofing envelope, are in accordance with one or more of the following:</p> <p>(1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)</p> <p>(2) GreenSeal GS-11</p> <p>(3) <i>CARB Suggested Control Measure for Architectural Coatings</i> (see Table 11.901.9.1)</p>	5

Table 11.901.9.1
VOC Content Limits For Architectural Coatings^{a,b,c}

Coating Category	LIMIT^d (g/l)
Flat Coatings	50
Non-flat Coatings	100
Non-flat High-Gloss Coatings	150
Specialty Coatings:	
Aluminum Roof Coatings	400
Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350
Bond Breakers	350
Concrete Curing Compounds	350
Concrete/Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Floor Coatings	100
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings	120 ^e
Magnesite Cement Coatings	450
Mastic Texture Coatings	100
Metallic Pigmented Coatings	500
Multi-Color Coatings	250
Pre-Treatment Wash Primers	420
Primers, Sealers, and Undercoaters	100
Reactive Penetrating Sealers	350
Recycled Coatings	250
Roof Coatings	50
Rust Preventative Coatings	250
Shellacs, Clear	730
Shellacs, Opaque	550
Specialty Primers, Sealers, and Undercoaters	100
Stains	250
Stone Consolidants	450
Swimming Pool Coatings	340
Traffic Marking Coatings	100
Tub and Tile Refinish Coatings	420
Waterproofing Membranes	250
Wood Coatings	275
Wood Preservatives	350
Zinc-Rich Primers	340

- a. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
- b. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008.
- c. Table 11.901.9.1 architectural coating regulatory category and VOC content compliance determination shall conform to the California Air Resources Board Suggested Control Measure for Architectural Coatings dated February 1, 2008.
- d. Limits are expressed as VOC Regulatory (except as noted), thinned to the manufacturer's maximum thinning recommendation, excluding any colorant added to tint bases.
- e. Limit is expressed as VOC actual.

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11.901.9.2 Architectural coating colorant additive VOC content is in accordance with Table 11.901.9.2. [Points for § 11.901.9.2 are awarded only if base architectural coating is in accordance with § 11.901.9.1.]..

1

**Table 11.901.9.2
VOC Content Limits for Colorants**

Colorant	LIMIT (g/l)
Architectural Coatings, excluding IM Coatings	50
Solvent-Based IM	600
Waterborne IM	50

11.901.9.3 Site-applied interior architectural coatings, which are inside the waterproofing envelope, are in accordance with the emission levels of CDPH/EHLB Standard Method v1.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the CDPH/EHLB Standard Method v1.1 is in its scope of accreditation. The product is certified by a third-party program accredited to ISO 17065, such as, but not limited to, those found in Appendix B.

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11.901.9.4 When the building is occupied during the remodel, a minimum of 85% of the newly applied interior architectural coatings are in accordance with either § 11.901.9.1 or § 11.901.9.3.

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11.901.10 Interior adhesives and sealants. Interior low-VOC adhesives and sealants located inside the water proofing envelope: A minimum of 85% of newly applied site-applied products used within the interior of the building are in accordance with one of the following, as applicable.

(1) The emission levels of CDPH/EHLB Standard Method v1.1. Emission levels are determined when tested by a laboratory accredited to ISO/IEC 17025 and the CDPH/EHLB Standard Method v1.1 is in its scope of accreditation. The product is certified by a third-party program accredited to ISO 17065, such as, but not limited to, those found in Appendix B.

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(2) GreenSeal GS-36

5

(3) SCAQMD Rule 1168 in accordance with Table 11.901.10(3), excluding products that are sold in 16-ounce containers or less and are regulated by the California Air Resources Board (CARB) Consumer Products Regulation.

5

11.901.11 Insulation. Emissions of 85% of newly installed wall, ceiling, and floor insulation materials are in accordance with the emission levels of CDPH/EHLB. Standard Method v1.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the CDPH/EHLB Standard Method v1.1 is in its scope of accreditation. The product is certified by a third-party program accredited to ISO 17065, such as, but not limited to, those in Appendix B.

4

11.901.12 Furniture and Furnishings. In a multifamily building, all furniture in common areas shall have VOC emission levels in accordance with ANSI/BIFMA e3-Furniture Sustainability Standard Sections 7.6.1 and 7.6.2, tested in accordance with ANSI/BIFMA Standard Method M7.1. Emission levels are determined by a laboratory accredited to ISO/IEC 17025 and the ANSI/BIFMA Standard Method M7.1 is in its scope of accreditation. Furniture and Furnishings are certified by a third-party program accredited to ISO 17065, such as, but not limited to, those in Appendix B.

2

11.901.13 Carbon monoxide (CO) alarms. A carbon monoxide (CO) alarm is provided in accordance with the IRC Section R315.

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**Table 11.901.10(3)
Site Applied Adhesive and Sealants VOC Limits^{a,b}**

ADHESIVE OR SEALANT	VOC LIMIT (g/l)
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single ply roof membrane adhesives	250
Architectural sealants	250
Architectural sealant primer	
Non-porous	250
Porous	775
Modified bituminous sealant primer	500
Other sealant primers	750
CPVC solvent cement	490
PVC solvent cement	510
ABS solvent cement	325
Plastic cement welding	250
Adhesive primer for plastic	550
Contact adhesive	80
Special purpose contact adhesive	250
Structural wood member adhesive	140

- a. VOC limit less water and less exempt compounds in grams/liter
- b. For low-solid adhesives and sealants, the VOC limit is expressed in grams/liter of material as specified in Rule 1168. For all other adhesives and sealants, the VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds as specified in Rule 1168.

11.901.14 Building entrance pollutants control. Pollutants are controlled at all main building entrances by one of the following methods:

- (1) Exterior grilles or mats are installed in a fixed manner and may be removable for cleaning. **1**
- (2) Interior grilles or mats are installed in a fixed manner and may be removable for cleaning. **1**

11.901.15 Non-smoking areas. Environmental tobacco smoke is minimized by one or more of the following:

- (1) All interior common areas of a multifamily building are designated as non-smoking areas with posted signage. **1**
- (2) Exterior smoking areas of a multifamily building are designated with posted signage and located a minimum of 25 ft. from entries, outdoor air intakes, and operable windows. **1**

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11.901.16 Lead-safe work practices. For buildings constructed before 1978, lead-safe work practices are used during the remodeling.	M
11.902 POLLUTANT CONTROL	
11.902.0 Intent. Pollutants generated in the building are controlled.	
11.902.1 Spot ventilation	
11.902.1.1 Spot ventilation is in accordance with the following:	
(1) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. <i>[1 point awarded only if a window complying with IRC Section R303.3 is provided in addition to mechanical ventilation.]</i>	M [1 max]
(2) Clothes dryers (except listed and labeled condensing ductless dryers) are vented to the outdoors. ...	M
(3) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation.	8
11.902.1.2 Bathroom and/or laundry exhaust fan is provided with an automatic timer and/or humidistat:	11 max
(1) for first device	5
(2) for each additional device.....	2
11.902.1.3 Kitchen range, bathroom, and laundry exhaust are verified to air flow specification. Ventilation airflow at the point of exhaust is tested to a minimum of:	8
(a) 100 cfm (47.2 L/s) intermittent or 25 cfm (11.8 L/s) continuous for kitchens, and.....	6
(b) 50 cfm (23.6 L/s) intermittent or 20 cfm (9.4 L/s) continuous for bathrooms and/or laundry.	
11.902.1.4 Exhaust fans are ENERGY STAR, as applicable.	12 max
(1) ENERGY STAR, or equivalent, fans <i>[Points awarded per fan.]</i>	2
(2) ENERGY STAR, or equivalent, fans operating at or below 1 sone <i>[Points awarded per fan.]</i>	3
11.902.1.5 Fenestration in spaces other than those identified in 11.902.1.1 through 11.902.1.4 are designed for stack effect or cross-ventilation in accordance with all of the following:.....	3
(1) Operable windows, operable skylights, or sliding glass doors with a total area of at least 15% of the total conditioned floor area are provided.	
(2) Insect screens are provided for all operable windows, operable skylights, and sliding glass doors.	
(3) A minimum of two operable windows or sliding glass doors are placed in adjacent or opposite walls. If there is only one wall surface in that space exposed to the exterior, the minimum windows or sliding glass doors may be on the same wall.	
11.902.1.6 Ventilation for Multifamily Common Spaces. Systems are implemented and are in accordance with the specifications of ASHRAE 62.1 and an explanation of the operation and importance of the ventilation system is included in § 11.1002.1 and § 11.1002.2.	3

GREEN BUILDING PRACTICES	POINTS
11.902.2 Building ventilation systems	
11.902.2.1 One of the following whole building ventilation systems is implemented and is in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4 and an explanation of the operation and importance of the ventilation system is included in either § 11.1001.1 or § 11.1002.2. [*Mandatory where the maximum air infiltration rate is less than 5.0 ACH50].....	M*
(1) exhaust or supply fan(s) ready for continuous operation and with appropriately labeled controls.....	3
(2) balanced exhaust and supply fans with supply intakes located in accordance with the manufacturer’s guidelines so as to not introduce polluted air back into the building.....	6
(3) heat-recovery ventilator	7
(4) energy-recovery ventilator	8
(5) Ventilation air is preconditioned by a system not specified above	10
11.902.2.2 Ventilation airflow is tested to achieve the design fan airflow in accordance with ANSI/RESNET/ICC 380 and § 11.902.2.1.	4
11.902.2.3 MERV filters 8 to13 are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of MERV 8 to 13 filters.	2
11.902.2.4 MERV filters 14 or greater are installed on central forced air systems and are accessible. Designer or installer is to verify that the HVAC equipment is able to accommodate the greater pressure drop of the filter used.	3
11.902.2.5 All HVAC filter locations are designed such that they are readily accessible to the occupant.....	3
11.902.3 Radon reduction measures. Radon reduction measures are in accordance with IRC Appendix F or § 11.902.3.1. Radon Zones as identified by the AHJ or, if the zone is not identified by the AHJ, as defined in Figure 9(1). This practice is not mandatory if the existing building has been tested for radon and is accordance with federal and local acceptable limits.	
(1) Buildings located in Zone 1	
(a) a passive radon system is installed.....	M
(b) an active radon system is installed.....	12
(2) Buildings located in Zone 2 or Zone 3	
(a) a passive or active radon system is installed.....	6
(b) an active radon system is installed.....	12
11.902.3.1 Radon reduction option. This option requires § 11.902.3.1.1 through § 11.902.3.1.7.	
11.902.3.1.1 Soil-gas barriers and base course. A base course in accordance with IRC Section 506.2.2 IRC shall be installed below slabs and foundations. There shall be a continuous gas-permeable base course under each soil-gas retarder that is separated by foundation walls or footings. Between slabs and the base course, damp proofing or water proofing shall be installed in accordance with IRC Section 406. Punctures, tears and gaps around penetrations of the soil-gas retarder shall be repaired or covered with an additional soil-gas retarder. The soil-gas retarder shall be a continuous 6-mil (0.15 mm) polyethylene or an approved equivalent.	

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11.902.3.1.2 Soil gas collection. There shall be an unobstructed path for soil gas flow between the void space installed in the base course and the vent through the roof. Soil gases below the foundation shall be collected by a perforated pipe with a diameter of not less than 4 in. (10 cm) and not less than 5 ft. (1.5 m) in total length. A tee fitting or equivalent method shall provide two horizontal openings to the radon collection. The tee fitting shall be designed to prevent clogging of the radon collection path. Alternately the soil gas collection shall be by approved radon collection mats or an equivalent approved method.

11.902.3.1.3 Soil gas entry routes. Openings in slabs, soil-gas retarders, and joints such as, but not limited to, plumbing, ground water control systems, soil-gas vent pipes, piping and structural supports, shall be sealed against air leakage at the penetrations. The sealant shall be a polyurethane caulk, expanding foam or other approved method. Foundation walls shall comply with IRC Section 103.2.3. Sumps shall be sealed in accordance with IRC Section 103.2.2. Sump pits and sump lids intended for ground water control shall not be connected to the sub-slab soil-gas exhaust system.

11.902.3.1.4 Soil gas vent. A gas-tight pipe vent shall extend from the soil gas permeable layer through the roof. The vent pipe size shall not be reduced at any location as it goes from gas collection to the roof. Exposed and visible interior vent pipes shall be identified with not less than one label reading "Radon Reduction System" on each floor and in habitable attics.

11.902.3.1.5 Vent pipe diameter. The minimum vent pipe diameter shall be as specified in Table 11.902.3.1.5.

**Table 11.902.3.1.5
Maximum Vented Foundation Area**

Maximum area vented	Nominal pipe diameter
2,500 ft ² (232 m ²)	3 in. (7.6 cm)
4,000 ft ² (372 m ²)	4 in. (10 cm)
Unlimited	6 in. (15.2 cm)

11.902.3.1.6 Multiple vented areas. In dwellings where interior footings or other barriers separate the soil-gas permeable layer, each area shall be fitted with an individual vent pipe. Vent pipes shall connect to a single vent that terminates above the roof or each individual vent pipe shall terminate separately above the roof.

11.902.3.1.7 Fan. Each sub-slab soil-gas exhaust system shall include a fan, or dedicated space for the post-construction installation of a fan. The electrical supply for the fan shall be located within 6 ft. (1.8 m) of the fan. Fan is not required to be on a dedicated circuit.

11.902.3.2 Radon testing. Radon testing is mandatory for Zone 1.

Exceptions: 1) Testing is not mandatory where the authority having jurisdiction has defined the radon zone as Zone 2 or 3; and 2) testing is not mandatory where the occupied space is located above an unenclosed open space.

- (1) Testing specifications. Testing is performance as specified in (a) through (j). Testing of a representative sample shall be permitted for multifamily buildings only.
- (a) Testing is performed after the residence passes its airtightness test.
- (b) Testing is performed after the radon control system installation is complete. If the system has an active fan, the residence shall be tested with the fan operating.

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(c) Testing is performed at the lowest level within a dwelling unit which will be occupied, even if the space is not finished.	
(d) Testing is not performed in a closet, hallway, stairway, laundry room, furnace room, kitchen, or bathroom.	
(e) Testing is performed with a commercially available test kit or with a continuous radon monitor that can be calibrated. Testing shall be in accordance with the testing device manufacturer’s instructions.	
(f) Testing shall be performed by the builder, a registered design professional, or an approved third party.	
(g) Testing shall extend at least 48 hours or to the minimum specified by the manufacturer, whichever is longer.	
(h) Written radon test results shall be provided by the test lab or testing party. Written test results shall be included with construction documents.	
(i) An additional pre-paid test kit shall be provided for the homeowner to use when they choose. The test kit shall include mailing or emailing the results from the testing lab to the homeowner.	
(j) Where the radon test result is 4 pCi/L or greater, the fan for the radon vent pipe shall be installed.	
(2) Testing results. A radon test done in accordance with § 11.902.3.2(1) and completed before occupancy receives a results of 2 pCi/L or less.....	6
11.902.4 HVAC system protection. One of the following HVAC system protection measures is performed. .	3
(1) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.	
(2) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned and the filter is replaced if necessary.	
(3) If HVAC systems are to be operated, during construction, all return grilles have a temporary MERV 8 or higher filter installed in a manner ensuring no leakage around the filter.	
11.902.5 Central vacuum systems. Central vacuum system is installed and vented to the outside.	3
11.902.6 Living space contaminants. The living space is sealed in accordance with § 11.701.4.3.1 to prevent unwanted contaminants.	M
11.903 MOISTURE MANAGEMENT: VAPOR, RAINWATER, PLUMBING, HVAC	
11.903.0 Intent. Moisture and moisture effects are controlled.	
11.903.1 Plumbing	
11.903.1.1 Cold water pipes in unconditioned spaces are insulated to a minimum of R-4 with pipe insulation or other covering that adequately prevents condensation.	2
11.903.1.2 Plumbing is not installed in unconditioned spaces.....	5

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11.903.2 Duct insulation. Ducts are in accordance with one of the following:	
(1) All HVAC ducts, plenums, and trunks are located in conditioned space.....	1
(2) All HVAC ducts, plenums, and trunks are located in conditioned space and all HVAC ducts are insulated to a minimum of R4.	3
11.903.3 Relative humidity. In climate zones 1A, 2A, 3A, 4A, and 5A as defined by Figure 6(1), equipment is installed to maintain relative humidity (RH) at or below 60% using one of the following: <i>[Points not awarded in other climate zones.]</i>	7
(1) additional dehumidification system(s)	
(2) central HVAC system equipped with additional controls to operate in dehumidification mode	
11.904 INDOOR AIR QUALITY	
11.904.0 Intent. IAQ is protected by best practices to control ventilation, moisture, pollutant sources and sanitation.	
11.904.1 Indoor Air Quality (IAQ) during construction. Wood is dry before close-in (§ 11.602.1.7.1(3)), materials comply with emission criteria (§ 11.901.4 - 11.901.11), sources of water infiltration or condensation observed during construction have been eliminated, accessible interior surfaces are dry and free of visible suspect growth (per ASTM D7338 Section 6.3), and water damage (per ASTM D7338 Section 7.4.3).....	2
11.904.2 Indoor Air Quality (IAQ) post completion. Verify there are no moisture, mold, and dust issues per § 11.602.1.7.1(3), § 11.901.4 - 11.901.11, ASTM D7338 Section 6.3, and ASTM D7338 Section 7.4.3. ..	3
11.904.3 Microbial growth & moisture inspection and remediation. A visual inspection is performed to confirm the following:	
(1) Verify that no visible signs of discoloration and microbial growth on ceilings, walls or floors, or other building assemblies; or if minor microbial growth is observed (less than within a total area of 25 sq. ft.) in homes or multifamily buildings, reference EPA Document 402-K-02-003 (A Brief Guide to Mold, Moisture, and Your Home) for guidance on how to properly remediate the issue. If microbial growth is observed, on a larger scale in homes or multifamily buildings (greater than 25 sq. ft.), reference EPA Document 402-K-01-001 (Mold Remediation in Schools and Commercial Buildings) for guidance on how to properly remediate the issue.....	M
(2) Verify that there are no visible signs of water damage or pooling. If signs of water damage or pooling are observed, verify that the source of the leak has been repaired, and that damaged materials are either properly dried or replaced as needed.	M
11.905 INNOVATIVE PRACTICES	
11.905.1 Humidity monitoring system. A humidity monitoring system is installed with a mobile base unit that displays readings of temperature and relative humidity. The system has a minimum of two remote sensor units. One remote unit is placed permanently inside the conditioned space in a central location, excluding attachment to exterior walls, and another remote sensor unit is placed permanently outside of the conditioned space.	2

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11.905.2 Kitchen exhaust. A kitchen exhaust unit(s) that equals or exceeds 400 cfm (189 L/s) is installed, and make-up air is provided.	2
11.905.3 Enhanced air filtration. Meet all of the following.....	2
(1) Design for and install a secondary filter rack space for activated carbon filters.	
(2) Provide the manufacturer’s recommended filter maintenance schedule to the homeowner or building manager.	
11.905.4 Sound barrier. Provide room-to-room privacy between bedrooms and adjacent living spaces within dwelling units or homes by achieving an articulation index (AI) between 0 and 0.15 per the criteria below.	1 SF / 4 MF
<i>Articulation Index 0 to 0.05 = STC greater than 55 (NIC greater than 47)</i> <i>Articulation Index 0.05 to 0.15 = STC 52 – 55 (NIC 44 – 47)</i>	
11.905.5 Evaporative coil mold prevention. For buildings with a mechanical system for cooling, ultraviolet lamps are installed on the cooling coils and drain pans of the mechanical system supplies. Lamps produce ultraviolet radiation at a wavelength of 254 nm so as not to generate ozone. Lamps have ballasts housed in a NEMA-rated enclosure.	2
11.905.6 Isolation of areas to be remodeled. To protect unrenovated spaces, meet one of the following:	3 max
(1) Remodeled space is isolated from unrenovated space by masking of openings and HVAC returns and providing strip doors.....	1
(2) Remodeled space is isolated from unrenovated space by masking of openings and HVAC returns, providing strip doors, and the space is negatively pressurized by ducting exhaust to the exterior.	3
(2) Remodeled space is isolated from unrenovated space by masking of openings and HVAC returns, providing strip doors, and a dedicated HEPA filtration system is installed.	3
11.1001 HOMEOWNER’S MANUAL AND TRAINING GUIDELINES FOR ONE- AND TWO-FAMILY DWELLINGS	
11.1001.0 Intent. Information on the building’s use, maintenance, and green components is provided.	
11.1001.1 Homeowner’s manual. A homeowner’s manual is provided and stored in a permanent location in the dwelling that includes the following, as available and applicable. <i>[1 Point awarded per two items. Points awarded for non-mandatory items.]</i>	1 [8 max]
(1) A National Green Building Standard certificate with web link and completion document.....	M
(2) List of green building features (can include the national green building checklist).	M
(3) Product manufacturer’s manuals or product data sheet for newly installed major equipment, fixtures, and appliances including product model numbers and serial numbers. If product data sheet is in the building owners’ manual, manufacturer’s manual may be attached to the appliance in lieu of inclusion in the building owners’ manual.	M
(4) Maintenance checklist.	
(5) Information on local recycling and composting programs.	
(6) Information on available local utility programs that purchase a portion of energy from renewable energy providers.	

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(7) Explanation of the benefits of using energy-efficient lighting systems [e.g., compact fluorescent light bulbs, light emitting diode (LED)] in high-usage areas.	
(8) A list of practices to conserve water and energy.	
(9) Information on the importance and operation of the home's fresh air ventilation system.	
(10) Local public transportation options.	
(11) A diagram showing the location of safety valves and controls for major building systems.	
(12) Where frost-protected shallow foundations are used, owner is informed of precautions including: <ul style="list-style-type: none"> <li>(a) instructions to not remove or damage insulation when modifying landscaping. <li>(b) providing heat to the building as required by the IRC or IBC. <li>(c) keeping base materials beneath and around the building free from moisture caused by broken water pipes or other water sources. 	
(13) A list of local service providers that offer regularly scheduled service and maintenance contracts to ensure proper performance of equipment and the structure (e.g., HVAC, water-heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).	
(14) A photo record of framing with utilities installed. Photos are taken prior to installing insulation, clearly labeled, and included as part of the building owners' manual.	
(15) List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.	
(16) Information on organic pest control, fertilizers, deicers, and cleaning products.	
(17) Information on native landscape materials and/or those that have low-water requirements.	
(18) Information on methods of maintaining the building's relative humidity in the range of 30% to 60%.	
(19) Instructions for inspecting the building for termite infestation.	
(20) Instructions for maintaining gutters and downspouts and importance of diverting water a minimum of 5 ft. away from foundation.	
(21) A narrative detailing the importance of maintenance and operation in retaining the attributes of a green-built building.	
(22) Where stormwater management measures are installed on the lot, information on the location, purpose, and upkeep of these measures.	
(23) For buildings originally built before 1978, the EPA publications "Reducing Lead Hazards When Remodeling Your Home" and "Asbestos in Your Home: A Homeowner's Guide".	
(24) Explanation of and benefits from green cleaning in the home.	
(25) Retrofit energy calculator that provides baseline for future energy retrofits.	

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11.1001.2 Training of initial building owners. Initial building owners are familiarized with the role of occupants in achieving green goals. Training is provided to the responsible party(ies) regarding newly installed equipment operation and maintenance, control systems, and occupant actions that will improve the environmental performance of the building. These include:.....

M 8

- (1) HVAC filters
- (2) thermostat operation and programming
- (3) lighting controls
- (4) appliances operation
- (5) water heater settings and hot water use
- (6) fan controls
- (7) Recycling and composting practices
- (8) Whole-dwelling mechanical ventilation systems

11.1002 CONSTRUCTION, OPERATION, AND MAINTENANCE MANUALS AND TRAINING FOR MULTIFAMILY BUILDINGS

11.1002.0 Intent. Manuals are provided to the responsible parties (owner, management, tenant, and/or maintenance team) regarding the construction, operation, and maintenance of the building. Paper or digital format manuals are to include information regarding those aspects of the building’s construction, maintenance, and operation that are within the area of responsibilities of the respective recipient. One or more responsible parties are to receive a copy of all documentation for archival purposes.

11.1002.1 Building construction manual. A building construction manual, including five or more of the following, is compiled and distributed in accordance with § 11.1002.0.

[Points awarded per two items. Points awarded for non-mandatory items.]

1

- (1) A narrative detailing the importance of constructing a green building, including a list of green building attributes included in the building. This narrative is included in all responsible parties’ manuals.....
- (2) A local green building program certificate as well as a copy of the *National Green Building Standard*, as adopted by the Adopting Entity, and the individual measures achieved by the building.
- (3) Warranty, operation, and maintenance instructions for all equipment, fixtures, appliances, and finishes.....
- (4) Record drawings of the building.
- (5) A record drawing of the site including stormwater management plans, utility lines, landscaping with common name and genus/species of plantings.
- (6) A diagram showing the location of safety valves and controls for major building systems.
- (7) A list of the type and wattage of light bulbs installed in light fixtures.
- (8) A photo record of framing with utilities installed. Photos are taken prior to installing insulation and clearly labeled.

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11.1002.2 Operations manual. Operations manuals are created and distributed to the responsible parties in accordance with § 11.1002.0. Among all of the operation manuals, five or more of the following options are included. *[Points awarded per two items. Points awarded for non-mandatory items.]*

1

(1) A narrative detailing the importance of operating and living in a green building. This narrative is included in all responsible parties' manuals.

M

(2) A list of practices to conserve water and energy (e.g., turning off lights when not in use, switching the rotation of ceiling fans in changing seasons, purchasing ENERGY STAR appliances and electronics).

M

(3) Information on methods of maintaining the building's relative humidity in the range of 30% to 60%.

(4) Information on opportunities to purchase renewable energy from local utilities or national green power providers and information on utility and tax incentives for the installation of on-site renewable energy systems.

(5) Information on local and on-site recycling and hazardous waste disposal programs and, if applicable, building recycling and hazardous waste handling and disposal procedures.

(6) Local public transportation options.

(7) Explanation of the benefits of using compact fluorescent light bulbs, LEDs, or other high-efficiency lighting.

(8) Information on native landscape materials and/or those that have low water requirements.

(9) Information on the radon mitigation system, where applicable.

(10) A procedure for educating tenants in rental properties on the proper use, benefits, and maintenance of green building systems including a maintenance staff notification process for improperly functioning equipment.

(11) Information on the importance and operation of the building's fresh air ventilation system.

11.1002.3 Maintenance manual. Maintenance manuals are created and distributed to the responsible parties in accordance with § 11.1002.0. Between all of the maintenance manuals, five or more of the following options are included. *[Points awarded for non-mandatory items.]*

1 per 2 items

(1) A narrative detailing the importance of maintaining a green building. This narrative is included in all responsible parties' manuals.

M

(2) A list of local service providers that offer regularly scheduled service and maintenance contracts to ensure proper performance of equipment and the structure (e.g., HVAC, water-heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).

(3) User-friendly maintenance checklist that includes:

(a) HVAC filters

(b) thermostat operation and programming

(c) lighting controls

(d) appliances and settings

(e) water heater settings

(f) fan controls

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(4) List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.	
(5) Information on organic pest control, fertilizers, deicers, and cleaning products.	
(6) Instructions for maintaining gutters and downspouts and the importance of diverting water a minimum of 5 ft. away from foundation.	
(7) Instructions for inspecting the building for termite infestation.	
(8) A procedure for rental tenant occupancy turnover that preserves the green features.	
(9) An outline of a formal green building training program for maintenance staff.	
(10) A green cleaning plan which includes guidance on sustainable cleaning products.	
(11) A maintenance plan for active recreation and play spaces (e.g., playgrounds, ground markings, exercise equipment).	
11.1002.4 Training of building owners. Building owners are familiarized with the role of occupants in achieving green goals. On-site training is provided to the responsible party(ies) regarding newly installed equipment operation and maintenance, control systems, and occupant actions that will improve the environmental performance of the building.	M 8
These include:	
(1) HVAC filters	
(2) thermostat operation and programming	
(3) lighting controls	
(4) appliances operation	
(5) water heater settings and hot water use	
(6) fan controls	
(7) recycling and composting practices	
(8) Whole-dwelling mechanical ventilation system	
11.1002.5 Multifamily occupant manual. An occupant manual is compiled and distributed in accordance with § 11.1002.0. <i>[Points awarded for non-mandatory items.]</i>	1 per 2 items
(1) NGBS certificate.....	M
(2) List of green building features	M
(3) Operations manuals for all appliances and occupant operated equipment including lighting and ventilation controls, thermostats, etc.	M
(4) Information on recycling and composting programs	
(5) Information on purchasing renewable energy from utility	
(6) Information on energy efficient replacement lamps	
(7) List of practices to save water and energy	
(8) Local public transportation options	
(9) Explanation of benefits of green cleaning	

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<p>11.1002.6 Training of multifamily occupants. Prepare a training outline, video or website that familiarizes occupants with their role in maintaining the green goals of the project. Include all equipment that the occupant(s) is expected to operate including but not limited to:</p> <ul style="list-style-type: none"> (1) Lighting controls (2) Ventilation controls (3) Thermostat operation and programming (4) Appliances operation (5) Recycling and composting (6) HVAC filters (7) Water heater setting and hot water use 	1 per 2 items
11.1003 PUBLIC EDUCATION	
<p>11.1003.0 Intent. Increase public awareness of the <i>National Green Building Standard</i>® and projects constructed in accordance with the NGBS to help increase demand for high-performance homes.</p> <p>11.1003.1 Public Education. One or more of the following is implemented:</p> <ul style="list-style-type: none"> (1) Signage. Signs showing the project is designed and built in accordance with the NGBS are posted on the construction site. (2) Certification Plaques. NGBS certification plaques with rating level attained are placed in a conspicuous location near the utility area of the home or, in a conspicuous location near the main entrance of a multifamily building. (3) Education. A URL for the NGBS is included on site signage, builder website (or property website for multifamily buildings), and marketing materials for homes certified under the NGBS. 	<p>2 max</p> <p>1</p> <p>1</p> <p>1</p>
11.1005 INNOVATIVE PRACTICES	
<p>11.1005.1 Appraisals. One or more of the following is implemented:</p> <ul style="list-style-type: none"> (1) Energy rating or projected usage data is posted in an appropriate location in the home, or public posting so that an appraiser can access the energy data for an energy efficiency property valuation.. (2) An Appraisal Institute Form 820.05 “Residential Green and Energy Addendum” or Form 821 “Commercial Green and energy Efficient Addendum” that consider NGBS, LEED, ENERGY STAR certifications and equivalent programs, is completed for the appraiser by a qualified professional or builder to use in performing the valuation of the property..... (3) NGBS certification information or one of the Appraisal Institute Forms cited in § 11.1005.1(2) is uploaded to a multiple listing service (MLS) or equivalent database so that appraisers can access it to compare property valuations. 	<p>2</p> <p>2</p> <p>2</p>

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SECTION 12

CERTIFIED COMPLIANCE PATH FOR SINGLE-FAMILY HOMES, TOWNHOMES, AND DUPLEXES

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GREEN BUILDING PRACTICES

1200 Substitution of practices. The adopting entity shall be permitted to substitute one or more practices with alternatives that achieve the overall intent of this standard. The determination of intent and equivalency is in the purview of the adopting entity.

1201 LOT DEVELOPMENT

1201.1 Floodplain. Construction shall not occur in a floodplain or construction shall be elevated above the floodplain.

1201.2 Lot slope. Finished grade at all sides of a building shall be sloped to provide a minimum of 6 in. (152 mm) of fall within 10 ft. (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 in. (152 mm) of fall within 10 ft. (3048 mm), the final grade shall be sloped away from the edge of the building at a minimum slope of 2%.

1201.3 Soil preparation for new plants. Soil shall be tilled or new soil shall be added down 6 in. for new plants and 12 in. for new trees. Soil shall be amended with organic matter, such as mulch or compost, as needed. Long acting sources of nutrients shall be added if the soil is deficient. Alternately, the landscaping plan shall incorporate the jurisdictional Department of Transportation (DOT) specifications (or equal) for soil preparation and amendment for landscape planning. Other approved sources such as University or County agricultural extension services shall be permitted for use.

1201.4 Regionally appropriate vegetation. When an Agency that has jurisdiction has developed a specification for planting, including non-invasive vegetation that is native or appropriate for local growing conditions, vegetation from that specification is selected for the landscaping plan and that landscaping is installed.

1201.5 Protection of natural resources. Any trees or other natural resources that do not conflict with the home construction or finished grading and drainage of the lot and adjacent lots shall be properly protected during construction and all controls shall be removed following construction. The landscape plan shall contain details for the protection and instructions for incorporation of the trees/areas into the final landscape plan.

1202 RESOURCE EFFICIENCY (DURABILITY)

1202.1 Capillary break. A capillary break and vapor retarder shall be installed at concrete slabs in accordance with IRC Sections R506.2.2 and R506.2.3.

1202.2 Foundation drainage. Where required by the IRC for habitable and usable spaces below grade, exterior drain tile shall be installed.

1202.3 Dampproof walls. Dampproof walls shall be provided below finished grade.

1202.4 Sealed crawlspace. 6-mil polyethylene sheeting, or other Class I vapor retarder shall be installed in accordance with § 408.3 or IRC Section 506.

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1202.5 Dry Insulation. Insulation in cavities shall be dry in accordance with manufacturer's instructions before enclosing (e.g., with drywall).

1202.6 Water-resistive barrier. A water-resistive barrier and/or drainage plane system shall be installed in accordance with IRC requirements behind exterior veneer and/or siding.

1202.7 Flashing. Flashing shall be provided as follows to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details shall be provided in the construction documents and shall be in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional.

Flashing shall be installed at the following locations, as applicable:

- (1) around exterior fenestrations, skylights, and doors
- (2) at roof valleys
- (3) at building-to-deck, -balcony, -porch, and -stair intersections
- (4) at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets
- (5) at ends of and under masonry, wood, or metal copings and sills
- (6) above projecting wood trim
- (7) at built-in roof gutters
- (8) drip edge shall be installed at eave and rake edges
- (9) window and door head and jamb flashing is either self-adhered flashing complying with AAMA 711 or liquid applied flashing complying with AAMA 714 and installed in accordance with flashing fenestration or manufacturer's installation instructions.
- (10) pan flashing is installed at sills of all exterior windows and doors.
- (11) seamless, preformed kickout flashing, or prefabricated metal with soldered seams is provided at all roof-to-wall intersections. The type and thickness of the material used for roof flashing including but not limited kickout and step flashing is commensurate with the anticipated service life of the roofing material.
- (12) through-wall flashing is installed at transitions between wall cladding materials, or wall construction types

1202.8 Tile backing materials. Tile backing materials installed under tiled surfaces in wet areas shall be in accordance with ASTM C1178, C1278, C1288, or C1325. Tile shall not be installed over paper-faced drywall in wet areas.

1202.9 Ice and water shield. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier shall be installed in accordance with the IRC at roof eaves of pitched roofs and shall extend a minimum of 24 in. (610 mm) inside the exterior wall line of the building.

1202.10 Architectural features. Horizontal ledgers shall be sloped away to provide gravity drainage as appropriate for the application.

1202.11 Visible suspect fungal growth. Building materials with visible suspect fungal growth shall not be installed or shall be addressed in accordance with industry recognized guidelines such as ANSI/IICRC S520 Mold Remediation or EPA 402-K-01-001 Table 2: Mold Remediation Guidelines, prior to concealment and

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closing. Porous and semi-porous building materials should be stored in such a manner as to prevent excessive moisture content prior to installation or use. Relative humidity within the structure shall be controlled during construction to minimize the potential for microbial growth.

1202.12 Exterior doors. At least one entry at an exterior door assembly, inclusive of side lights (if any), are covered by one of the following methods to protect the building from the effects of precipitation and solar radiation. Either a storm door or a projection factor of 0.375 minimum is provided. Eastern- and western-facing entries in Climate Zones 1, 2, and 3, as determined in accordance with Figure 6(1) or Appendix A, have either a storm door or a projection factor of 1.0 minimum, unless protected from direct solar radiation by other means (e.g., screen wall, vegetation).

- (a) installing a porch roof or awning
- (b) extending the roof overhang
- (c) recessing the exterior door
- (d) installing a storm door

1202.13 Roof overhangs. Roof overhangs, in accordance with Table 602.1.12, are provided over a minimum of 90% of exterior walls to protect the building envelope.

1202.14 Roof Water discharge. Each downspout shall discharge 5 ft. from building, onto impervious surfaces, into areas designed to infiltrate drainage into the ground, to water vegetation, or into a rain collection system.

1203 ENERGY EFFICIENCY

1203.1 Mandatory requirements. The building shall comply with § 1203.1 through § 1203.9 in addition to one of the following: § 1203.10 (Energy Performance Path); § 1203.11 through § 1203.14 (Energy Prescriptive Path); or § 1203.15 (ERI Target Path). Sampling shall not be permitted for this alternative compliance path.

1203.2 Adopting entity review. A review by the Adopting Entity or approved third party shall be conducted to verify design and compliance with these energy requirements.

1203.3 Duct testing. Ducts shall be pressure tested to determine air leakage by one of the following methods:

- (1) Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 in. w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. Registers shall be taped or otherwise sealed during the test.
- (2) Post-construction test: Total leakage shall be measured with a pressure differential of 0.1 in. w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.

Exceptions: 1) A duct air-leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope; and 2) A duct air-leakage test shall not be required for ducts serving heat or energy recovery ventilators that are not integrated with ducts serving heating or cooling systems.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.

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1203.4 Radiant and hydronic space heating. Where installed as a primary heat source in the building, radiant or hydronic space heating system is designed, installed, and documented, using industry-approved guidelines and standards (e.g., ACCA Manual J, AHRI I=B=R, ACCA 5 QI, or an accredited design professional's and manufacturer's recommendations).

1203.5 Building thermal envelope air sealing. The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film, or solid material:

- (a) All joints, seams and penetrations
- (b) Site-built windows, doors, and skylights
- (c) Openings between window and door assemblies and their respective jambs and framing
- (d) Utility penetrations
- (e) Dropped ceilings or chases adjacent to the thermal envelope
- (f) Knee walls
- (g) Walls and ceilings separating a garage from conditioned spaces
- (h) Behind tubs and showers on exterior walls
- (i) Common walls between dwelling units
- (j) Attic access openings
- (k) Rim joist junction
- (l) Other sources of infiltration

1203.6 Air sealing and insulation. Insulation shall be installed to Grade I. Grade II and Grade III insulation shall not be permitted. Building envelope air tightness and insulation installation shall be verified to be in accordance with the following.

- (A) Testing is conducted in accordance with ASTM E 779 using a blower door at a pressure of 1.04 psf (50 pa). Testing is conducted after rough-in and installation of penetrations in the building envelope, including but not limited to penetrations for utilities, electrical, plumbing, ventilation and combustion appliances. Testing is to be conducted under the following conditions:
 - (a) Exterior windows and doors, fireplace and stove doors are closed, but not sealed;
 - (b) Dampers are closed, but not sealed, including exhaust, intake, make-up air, backdraft and flue dampers;
 - (c) Interior doors are open;
 - (d) Exterior openings for continuous ventilation systems and heat recovery ventilators are closed and sealed;
 - (e) Heating, cooling, and ventilation systems are turned off;
 - (f) HVAC duct terminations are not sealed; and
 - (g) Supply and return registers are not sealed.
- (B) Visual inspection. The air barrier and insulation items listed in Table 1203.6(B) shall be field verified by visual inspection.

Table 1203.6(B)
Air Barrier and Insulation Installation

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within comers and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.
Windows, skylights and doors	The space between window/doorjamb and framing, and skylights and framing shall be sealed.	
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.
Floors (including above garage and cantilevered floors)	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Where provided instead of floor insulation, insulation shall be permanently attached to the crawlspace walls.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.	
Narrow cavities		Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the drywall.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.
Plumbing and wiring		Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate them from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.	
HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.	
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

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1203.7 High-efficacy lighting. A minimum of 90% of the total hard-wired lighting fixtures or the bulbs in those fixtures qualify as high efficacy or equivalent.

1203.8 Appliances. If installed, refrigerator, dishwasher, and/or washing machine shall be ENERGY STAR or equivalent.

1203.9 Clothes washers. Where installed, clothes washers rated with an IWF (integrated water factor), MEF (modified energy factor), or IMEF (integrated modified energy factor), shall be rated as follows:

- (1) Residential Clothes Washers, Front-loading,
greater than 2.5 cu-ft maximum 3.2 IWF, minimum IMEF 2.76
- (2) Residential Clothes Washers, Top-loading,
greater than 2.5 cu-ft maximum 4.3 IWF, minimum IMEF 2.06
- (3) Residential Clothes Washers,
less than or equal to 2.5 cu-ft maximum 4.2 IWF, minimum IMEF 2.07

1203.10 Energy performance pathway.

1203.10.1 ICC IECC analysis. Energy efficiency features are implemented to achieve energy cost or source energy performance that exceeds the ICC IECC by 7.5%. A documented analysis using software in accordance with ICC IECC Section R405 is required.

1203.10.2 Energy performance analysis. Energy savings levels above the ICC IECC are determined through an analysis that includes improvements in building envelope, air infiltration, heating system efficiencies, cooling system efficiencies, duct sealing, water heating system efficiencies, lighting, and appliances.

1203.11 Energy prescriptive pathway.

1203.11.1 Building envelope. The building thermal envelope complies with § 1203.11.1.1 or § 1203.11.1.2. Exception: Section 1203.11.1.1 is not required for Tropical Climate Zone.

1203.11.1.1 Insulation and fenestration requirements. The building thermal envelope shall meet the requirements of Table 1203.11.1.1 and 1203.11.1.2.

1203.11.1.2 The total UA proposed and baseline calculations are documented where the total proposed building thermal envelope UA is less than or equal to the total baseline UA resulting from multiplying the U-factors in Table 1203.11.1.2 by the same assembly area as in the proposed building. REScheck is deemed to provide UA calculation documentation. SHGC requirements of Table 1203.11.1.1 shall be met.

**Table 1203.11.1.1
Insulation and Fenestration Requirements by Component^a**

Climate Zone	Fenestration ^b U-Factor	Skylight ^b U-Factor	Glazed Fenestration SHGC ^{b,e}	Ceiling R-Value ⁱ	Wood Frame Wall R-Value	Mass Wall R-Value ⁱ	Floor R-Value	Basement ^c Wall R-Value	Slab ^d R-Value & Depth	Crawlspace ^c Wall R-Value
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 OR 13+5 ^h	8/13	19	5/13 ^f	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 OR 13+5 ^h	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 OR 13+5 ^h	13/17	30 ^g	15/19	10, 2 ft	15/19
6	0.30	0.55	NR	49	20+5 ^h OR 13+10 ^h	15/20	30 ^g	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20+5 ^h OR 13+10 ^h	19/21	38 ^g	15/19	10, 4 ft	15/19

NR = Not Required

For SI: 1 foot = 304.8 mm.

- R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation shall be not less than the R-value specified in the table.
- The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
Exception: In Climate Zones 1 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements provided that the SHGC for such skylights does not exceed 0.30.
- “10/13” means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation on the interior of the basement wall. “15/19” means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. Alternatively, compliance with “15/19” shall be R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.
- R-5 insulation shall be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs, as indicated in the table. The slab edge insulation for heated slabs shall not be required to extend below the slab.
- There are no SHGC requirements in the Marine Zone.
- Basement wall insulation is not required in warm-humid locations as defined by ICC IECC Figure R301.1 and ICC IECC Table R301.1.
- Alternatively, insulation sufficient to fill the framing cavity and providing not less than an R-value of R-19.
- The first value is cavity insulation, the second value is continuous insulation. Therefore, as an example, “13+5” means R-13 cavity insulation plus R-5 continuous insulation.
- Mass walls shall be in accordance with ICC IECC Section R402.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.

**Table 1203.11.1.2
Equivalent U-Factors^a**

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor ^b	Floor U-Factor	Basement Wall U-Factor	Crawlspace Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.32	0.55	0.030	0.060	0.098	0.047	0.091 ^c	0.136
4 except Marine	0.32	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.30	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	0.026	0.045	0.057	0.028	0.050	0.055

- Non-fenestration U-factors shall be obtained from measurement, calculation, or an approved source.
- Mass walls shall be in accordance with Section R402.2.5. Where more than half the insulation is on the interior, the mass wall U-factors shall not exceed 0.17 in Climate Zone 1, 0.14 in Climate Zone 2, 0.12 in Climate Zone 3, 0.087 in Climate Zone 4 except Marine, 0.065 in Climate Zone 5 and Marine 4, and 0.57 in Climate Zones 6 through 8.

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1203.12 Space heating and cooling and water heating system efficiencies. The Space Heating and Cooling and Water Heating systems are in accordance with Table 1203.12.

**Table 1203.12
Space Heating and Cooling and Water Heating System Efficiencies**

Climate Zone	Space Cooling System	Space Heating System - select 1 option from below				Water Heating System - select 1 option from below		
	AC	Gas Furnace	Gas Boiler	ASHP	GSHP or WSHP	Gas Tank WH	Gas Tankless WH	Elec Tank WH
	Min. Req.	Min. Req.	Min. Req.	Min. Req.	Min. Req.	Min. UEF Req.	Min. UEF Req.	Min. UEF Req.
1	15 SEER**	NR	85%	NR	Any	0.78	>.93	>.92
2	15 SEER**	NR	85%	NANR	Any	0.78	>.93	>.92
3	15 SEER**	92%	85%	≥ 8.5 HSPF*	Any	0.78	>.93	>.92
4	15 SEER**	92%	85%	≥ 8.5 HSPF*	Any	0.78	>.93	>.92
5	14 SEER	95%	85%	≥ 8.5 HSPF*	Any	0.78	>.93	>.92
6	14 SEER	95%	85%	≥ 8.5 HSPF*	Any	0.78	>.93	>.92
7	14 SEER	95%	85%	≥ 8.5 HSPF*	Any	0.78	>.93	>.92
8	14 SEER	95%	85%	≥ 8.5 HSPF*	Any	∅	>.93	>.92

* ≥ 8.2 HSPF for single package

**zones 1-4 ≥12.5 EER for split; ≥12 EER for single package

NR = No requirement

1203.13 Duct leakage. The total leakage of the ducts, where measured in accordance with Section R403.3.3, shall be as follows:

- (1) Rough-in test: The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 sq. ft. (9.29 m²) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 sq. ft. (9.29 m²) of conditioned floor area.
- (2) Postconstruction test: Total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 sq. ft. (9.29 m²) of conditioned floor area.

1203.14 High-efficacy lighting. A minimum of 95% of the total hard-wired lighting fixtures or the bulbs in those fixtures qualify as high efficacy or equivalent.

1203.15 ERI target pathway.

1203.15.1 ERI target compliance. Energy efficiency features are implemented to achieve an ERI performance that is 8 points less than the EPA National ERI Target Procedure for ENERGY STAR Certified Homes version 3.0 as computed based on Step 1 of the EPA National ERI Target Procedure. Dwelling ratings shall be submitted to a quality control registry approved by the Adopting Entity for calculating points under this section.

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1204 WATER EFFICIENCY

1204.1 Lavatory faucets. Water-efficient lavatory faucets in bathrooms shall have a maximum flow rate of 1.5 gpm (5.68 L/min), tested at 60 psi (414 kPa) in accordance with ASME A112.18.1/CSA B125.1.

1204.2 Water closets. Water closets shall have an effective flush volume of 1.28 gallons or less and shall be in accordance with the performance criteria of the EPA WaterSense Specification for tank-type toilets.

1204.3 Irrigation systems. Where an irrigation system is installed, one of the following is met:

- (1) Drip irrigation is installed for all landscape beds and/or subsurface drip irrigation is installed for all turf grass areas.
- (2) Irrigation zones are organized by plant water needs.
- (3) The irrigation system(s) is controlled by a climate-based controller or soil moisture controller.
- (4) No irrigation is installed.

1204.4 Alternative Compliance Path. Water Rating Index (WRI) needs to achieve a level 70.

1205 INDOOR ENVIRONMENTAL QUALITY

1205.1 Gas-fired fireplaces and direct heating equipment. Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the NFPA 54, ICC IFGC, or the applicable local gas appliance installation code. Gas-fired fireplaces within dwelling units and direct heating equipment are vented to the outdoors.

1205.2 Solid fuel-burning fireplaces, inserts, stoves and heaters. Solid fuel-burning fireplaces, inserts, stoves and heaters are code compliant and are in accordance with one or more of the following requirements:

- (1) Site-built masonry wood-burning fireplaces use outside combustion air and include a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.
- (2) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified or Phase 2 Qualified.
- (3) Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100(3).
- (4) Pellet (biomass) stoves and furnaces are in accordance with ASTM E1509 or are EPA certified.
- (5) Masonry heaters are in accordance with the definitions in ASTM E1602 and IBC Section 2112.1.
- (6) Fireplaces, woodstoves, pellet stoves, or masonry heaters are not installed.

1205.3 Garages. Garages shall be in accordance with "a" or "b":

- (a) Attached garage
 - (1) Doors installed in the common wall between the attached garage and conditioned space are tightly sealed and gasketed; and
 - (2) A continuous air barrier is provided separating the garage space from the conditioned living spaces.
- (b) A carport is installed, the garage is detached from the building, or no garage is installed.

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1205.4 Carpets. Wall-to-wall carpeting shall not be installed adjacent to

- (a) water closets and bathing fixtures, and
- (b) exterior doors.

1205.5 Carbon monoxide (CO) alarms. A carbon monoxide (CO) alarm shall be provided in accordance with IRC Section R315 in any dwelling unit with a combustion fueled appliance or an attached garage with an opening that communicates with the dwelling unit.

1205.6 Interior architectural coatings. A minimum of 85% of the interior architectural coatings are in accordance with one or more of the following:

- (1) Low VOC as determined by EPA Method 24 (VOC content is below the detection limit for the method)
- (2) Green Seal GS-11
- (3) CARB Suggested Control Measure for Architectural Coatings (see Table 901.9.1).

1205.7 Local ventilation. shall be in accordance with the following:

- (1) Bathrooms are vented to the outdoors. The minimum tested ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. Exhaust fans are ENERGY STAR, or equivalent.
- (2) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation.
- (3) Bathroom and kitchen exhaust ventilation rates are tested to meet minimum ventilation rates or ducts are installed to meet the prescriptive requirements in IRC Table M1504.2.

1205.8 Whole Dwelling Ventilation. One of the following whole dwelling ventilation systems shall be implemented and shall be in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4. An explanation of the operation and importance of the ventilation system shall be included in the homeowner's manual practice.

- (1) exhaust air ventilation system equipped with outdoor air ducts and intake(s) for ventilation air.
- (2) exhaust air ventilation system equipped with outdoor air ducts and intake(s) for ventilation air and with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads.
- (3) supply air ventilation system.
- (4) supply air ventilation system equipped with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads.
- (5) balanced air ventilation system with exhaust and supply fan(s) with supply intakes located in accordance with the manufacturer's guidelines to not introduce polluted air back into the building.
- (6) heat-recovery ventilator.
- (7) balanced air ventilation system with exhaust and supply fan(s) with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads, and with intakes located in accordance with the manufacturer's guidelines to not introduce polluted air back in to the building.
- (8) energy-recovery ventilator

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GREEN BUILDING PRACTICES

1205.9 Radon control. Radon control measures are installed in accordance with 902.3 for Zone 1 as defined in Figure 9(1).

- (a) a passive radon system is installed, or
- (b) an active radon system is installed

1205.10 Kitchen exhaust. If a kitchen exhaust unit(s) that equals or exceeds 400 cfm (189 L/s) is installed, make-up air shall be provided.

1205.11 MERV filters. Minimum 8 MERV filters shall be installed on central forced air systems and are accessible.

1205.12 HVAC system protection. One of the following HVAC system protection measures shall be performed.

- (a) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.
- (b) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned, and the filter is replaced if necessary.

1206 HOMEOWNER OPERATION AND MAINTAINANCE

1206.1 Homeowner's manual. A homeowner's manual shall be provided. The homeowner's manual shall include all items below:

- (1) A National Green Building Standard certificate with a web link and completion document.
- (2) List of green building features (can include the National Green Building Standard checklist).
- (3) Product manufacturer's manuals or product data sheet for installed major equipment, fixtures, and appliances. If product data sheet is in the building owners' manual, manufacturer's manual may be attached to the appliance in lieu of inclusion in the building owners' manual.
- (4) Maintenance checklist.
- (5) Information on the importance and operation of the home's fresh air ventilation system.
- (6) Provide information on regionally-appropriate vegetation from the local authority with jurisdiction.
- (7) A narrative detailing the importance of maintenance and operation of the green building features from the National Green Building Standard checklist in retaining the attributes of a green-built home.
- (8) Where stormwater management measures are installed on the lot, information on the location, purpose, and upkeep of these measures.

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GREEN BUILDING PRACTICES

1206.2 Training of initial homeowners. Initial homeowners shall be familiarized with the role of occupants in achieving green goals. Training is provided to the responsible party(ies) regarding equipment operation and maintenance, control systems, and occupant role. These include:

- (1) HVAC filters
- (2) Water heater settings
- (3) Whole-house ventilation systems
- (4) Operation of household equipment



SECTION 13

COMMERCIAL SPACES

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GREEN BUILDING PRACTICES

13.101 INTENT AND SCOPE

13.101.1 Intent. This chapter shall provide green requirements for the non-residential portion(s) of a mixed-use building.

13.101.2 Scope. The provisions of this Chapter shall apply to the design, construction, addition, and alteration of non-residential portion(s) of a mixed-use building.

13.102 COMPLIANCE

13.102.1 Compliance. The non-residential portion(s) of a mixed-use building shall comply with all provisions of this chapter as applicable. The provisions of this Chapter are mandatory.

13.102.1.1 Core and shell compliance. The exterior air barrier, insulation, air sealing, and fenestration, are verified to the requirements of this chapter at the time of certification.

13.102.1.2 Full mixed-use building compliance. Residential and non-residential spaces are verified to the requirements of this standard at the time of certification. The residential portions of the building are verified to the requirements of Chapters 5 through 10 of this Standard. The non-residential portion(s) of the building must comply with the requirements of this chapter.

13.102.1.3 Additions and alterations. The provisions of this Chapter shall only apply to areas of the building that are exposed or created during the remodel of mixed-use building(s) complying with § 305, Green Remodeling.

13.102.1.4 Alternate compliance. Non-residential portions of a building shall comply with ICC IgCC Section 501.3.7.2 and Chapters 6 through 10.

Exception: Section 6.3.1 of the ICC IgCC.

13.103 BICYCLE PARKING

13.103.1 Bicycle parking. Bicycle parking shall comply with § 13.103.1.1 through § 13.103.1.2

13.103.1.1 Minimum number of spaces. The minimum number of required bicycle parking spaces shall be 4 parking spaces.

Exceptions: 1) The number of bicycle parking spaces shall be allowed to be reduced subject to Adopting Entity approval; 2) bicycle parking shall not be required where the total non-residential conditioned space in the building is less than 1,000 sq. ft.; and 3) The minimum number of spaces shall be permitted to be reduced by the authority having jurisdiction based on the occupants expected use of public transit or walking to the building.

13.103.1.2 Location. The bicycle parking must be located on the same building site or within the building. It must be located within 100 ft. of, and visible from, the main entrance.

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13.104 RESOURCE EFFICIENCY

13.104.1 Enhanced durability.

13.104.1.1 Capillary break. A capillary break and vapor retarder shall be installed under the concrete slabs in accordance with IBC Sections 1907, excluding exception #3 and 1805.2.1.

13.104.1.2 Foundation drainage. Where required by the IBC for habitable and usable spaces below grade, exterior drain tile is installed.

13.104.1.3 Dampproof walls. Walls that retain earth, and encloses interior space are required to be dampproof per IBC Section 1805.

13.104.1.4 Water-resistive barrier. Where required by the IBC, a water-resistive barrier and/or drainage plane system is installed behind exterior cladding.

13.104.1.5 Flashing. Flashing is provided as follows to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional.

Flashing is installed at the following locations, as applicable unless in conflict with manufacturer's installation instructions:

- (1) Around exterior fenestrations, skylights, and doors;
- (2) At roof valleys;
- (3) At all building-to-deck, -balcony, -porch, and -stair intersections;
- (4) At roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets;
- (5) At ends of and under masonry, wood, or metal copings and sills;
- (6) Above projecting wood trim;
- (7) At built-in roof gutters;
- (8) Drip edge is installed at eave and rake edges;
- (9) Window and door head and jamb flashing is either self-adhered or liquid applied;
- (10) Flashing is installed at exterior windows and doors;
- (11) Through-wall flashing is installed at transitions between wall cladding materials or wall construction types; and
- (12) Flashing is installed at the expansion joint in stucco walls.

13.104.1.6 Tile backing materials. Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325. Tile shall not be installed over paper-faced gypsum board in wet areas.

13.104.1.7 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the IBC at roof eaves of pitched roofs and extends a minimum of 24 in. (610 mm) inside the exterior wall line of the building.

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GREEN BUILDING PRACTICES

13.104.1.8 Architectural features. Architectural features that increase the potential for water intrusion are avoided, and must comply with the following:

- (1) Horizontal ledgers are sloped away to provide gravity drainage as appropriate for the application.
- (2) No roof configurations that create horizontal valleys in roof design, unless directed to a drain on a flat roof.
- (3) No recessed windows and architectural features that trap water on horizontal surfaces

13.104.1.9 Moisture control measures. Moisture control measures for newly installed materials are in accordance with the following:

- (1) Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.
- (2) Insulation in cavities is dry in accordance with manufacturer's installation instructions when enclosed (e.g., with drywall).

13.104.2 Construction material and waste management plan. A written construction waste management plan is posted at the jobsite and implemented.

13.104.3 Core and shell material selection. The core and shell of the non-residential portion of the building must contain similar green material selections of the residential portion of the building and must comply with the additional provisions of this section.

13.104.3.1 Material selection. At least six of these sections must be met from the following:

- (1) Biobased products § 606.1
- (2) Wood-based products § 606.2
- (3) Manufacturing energy § 606.3
- (4) Resource-efficient materials § 608.1
- (5) Regional materials § 609.1
- (6) Product LCA § 610.1.2.1
- (7) Building assembly LCA § 610.1.2.2
- (8) Manufacturer's environmental management system concepts § 612.1
- (9) Sustainable products § 612.2
- (10) Salvaged materials § 603.2
- (11) Product declarations § 611.1.1 and § 611.1.2
- (12) Recycled content § 604.1

13.104.4 Recycling and composting. A readily accessible space(s) adequate to accommodate the recycling and composting containers for materials accepted in local recycling/composting programs is provided and identified on the floorplan.

GREEN BUILDING PRACTICES

13.105 ENERGY EFFICIENCY

13.105.1 Building thermal envelope insulation. The non-residential portion of the building must comply with the insulation requirements of ICC IECC Sections C402.1 through C402.3 as applicable, and § 13.105.1.1. A UA tradeoff shall be allowed for § 13.105.1 and § 13.105.2 is equal to or less than the ICC IECC UA.

Maximum UA. For ICC IECC residential, the total building UA is less than or equal to the total maximum UA as computed by 2015 ICC IECC Section R02.1.5. For ICC IECC commercial, the total UA is less than or equal to the sum of the UA for 2015 ICC IECC Tables C402.1.4 and C402.4, including the U-factor times the area and C-factor or F-factor times the perimeter. The total UA proposed and baseline calculations are documented. REScheck or COMcheck is deemed to provide UA calculation documentation.

13.105.1.1 Insulation installation. Insulation installed in the thermal envelope shall be visually inspected for compliance with Grade I installation. Grade II insulation is only permitted where exterior continuous insulation is installed. Grade III insulation installation is not permitted.

13.105.2 Building thermal envelope fenestration. The non-residential portion of the building shall be in accordance with the requirements of the ICC IECC Section C402.4 as applicable.

13.105.3 Building thermal envelope air sealing. The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film, or solid material:

- (1) All joints, seams and penetrations
- (2) Site-built windows, doors and skylights
- (3) Openings between window and door assemblies and their respective jambs and framing
- (4) Utility penetrations
- (5) Dropped ceilings or chases adjacent to the thermal envelope
- (6) Knee walls
- (7) Walls and ceilings separating the garage from conditioned spaces
- (8) Behind tubs and showers on exterior walls
- (9) Cantilevers
- (10) Attic access openings
- (11) Rim joists junction
- (12) Other sources of infiltration

13.105.3.1 Air barrier verification. If not previously verified, the air barrier shall be visually inspected to demonstrate compliance with Table 701.4.3.2(2) and shall comply with the requirements of ICC IECC C402.5.

13.105.4 Energy metering. Energy metering shall be provided for each tenant individually for the non-residential portions of the building.

Exception: non-residential spaces under 10,000 sq. ft.

13.105.5 Efficiency of HVAC equipment. HVAC equipment shall meet the minimum efficiency requirements listed in ICC IECC Tables C403.3.2(1) through C403.3.2(7).

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GREEN BUILDING PRACTICES

13.105.6 Efficiency of Service Water Heating equipment. Service Water Heating equipment shall meet the minimum efficiency requirements listed in ICC IECC Table C404.2.

13.105.7 Lighting. The total interior lighting power allowance shall be less than the total lighting power allowance in accordance with ICC IECC Section C405.3.2.

13.105.8 Commissioning.

13.105.8.1 Mechanical and service water heating systems. Mechanical and service water heating systems shall comply with ICC IECC Section C408.2.

13.105.9 Calculation of heating and cooling loads. Design loads associated with heating, ventilating and air conditioning of the building shall be determined in accordance with ASHRAE/ACCA Standard 183 or by an approved equivalent computational procedure and using the design parameters specified in ICC IECC Chapter 3. Heating and cooling loads shall be adjusted to account for load reductions that are achieved where energy recovery systems are utilized in the HVAC system in accordance with the ASHRAE HVAC Systems and Equipment Handbook or an approved equivalent computational procedure.

13.105.10 Duct air sealing. Ductwork shall be constructed in accordance with the IMC.

13.105.11 Heated-water circulation and temperature maintenance. Where installed, heated-water circulation systems shall be in accordance with § 13.105.11.1. Heat trace temperature maintenance systems shall be in accordance with § 13.105.11.2. Controls for hot water storage shall be in accordance with § 13.105.11.3. Automatic controls, temperature sensors, and pumps shall be in a location that is accessible. Manual controls shall be in a location with ready access.

13.105.11.1 Circulation systems. Heated-water circulation systems shall be provided with a circulation pump. The system return pipe shall be a dedicated return pipe, or a cold water supply pipe. Gravity and thermos-syphon circulation systems shall be prohibited. Controls for circulation hot water system pumps shall start the pump based on the identification of a demand for hot water. The controls shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is not a demand for hot water.

13.105.11.2 Heat trace systems. Electric heat trace systems shall comply with ICC IECC 505.1. Controls for such systems shall be able to automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping in accordance with the times when heated water is used in the occupancy. Heat trace shall be arranged to be turned off automatically when there is not a demand for hot water.

13.105.11.3 Controls for hot water storage. The controls on pumps that circulate water between a water heater and a heated water storage tank shall limit the operation of the pump from the heating cycle startup to not greater than 5 minutes at the end of the cycle.

13.105.12 Energy options. Non-residential portions of the building shall comply with one of the three options below:

13.105.12.1 Energy requirements shall be met if modeling in accordance with C407 shows a 10% reduction in energy from the ICC IECC.

13.105.12.2 Energy requirements shall be met if modeling in accordance with ASHRAE 90.1 Appendix G shows a 10% reduction in energy cost from the prescribed levels.

13.105.12.3 Energy requirements shall be met if at least two options in ICC IECC Section C406 are met.

GREEN BUILDING PRACTICES

13.106 WATER EFFICIENCY AND CONSERVATION

13.106.1 Fitting and fixture consumption. Plumbing fixtures and fixture fittings shall comply with the maximum flow rates specified in Table 13.106.1. Plumbing fixtures and fixture fittings in Table 13.106.1 shall have a manufacturer’s designation for flow rate.

Exceptions: The following fixtures and devices shall not be required to comply with the reduced flow rates in Table 13.106.1: 1) Clinical sinks having a maximum water consumption of 4.5 gallons (17 L) per flush; 2) service sinks faucets, tub fillers, pot fillers, laboratory faucets, utility faucets, and other fittings designed primarily for filling operations; and 3) Fixtures, fittings, and devices whose primary purpose is safety.

**TABLE 13.106.1
MAXIMUM FLOW RATES AND FLUSH VOLUMES FOR
FIXTURES AND FIXTURES FITTING**

FIXTURE OR FIXTURE FITTING TYPE	MAXIMUM FLOW RATE OR FLUSH
	VOLUME
Showerhead ^a	2.0 gpm at 80 psi
Lavatory faucet and bar sink-private	1.5 gpm at 60 psi
Lavatory faucet-public (metering)	0.25 gpc ^b at 60 psi
Lavatory faucet-public (non-metering)	0.5 gpm at 60 psi
Kitchen faucet-private ^e	1.8 gpm at 60 psi
Kitchen and bar sink faucets in other than dwelling units and guest rooms	2.2 gpm at 60 psi
Urinal	0.5 gpf or nonwater urinal
Water closet	1.28 gpf ^c
Prerinse Spray Valves	1.3 gpm
Drinking Fountains (manual)	0.7 gpm ^d
Drinking Fountains (metered)	0.25 gpc ^{b,d}

- a. Includes hand showers, body sprays, and rainfall panels.
- b. Gallons per cycle.
- c. Dual flush water closets in public bathrooms shall have a maximum full flush of 1.28.
- d. Bottle filling stations associated with drinking fountains shall not have limitations for flow rate.
- e. Kitchen faucets may temporarily increase the flow above the maximum rate but not to exceed 2.2 gpm.

13.106.2 Once-through cooling for appliances and equipment. Once-through or single-pass cooling with potable or municipal reclaimed water is prohibited.

13.106.3 Clothes washers. Clothes washers rated with an IWF (integrated water factor), MEF (modified energy factor), or IMEF (integrated modified energy factor), shall be rated as follows:

- (1) Residential Clothes Washers, Front-loading, greater than 2.5 cu-ft maximum 3.2 IWF minimum IMEF 2.76
- (2) Residential Clothes Washers, Top-loading, greater than 2.5 cu-ft maximum 4.3 IWF, minimum IMEF 2.06
- (3) Residential Clothes Washers, less than or equal to 2.5 cu-ft maximum 4.2 IWF, minimum IMEF 2.07
- (4) Commercial Clothes Washers, maximum 4.0 IWF, minimum MEF 2.20

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13.106.4 Food Service.

13.106.4.1 Dipper wells. The water supply to a dipper well shall have a shutoff valve and flow control valve. The maximum flow shall not exceed 1 gpm (3.78 lpm) at a supply pressure of 60 psi (413.7 kPa). The dipper well shall have a manufacturer's designation of flow rate.

13.106.4.2 Food waste disposal. The disposal of food wastes that are collected as part of preparing ware for one or more of the following shall accomplish washing:

- (1) A food strainer (scraper) basket that is emptied into a trash can.
- (2) A garbage grinder where the water flow into the food waste disposer is controlled by a load sensing device such that the water flow does not exceed 1 gpm under no-load operating conditions and 8 gpm under full-load operating conditions.
- (3) A pulper or mechanical strainer that uses no more than 2 gpm of potable water.

13.106.4.3 Pre-rinse spray heads. Food service pre-rinse spray heads shall have a manufacturer's designation of flow rate, shall comply with the maximum flow rate in Table 1305.1, and shall shut off *automatically* when released.

13.106.4.4 Hand washing faucets. Faucets for hand washing sinks in food service preparation and serving areas shall be self-closing.

13.106.5. Water softeners. Water softeners shall comply with § 13.106.5.1 through § 13.106.5.3.

13.106.5.1 Demand initiated regeneration. Water softeners shall be equipped with demand-initiated regeneration control systems. Such control systems shall automatically initiate the regeneration cycle after determining the depletion, or impending depletion of softening capacity.

13.106.5.2 Water consumption. Water softeners shall have a maximum water consumption during regeneration of 5 gal (18.9 L) per 1000 grains of hardness removed as measured in accordance with NSF 44.

13.106.5.3 Waste connections. Wastewater from water softener regeneration shall not discharge to reclaimed, greywater or rainwater water collection systems and shall discharge in accordance with the ICC IPC.

13.106.6 Heat exchangers. Once-through or single-pass cooling with potable or municipal reclaimed water is prohibited. Heat exchangers shall be connected to a recirculating water system such as a chilled water loop, cooling tower loop, or similar recirculating system.

13.107 INDOOR AIR QUALITY

13.107.1 Carpets. Carpeting is not installed adjacent to water closets and bathing and or shower fixtures.

13.107.1.1 Entry. The primary entryway from the outdoors shall include one of the following:

- (1) Permanent walk-off mat that allows access for cleaning (e.g., grating with catch basin); or
- (2) Roll-out mat that will be maintained on a weekly basis by a contracted service.

13.107.2 Prohibited materials. The use of the following materials shall be prohibited:

- (1) Asbestos-containing materials
- (2) Urea-formaldehyde foam insulation

GREEN BUILDING PRACTICES

13.107.3 Product emissions. At least five types of the following product categories must meet their respective section of the Standard referenced below:

- (1) Wood materials § 901.4
- (2) Cabinets § 901.5
- (3) Floor materials § 901.7
- (4) Wall coverings § 901.8
- (5) Interior architectural coatings § 901.9
- (6) Interior adhesives and sealants § 901.10
- (7) Insulation § 901.11

13.107.4 Fireplaces and appliances. Where located within buildings, fireplaces, solid fuel-burning appliances, vented decorative gas appliances, vented gas fireplace heaters and decorative gas appliances for installation in fireplaces shall comply with § 13.107.4.1 through § 13.107.4.5.

13.107.4.1 Venting and combustion air. Fireplaces and fuel-burning appliances shall be vented to the outdoors and shall be provided with combustion air provided from the outdoors in accordance with the International Mechanical Code and the International Fuel Gas Code. Solid-fuel-burning fireplaces shall be provided with a means to tightly close off the chimney flue and combustion air openings when the fireplace is not in use.

13.107.4.2 Wood-fired appliances. Wood stoves and wood-burning fireplace inserts shall be listed and, additionally, shall be labeled in accordance with the applicable requirement.

- (1) Site-built masonry wood-burning fireplaces use outside combustion air and include a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.
- (2) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127.
- (3) Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482.

13.107.4.3 Biomass appliances. Biomass fireplaces, stoves and inserts shall be listed and labeled in accordance with ASTM E 1509 or UL 1482. Biomass furnaces shall be listed and labeled in accordance with CSA B366.1 or UL 391. Biomass boilers shall be listed and labeled in accordance with CSA B366.1 or UL 2523.

13.107.4.4 Gas-fireplaces. Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the NFPA 54, ICC IFGC, or the applicable local gas appliance installation code. Gas-fired fireplaces within dwelling units and direct heating equipment are vented to the outdoors.

13.107.4.5 Unvented. Unvented room heaters and unvented decorative appliances, including alcohol burning, shall be prohibited.

13.107.5 Protection of HVAC system openings. HVAC supply and return duct and equipment openings shall be protected during dust-producing operations of construction.

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GREEN BUILDING PRACTICES

13.107.6 Garages. Attached garages are in accordance with the following:

- (1) Doors installed in the common wall between the attached garage and conditioned space are tightly sealed and gasketed.
- (2) A continuous air barrier is provided separating the garage space from the conditioned spaces.

13.107.7 Spot Ventilation. Exhaust systems shall be provided in accordance with ICC IMC Chapter 5 or ASHRAE 62.1.

13.107.8 Building Ventilation Systems.

13.107.8.1 Building Ventilation. Ventilation shall be provided to non-residential spaces in accordance with ICC IMC Chapter 4 or ASHRAE 62.1.

13.107.8.2 Air filters. Air filters with a minimum MERV rating of 6 are installed on central forced air systems and are accessible.

13.107.9 Radon system. Commercial spaces in building located in Zone 1 shall comply with § 902.3.

13.108 OPERATION, MAINTENANCE, AND BUILDING OWNER EDUCATION

13.108.1 Operation and maintenance manuals for tenants. Manuals are provided to the initial tenants of the non-residential space regarding the operation and maintenance of the building. Paper or digital format manuals are to include information regarding those aspects of the building's maintenance and operation that are within the area of responsibilities of the respective tenant. One or more responsible parties are to receive a copy of all documentation for archival purposes.

- (1) A narrative detailing the importance of operating in a green building. This narrative is included in all responsible parties' manuals.
- (2) A list of practices to conserve water and energy which require maintenance.
- (3) Information on opportunities to purchase renewable energy from local utilities or national green power providers.
- (4) Information on local and on-site recycling and hazardous waste disposal programs.
- (5) Local public transportation options for employees.

13.108.2 Tenant finish out manual. Manuals are provided to the tenants of the non-residential space prior to the start of construction regarding the design and construction of the non-residential portion of the building. Paper or digital format manuals are to include information regarding those aspects of the design and construction that are within the area of responsibilities of the respective tenant. One or more responsible parties are to receive a copy of all documentation for archival purposes.

- (1) Provisions of this Chapter verified at the time of building Certification for the respective space that shall be maintained as part of the Tenant Finish Out
- (2) Provisions of this Chapter NOT verified at the time of building Certification for the respective space that shall be included in the Tenant Finish Out Construction Documents.
- (3) A list of minimum green building material specifications that are to be included in the Tenant Finish Out Construction Documents based on the materials that were installed in the residential portion of the building.

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SECTION 14

REFERENCED DOCUMENTS

1401 GENERAL

1401.1 This chapter lists the codes, standards, and other documents that are referenced in various sections of this Standard. The codes, standards, and other documents are listed herein indicate the promulgating agency of the document, the document identification, the effective date and title, and the section or sections of this Standard that reference the document. Unless indicated otherwise, the first printing of the document is referenced.

1401.2 The application of the referenced documents shall be as specified in § 102.2.

1402 REFERENCED DOCUMENTS

ACCA – Air Conditioning Contractors of America | www.acca.org

DOCUMENT	DATE	TITLE	SECTION
Manual D	2016	<i>Residential Duct Systems</i>	701.4.2.3, 11.701.4.2.3,
Manual J	2016	<i>Residential Load Calculation, Eighth Edition, Version 2.1</i>	701.4.1.1, 701.4.1.2, 703.3.0, 11.701.4.1.1, 11.701.4.1.2, 11.703.3.0, 1203.4
Manual S	2014	<i>Residential Equipment Selection</i>	701.4.1.1, 703.3.0, 11.701.4.1.1, 11.703.3.0
5 QI	2015	<i>HVAC Quality Installation Specification</i>	701.4.1.2, 703.3.3, 703.3.4, 703.3.5, 703.3.6, 705.6.2.2(1), 705.6.2.2(2), 11.701.4.1.2, 11.703.3.3, 11.703.3.4, 11.703.3.5, 11.703.3.6, 11.705.6.2.2(1), 11.705.6.2.2(2), 1203.4

REFERENCED DOCUMENTS

AFF – American Forest Foundation, Inc. | www.forestfoundation.org

DOCUMENT	DATE	TITLE	SECTION
2010-2015 AFF Standards	2010	<i>American Tree Farm System Standards for Sustainability for Forest Certification, including Performance Measures and Field Indicators</i>	606.2(a), 11.606.2(a),

AAMA – American Architectural Manufacturers Association | www.aamanet.org

DOCUMENT	DATE	TITLE	SECTION
711	2013	<i>The Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products</i>	602.1.9(2), 11.602.1.9(2), 1202.7(9)
714	2015	<i>Voluntary Specification for Liquid Applied Flashing Used to Create a Water-Resistive Seal around Exterior Wall Openings in Buildings</i>	602.1.9(2), 11.602.1.9(2), 1202.7(9)
AAMA/WDMA/CSA 101/I.S.2/A440 UP3	2008		701.4.3.4, 11.701.4.3.4,

AHRI – Air-Conditioning, Heating, and Refrigeration Institute | www.ahrinet.org

DOCUMENT	DATE	TITLE	SECTION
I=B=R	2009	<i>Heat Loss Calculation Guide</i>	701.4.1.2, 11.701.4.1.2, 1203.4

ASCE – American Society of Civil Engineers | www.asce.org

DOCUMENT	DATE	TITLE	SECTION
32-01	2001	<i>Design and Construction of Frost-Protected Shallow Foundations</i>	202

ASHRAE – American Society of Heating, Refrigeration, Air-conditioning Engineers | www.ashrae.org

DOCUMENT	DATE	TITLE	SECTION
ASHRAE 62.1	2016	<i>Ventilation for Acceptable Indoor Air Quality</i>	902.1.6, 11.902.1.6, 13.107.7, 13.107.8.1
ASHRAE/ACCA 183	2007 (RA 2017)	<i>Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential</i>	13.105.9

ASME – American Society of Mechanical Engineers | www.asme.org

DOCUMENT	DATE	TITLE	SECTION
A112.18.1/CSA B125.1	2012	<i>Plumbing Supply Fittings</i>	802.4(1), 802.5.1, 802.5.2, 11.802.4(1), 11.802.5.1, 11.802.5.2
A112.19.2/CSA B45.1	2013	<i>Vitreous China Plumbing Fixtures and Hydraulic Requirements for Water Closets and Urinals</i>	802.5.4(2), 802.5.4(4)(b), 802.5.4(4)(c), 11.802.5.4(2), 11.802.5.4(4)(b), 11.802.5.4(4)(c)
A112.19.14	2013	<i>Six-Liter Water Closets Equipped with a Dual Flushing Device</i>	802.5.4(2), 11.802.5.4(2)

ASSE – American Society of Sanitary Engineering | www.asse-plumbing.org

DOCUMENT	DATE	TITLE	SECTION
1016/ASME A112.1016/CSA B125.16	2011	<i>Automatic Compensation Valves for Individual Showers and Tub/Shower Combinations</i>	802.4(1), 11.802.4(1)

ASTM – ASTM International, Inc. | www.astm.org

DOCUMENT	DATE	TITLE	SECTION
C1178	2013	<i>Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel</i>	602.1.11, 11.602.1.11, 1202.8, 13.104.1.6
C1278 – 07a/1278M – 07a	2011	<i>Standard Specification for Fiber-Reinforced Gypsum Panel</i>	602.1.11, 11.602.1.11, 1202.8, 13.104.1.6
C1288	2010	<i>Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets</i>	602.1.11, 11.602.1.11, 1202.8, 13.104.1.6
C1325-08b	2008	<i>Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units</i>	602.1.11, 11.602.1.11, 1202.8, 13.104.1.6
C1371	2010	<i>Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers</i>	703.2.3, 11.703.2.3
D7338	2010	<i>Standard Guide for Assessment of Fungal Growth in Buildings</i>	904.1, 904.2, 11.904.1, 11.904.2

ASTM – ASTM International, Inc. | www.astm.org (Continued)

DOCUMENT	DATE	TITLE	SECTION
D7612	2015	<i>Standard Practice for Categorizing Wood and Wood-Based Products According to Their Fiber Sources</i>	606.2(h), 11.606.2(h)
E283	2012	<i>Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen</i>	701.4.3.5, 11.701.4.3.5,
E779	2010	<i>Standard Test Method for Determining Air Leakage Rate by Fan Pressurization</i>	705.6.2.1, 11.705.6.2.1
E1509	2012	<i>Standard Specification for Room Heaters, Pellet Fuel-Burning Type</i>	901.2.1(4), 11.901.2.1(4), 1205.2(4)
E1602	2010	<i>Standard Guide for Construction of Solid Fuel Burning Masonry Heaters</i>	901.2.1(5), 11.901.2.1(5), 1205.2(4)
E1827	2011	<i>Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door</i>	705.6.2.1, 11.705.6.2.1
E1980	2011	<i>Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low Sloped Opaque Surfaces</i>	505.2(1)(b), 602.2(3), 11.505.2(1)(b), 11.602.2(3)
E2273	2011	<i>Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies</i>	602.1.9(5)(b), 11.602.1.9(5)(b)
E2921	2013	<i>Standard Practice for Minimum Criteria for Comparing Whole Building Life Cycle Assessments for Use with Building Codes and Rating Systems</i>	610.1.1, 610.1.1(1), 11.610.1.1, 11.610.1.1(1),

BOMA – Building Owners and Managers Association International | www.boma.org

DOCUMENT	DATE	TITLE	SECTION
Z65.4	2010	Multi-Unit Residential Buildings: Standard Methods of Measurement	601.1, 11.601.1

CARB – California Air Resources Board | www.arb.ca.gov

DOCUMENT	DATE	TITLE	SECTION
	2007	<i>Composite Wood Air Toxic Contaminant Measure Standard</i>	901.4(5), 901.5(2), 11.901.4(5), 11.901.5(2)
	2008	<i>Suggested Control Measure for Architectural Coatings</i>	901.9.1(3), 11.901.9.1(3), 1205.6(3)
	2011	<i>The California Consumer Products Regulations</i>	901.10(3), 11.901.10(3)

CDPH – California Department of Public Health | www.cdarb.ca.gov

DOCUMENT	DATE	TITLE	SECTION
	2010	<i>Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.1.</i>	901.7, 901.8, 901.9.3, 901.10(1), 901.11, 11.901.7, 11.901.8, 11.901.9.3, 11.901.10(1), 11.901.11, 12.1.901.7, 12.1.901.8, 12.1.901.9.2, 12.11.901.10(1)

CPA – Composite Panel Association | www.pbmdf.com

DOCUMENT	DATE	TITLE	SECTION
A208.1	2009	<i>Particleboard Standard</i>	901.4(2), 11.901.4(2)
A208.2	2009	<i>MDF Standard</i>	901.4(2), 11.901.4(2)
CPA 4	2011	<i>The Eco-Certified Composite™ (ECC) Standard</i>	901.4(4), 11.901.4(4)

CSA – CSA International | www.csa-international.org

DOCUMENT	DATE	TITLE	SECTION
6.19	2011	<i>Residential Carbon Monoxide Alarming Devices</i>	
CSA Z21.50/ CSA 2.22	2014	<i>Vented Gas Fireplaces w/ Addenda b</i>	901.1.5, 11.901.1.5
CSA Z21.88/ CSA 2.33	2014	<i>Vented Gas Fireplace Heaters</i>	901.1.5, 11.901.1.5
Z809	2013	<i>Sustainable Forest Management Requirements and Guidance (SFM)</i>	606.2(b), 11.606.2(b)
B366.1	2007	<i>Solid-Fuel-Fired Central Heating Appliances</i>	13.107.4.3

**DOC/NIST – United States Department of Commerce /
National Institute of Standards and Technology | www.nist.gov**

DOCUMENT	DATE	TITLE	SECTION
PS 1-09	2010	<i>Construction and Industrial Plywood</i>	901.4(1), 11.901.4(1)
PS 2-10	2011	<i>Performance Standard for Wood-based Structural-use Panels</i>	901.4(1), 11.901.4(1)

DOE – U.S. Department of Energy | www.energy.gov

DOCUMENT	DATE	TITLE	SECTION
v. 4.6.1	2015	<i>REScheck</i>	703.1.1.1, 703.2.1, 11.703.1.1.1, 11.703.2.1, 1203.11.1.2, 13.105.1
v. 4.4.0	2015	<i>COMcheck</i>	703.1.1.1, 703.2.1, 11.703.1.1.1, 11.703.2.1, 1203.11.1.2, 13.105.1

EPA – Environmental Protection Agency | www.epa.gov

DOCUMENT	DATE	TITLE	SECTION
Burn Wise	2012	<i>EPA Qualified Wood-Burning Fireplace Program Partnership Agreement</i>	901.2(2), 11.901.2(2)
EPA 402-K-01-001	2008	<i>Mold Remediation in Schools and Commercial Buildings</i>	904.3(1), 11.904.3(1), 1202.11
EPA 402-K-02-003	2012	<i>A Brief Guide to Mold, Moisture and Your Home</i>	904.3(1), 11.904.3(1)
EPA 747-K-97-001	1997	<i>Reducing Lead Hazards When Remodeling Your Home</i>	11.1001.1(23)
Method 24	2000	<i>Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings</i>	901.9.1(1), 11.901.9.1(1), 1205.6(1)
	1990	<i>Asbestos in the Home: A Homeowner’s Guide</i>	11.1001.1(23)
	2013	<i>Smart Location Database, NGBS: Points for Smart Location Practices</i> https://epa.maps.arcgis.com/home/item.html?id=9508f9295c144b9fb392d33b18b569e3	405.6(7), 405.6(8), 501.2(4), 11.501.2(3)

ENERGY STAR® Documents

DOCUMENT	DATE	TITLE	SECTION
	September 1, 2018	<i>National ERI Target Procedure, ENERGY STAR Certified Homes, Version 3 (Rev. 09)</i>	701.1, 701.1.3, 704.1, 704.2, 1203.15.1
	September 1, 2018	<i>National Program Requirements ENERGY STAR Certified Homes, Version 3 (Rev. 09)</i>	701.1.4
	September 1, 2018	<i>National Program Requirements ENERGY STAR Certified Homes, Version 3.1 (Rev. 09)</i>	701.1.4
	January 1, 2015	<i>ENERGY STAR Multifamily High Rise Version 1 (Rev 03)</i>	701.1.4

EPA – Environmental Protection Agency | www.epa.gov (continued)

ENERGY STAR® Documents (Continued)

DOCUMENT	DATE	TITLE	SECTION
	January 1, 2014	<i>ENERGY STAR Program Requirements for Clothes Washers, Version 7.0</i>	703.6.2(3), 802.2(2), 11.703.6.2(3), 11.802.2(3)
	January 20, 2013	<i>ENERGY STAR Program Requirements for Dishwashers, Version 5.2</i>	703.6.2(2), 802.2(1), 11.703.6.2(2), 11.802.2(1)
	December 1, 2009	<i>ENERGY STAR Program Requirements for Geothermal Heat Pumps – Eligibility Criteria Version 3.1</i>	703.3.6, 11.703.3.6
	April 1, 2012	<i>ENERGY STAR Program Requirements for Luminaires, Version 1.2</i>	703.6.1(1), 11.703.6.1(1)
	April 28, 2014	<i>ENERGY STAR Program Eligibility Criteria for Residential Refrigerators and/or Freezers, Version 5</i>	703.6.2(1), 11.703.6.2(1)
	April 1, 2012	<i>ENERGY STAR Program Requirements for Residential Ceiling Fans – Eligibility Criteria Version 3.0</i>	703.3.7, 11.703.3.7
	April 1, 2012	<i>ENERGY STAR Program Requirements for Residential Ventilating Fans – Eligibility Criteria Version 3.2</i>	902.1.4(1), 902.1.4(2), 11.902.1.4(1), 11.902.1.4(2)
	January 17, 2014	<i>ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Eligibility Criteria Version 6.0</i>	703.2.5.2.1, 11.703.2.5.2.1
	2012	<i>ENERGY STAR Program Requirements for Roof Products – Eligibility Criteria Version 2.3</i>	602.2(1), 11.602.2(1)

WaterSense Documents

DOCUMENT	DATE	TITLE	SECTION
	May 20, 2014	<i>WaterSense Specification for Tank-Type Toilets, Version 1.2</i>	802.5.4(2), 12.3.801.6
	November 3, 2011	<i>WaterSense Specification for Weather-Based Irrigation Controllers, Version 1.0</i>	802.6.4(1), 11.802.6.4(1)
	December 9, 2014	<i>WaterSense Water Budget Approach Version 1.02</i>	403.6(4), 503.5(4), 11.503.5(4)
	October 1, 2007	<i>WaterSense High-Efficiency Lavatory Faucet Specification Version 1.0</i>	802.5.1, 11.802.5.1
	March 4, 2010	<i>WaterSense Specification for Showerheads Version 1.0</i>	802.4(1), 11.802.4(1)

FSA – Forest Stewardship Council | www.fsc.org

DOCUMENT	DATE	TITLE	SECTION
FSC-STD-01-001 (Version 4-0) EN	2013	FSC Principles and Criteria for Forest Stewardship v5	606.2(c), 11.606.2(c)

GS – Green Seal | www.greenseal.org

DOCUMENT	DATE	TITLE	SECTION
GS-11	2013	<i>Paints and Coatings 3.1</i>	901.9.1(2), 11.901.9.1(2), 1205.6(2)
GS-36	2013	<i>Adhesives for Commercial Use 2.1</i>	901.10(2), 11.901.10(2),

HPVA – Hardwood Plywood Veneer Association | www.hpva.org

DOCUMENT	DATE	TITLE	SECTION
HP-1	2009	<i>American National Standard for Hardwood and Decorative Plywood</i>	901.4(3), 11.901.4(3)

HUD – U.S. Department of Housing and Urban Development | www.hud.gov

DOCUMENT	DATE	TITLE	SECTION
24 CFR, Part 3280	2014	<i>Manufactured Home Construction and Safety Standards</i>	202

ICC – International Code Council | www.iccsafe.org

DOCUMENT	DATE	TITLE	SECTION
A117.1	2017	<i>Accessible and Usable Buildings and Facilities</i>	611.3
IBC	2018	<i>International Building Code</i>	202, 602.1.1.1, 602.1.3.1, 602.1.8, 602.1.13, 613.2, 901.2.1(5), 1001.1(12)(b), 11.602.1.1.1, 11.602.1.3.1, 11.602.1.8, 11.602.1.13, 11.613.2, 11.901.2.1(5), 11.1001.1(12)(b), 1205.2(5), 13.104.1.1, 13.104.1.2, 13.104.1.3, 13.104.1.4, 13.104.1.6

ICC – International Code Council | www.iccsafe.org (Continued)

DOCUMENT	DATE	TITLE	SECTION
ICC-400	2012	<i>Standard on the Design and Construction of Log Structures</i>	Table 701.4.3.2(2)
IECC	2018	<i>International Energy Conservation Code</i>	610.1.1(2), 701.1.4, 701.1.6(1), 701.1.6(6)(a), 701.4.3.3, 702.2.1, 702.2.2, 702.2.3, 703.1.1.1, 703.1.1.2, 703.1.2, 703.1.3, 703.2.1, 705.6.2.1, 705.6.2.3(1), 705.6.2.3(2), 705.6.3, 706.5(1), 11.610.1.1(2), 11.701.4.0, 11.701.4.3.3, 11.703.1.1.1, 11.703.1.1.2, 11.703.1.2, 11.703.1.3, 11.703.2.1, 11.705.6.2.1, 11.705.6.2.3(1), 11.705.6.2.3(2), 11.705.6.3, 11.706.5(1), 1203.10.1, 1203.10.2, 13.105.1, 13.105.3.1, 13.105.5, 13.105.6, 13.105.7, 13.105.8.1, 13.105.9, 13.105.11.2, 13.105.12.1, 13.105.12.3
IFGC	2018	<i>International Fuel Gas Code</i>	901.1.4, 11.901.1.4, 1205.1, 13.107.4.4

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ICC – International Code Council | www.iccsafe.org (Continued)

DOCUMENT	DATE	TITLE	SECTION
IgCC	2018	<i>International Green Construction Code</i>	301.1.1, 304.2, 701.1.5, 13.102.1.4
IMC	2018	<i>International Mechanical Code</i>	705.6.1(1), 11.705.6.1(1), 13.105.10, 13.107.7, 13.107.8.1
IRC	2018	<i>International Residential Code</i>	202, 602.1.1.1, 602.1.3.1, 602.1.4.2(1), 602.1.4.2(2), 602.1.8, 602.1.13, 705.6.1(1), 902.1.1(1), 902.3, 1001.1(12)(b), 11.602.1.1.1, 11.602.1.3.1, 11.602.1.4.2(1), 11.602.1.4.2(2), 11.602.1.8, 11.602.1.13, 11.705.6.1, 11.902.1.1(1), 11.902.3, 11.1001.1(12)(b), 1202.1, 1202.4
IPC	2018	<i>International Plumbing Code</i>	703.5.1, 11.703.5.1, 13.106.5.3
IWUIC	2018	<i>International Wildlife Urban Interface Code</i>	503.1(8), 11.503.1(8)

IA – Irrigation Association & American Society of Irrigation Consultants | www.irrigation.com

DOCUMENT	DATE	TITLE	SECTION
	2014	<i>Landscape Irrigation Best Management Practices</i>	403.6(15)

ISO – International Organization for Standardization | www.iso.org

DOCUMENT	DATE	TITLE	SECTION
14025	2006	<i>Environmental labels and declarations – Type III environmental declarations – Principles and procedures</i>	611.1.1, 611.1.2, 11.611.1.1, 11.611.1.2
14044	2006	<i>Environmental management – Life cycle assessment – Requirements and guidelines</i>	610.1.1, 610.1.2, 11.610.1.1, 11.610.1.2,
14001	2004	<i>Environmental management systems – Requirements with guidance for use</i>	612.1, 11.612.1
16000-23	2009	<i>Indoor air – Part 23: Performance test for evaluating the reduction of formaldehyde concentrations by sorptive building materials</i>	901.9, 11.901.9
17025	2005	<i>General requirements for the competence of testing and calibration laboratories</i>	901.7, 901.8, 901.9.3, 901.10(1), 901.11, 901.12 11.901.7, 11.901.8, 11.901.9.3, 11.901.10(1), 11.901.11, 11.901.12
17065	2012	<i>Conformity assessment – Requirements for bodies certifying products, processes and services</i>	612.2, 901.7, 901.8, 901.9.3, 901.10(1), 901.11, 901.12, 11.612.2, 11.901.7, 11.901.8, 11.901.9.3, 11.901.10(1), 11.901.11, 11.901.12
21930	2007	<i>Sustainability in building construction – Environmental declaration of building products</i>	611.1.1, 611.1.2, 11.611.1.1, 11.611.1.2

Home Innovation | Home Innovation Research Labs | www.HomeInnovation.com

DOCUMENT	DATE	TITLE	SECTION
Z765	2013	<i>Single-Family Residential Buildings - Square Footage - Method for Calculating</i>	601.1, 11.601.1

KCMA – Kitchen Cabinet Manufacturers Association | www.kcma.org

DOCUMENT	DATE	TITLE	SECTION
ANSI/KCMA A161.1	2012	<i>Performance and Construction Standard for Kitchen and Vanity Cabinets</i>	602.1.15, 11.602.1.15

NFPA – National Fire Protection Association | www.nfpa.org

DOCUMENT	DATE	TITLE	SECTION
54	2012	<i>National Fuel Gas Code</i>	901.1.4, 11.901.1.4, 1205.1, 13.107.4.4

NFRC – National Fenestration Rating Council | www.nfrc.org

DOCUMENT	DATE	TITLE	SECTION
400	2010	<i>Procedure for Determining Fenestration Product Air Leakage</i>	701.4.3.4, 11.701.4.3.4

NSF – NSF International | www.nsf.org

DOCUMENT	DATE	TITLE	SECTION
NSF/ANSI 140	2013	<i>Sustainable Carpet Assessment</i>	612.2(1), 11.612.2(1)
NSF/ANSI 332	2012	<i>Sustainability Assessment for Resilient Floor Coverings</i>	612.2(2), 11.612.2(2)
NSF/ANSI 342	2012	<i>Sustainability Assessment for Wallcovering Products</i>	612.2(4), 11.612.2(4)

NWFA – National Wood Flooring Association | www.nwfa.org

DOCUMENT	DATE	TITLE	SECTION
	2011	<i>Responsible Procurement Program</i>	606.2(f), 11.606.2(f)

PEFC – Pan European Forest Council | www.pefc.org

DOCUMENT	DATE	TITLE	SECTION
GL 2	2011	<i>PEFC Council Minimum Requirements Checklist</i>	606.2(d) & (g), 11.606.2(d) & (g)

RESNET – Residential Energy Services Network | www.resnet.us

DOCUMENT	DATE	TITLE	SECTION
ANSI/RESNET/ICC 380	2018	<i>Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems</i>	902.2.2, 705.6.2.1, 11.705.6.2.1, 11.902.2.2

SAE – SAE International | <https://www.sae.org>

DOCUMENT	DATE	TITLE	SECTION
J1772_201001	2010	<i>Electric Vehicle and Plug in Hybrid Vehicle Conductive Charge Coupler</i>	505.6, 11.505.6

SCAQMD – South Coast Air Quality Management District | www.aqmd.gov

DOCUMENT	DATE	TITLE	SECTION
Rule 1168	2011	<i>Adhesive and Sealant Applications</i>	901.10(3), 11.901.10(3)

SRCC – Solar Rating and Certification Corporation | www.solar-rating.org

DOCUMENT	DATE	TITLE	SECTION
OG 300	2014	<i>Operating Guidelines and Minimum Standards for Certifying Solar Water Heating Systems</i>	703.5.5, 11.703.5.5

SFI – Sustainable Forestry Initiative, Inc. | www.sfiprogram.org

DOCUMENT	DATE	TITLE	SECTION
2010-2014 Standard	2010	<i>Sustainable Forestry Initiative Standard (SFIS)</i>	606.2(e), 11.606.2(e)

TCIA – Tree Care Industry Association | www.tcia.org

DOCUMENT	DATE	TITLE	SECTION
A300	2001	<i>Standards for Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices</i>	503.1(6), 11.503.1(6)

TCNA – Tile Council of North America | www.tileusa.com

DOCUMENT	DATE	TITLE	SECTION
A138.1	2011	<i>Green Squared: American National Standard Specifications for Sustainable Ceramic Tiles, Glass Tiles, and Tile Installation Materials</i>	612.2(7), 11.612.2(7)

REFERENCED DOCUMENTS

UL – Underwriters Laboratories Inc. | www.ul.com

DOCUMENT	DATE	TITLE	SECTION
127	2011	<i>Factory-Built Fireplaces</i>	901.2.1(2), 11.901.2.1(2)
181	2013	<i>The Standard for Safety for Factory-Made Air Ducts and Air Connectors</i>	701.4.2.1, 11.701.4.2.1
1482	2011	<i>Solid-Fuel Type Room Heaters</i>	901.2.1(3), 11.901.2.1(3), 1205.2(3), 13.107.4.2(3)
100	2012	<i>Interim Sustainability Requirements for Gypsum Boards and Panels</i>	612.2(5), 11.612.2(5)
102	2012	<i>Standard for Sustainability for Door Leafs</i>	612.2(6), 11.612.2(6)
2985	2015	<i>Sustainability Outline for Thermal Insulation</i>	612.2(3), 11.612.2(3)
391	2010	<i>Standard for Solid-Fuel and Combination Fuel Central and Supplementary Furnaces</i>	13.107.4.3
2523	2009	<i>Standard for Solid Fuel-Fired Hydronic Heating Appliances, Water Heaters, and Boilers</i>	13.107.4.3

USDA – U.S. Department of Agriculture | www.usda.gov

DOCUMENT	DATE	TITLE	SECTION
7 CFR Part 2902	2014	<i>Designation of Biobased Items for Federal Procurement; Final Rule</i>	606.1(h)

WSL – Washington State Legislature | www.leg.wa.gov

DOCUMENT	DATE	TITLE	SECTION
WAC 173-433-100 (3)	2014	<i>Solid Fuel Burning Devices - Emission Performance Standards</i>	901.2.1(3), 11.901.2.1(3), 1205.2(3)



APPENDIX A: CLIMATE ZONES

A100 SCOPE AND APPLICABILITY

A101.1 Applicability of Appendix A. Appendix A is part of this Standard. Text identified as “User Note” is not considered part of this Standard.

A101.2 Scope. The provisions contained in Appendix A provide the criteria necessary for complying with the climate-specific provisions of this Standard.

A200 CLIMATE ZONES

**TABLE A200
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID
DESIGNATIONS BY STATE, COUNTY AND TERRITORY**

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant. Asterisk (*) indicates a warm-humid location.

ALABAMA	3A Elmore*	3A Morgan	7 Haines	ARIZONA
3A Autauga*	3A Escambia*	3A Perry*	7 Juneau	5B Apache
2A Baldwin*	3A Etowah	3A Pickens	7 Kenai Peninsula	3B Cochise
3A Barbour*	3A Fayette	3A Pike*	7 Ketchikan	5B Coconino
3A Bibb	3A Franklin	3A Randolph	Gateway	4B Gila
3A Blount	3A Geneva*	3A Russell*	7 Kodiak Island	3B Graham
3A Bullock*	3A Greene	3A Shelby	7 Lake and Peninsula	3B Greenlee
3A Butler*	3A Hale	3A St. Clair	7 Matanuska-Susitna	2B La Paz
3A Calhoun	3A Henry*	3A Sumter	8 Nome	2B Maricopa
3A Chambers	3A Houston*	3A Talladega	8 North Slope	3B Mohave
3A Cherokee	3A Jackson	3A Tallapoosa	8 Northwest Arctic	5B Navajo
3A Chilton	3A Jefferson	3A Tuscaloosa	8 Prince of Wales-Outer Ketchikan	2B Pima
3A Choctaw*	3A Lamar	3A Walker	7 Prince of Wales-Outer Ketchikan	2B Pinal
3A Clarke*	3A Lauderdale	3A Washington*	7 Sitka	3B Santa Cruz
3A Clay	3A Lawrence	3A Wilcox*	7 Skagway-Hoonah Angoon	4B Yavapai
3A Cleburne	3A Lee	3A Winston	7 Southeast Fairbanks	2B Yuma
3A Coffee*	3A Limestone			
3A Colbert	3A Lowndes*	ALASKA		ARKANSAS
3A Conecuh*	3A Macon*	7 Aleutians East		3A Arkansas
3A Coosa	3A Madison	7 Aleutians West	7 Valdez-Cordova	3A Ashley
3A Covington*	3A Marengo*	7 Anchorage	8 Wade Hampton	4A Baxter
3A Crenshaw*	3A Marion	8 Bethel	7 Wrangell-Petersburg	4A Benton
3A Cullman	3A Marshall	7 Bristol Bay	7 Yakutat	4A Boone
3A Dale*	2A Mobile*	7 Denali	8 Yukon-Koyukuk	3A Bradley
3A Dallas*	3A Monroe*	8 Dillingham		3A Calhoun
3A DeKalb	3A Montgomery*	8 Fairbanks North Star		

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

4A Carroll	3A Perry	3C Marin	5B Boulder	6B Rio Blanco
3A Chicot	3A Phillips	4B Mariposa	5B Broomfield	7 Rio Grande
3A Clark	3A Pike	3C Mendocino	6B Chaffee	7 Routt
3A Clay	3A Poinsett	3B Merced	5B Cheyenne	6B Saguache
3A Cleburne	3A Polk	5B Modoc	7 Clear Creek	7 San Juan
3A Cleveland	3A Pope	6B Mono	6B Conejos	6B San Miguel
3A Columbia*	3A Prairie	3C Monterey	6B Costilla	5B Sedgwick
3A Conway	3A Pulaski	3C Napa	5B Crowley	7 Summit
3A Craighead	3A Randolph	5B Nevada	6B Custer	5B Teller
3A Crawford	3A Saline	3B Orange	5B Delta	5B Washington
3A Crittenden	3A Scott	3B Placer	5B Denver	5B Weld
3A Cross	4A Searcy	5B Plumas	6B Dolores	5B Yuma
3A Dallas	3A Sebastian	3B Riverside	5B Douglas	
3A Desha	3A Sevier*	3B Sacramento	6B Eagle	CONNECTICUT
3A Drew	3A Sharp	3C San Benito	5B Elbert	5A (all)
3A Faulkner	3A St. Francis	3B San Bernardino	5B El Paso	
3A Franklin	4A Stone	3B San Diego	5B Fremont	DELAWARE
4A Fulton	3A Union*	3C San Francisco	5B Garfield	4A (all)
3A Garland	3A Van Buren	3B San Joaquin	5B Gilpin	
3A Grant	4A Washington	3C San Luis Obispo	7 Grand	DISTRICT OF
3A Greene	3A White	3C San Mateo	7 Gunnison	COLUMBIA
3A Hempstead*	3A Woodruff	3C Santa Barbara	7 Hinsdale	4A (all)
3A Hot Spring	3A Yell	3C Santa Clara	5B Huerfano	
3A Howard		3C Santa Cruz	7 Jackson	FLORIDA
3A Independence	CALIFORNIA	3B Shasta	5B Jefferson	2A Alachua*
4A Izard	3C Alameda	5B Sierra	5B Kiowa	2A Baker*
3A Jackson	6B Alpine	5B Siskiyou	5B Kit Carson	2A Bay*
3A Jefferson	4B Amador	3B Solano	7 Lake	2A Bradford*
3A Johnson	3B Butte	3C Sonoma	5B La Plata	2A Brevard*
3A Lafayette*	4B Calaveras	3B Stanislaus	5B Larimer	1A Broward*
3A Lawrence	3B Colusa	3B Sutter	4B Las Animas	2A Calhoun*
3A Lee	3B Contra Costa	3B Tehama	5B Lincoln	2A Charlotte*
3A Lincoln	4C Del Norte	4B Trinity	5B Logan	2A Citrus*
3A Little River*	4B El Dorado	3B Tulare	5B Mesa	2A Clay*
3A Logan	3B Fresno	4B Tuolumne	7 Mineral	2A Collier*
3A Lonoke	3B Glenn	3C Ventura	6B Moffat	2A Columbia*
4A Madison	4C Humboldt	3B Yolo	5B Montezuma	2A DeSoto*
4A Marion	2B Imperial	3B Yuba	5B Montrose	2A Dixie*
3A Miller*	4B Inyo		5B Morgan	2A Duval*
3A Mississippi	3B Kern	COLORADO	4B Otero	2A Escambia*
3A Monroe	3B Kings	5B Adams	6B Ouray	2A Flagler*
3A Montgomery	4B Lake	6B Alamosa	7 Park	2A Franklin*
3A Nevada	5B Lassen	5B Arapahoe	5B Phillips	2A Gadsden*
4A Newton	3B Los Angeles	6B Archuleta	7 Pitkin	2A Gilchrist*
3A Ouachita	3B Madera	4B Baca	5B Prowers	2A Glades*
		5B Bent	5B Pueblo	

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

2A Gulf*	2A Washington*	2A Decatur*	3A Lee*	3A Taylor*
2A Hamilton*		3A DeKalb	2A Liberty*	3A Telfair*
2A Hardee*	GEORGIA	3A Dodge*	3A Lincoln	3A Terrell*
2A Hendry*	2A Appling*	3A Dooly*	2A Long*	2A Thomas*
2A Hernando*	2A Atkinson*	3A Dougherty*	2A Lowndes*	3A Tift*
2A Highlands*	2A Bacon*	3A Douglas	4A Lumpkin	2A Toombs*
2A Hillsborough*	2A Baker*	3A Early*	3A Macon*	4A Towns
2A Holmes*	3A Baldwin	2A Echols*	3A Madison	3A Treutlen*
2A Indian River*	4A Banks	2A Effingham*	3A Marion*	3A Troup
2A Jackson*	3A Barrow	3A Elbert	3A McDuffie	3A Turner*
2A Jefferson*	3A Bartow	3A Emanuel*	2A McIntosh*	3A Twiggs*
2A Lafayette*	3A Ben Hill*	2A Evans*	3A Meriwether	4A Union
2A Lake*	2A Berrien*	4A Fannin	2A Miller*	3A Upson
2A Lee*	3A Bibb	3A Fayette	2A Mitchell*	4A Walker
2A Leon*	3A Bleckley*	4A Floyd	3A Monroe	3A Walton
2A Levy*	2A Brantley*	3A Forsyth	3A Montgomery*	2A Ware*
2A Liberty*	2A Brooks*	4A Franklin	3A Morgan	3A Warren
2A Madison*	2A Bryan*	3A Fulton	4A Murray	3A Washington
2A Manatee*	3A Bulloch*	4A Gilmer	3A Muscogee	2A Wayne*
2A Marion*	3A Burke	3A Glascock	3A Newton	3A Webster*
2A Martin*	3A Butts	2A Glynn*	3A Oconee	3A Wheeler*
1A Miami-Dade*	3A Calhoun*	4A Gordon	3A Oglethorpe	4A White
1A Monroe*	2A Camden*	2A Grady*	3A Paulding	4A Whitfield
2A Nassau*	3A Candler*	3A Greene	3A Peach*	3A Wilcox*
2A Okaloosa*	3A Carroll	3A Gwinnett	4A Pickens	3A Wilkes
2A Okeechobee*	4A Catoosa	4A Habersham	2A Pierce*	3A Wilkinson
2A Orange*	2A Charlton*	4A Hall	3A Pike	3A Worth*
2A Osceola*	2A Chatham*	3A Hancock	3A Polk	
2A Palm Beach*	3A Chattahoochee*	3A Haralson	3A Pulaski*	HAWAII
2A Pasco*	4A Chattooga	3A Harris	3A Putnam	1A (all)*
2A Pinellas*	3A Cherokee	3A Hart	3A Quitman*	
2A Polk*	3A Clarke	3A Heard	4A Rabun	IDAHO
2A Putnam*	3A Clay*	3A Henry	3A Randolph*	5B Ada
2A Santa Rosa*	3A Clayton	3A Houston*	3A Richmond	6B Adams
2A Sarasota*	2A Clinch*	3A Irwin*	3A Rockdale	6B Bannock
2A Seminole*	3A Cobb	3A Jackson	3A Schley*	6B Bear Lake
2A St. Johns*	3A Coffee*	3A Jasper	3A Screven*	5B Benewah
2A St. Lucie*	2A Colquitt*	2A Jeff Davis*	2A Seminole*	6B Bingham
2A Sumter*	3A Columbia	3A Jefferson	3A Spalding	6B Blaine
2A Suwannee*	2A Cook*	3A Jenkins*	4A Stephens	6B Boise
2A Taylor*	3A Coweta	3A Johnson*	3A Stewart*	6B Bonner
2A Union*	3A Crawford	3A Jones	3A Sumter*	6B Bonneville
2A Volusia*	3A Crisp*	3A Lamar	3A Talbot	6B Boundary
2A Wakulla*	4A Dade	2A Lanier*	3A Taliaferro	6B Butte
2A Walton*	4A Dawson	3A Laurens*	2A Tattall*	6B Camas

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

5B Canyon	4A Clay	4A Marion	INDIANA	5A Lake
6B Caribou	4A Clinton	5A Marshall	5A Adams	5A La Porte
5B Cassia	5A Coles	5A Mason	5A Allen	4A Lawrence
6B Clark	5A Cook	4A Massac	5A Bartholomew	5A Madison
5B Clearwater	4A Crawford	5A McDonough	5A Benton	5A Marion
6B Custer	5A Cumberland	5A McHenry	5A Blackford	5A Marshall
5B Elmore	5A DeKalb	5A McLean	5A Boone	4A Martin
6B Franklin	5A De Witt	5A Menard	4A Brown	5A Miami
6B Fremont	5A Douglas	5A Mercer	5A Carroll	4A Monroe
5B Gem	5A DuPage	4A Monroe	5A Cass	5A Montgomery
5B Gooding	5A Edgar	4A Montgomery	4A Clark	5A Morgan
5B Idaho	4A Edwards	5A Morgan	5A Clay	5A Newton
6B Jefferson	4A Effingham	5A Moultrie	5A Clinton	5A Noble
5B Jerome	4A Fayette	5A Ogle	4A Crawford	4A Ohio
5B Kootenai	5A Ford	5A Peoria	4A Daviess	4A Orange
5B Latah	4A Franklin	4A Perry	4A Dearborn	5A Owen
6B Lemhi	5A Fulton	5A Piatt	5A Decatur	5A Parke
5B Lewis	4A Gallatin	5A Pike	5A De Kalb	4A Perry
5B Lincoln	5A Greene	4A Pope	5A Delaware	4A Pike
6B Madison	5A Grundy	4A Pulaski	4A Dubois	5A Porter
5B Minidoka	4A Hamilton	5A Putnam	5A Elkhart	4A Posey
5B Nez Perce	5A Hancock	4A Randolph	5A Fayette	5A Pulaski
6B Oneida	4A Hardin	4A Richland	4A Floyd	5A Putnam
5B Owyhee	5A Henderson	5A Rock Island	5A Fountain	5A Randolph
5B Payette	5A Henry	4A Saline	5A Franklin	4A Ripley
5B Power	5A Iroquois	5A Sangamon	5A Fulton	5A Rush
5B Shoshone	4A Jackson	5A Schuyler	4A Gibson	4A Scott
6B Teton	4A Jasper	5A Scott	5A Grant	5A Shelby
5B Twin Falls	4A Jefferson	4A Shelby	4A Greene	4A Spencer
6B Valley	5A Jersey	5A Stark	5A Hamilton	5A Starke
5B Washington	5A Jo Daviess	4A St. Clair	5A Hancock	5A Steuben
	4A Johnson	5A Stephenson	4A Harrison	5A St. Joseph
ILLINOIS	5A Kane	5A Tazewell	5A Hendricks	4A Sullivan
5A Adams	5A Kankakee	4A Union	5A Henry	4A Switzerland
4A Alexander	5A Kendall	5A Vermilion	5A Howard	5A Tippecanoe
4A Bond	5A Knox	4A Wabash	5A Huntington	5A Tipton
5A Boone	5A Lake	5A Warren	4A Jackson	5A Union
5A Brown	5A La Salle	4A Washington	5A Jasper	4A Vanderburgh
5A Bureau	4A Lawrence	4A Wayne	5A Jay	5A Vermillion
5A Calhoun	5A Lee	4A White	4A Jefferson	5A Vigo
5A Carroll	5A Livingston	5A Whiteside	4A Jennings	5A Wabash
5A Cass	5A Logan	5A Will	5A Johnson	5A Warren
5A Champaign	5A Macon	4A Williamson	4A Knox	4A Warrick
4A Christian	4A Macoupin	5A Winnebago	5A Kosciusko	4A Washington
5A Clark	4A Madison	5A Woodford	5A Lagrange	5A Wayne

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

5A Wells	6A Hancock	5A Tama	4A Franklin	4A Pottawatomie
5A White	6A Hardin	5A Taylor	4A Geary	4A Pratt
5A Whitley	5A Harrison	5A Union	5A Gove	5A Rawlins
	5A Henry	5A Van Buren	5A Graham	4A Reno
IOWA	6A Howard	5A Wapello	4A Grant	5A Republic
5A Adair	6A Humboldt	5A Warren	4A Gray	4A Rice
5A Adams	6A Ida	5A Washington	5A Greeley	4A Riley
6A Allamakee	5A Iowa	5A Wayne	4A Greenwood	5A Rooks
5A Appanoose	5A Jackson	6A Webster	5A Hamilton	4A Rush
5A Audubon	5A Jasper	6A Winnebago	4A Harper	4A Russell
5A Benton	5A Jefferson	6A Winneshiek	4A Harvey	4A Saline
6A Black Hawk	5A Johnson	5A Woodbury	4A Haskell	5A Scott
5A Boone	5A Jones	6A Worth	4A Hodgeman	4A Sedgwick
6A Bremer	5A Keokuk	6A Wright	4A Jackson	4A Seward
6A Buchanan	6A Kossuth		4A Jefferson	4A Shawnee
6A Buena Vista	5A Lee	KANSAS	5A Jewell	5A Sheridan
6A Butler	5A Linn	4A Allen	4A Johnson	5A Sherman
6A Calhoun	5A Louisa	4A Anderson	4A Kearny	5A Smith
5A Carroll	5A Lucas	4A Atchison	4A Kingman	4A Stafford
5A Cass	6A Lyon	4A Barber	4A Kiowa	4A Stanton
5A Cedar	5A Madison	4A Barton	4A Labette	4A Stevens
6A Cerro Gordo	5A Mahaska	4A Bourbon	5A Lane	4A Sumner
6A Cherokee	5A Marion	4A Brown	4A Leavenworth	5A Thomas
6A Chickasaw	5A Marshall	4A Butler	4A Lincoln	5A Trego
5A Clarke	5A Mills	4A Chase	4A Linn	4A Wabaunsee
6A Clay	6A Mitchell	4A Chautauqua	5A Logan	5A Wallace
6A Clayton	5A Monona	4A Cherokee	4A Lyon	4A Washington
5A Clinton	5A Monroe	5A Cheyenne	4A Marion	5A Wichita
5A Crawford	5A Montgomery	4A Clark	4A Marshall	4A Wilson
5A Dallas	5A Muscatine	4A Clay	4A McPherson	4A Woodson
5A Davis	6A O'Brien	5A Cloud	4A Meade	4A Wyandotte
5A Decatur	6A Osceola	4A Coffey	4A Miami	
6A Delaware	5A Page	4A Comanche	5A Mitchell	KENTUCKY
5A Des Moines	6A Palo Alto	4A Cowley	4A Montgomery	4A (all)
6A Dickinson	6A Plymouth	4A Crawford	4A Morris	
5A Dubuque	6A Pocahontas	5A Decatur	4A Morton	LOUISIANA
6A Emmet	5A Polk	4A Dickinson	4A Nemaha	2A Acadia*
6A Fayette	5A Pottawattamie	4A Doniphan	4A Neosho	2A Allen*
6A Floyd	5A Poweshiek	4A Douglas	5A Ness	2A Ascension*
6A Franklin	5A Ringgold	4A Edwards	5A Norton	2A Assumption*
5A Fremont	6A Sac	4A Elk	4A Osage	2A Avoyelles*
5A Greene	5A Scott	5A Ellis	5A Osborne	2A Beauregard*
6A Grundy	5A Shelby	4A Ellsworth	4A Ottawa	3A Bienville*
5A Guthrie	6A Sioux	4A Finney	4A Pawnee	3A Bossier*
6A Hamilton	5A Story	4A Ford	5A Phillips	3A Caddo*

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
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2A Calcasieu*	3A Tensas*	4A Howard	5A Hillsdale	7 Schoolcraft
3A Caldwell*	2A Terrebonne*	4A Kent	7 Houghton	5A Shiawassee
2A Cameron*	3A Union*	4A Montgomery	6A Huron	5A St. Clair
3A Catahoula*	2A Vermilion*	4A Prince George's	5A Ingham	5A St. Joseph
3A Claiborne*	3A Vernon*	4A Queen Anne's	5A Ionia	5A Tuscola
3A Concordia*	2A Washington*	4A Somerset	6A Iosco	5A Van Buren
3A De Soto*	3A Webster*	4A St. Mary's	7 Iron	5A Washtenaw
2A East Baton Rouge*	2A West Baton Rouge*	4A Talbot	6A Isabella	5A Wayne
3A East Carroll		4A Washington	5A Jackson	6A Wexford
2A East Feliciana*	3A West Carroll	4A Wicomico	5A Kalamazoo	
2A Evangeline*	2A West Feliciana*	4A Worcester	6A Kalkaska	MINNESOTA
3A Franklin*	3A Winn*		5A Kent	7 Aitkin
3A Grant*		MASSACHUSETTS	7 Keweenaw	6A Anoka
2A Iberia*	MAINE	5A (all)	6A Lake	7 Becker
2A Iberville*	6A Androscoggin		5A Lapeer	7 Beltrami
3A Jackson*	7 Aroostook	MICHIGAN	6A Leelanau	6A Benton
2A Jefferson*	6A Cumberland	6A Alcona	5A Lenawee	6A Big Stone
2A Jefferson Davis*	6A Franklin	6A Alger	5A Livingston	6A Blue Earth
2A Lafayette*	6A Hancock	5A Allegan	7 Luce	6A Brown
2A Lafourche*	6A Kennebec	6A Alpena	7 Mackinac	7 Carlton
3A La Salle*	6A Knox	6A Antrim	5A Macomb	6A Carver
3A Lincoln*	6A Lincoln	6A Arenac	6A Manistee	7 Cass
2A Livingston*	6A Oxford	7 Baraga	6A Marquette	6A Chippewa
3A Madison*	6A Penobscot	5A Barry	6A Mason	6A Chisago
3A Morehouse	6A Piscataquis	5A Bay	6A Mecosta	7 Clay
3A Natchitoches*	6A Sagadahoc	6A Benzie	6A Menominee	7 Clearwater
2A Orleans*	6A Somerset	5A Berrien	5A Midland	7 Cook
3A Ouachita*	6A Waldo	5A Branch	6A Missaukee	6A Cottonwood
2A Plaquemines*	6A Washington	5A Calhoun	5A Monroe	7 Crow Wing
2A Pointe Coupee*	6A York	5A Cass	5A Montcalm	6A Dakota
2A Rapides*		6A Charlevoix	6A Montmorency	6A Dodge
3A Red River*	MARYLAND	6A Cheboygan	5A Muskegon	6A Douglas
3A Richland*	4A Allegany	7 Chippewa	6A Newaygo	6A Faribault
3A Sabine*	4A Anne Arundel	6A Clare	5A Oakland	6A Fillmore
2A St. Bernard*	4A Baltimore	5A Clinton	6A Oceana	6A Freeborn
2A St. Charles*	4A Baltimore (city)	6A Crawford	6A Ogemaw	6A Goodhue
2A St. Helena*	4A Calvert	6A Delta	7 Ontonagon	7 Grant
2A St. James*	4A Caroline	6A Dickinson	6A Osceola	6A Hennepin
2A St. John the Baptist*	4A Carroll	5A Eaton	6A Oscoda	6A Houston
2A St. Landry*	4A Cecil	6A Emmet	6A Otsego	7 Hubbard
2A St. Martin*	4A Charles	5A Genesee	5A Ottawa	6A Isanti
2A St. Mary*	4A Dorchester	6A Gladwin	6A Presque Isle	7 Itasca
2A St. Tammany*	4A Frederick	7 Gogebic	6A Roscommon	6A Jackson
2A Tangipahoa*	5A Garrett	6A Grand Traverse	5A Saginaw	7 Kanabec
	4A Harford	5A Gratiot	6A Sanilac	6A Kandiyohi

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

7 Kittson	7 Wadena	3A Lafayette	3A Yalobusha	4A Henry
7 Koochiching	6A Waseca	3A Lamar*	3A Yazoo	4A Hickory
6A Lac qui Parle	6A Washington	3A Lauderdale		5A Holt
7 Lake	6A Watonwan	3A Lawrence*	MISSOURI	4A Howard
7 Lake of the Woods	7 Wilkin	3A Leake	5A Adair	4A Howell
6A Le Sueur	6A Winona	3A Lee	5A Andrew	4A Iron
6A Lincoln	6A Wright	3A Leflore	5A Atchison	4A Jackson
6A Lyon	6A Yellow Medicine	3A Lincoln*	4A Audrain	4A Jasper
7 Mahanomen		3A Lowndes	4A Barry	4A Jefferson
7 Marshall	MISSISSIPPI	3A Madison	4A Barton	4A Johnson
6A Martin	3A Adams*	3A Marion*	4A Bates	5A Knox
6A McLeod	3A Alcorn	3A Marshall	4A Benton	4A Laclede
6A Meeker	3A Amite*	3A Monroe	4A Bollinger	4A Lafayette
7 Mille Lacs	3A Attala	3A Montgomery	4A Boone	4A Lawrence
6A Morrison	3A Benton	3A Neshoba	5A Buchanan	5A Lewis
6A Mower	3A Bolivar	3A Newton	4A Butler	4A Lincoln
6A Murray	3A Calhoun	3A Noxubee	5A Caldwell	5A Linn
6A Nicollet	3A Carroll	3A Oktibbeha	4A Callaway	5A Livingston
6A Nobles	3A Chickasaw	3A Panola	4A Camden	5A Macon
7 Norman	3A Choctaw	2A Pearl River*	4A Cape Girardeau	4A Madison
6A Olmsted	3A Claiborne*	3A Perry*	4A Carroll	4A Maries
7 Otter Tail	3A Clarke	3A Pike*	4A Carter	5A Marion
7 Pennington	3A Clay	3A Pontotoc	4A Cass	4A McDonald
7 Pine	3A Coahoma	3A Prentiss	4A Cedar	5A Mercer
6A Pipestone	3A Copiah*	3A Quitman	5A Chariton	4A Miller
7 Polk	3A Covington*	3A Rankin*	4A Christian	4A Mississippi
6A Pope	3A DeSoto	3A Scott	5A Clark	4A Moniteau
6A Ramsey	3A Forrest*	3A Sharkey	4A Clay	4A Monroe
7 Red Lake	3A Franklin*	3A Simpson*	5A Clinton	4A Montgomery
6A Redwood	3A George*	3A Smith*	4A Cole	4A Morgan
6A Renville	3A Greene*	2A Stone*	4A Cooper	4A New Madrid
6A Rice	3A Grenada	3A Sunflower	4A Crawford	4A Newton
6A Rock	2A Hancock*	3A Tallahatchie	4A Dade	5A Nodaway
7 Roseau	2A Harrison*	3A Tate	4A Dallas	4A Oregon
6A Scott	3A Hinds*	3A Tippah	5A Daviess	4A Osage
6A Sherburne	3A Holmes	3A Tishomingo	5A DeKalb	4A Ozark
6A Sibley	3A Humphreys	3A Tunica	4A Dent	4A Pemiscot
6A Stearns	3A Issaquena	3A Union	4A Douglas	4A Perry
6A Steele	3A Itawamba	3A Walthall*	4A Dunklin	4A Pettis
6A Stevens	2A Jackson*	3A Warren*	4A Franklin	4A Phelps
7 St. Louis	3A Jasper	3A Washington	4A Gasconade	5A Pike
6A Swift	3A Jefferson*	3A Wayne*	5A Gentry	4A Platte
6A Todd	3A Jefferson Davis*	3A Webster	4A Greene	4A Polk
6A Traverse	3A Jones*	3A Wilkinson*	5A Grundy	4A Pulaski
6A Wabasha	3A Kemper	3A Winston	5A Harrison	5A Putnam

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

5A Ralls	5B Lander	NEW MEXICO	6A Clinton	6A Tompkins
4A Randolph	5B Lincoln	4B Bernalillo	5A Columbia	6A Ulster
4A Ray	5B Lyon	5B Catron	5A Cortland	6A Warren
4A Reynolds	5B Mineral	3B Chaves	6A Delaware	5A Washington
4A Ripley	5B Nye	4B Cibola	5A Dutchess	5A Wayne
4A Saline	5B Pershing	5B Colfax	5A Erie	4A Westchester
5A Schuyler	5B Storey	4B Curry	6A Essex	6A Wyoming
5A Scotland	5B Washoe	4B DeBaca	6A Franklin	5A Yates
4A Scott	5B White Pine	3B Dona Ana	6A Fulton	
4A Shannon		3B Eddy	5A Genesee	NORTH
5A Shelby	NEW HAMPSHIRE	4B Grant	5A Greene	CAROLINA
4A St. Charles	6A Belknap	4B Guadalupe	6A Hamilton	4A Alamance
4A St. Clair	6A Carroll	5B Harding	6A Herkimer	4A Alexander
4A Ste. Genevieve	5A Cheshire	3B Hidalgo	6A Jefferson	5A Alleghany
4A St. Francois	6A Coos	3B Lea	4A Kings	3A Anson
4A St. Louis	6A Grafton	4B Lincoln	6A Lewis	5A Ashe
4A St. Louis (city)	5A Hillsborough	5B Los Alamos	5A Livingston	5A Avery
4A Stoddard	6A Merrimack	3B Luna	6A Madison	3A Beaufort
4A Stone	5A Rockingham	5B McKinley	5A Monroe	4A Bertie
5A Sullivan	5A Strafford	5B Mora	6A Montgomery	3A Bladen
4A Taney	6A Sullivan	3B Otero	4A Nassau	3A Brunswick*
4A Texas		4B Quay	4A New York	4A Buncombe
4A Vernon	NEW JERSEY	5B Rio Arriba	5A Niagara	4A Burke
4A Warren	4A Atlantic	4B Roosevelt	6A Oneida	3A Cabarrus
4A Washington	5A Bergen	5B Sandoval	5A Onondaga	4A Caldwell
4A Wayne	4A Burlington	5B San Juan	5A Ontario	3A Camden
4A Webster	4A Camden	5B San Miguel	5A Orange	3A Carteret*
5A Worth	4A Cape May	5B Santa Fe	5A Orleans	4A Caswell
4A Wright	4A Cumberland	4B Sierra	5A Oswego	4A Catawba
	4A Essex	4B Socorro	6A Otsego	4A Chatham
MONTANA	4A Gloucester	5B Taos	5A Putnam	4A Cherokee
6B (all)	4A Hudson	5B Torrance	4A Queens	3A Chowan
	5A Hunterdon	4B Union	5A Rensselaer	4A Clay
NEBRASKA	5A Mercer	4B Valencia	4A Richmond	4A Cleveland
5A (all)	4A Middlesex		5A Rockland	3A Columbus*
	4A Monmouth	NEW YORK	5A Saratoga	3A Craven
NEVADA	5A Morris	5A Albany	5A Schenectady	3A Cumberland
5B Carson City (city)	4A Ocean	6A Allegany	6A Schoharie	3A Currituck
5B Churchill	5A Passaic	4A Bronx	6A Schuyler	3A Dare
3B Clark	4A Salem	6A Broome	5A Seneca	3A Davidson
5B Douglas	5A Somerset	6A Cattaraugus	6A Steuben	4A Davie
5B Elko	5A Sussex	5A Cayuga	6A St. Lawrence	3A Duplin
5B Esmeralda	4A Union	5A Chautauqua	4A Suffolk	4A Durham
5B Eureka	5A Warren	5A Chemung	6A Sullivan	3A Edgecombe
5B Humboldt		6A Chenango	5A Tioga	4A Forsyth

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

4A Franklin	3A Rowan	6A LaMoure	4A Clermont	5A Morgan
3A Gaston	4A Rutherford	6A Logan	5A Clinton	5A Morrow
4A Gates	3A Sampson	7 McHenry	5A Columbiana	5A Muskingum
4A Graham	3A Scotland	6A McIntosh	5A Coshocton	5A Noble
4A Granville	3A Stanly	6A McKenzie	5A Crawford	5A Ottawa
3A Greene	4A Stokes	7 McLean	5A Cuyahoga	5A Paulding
4A Guilford	4A Surry	6A Mercer	5A Darke	5A Perry
4A Halifax	4A Swain	6A Morton	5A Defiance	5A Pickaway
4A Harnett	4A Transylvania	7 Mountrail	5A Delaware	4A Pike
4A Haywood	3A Tyrrell	7 Nelson	5A Erie	5A Portage
4A Henderson	3A Union	6A Oliver	5A Fairfield	5A Preble
4A Hertford	4A Vance	7 Pembina	5A Fayette	5A Putnam
3A Hoke	4A Wake	7 Pierce	5A Franklin	5A Richland
3A Hyde	4A Warren	7 Ramsey	5A Fulton	5A Ross
4A Iredell	3A Washington	6A Ransom	4A Gallia	5A Sandusky
4A Jackson	5A Watauga	7 Renville	5A Geauga	4A Scioto
3A Johnston	3A Wayne	6A Richland	5A Greene	5A Seneca
3A Jones	4A Wilkes	7 Rolette	5A Guernsey	5A Shelby
4A Lee	3A Wilson	6A Sargent	4A Hamilton	5A Stark
3A Lenoir	4A Yadkin	7 Sheridan	5A Hancock	5A Summit
4A Lincoln	5A Yancey	6A Sioux	5A Hardin	5A Trumbull
4A Macon		6A Slope	5A Harrison	5A Tuscarawas
4A Madison	NORTH DAKOTA	6A Stark	5A Henry	5A Union
3A Martin	6A Adams	7 Steele	5A Highland	5A Van Wert
4A McDowell	7 Barnes	7 Stutsman	5A Hocking	5A Vinton
3A Mecklenburg	7 Benson	7 Towner	5A Holmes	5A Warren
5A Mitchell	6A Billings	7 Traill	5A Huron	4A Washington
3A Montgomery	7 Bottineau	7 Walsh	5A Jackson	5A Wayne
3A Moore	6A Bowman	7 Ward	5A Jefferson	5A Williams
4A Nash	7 Burke	7 Wells	5A Knox	5A Wood
3A New Hanover*	6A Burleigh	7 Williams	5A Lake	5A Wyandot
4A Northampton	7 Cass		4A Lawrence	
3A Onslow*	7 Cavalier	OHIO	5A Licking	OKLAHOMA
4A Orange	6A Dickey	4A Adams	5A Logan	3A Adair
3A Pamlico	7 Divide	5A Allen	5A Lorain	3A Alfalfa
3A Pasquotank	6A Dunn	5A Ashland	5A Lucas	3A Atoka
3A Pender*	7 Eddy	5A Ashtabula	5A Madison	4B Beaver
3A Perquimans	6A Emmons	5A Athens	5A Mahoning	3A Beckham
4A Person	7 Foster	5A Auglaize	5A Marion	3A Blaine
3A Pitt	6A Golden Valley	5A Belmont	5A Medina	3A Bryan
4A Polk	7 Grand Forks	4A Brown	5A Meigs	3A Caddo
3A Randolph	6A Grant	5A Butler	5A Mercer	3A Canadian
3A Richmond	7 Griggs	5A Carroll	5A Miami	3A Carter
3A Robeson	6A Hettinger	5A Champaign	5A Monroe	3A Cherokee
4A Rockingham	7 Kidder	5A Clark	5A Montgomery	3A Choctaw

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

4B Cimarron	3A Ottawa	4C Marion	5A Huntingdon	3A Allendale*
3A Cleveland	3A Pawnee	5B Morrow	5A Indiana	3A Anderson
3A Coal	3A Payne	4C Multnomah	5A Jefferson	3A Bamberg*
3A Comanche	3A Pittsburg	4C Polk	5A Juniata	3A Barnwell*
3A Cotton	3A Pontotoc	5B Sherman	5A Lackawanna	3A Beaufort*
3A Craig	3A Pottawatomie	4C Tillamook	5A Lancaster	3A Berkeley*
3A Creek	3A Pushmataha	5B Umatilla	5A Lawrence	3A Calhoun
3A Custer	3A Roger Mills	5B Union	5A Lebanon	3A Charleston*
3A Delaware	3A Rogers	5B Wallowa	5A Lehigh	3A Cherokee
3A Dewey	3A Seminole	5B Wasco	5A Luzerne	3A Chester
3A Ellis	3A Sequoyah	4C Washington	5A Lycoming	3A Chesterfield
3A Garfield	3A Stephens	5B Wheeler	6A McKean	3A Clarendon
3A Garvin	4B Texas	4C Yamhill	5A Mercer	3A Colleton*
3A Grady	3A Tillman		5A Mifflin	3A Darlington
3A Grant	3A Tulsa	PENNSYLVANIA	5A Monroe	3A Dillon
3A Greer	3A Wagoner	5A Adams	4A Montgomery	3A Dorchester*
3A Harmon	3A Washington	5A Allegheny	5A Montour	3A Edgefield
3A Harper	3A Washita	5A Armstrong	5A Northampton	3A Fairfield
3A Haskell	3A Woods	5A Beaver	5A Northumberland	3A Florence
3A Hughes	3A Woodward	5A Bedford	5A Perry	3A Georgetown*
3A Jackson		5A Berks	4A Philadelphia	3A Greenville
3A Jefferson	OREGON	5A Blair	5A Pike	3A Greenwood
3A Johnston	5B Baker	5A Bradford	6A Potter	3A Hampton*
3A Kay	4C Benton	4A Bucks	5A Schuylkill	3A Horry*
3A Kingfisher	4C Clackamas	5A Butler	5A Snyder	3A Jasper*
3A Kiowa	4C Clatsop	5A Cambria	5A Somerset	3A Kershaw
3A Latimer	4C Columbia	6A Cameron	5A Sullivan	3A Lancaster
3A Le Flore	4C Coos	5A Carbon	6A Susquehanna	3A Laurens
3A Lincoln	5B Crook	5A Centre	6A Tioga	3A Lee
3A Logan	4C Curry	4A Chester	5A Union	3A Lexington
3A Love	5B Deschutes	5A Clarion	5A Venango	3A Marion
3A Major	4C Douglas	6A Clearfield	5A Warren	3A Marlboro
3A Marshall	5B Gilliam	5A Clinton	5A Washington	3A McCormick
3A Mayes	5B Grant	5A Columbia	6A Wayne	3A Newberry
3A McClain	5B Harney	5A Crawford	5A Westmoreland	3A Oconee
3A McCurtain	5B Hood River	5A Cumberland	5A Wyoming	3A Orangeburg
3A McIntosh	4C Jackson	5A Dauphin	4A York	3A Pickens
3A Murray	5B Jefferson	4A Delaware		3A Richland
3A Muskogee	4C Josephine	6A Elk	RHODE ISLAND	3A Saluda
3A Noble	5B Klamath	5A Erie	5A (all)	3A Spartanburg
3A Nowata	5B Lake	5A Fayette		3A Sumter
3A Okfuskee	4C Lane	5A Forest	SOUTH	3A Union
3A Oklahoma	4C Lincoln	5A Franklin	CAROLINA	3A Williamsburg
3A Okmulgee	4C Linn	5A Fulton	3A Abbeville	3A York
3A Osage	5B Malheur	5A Greene	3A Aiken	

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

SOUTH DAKOTA	6A McPherson	4A Dickson	4A Overton	2A Bexar*
6A Aurora	6A Meade	3A Dyer	4A Perry	3A Blanco*
6A Beadle	5A Mellette	3A Fayette	4A Pickett	3B Borden
5A Bennett	6A Miner	4A Fentress	4A Polk	2A Bosque*
5A Bon Homme	6A Minnehaha	4A Franklin	4A Putnam	3A Bowie*
6A Brookings	6A Moody	4A Gibson	4A Rhea	2A Brazoria*
6A Brown	6A Pennington	4A Giles	4A Roane	2A Brazos*
6A Brule	6A Perkins	4A Grainger	4A Robertson	3B Brewster
6A Buffalo	6A Potter	4A Greene	4A Rutherford	4B Briscoe
6A Butte	6A Roberts	4A Grundy	4A Scott	2A Brooks*
6A Campbell	6A Sanborn	4A Hamblen	4A Sequatchie	3A Brown*
5A Charles Mix	6A Shannon	4A Hamilton	4A Sevier	2A Burleson*
6A Clark	6A Spink	4A Hancock	3A Shelby	3A Burnet*
5A Clay	6A Stanley	3A Hardeman	4A Smith	2A Caldwell*
6A Codington	6A Sully	3A Hardin	4A Stewart	2A Calhoun*
6A Corson	5A Todd	4A Hawkins	4A Sullivan	3B Callahan
6A Custer	5A Tripp	3A Haywood	4A Sumner	2A Cameron*
6A Davison	6A Turner	3A Henderson	3A Tipton	3A Camp*
6A Day	5A Union	4A Henry	4A Trousdale	4B Carson
6A Deuel	6A Walworth	4A Hickman	4A Unicoi	3A Cass*
6A Dewey	5A Yankton	4A Houston	4A Union	4B Castro
5A Douglas	6A Ziebach	4A Humphreys	4A Van Buren	2A Chambers*
6A Edmunds		4A Jackson	4A Warren	2A Cherokee*
6A Fall River	TENNESSEE	4A Jefferson	4A Washington	3B Childress
6A Faulk	4A Anderson	4A Johnson	4A Wayne	3A Clay
6A Grant	4A Bedford	4A Knox	4A Weakley	4B Cochran
5A Gregory	4A Benton	3A Lake	4A White	3B Coke
6A Haakon	4A Bledsoe	3A Lauderdale	4A Williamson	3B Coleman
6A Hamlin	4A Blount	4A Lawrence	4A Wilson	3A Collin*
6A Hand	4A Bradley	4A Lewis		3B Collingsworth
6A Hanson	4A Campbell	4A Lincoln	TEXAS	2A Colorado*
6A Harding	4A Cannon	4A Loudon	2A Anderson*	2A Comal*
6A Hughes	4A Carroll	4A Macon	3B Andrews	3A Comanche*
5A Hutchinson	4A Carter	3A Madison	2A Angelina*	3B Concho
6A Hyde	4A Cheatham	4A Marion	2A Aransas*	3A Cooke
5A Jackson	3A Chester	4A Marshall	3A Archer	2A Coryell*
6A Jerauld	4A Claiborne	4A Maury	4B Armstrong	3B Cottle
6A Jones	4A Clay	4A McMinn	2A Atascosa*	3B Crane
6A Kingsbury	4A Cocke	3A McNairy	2A Austin*	3B Crockett
6A Lake	4A Coffee	4A Meigs	4B Bailey	3B Crosby
6A Lawrence	3A Crockett	4A Monroe	2B Bandera	3B Culberson
6A Lincoln	4A Cumberland	4A Montgomery	2A Bastrop*	4B Dallam
6A Lyman	4A Davidson	4A Moore	3B Baylor	3A Dallas*
6A Marshall	4A Decatur	4A Morgan	2A Bee*	3B Dawson
6A McCook	4A DeKalb	4A Obion	2A Bell*	4B Deaf Smith

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

3A Delta	2A Hays*	3A Llano*	3B Reeves	2B Webb
3A Denton*	3B Hemphill	3B Loving	2A Refugio*	2A Wharton*
2A DeWitt*	3A Henderson*	3B Lubbock	4B Roberts	3B Wheeler
3B Dickens	2A Hidalgo*	3B Lynn	2A Robertson*	3A Wichita
2B Dimmit	2A Hill*	2A Madison*	3A Rockwall*	3B Wilbarger
4B Donley	4B Hockley	3A Marion*	3B Runnels	2A Willacy*
2A Duval*	3A Hood*	3B Martin	3A Rusk*	2A Williamson*
3A Eastland	3A Hopkins*	3B Mason	3A Sabine*	2A Wilson*
3B Ector	2A Houston*	2A Matagorda*	3A San Augustine*	3B Winkler
2B Edwards	3B Howard	2B Maverick	2A San Jacinto*	3A Wise
3A Ellis*	3B Hudspeth	3B McCulloch	2A San Patricio*	3A Wood*
3B El Paso	3A Hunt*	2A McLennan*	3A San Saba*	4B Yoakum
3A Erath*	4B Hutchinson	2A McMullen*	3B Schleicher	3A Young
2A Falls*	3B Irion	2B Medina	3B Scurry	2B Zapata
3A Fannin	3A Jack	3B Menard	3B Shackelford	2B Zavala
2A Fayette*	2A Jackson*	3B Midland	3A Shelby*	
3B Fisher	2A Jasper*	2A Milam*	4B Sherman	UTAH
4B Floyd	3B Jeff Davis	3A Mills*	3A Smith*	5B Beaver
3B Foard	2A Jefferson*	3B Mitchell	3A Somervell*	6B Box Elder
2A Fort Bend*	2A Jim Hogg*	3A Montague	2A Starr*	6B Cache
3A Franklin*	2A Jim Wells*	2A Montgomery*	3A Stephens	6B Carbon
2A Freestone*	3A Johnson*	4B Moore	3B Sterling	6B Daggett
2B Frio	3B Jones	3A Morris*	3B Stonewall	5B Davis
3B Gaines	2A Karnes*	3B Motley	3B Sutton	6B Duchesne
2A Galveston*	3A Kaufman*	3A Nacogdoches*	4B Swisher	5B Emery
3B Garza	3A Kendall*	3A Navarro*	3A Tarrant*	5B Garfield
3A Gillespie*	2A Kenedy*	2A Newton*	3B Taylor	5B Grand
3B Glasscock	3B Kent	3B Nolan	3B Terrell	5B Iron
2A Goliad*	3B Kerr	2A Nueces*	3B Terry	5B Juab
2A Gonzales*	3B Kimble	4B Ochiltree	3B Throckmorton	5B Kane
4B Gray	3B King	4B Oldham	3A Titus*	5B Millard
3A Grayson	2B Kinney	2A Orange*	3B Tom Green	6B Morgan
3A Gregg*	2A Kleberg*	3A Palo Pinto*	2A Travis*	5B Piute
2A Grimes*	3B Knox	3A Panola*	2A Trinity*	6B Rich
2A Guadalupe*	3A Lamar*	3A Parker*	2A Tyler*	5B Salt Lake
4B Hale	4B Lamb	4B Parmer	3A Upshur*	5B San Juan
3B Hall	3A Lampasas*	3B Pecos	3B Upton	5B Sanpete
3A Hamilton*	2B La Salle	2A Polk*	2B Uvalde	5B Sevier
4B Hansford	2A Lavaca*	4B Potter	2B Val Verde	6B Summit
3B Hardeman	2A Lee*	3B Presidio	3A Van Zandt*	5B Tooele
2A Hardin*	2A Leon*	3A Rains*	2A Victoria*	6B Uintah
2A Harris*	2A Liberty*	4B Randall	2A Walker*	5B Utah
3A Harrison*	2A Limestone*	3B Reagan	2A Waller*	6B Wasatch
4B Hartley	4B Lipscomb	2B Real	3B Ward	3B Washington
3B Haskell	2A Live Oak*	3A Red River*	2A Washington*	5B Wayne

(continued)

TABLE A200 – Continued
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS
BY STATE, COUNTY AND TERRITORY

Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant.
 Asterisk (*) indicates a warm-humid location.

5B Weber	4C Whatcom	5A Raleigh	6A Juneau	WYOMING
	5B Whitman	5A Randolph	6A Kenosha	6B Albany
VERMONT	5B Yakima	4A Ritchie	6A Kewaunee	6B Big Horn
6A (all)		4A Roane	6A La Crosse	6B Campbell
	WEST VIRGINIA	5A Summers	6A Lafayette	6B Carbon
VIRGINIA	5A Barbour	5A Taylor	7 Langlade	6B Converse
4A (all)	4A Berkeley	5A Tucker	7 Lincoln	6B Crook
	4A Boone	4A Tyler	6A Manitowoc	6B Fremont
WASHINGTON	4A Braxton	5A Upshur	6A Marathon	5B Goshen
5B Adams	5A Brooke	4A Wayne	6A Marinette	6B Hot Springs
5B Asotin	4A Cabell	5A Webster	6A Marquette	6B Johnson
5B Benton	4A Calhoun	5A Wetzal	6A Menominee	6B Laramie
5B Chelan	4A Clay	4A Wirt	6A Milwaukee	7 Lincoln
4C Clallam	5A Doddridge	4A Wood	6A Monroe	6B Natrona
4C Clark	5A Fayette	4A Wyoming	6A Oconto	6B Niobrara
5B Columbia	4A Gilmer		7 Oneida	6B Park
4C Cowlitz	5A Grant	WISCONSIN	6A Outagamie	5B Platte
5B Douglas	5A Greenbrier	6A Adams	6A Ozaukee	6B Sheridan
6B Ferry	5A Hampshire	7 Ashland	6A Pepin	7 Sublette
5B Franklin	5A Hancock	6A Barron	6A Pierce	6B Sweetwater
5B Garfield	5A Hardy	7 Bayfield	6A Polk	7 Teton
5B Grant	5A Harrison	6A Brown	6A Portage	6B Uinta
4C Grays Harbor	4A Jackson	6A Buffalo	7 Price	6B Washakie
4C Island	4A Jefferson	7 Burnett	6A Racine	6B Weston
4C Jefferson	4A Kanawha	6A Calumet	6A Richland	
4C King	5A Lewis	6A Chippewa	6A Rock	U.S. TERRITORIES
4C Kitsap	4A Lincoln	6A Clark	6A Rusk	
5B Kittitas	4A Logan	6A Columbia	6A Sauk	AMERICAN SAMOA
5B Klickitat	5A Marion	6A Crawford	7 Sawyer	1A (all)*
4C Lewis	5A Marshall	6A Dane	6A Shawano	
5B Lincoln	4A Mason	6A Dodge	6A Sheboygan	GUAM
4C Mason	4A McDowell	6A Door	6A St. Croix	1A (all)*
6B Okanogan	4A Mercer	7 Douglas	7 Taylor	
4C Pacific	5A Mineral	6A Dunn	6A Trempealeau	NORTHERN
6B Pend Oreille	4A Mingo	6A Eau Claire	6A Vernon	MARIANA ISLANDS
4C Pierce	5A Monongalia	7 Florence	7 Vilas	1A (all)*
4C San Juan	4A Monroe	6A Fond du Lac	6A Walworth	
4C Skagit	4A Morgan	7 Forest	7 Washburn	PUERTO RICO
5B Skamania	5A Nicholas	6A Grant	6A Washington	1A (all)*
4C Snohomish	5A Ohio	6A Green	6A Waukesha	
5B Spokane	5A Pendleton	6A Green Lake	6A Waupaca	VIRGIN ISLANDS
6B Stevens	4A Pleasants	6A Iowa	6A Waushara	1A (all)*
4C Thurston	5A Pocahontas	7 Iron	6A Winnebago	
4C Wahkiakum	5A Preston	6A Jackson	6A Wood	
5B Walla Walla	4A Putnam	6A Jefferson		

A201.1 Tropical climate zone. The tropical climate zone shall be defined as:

- (1) Hawaii, Puerto Rico, Guam, American Samoa, U.S. Virgin Islands, Commonwealth of Northern Mariana Islands
- (2) Islands in the area between the Tropic of Cancer and the Tropic of Capricorn

A300 INTERNATIONAL CLIMATE ZONES

A301 International climate zones. The climate zone for any location outside the United States shall be determined by applying Table A301(1) and then Table A301(2).

**TABLE A301(1)
INTERNATIONAL CLIMATE ZONE DEFINITIONS**

MAJOR CLIMATE TYPE DEFINITIONS
<p>Marine (C) Definition – Locations meeting all four criteria:</p> <ol style="list-style-type: none"> 1. Mean temperature of coldest month between -3°C (27°F) and 18°C (65°F) 2. Warmest month mean <22°C (72°F) 3. At least four months with mean temperatures over 10°C (50°F) 4. Dry season in summer. The month with the heaviest precipitation in the cold season has at least three times as much precipitation as the month with the least precipitation in the rest of the year. The cold season is October through March in the Northern Hemisphere and April through September in the Southern Hemisphere.
<p>Dry (B) Definition—Locations meeting the following criteria: Not marine and</p> $P_{in} < 0.44 \times (TF - 19.5) \quad [P_{cm} < 2.0 \times (TC + 7) \text{ in SI units}]$ <p>where:</p> <p>P_{in} = Annual precipitation in inches (cm)</p> <p>T = Annual mean temperature in °F (°C)</p>
<p>Moist (A) Definition – Locations that are not marine and not dry.</p>
<p>Warm-humid Definition – Moist (A) locations where either of the following wet-bulb temperature conditions shall occur during the warmest six consecutive months of the year:</p> <ol style="list-style-type: none"> 1. 67°F (19.4°C) or higher for 3,000 or more hours; or 2. 73°F (22.8°C) or higher for 1,500 or more hours

For SI: °C = [(°F)-32]/1.8; 1 in. = 2.54 cm.

**TABLE A301(2)
INTERNATIONAL CLIMATE ZONE DEFINITIONS**

ZONE NUMBER	THERMAL CRITERIA	
	IP Units	SI Units
1	9000 < CDD50°F	5000 < CDD10°C
2	6300 < CDD50°F ≤ 9000	3500 < CDD10°C ≤ 5000
3A and 3B	4500 < CDD50°F ≤ 6300 AND HDD65°F ≤ 5400	2500 < CDD10°C ≤ 3500 AND HDD18°C ≤ 3000
4A and 4B	CDD50°F ≤ 4500 AND HDD65°F ≤ 5400	CDD10°C ≤ 2500 AND HDD18°C ≤ 3000
3C	HDD65°F ≤ 3600	HDD18°C ≤ 2000
4C	3600 < HDD65°F ≤ 5400	2000 < HDD18°C ≤ 3000
5	5400 < HDD65°F ≤ 7200	3000 < HDD18°C ≤ 4000
6	7200 < HDD65°F ≤ 9000	4000 < HDD18°C ≤ 5000
7	9000 < HDD65°F ≤ 12600	5000 < HDD18°C ≤ 7000
8	12600 < HDD65°F	7000 < HDD18°C

For SI: °C = [(°F)-32]/1.8



APPENDIX B:

EXAMPLES OF THIRD-PARTY PROGRAMS FOR INDOOR ENVIRONMENTAL QUALITY

B100 SCOPE AND APPLICABILITY

B101.1 Applicability of Appendix B. Appendix B is not part of this Standard.

B101.2 Scope. Appendix B provides examples of third-party programs for indoor environmental quality that can be used to demonstrate compliance with the applicable provisions of this Standard.

D200 CONFORMANCE

TABLE B200(1)
Examples of Third-party Certification Programs

Related Section of Standard	Examples of Third-party Certification Programs Compliant with the Corresponding Section
901.5 Cabinets	Kitchen Cabinet Manufacturers Association (KCMA) Environmental Stewardship Program (ESP)
901.6 Carpets	Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program
901.7 Hard-surface flooring	UL GREENGUARD Gold Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program
901.8 Wall coverings	UL GREENGUARD Gold Scientific Certification Systems (SCS) Indoor Advantage Gold Program
901.9 Architectural coatings	UL GREENGUARD Gold Scientific Certification Systems (SCS) Indoor Advantage Gold Program Green Seal-11 Standard for Paints and Coatings UL 2768
901.10 Adhesives and sealants	UL GREENGUARD Scientific Certifications Systems (SCS) Indoor Advantage Gold Program Carpet and Rug Institute's (CRI) Green Label Plus Indoor Air Quality Program Resilient Floor Covering Institute's FloorScore Indoor Air Certification Program Green Seal-36 Standard for Adhesives for Commercial Use
901.11 Insulation	UL GREENGUARD Gold Scientific Certifications Systems (SCS) Indoor Advantage Gold Program
901.12 Furniture and Furnishing	UL GREENGUARD Gold Scientific Certifications Systems (SCS) Indoor Advantage Gold Program BIFMA level certification where 7.6.1 and 7.6.2 are proven to be achieved

TABLE B200(2) Contact Information for the Example Third-party Certification Programs	
Third-party Certification Program	Contact Information for the Program Administrator
Kitchen Cabinet Manufacturers Association (KCMA) Environmental Stewardship Program (ESP)	<i>Kitchen Cabinet Manufacturers Association 1899 Preston White Drive Reston, VA 20191 www.kcma.org (703) 264-1690</i>
Carpet and Rug Institute’s (CRI) Green Label Plus Indoor Air Quality Program	<i>Carpet and Rug Institute 730 College Drive Dalton, Georgia 30720 United States of America http://www.carpet-rug.org (706) 278-3176</i>
UL GREENGUARD Gold	<i>Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 www.ul.com (877) 854-3577</i>
Resilient Floor Covering Institute’s FloorScore Indoor Air Certification Program	<i>Resilient Floor Covering Institute 115 Broad Street, Suite 201 LaGrange, Georgia 30240 http://www.rfci.com</i>
Scientific Certification Systems (SCS) Indoor Advantage Gold Program	<i>Scientific Certification Systems 2000 Powell Street, Suite 600 Emeryville, California 94608 http://www.scs-certified.com (510) 452-8000</i>
Green Seal-11 Standard for Paints and Coatings	<i>Green Seal 1001 Connecticut Avenue, NW, Suite 827 Washington, DC 20036-5525 http://www.greenseal.org/ (202) 872-6400</i>
UL 2768	<i>Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 www.ul.com (877) 854-3577</i>



APPENDIX C: ACCESSORY STRUCTURES

C100 SCOPE AND APPLICABILITY

C101.1 Applicability of Appendix C. Appendix C is part of this Standard. Text identified as “User Note” is not considered part of this Standard.

C101.2 Scope. The provisions contained in Appendix C provide the criteria necessary for complying with Section 306 for accessory structures.

C201 CONFORMANCE

C201.1 Conformance. Accessory structures that meet all applicable requirements of Appendix C shall be designated as *conforming*. The *conforming* designation for the accessory structure is separate from the rating achieved by the residential buildings located on the same site or lot. Where residential buildings located on the same lot have not achieved a rating in accordance with this Standard, the accessory structures shall not be eligible for designation under this Appendix. Each accessory structure shall seek a separate designation of *conforming* based on the rules established by the Adopting Entity in accordance with Section E202. The residential building shall not receive points for any practices implemented only for the accessory structure.

C202 CONFORMANCE CRITERIA

C202 Conformance Criteria. Accessory structures shall implement practices from Chapters 5 through 10 in accordance with Sections C202.1 through C202.7.

C202.1 The practices that are mandatory for the residential building shall also be mandatory for the accessory structure unless these practices are exempt under Sections C202.5 or C202.7.

C202.2 All land development practices associated with construction of the accessory structure shall comply with the land development practices for the residential building located on the same lot.

C202.3 For the accessory structures that use the same basic construction and mechanical systems as the residential buildings, the design and construction of the accessory structures shall meet the practices, or the intent of the practices, implemented to achieve compliance for the residential building located on the same site or lot.

C202.4 For the accessory structures that use basic construction or mechanical systems that are different from the residential buildings, the design and construction of the accessory structures shall meet the intent of the practice implemented to achieve compliance for the residential building located on the same site or lot.

C202.5 Where the residential buildings located on the same site or lot include construction methods or systems that do not have functionally-equivalent methods or systems as part of the accessory structure, the accessory structure does not need to comply with any of the practices implemented for the residential building with regard to such construction methods or systems.

User note: Examples of the practices that may be exempt from implementation in accessory structures include, but are not limited to:

- 1) *Section 601.1 Conditioned floor area.*
- 2) *Section 601.5 Prefabricated components – accessory structure is not required to be modular if the residential building is modular.*
- 3) *Section 601.6 Stacked stories – accessory structures are not required to have more than one story if the residential building is more than one story.*
- 4) *Section 602.2 Roof surfaces – if the residential building has a landscaped roof, the accessory structure is not required to have a landscaped roof.*
- 5) *Chapter 7 Energy efficiency – unconditioned spaces in the accessory structure are not required to comply with Chapter 7.*
- 6) *Section 902.3 Radon control except for habitable space.*

C202.6 Where the accessory structure includes construction methods or systems that do not have functionally-equivalent counterparts as part of the residential buildings located on the same site or lot, the Adopting Entity shall review such construction methods and systems and shall establish an approach for meeting the overall intent of the Standard with regard to the minimum acceptable threshold.

C202.7 Where the use of the accessory structure does not necessitate the implementation of a specific practice in the same manner as the practice applies to the residential building, such practice for the accessory structure may be exempted by the Adopting Entity.

User note: Examples of the practices that may be exempted from implementation in accessory structures include, but are not limited to:

- 1) *Section 602.1.14 Ice barrier – if the accessory structure does not contain conditioned space, ice barrier is not required.*



APPENDIX D: WATER RATING INDEX

D101.1 Intent. Provide a flexible method to quantify home water use efficiency as a single number.

D101.2 Scope. The Water Rating Index (WRI) is a performance calculation for water use efficiency, including both indoor and outdoor water use.

D101.3 Capabilities. The WRI calculation shall include the following capabilities

- (1) Both new and existing construction.
- (2) One or more of the following building types:
 - (a) One- and two-family dwellings.
 - (b) Townhouses not more than three stories above grade in height.
 - (c) Multifamily buildings as a whole building; or individual dwelling units provided each unit has a separate water meter.
- (3) Three types of WRI rating reports shall be available:
 - (a) Preliminary reports with WRI from plans.
 - (b) Final reports with WRI with field verification. The final reports shall be formatted to be compared side-by-side with the preliminary reports.
 - (c) Existing dwellings WRI with field-verified existing conditions.
- (4) Building water use shall be reduced based on the water capture and reuse. Where a specific type of water capture and reuse would violate local laws or ordinances, the amount of water capture and reuse for that specific type shall be zero.
 - (a) The water types for capture and reuse shall be:
 - (i) Rainwater, which is natural precipitation that falls on a structure.
 - (ii) Sitewater, which is natural precipitation that falls on the ground, softscapes, and hardscapes.
 - (iii) Greywater, which is untreated wastewater that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources:
 - (1) Only wastewater from bathtubs, showers, lavatories, and clothes washers shall be used in the greywater offset calculation.
 - (2) If no filtration/purification system and properly sized tank is present, then greywater shall only be used outdoors as subsurface irrigation.
 - (iv) Blackwater, which is the liquid and waterborne waste that would be permitted without special treatment into either the public sewer or a private sewage disposal system.
 - (b) Water offset credit for rainwater, sitewater, and greywater use indoors shall require filtration, purification and properly sized tanks. Blackwater shall not offset indoor water.

D101.4 Process. The following shall be required as part of a WRI implementation:

- (1) Trained WRI Verifiers shall provide field verifications, ratings and the associated reports.
- (2) At minimum training shall include:
 - (a) Confirmation of contract documents including building drawings, site drawings, landscape drawings, specifications, cut sheets, and approved final submittals.
 - (b) Visual confirmation of installed site material, fixtures, and equipment.
 - (c) Physical field testing of installed fixtures and equipment.
 - (d) Ability to utilize a tool that incorporates this WRI calculation.

D101.5 Compute Water Rating Index. The WRI is an overall rating for the home on an annual basis. The WRI shall be computed as a percentage of the combined indoor and outdoor water use in relation to the combined indoor and outdoor water baseline.

$$\text{WRI} = 100 * (\text{IndoorUse} + \text{OutdoorUse}) / (\text{IndoorBaseline} + \text{OutdoorBaseline})$$

This Appendix specifies which parameters input to the WRI shall be verified from plans and/or field inspection. Variables with the subscript “verified” shall be verified.

D101.6 Indoor Water. The WRI

- (1) Indoor water calculations for annual Baseline and annual Use shall be as follows:

$$\text{IndoorBaseline} = [\text{ToiletWater}_{(\text{baseline})} + \text{ShowerWater}_{(\text{baseline})} + \text{BathtubWater}_{(\text{baseline})} + \text{LavatoryWater}_{(\text{baseline})} + \text{FaucetWater}_{(\text{baseline})} + \text{DishWasherWater}_{(\text{baseline})} + \text{ClothesWasherWater}_{(\text{baseline})} + \text{StructuralWasteWater}_{(\text{baseline})} + \text{OtherWaterUse}_{(\text{baseline})}] * 365 \text{ days/year}$$

$$\text{IndoorUse} = [\text{ToiletWater}_{(\text{verified})} + \text{ShowerWater}_{(\text{verified})} + \text{BathtubWater}_{(\text{verified})} + \text{LavatoryWater}_{(\text{verified})} + \text{FaucetWater}_{(\text{verified})} + \text{DishWasherWater}_{(\text{verified})} + \text{ClothesWasherWater}_{(\text{verified})} + \text{StructuralWasteWater}_{(\text{verified})} + \text{OtherWaterUse}_{(\text{verified})}] - \text{IndoorWaterReuseCredit}_{(\text{verified})}$$

- (2) NumOccupants = bedrooms + 1
- (3) Baseline water for each device in Table 1 shall be:
 - (a) $\text{Baseline}_{(\text{device})} = \text{VolumePerOccupant}_{(\text{device})} * \text{NumOccupants}$
 - (b) For dishwasher and clothes washer, if it is verified that there is no hookup
 $\text{Baseline}_{(\text{device})} = 0$
- (4) Verified use for each device in Table 1 shall be:
 - (a) $\text{Verified}_{(\text{device})} = \text{VerifiedFlowRate}_{(\text{device})} * \text{UseFactor} * \text{NumOccupants}$
 - (b) A thermostatic control value (TSV) on all showerheads shall be verified, otherwise the shower shall assume no TSV for all showerheads
 - (c) For bathtub, dishwasher and clothes washer, if it is verified that there is no hookup
 $\text{Verified}_{(\text{device})} = 0$

TABLE 1.
WATER USE FOR BASELINE AND VERIFIED DEVICES

Device	Baseline Volume Per Occupant gallons / day / occupant	Uses for Verified Devices and units
Toilet	8	5 uses / day / occupant
Shower	13.455	5.382 or 4.7035 with TSVs minutes / day / occupant at device flow rate
Bathtub	1.414	same as the baseline gallons / day / occupant
Lavatory	2.75	1.25 minutes / day / occupant at device flow rate
Faucet	8.8	4 minutes / day / occupant at device flow rate
Dishwasher	1.69	0.26 uses / day / occupant
Clothes Washer	7.41	0.78 uses / day / occupant

- (5) Structural waste, which is the water volume in the pipe between the hot water source and the plumbing fixture or appliance plus the extra volume needed to heat the pipe as hot water is delivered to its use.
- (a) VerifiedStructuralWaste (gallons), shall be field measured as the water volume collected until the temperature of the water equals 100°F at the furthest fixture for a domestic hot water system.
- (i) This test shall be performed before any other tests in order to avoid preheating the pipes. This test shall use an apparatus with a thermometer and water container.
- (ii) If there is more than one domestic hot water system, all systems shall be tested for structural waste with the worst performing system entered into the calculation.
- (b) BaselineStructuralWaste (gallons/day) is approximated based on the house size and configuration. The pipe length is estimated as a horizontal length plus a vertical length.
- (i) EstimatedHorizontalPipe = $\text{SQRT}(\text{HouseFootprint}) * 2$
which is the pipe length estimated as the distance between two opposite corners of square with same area as house, assuming the pipe went along the length and width of the square.
- (ii) EstimatedVerticalPipe = NumberOfFloors * FloorHeight
- Except:
- (1) Add half floor height for one story house with crawlspace and water heater on first floor or in garage
- (2) Add half floor height for 1 story with slab
- (3) Subtract 1 floor height for 2 story slab on grade
- (iii) EstimatedTotalPipe = EstimatedHorizontalPipe + EstimatedVerticalPipe

(iv) $\text{BaselineStructuralWaste} = \text{EstimatedTotalPipe} * \text{WaterVolumePerPipeLength}$

Variables

- (1) HouseFootprint - sf of the exterior conditioned space on the ground floor
 - (a) Exception: the attached garage’s sf shall be included if a water heater is located in the garage
- (2) FloorToFloorHeight, average floor to floor height (ft) WaterVolumePerPipeLength is gallons per ft pipe from Table 2, based on the predominate type of pipe. For existing homes, the value of 0.025 shall be used when the predominant type of pipe is not known

TABLE 2.
GALLONS OF WATER PER FOOT OF PIPE

Pipe Material	3/8"	1/2"	3/4"	1"
K (fat wall copper)	0.007	0.011	0.023	0.040
L (medium wall copper)	0.008	0.012	0.025	0.043
M (skinny wall copper)	0.008	0.013	0.027	0.045
CPVC	N/A	0.010	0.021	0.035
PEX	0.005	0.009	0.019	0.031

- (c) PreliminaryStructuralWaste (gallons) is the estimated structural waste volume for a building when there is no built construction to verify but a preliminary estimate is necessary to create a comparison to the baseline. This estimate shall be the same as BaselineStructuralWaste, except that the EstimatedHorizontalPipe shall be replaced with the PreliminaryHorizontalPipe computed as:

$\text{PreliminaryHorizontalPipe} = \text{horizontal measurement of the straight-line distance from the water heater to the furthest hot-water-using fixture on the plans}$

- (6) Other types of water use. OtherWaterUse (gallons/day) - other water fixture use for fixtures verified to be present
 - (a) The baseline is zero, when device is not present
 - (b) OtherWaterUse sums the water use for fixtures that are present
 - (c) OtherWaterUse includes:
 - (i) Water use per manufacturer (gallons/day)
 - (1) Water softeners
 - (2) Humidifiers
 - (3) Evaporative coolers
 - (4) Water filters, except reverse osmosis
 - (ii) Reverse osmosis water use shall be as specified by the manufacturer or shall default to a water waste of 4 times the water consumption
 - (iii) Fountains and spas – water loss (gallons/day) = pan evaporation rate * area
 - (iv) VerifiedLeaks shall be included as a direct use item. The baseline is no leaks. Leaks are included in both baseline and actual if verified as present for existing or final ratings.
 - (v) Where there are multiple fixtures or appliances of the same type, the baseline fixtures and appliances shall be assumed to all be of the same type, flow rate and water use rate.

- (7) Master bath adjustment. This item shall apply where there is a master bath. If the flow rate of the individual toilet, lavatory, or shower devices varies, then water use in the master bath and outside the master bath shall be computed separately.
 - (a) For each device type, average the device-type flow rates. Compute two separate device-type-averages, one average for the master bath and one average for outside the master bath.
 - (b) Device-type uses are divided as follows:
 - (i) For each device the total number of uses shall be as given in Table 1, with the uses divided between the master bath and outside the master bath.
 - (ii) For master bath toilets and lavatories assume 2 uses each for 2 occupants, for a total of 4 uses per day. For master bath showers assume 1 use each for 2 occupants for a total of 2 uses per day.
 - (iii) Assume the remaining uses in Table 1 are outside the master bath.
 - (c) For both the master bath and outside the master bath compute water use as the device-type average times the number of uses.
 - (d) Add the device water use to ToiletWater, LavatoryWater and ShowerWater as appropriate in the IndoorUse equation in item #1.
- (8) Other appliances. For other appliances: If there is more than one of a specific type of appliance, then the worst-case appliance water use shall be used in the ApplianceFlowRate_(device).

Defaults - If cut sheets or internet information is available for either dishwashers or clothes washers, that information shall supersede these defaults.

**TABLE 4.
DEFAULTS FOR CLOTHES WASHERS AND DISHWASHERS**

Clothes Washer	9.5 IWF, 4 CF (ft ²)
Dishwasher	6.5 gallon/cycle

D101.7 Water Capture for Potential Reuse. This calculates the water available for reuse for each month.

- (1) RainwaterCapture, GreywaterCapture, and BlackwaterCapture shall be computed for each month.
 - (a) RainwaterCapture_(month) - gallons/month, includes roofwater and sitewater.

= [(RoofwaterArea * RoofSurfaceCapture) + (SitewaterArea * SiteSurfaceCapture)] * 0.623 (gallons/sq ft of 1 in of rain) * DaysInMonth_(month)

 - (i) RainwaterArea_(roof) and RainwaterArea_(site) – Verified Rainwater capture areas for the roof and site in sq ft. Where there is no rainwater capture, these areas shall be zero
 - (ii) SiteSurfaceCapture – Site surface affects water capture as specified in Table 6. Site surface shall be verified. Where there are multiple site surface types, the area-weighted average shall be used.

**TABLE 6.
SITE SURFACE FRACTION CAPTURED**

Surface	Capture
Asphalt	0.83
Concrete	0.88
Brick	0.78
Patios, stone or other pavers	0.88
Unknown (also default)	0.50

- (iii) RoofSurfaceCapture – Roof surface affects water capture as specified in Table 7. Roof surface shall be verified. Where there are multiple roof surface types, the area-weighted average shall be used.

**TABLE 7.
ROOF SURFACE FRACTION CAPTURED**

Surface	Capture
Asphalt/sloped	0.90
Concrete or Tile/sloped	0.90
Metal/sloped	0.95
Tar & Gravel/sloped	0.80
Membrane/sloped	0.90
Concrete or Tile/flat	0.81
Foam & Gravel/flat	0.62
Foam/flat	0.90
Membrane/flate	0.90
Unknown (also default)	0.50

- (b) GreywaterCapture_(month) - in gallons/month

$$= (\text{ShowerWater}_{(\text{verified})} + \text{BathtubWater}_{(\text{verified})} + \text{LavatoryWater}_{(\text{verified})} + \text{ClothesWasherWater}_{(\text{verified})}) * \text{DaysInMonth}_{(\text{month})}$$

- (c) BlackwaterCapture_(month) - in gallons/month

$$= (\text{ToiletWater}_{(\text{verified})} + \text{FaucetWater}_{(\text{verified})}) * \text{DaysInMonth}_{(\text{month})}$$

- (d) To get credit for reuse of captured rainwater, greywater and blackwater:

- (i) Tank size shall be 90% of nominal size to provide a safety factor.
- (ii) Capture systems shall include filtration and purification for reuse indoors or above ground irrigation.
- (iii) Capture water credit for each month shall be no more than the tank size or the captured water available – whichever is less.
- (iv) Any remaining unused captured water can be carried over to the following month but not in excess of the tank size.
- (v) Reuse of rainwater, greywater and blackwater shall not receive credit in violation of ordinances or other regulations.

D101.8 Outdoor Calculations. The annual outdoor water use shall be calculated as follows:

$$\text{OutdoorUse} = \text{LandscapeWaterUse} + \text{NonLandscapeWaterUse}$$

OutdoorBaseline_(month) = Evapotranspiration_(month) * LandscapeWaterArea_(total) * 0.623 (gallons/sq ft of 1 in of rain) where LandscapeWaterArea_(total) is the total of all the areas that are planted, irrigated, hand-watered or have a water feature like a pool.

- (1) LandscapeWaterUse – Is the annual outdoor water use for landscaping. It sums the monthly water use for each landscape zone into the LandscapeWaterUse

- (a) Water use shall be increased for an IrrigationEfficiency of less than 1, as specified in Table 8
- (b) Water use shall be adjusted based on the irrigation controller, as some controllers conserve water by adjusting for weather or soil conditions

LandscapeWaterUse = For each month that is a water month and for each landscape zone sum

$$([\text{Evapotranspiration}_{(\text{month})} * \text{PlantFractionEvapotranspiration}_{(\text{zone})}] - \text{EffectiveRainfall}_{(\text{month})}) * \text{LandscapeArea}_{(\text{zone})} * (1 - \text{IrrigationControllerReduction})_{(\text{zone})} / \text{IrrigationEfficiency}_{(\text{zone})} * 0.623 \text{ (gallons/sq ft of 1 in of rain)}$$

- (a) Multiple physical zones with the same values for Evapotranspiration, IrrigationEfficiency and IrrigationControllerReduction shall be permitted to be combined into one zone with LandscapeArea being the sum of the areas of those zones
- (2) Months shall be water-months as follows based on approved long-term climate data which includes frost days and average last frost
 - (a) To define the watering months, take the number of frost days in a year, divide by twelve, and round to the nearest whole month
 - (b) The month with the average last frost is the beginning of the watering months
- (3) If an irrigation system is installed, the verifiers shall verify that the irrigation emitters and zones are operational
- (4) Variables:
 - (a) LandscapeArea_(zone) - verified landscape zone(s) with specific verified area
 - (b) Defaults – If the landscaping cannot be verified then the verifier shall use an automatic minimum of 10% of the LandscapeWaterArea_(total). Where the plants cannot be verified, the verifier shall assume plants with the highest water requirements and no irrigation
 - (c) IrrigationEfficiency_(zone) – The efficiency of a specific type of irrigation, a number between 0 and 1

**TABLE 8.
IRRIGATION EFFICIENCY**

Only hand irrigation	1
Drip – standard	.7
Drip – micro	.8
Drip – press comp	.9
Fixed spray	.65
Micro spray	.7
Rotor	.7
Rotary nozzle	.75
Spray	.55
Flood	1
Direct injection/root	1

- (d) IrrigationControllerReduction_(zone) is irrigation water reduction based on a verified weather-based irrigation controller:
 - (i) An irrigation controller that integrates rain sensors shall be a 10% IrrigationControllerReduction
 - (ii) An irrigation controller that integrates daily weather tracking shall be a 10% IrrigationControllerReduction
 - (iii) Both i and ii, which shall be a 20% IrrigationControllerReduction

- (5) Evapotranspiration(month) - Monthly evapotranspiration (ETo)
 - (a) Approved long-term evapotranspiration data with a least a monthly resolution shall be used to define monthly evapotranpiration rates for specific locations
 - (b) PlantFractionEvapotranspiration(zone) – which is from the highest water using plant in that zone
 - (c) For purposes of identifying plant water demand, an approved resource shall be used to identify plant type

**TABLE 9.
RELATIVE WATER USE BY PLANT TYPE**

Plant Type	Plant Fraction of Evapotranspiration
Turf, cool season grasses adapted to temperatures from 65° to 75°F.	0.8
Turf, warm season grasses adapted to temperatures from 80° to 95°F	0.6
Annual flowers	0.8
Woody plants and herbaceous perennials, wet plants adapted to ≥20 in. of annual precipitation	0.7
Woody plants and herbaceous perennials, dry plants adapted to 10 to 20 in. of annual precipitation	0.5
Desert plants plants adapted to <10 in. of annual precipitation	0.3
Home food crops	1.0

- (6) NonLandscapeWaterUse shall be the sum of outdoor exposed pools, spas, and fountains, if any
 - (a) The water requirement for outdoor uncovered pools, spas, or fountains is 70% of the evapotranspiration (ETo). The water demand is the same covered or uncovered.

Exception: Pools with motorized covers shall use 40% of the evapotranspiration.
 - (b) The baseline assumes uncovered pools, spas or fountains only if present for the proposed.

D101.9 Water Cost Calculations. Where water costs are calculated the water cost shall be obtained from the authority having jurisdiction.

- (1) All indoor and outdoor water use shall be included in the water cost calculation. This includes items for which there is no industry accepted baseline efficiency as specified in the Indoor Calculations section of this appendix.

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Georgia State Amendments to the National Green Building Standard (2008 Edition)



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Revised January 1, 2011

**GEORGIA STATE MINIMUM
RESIDENTIAL GREEN BUILDING STANDARD
(NATIONAL GREEN BUILDING STANDARD
WITH GEORGIA STATE AMENDMENTS)**

The NATIONAL GREEN BUILDING STANDARD, 2008 Edition, published by the International Code Council, when used in conjunction with these Georgia State Amendments and all other Georgia State Amendments to the NATIONAL GREEN BUILDING STANDARD, 2008 EDITION, shall constitute the official *Georgia State Minimum Residential Green Building Standard*.

GEORGIA STATE AMENDMENTS

**Revise the National Green Building Standard, 2008 Edition, as follows:*

**CHAPTER 1
SCOPE AND ADMINISTRATION**

**SECTION 101
GENERAL**

*Add new Section 101.4, 'Local Ordinances', to read as follows:

101.4 Local Ordinances. Where the provisions of this Standard are in conflict with local ordinances, the provisions of the local ordinances shall prevail.
(Effective January 1, 2011)

**SECTION 102
APPLICABILITY**

*Revise Section 102.1, 'Applicability', to read as follows:

102.1 Applicability. The provisions of this standard shall apply to one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height with separate means of egress and their accessory structures; subdivisions, building sites, alterations, additions, and renovations.
(Effective January 1, 2011)

*Add new Section 102.2.1, 'Supplementary document', to read as follows:

102.2.1 Supplementary document. The National Green Building Standard Commentary may be used as a supplementary document to the National Green Building Standard.
(Effective January 1, 2011)

SECTION 103 CONFORMANCE

*Revise Section 103.3, 'Documentation', to read as follows:

103.3 Documentation. Certification of conformance to green building practices shall be the appropriate construction documents, architectural plans, site plans, specifications, inspection reports and the report of the Special Green Inspector as provided in section 104.2.
(Effective January 1, 2011)

*Add new Section 103.4.1, 'Deemed to comply', to read as follows:

103.4.1 Deemed to comply. Homes certified under the EarthCraft or LEED for Homes certification programs are deemed to meet this Standard.
(Effective January 1, 2011)

SECTION 104 ADMINISTRATION

*Revise Section 104.1, 'Administration', to read as follows:

104.1 Administration. The Adopting Entity shall specify the minimal performance level to be achieved as identified in Chapter 3.
(Effective January 1, 2011)

*Add new Section 104.2, 'Special Green Inspector', to read as follows:

104.2 Special Green Inspector.

104.2.1 General. Where construction is proposed under this Standard, a Special Green Inspector shall provide inspections and verify work performed in compliance with this Standard. The owner shall be responsible for any costs incurred by the Special Green Inspector. The inspector shall be an independent third party.

104.2.2 Qualifications. The Special Green Inspector shall be a qualified person who shall be a NAHB Accredited Green Verifier or possess a G1 ICC Certified Green Building Inspector Certification and comply with the insurance and prerequisite requirements in Appendix C. If any verification performed under this Standard requires additional qualifications, the Special Green Inspector shall ensure that the verification is performed by a qualified party.

Exceptions:

1. Section 701.1.1 shall be verified by an accredited HERS Rater working under the supervision of a RESNET Provider

104.2.3 Report requirement. The Special Green Inspector shall keep records of the verifications performed in compliance with this Standard and shall furnish inspection reports to the building official and owner. Reports shall state that the verification has been performed in compliance with the requirements of this Standard. A final report certifying compliance with this Standard shall be made to the building official and owner upon completion of the project.

(Effective January 1, 2011)

CHAPTER 2 DEFINITIONS

SECTION 202 DEFINITIONS

*Add definition of ‘ACCESSORY STRUCTURE’ as follows:

ACCESSORY STRUCTURE. A structure not greater than 3,000 square feet (279 m²) in floor area, and not over two stories in height, containing conditioned space, the use of which is customarily accessory to and incidental to that of the dwelling(s) and which is located on the same lot.

(Effective January 1, 2011)

*Revise definition of ‘GROUND SOURCE HEAT PUMP’ as follows:

GROUND SOURCE HEAT PUMP. Space conditioning and/or water heating systems that employs a geothermal resource such as the ground, ground water, or surface water or a lake or pond, utilizing an approved closed loop heat exchanger as both a heat source and a heat sink using a reversible refrigeration cycle to provide both heating and cooling.

(Effective January 1, 2011)

*Add definition of ‘TOWNHOUSE’ as follows:

TOWNHOUSE. Multiple single-family dwelling units, separately owned, constructed in a group of three or more attached units in which each unit extends from foundation to roof and with a yard or public way on at least two sides.

(Effective January 1, 2011)

CHAPTER 3 COMPLIANCE METHOD

SECTION 301 GENERAL

*Revise Section 301.2, ‘Awarding of points’, to read as follows:

(Beginning of section left unchanged)

(3) The Adopting Entity’s building official, building inspector or designee shall allow new products and practices to be added where deemed to meet the intent of this Standard. Points assigned for any new product or practice shall be determined by the Adopting Entity’s building official, building inspector or designee.

(Effective January 1, 2011)

**SECTION 304
GREEN MULTI-UNIT BUILDINGS**

*Delete Section 304, ‘GREEN MULTI-UNIT BUILDINGS’, in its entirety without substitution.

**SECTION 305
GREEN RENOVATIONS AND ADDITIONS**

*Revise Section 305.5.4(1), as follows:

305.5.4 (1) Energy consumption: Energy consumption shall be based on the estimated annual energy use due to heating, cooling, and water heating as determined by Chapter 7 of this Standard. *(Remainder of section left unchanged)*

(Effective January 1, 2011)

**CHAPTER 4
SITE DESIGN AND DEVELOPMENT**

**SECTION 405
INNOVATIVE PRACTICES**

*Revise Section 405.6, ‘Mass transit’, to add # 3 as follows:

(3) A selected site with a main entrance within one-half mile (805 m) of six or more community resources [e.g., recreational facilities (such as pools, tennis courts, basketball courts), parks, grocery store, post office, place of worship, community center, daycare center, bank, school, restaurant, medical/dental office, laundromat/dry cleaner].

[3 points]

(Effective January 1, 2011)

**CHAPTER 5
LOT DESIGN, PREPARATION, AND DEVELOPMENT**

**SECTION 505
INNOVATIVE PRACTICES**

*Add new Section 505.1.1, ‘Minimum pavement design’, to read as follows:

505.1.1 Minimum pavement design. The design of ground supported pavement for driveways and parking areas shall comply with one of the following:

(1) Concrete surfaces. The minimum compressive strength of the concrete (f'_c) for concrete pavements shall be 4000 psi. The minimum thickness of the concrete pavement shall be 4.0 inches on uniform compacted subgrade with a maximum joint spacing of 10 feet by 10 feet

[2 points]

(2) Asphalt surfaces. The asphalt pavement shall comply with Item a) or b).

a. Full depth asphalt pavement: Where full depth asphalt pavements are constructed using asphalt and emulsified asphalt base mixes the minimum thickness of the asphalt pavement shall be one of the following on compacted subgrade:

1. A minimum of 1 inch of asphalt for the top surface and 3.5 inches of asphalt or Type I emulsified asphalt mix for the base.
2. A minimum of 2 inches of asphalt for the top surface and 2.5 inches of Type II emulsified asphalt mix for the base.
3. A minimum of 2 inches of asphalt for the top surface and 4.5 inches of Type III emulsified asphalt mix for the base.

[2 points]

b. Asphalt pavement with untreated aggregate base and sub-base: Where asphalt pavements are constructed using asphalt placed over untreated aggregate bases and sub-bases the thickness of the asphalt pavement shall be a minimum of 1 inch of asphalt for the top surface, 2.5 inches of asphalt base and 4.0 inches of untreated aggregate base on compacted subgrade.

[2 points]

(3) Interlocking concrete paver surfaces: Interlocking concrete pavers shall be installed on a minimum 1-inch thick bedding sand supported by a compacted road base material with a minimum thickness of 6-inches. The joints of the interlocking concrete pavers shall be filled with a polymeric sand.

[2 points]

(4) Permeable interlocking concrete paver surfaces. Permeable interlocking concrete pavers shall be installed on three layers of aggregate base as follows:

- a. The first layer shall be a compacted aggregate base of No. 2 or No. 4 stone with a minimum thickness of 8 inches.
- b. The second layer shall be a compacted aggregate base of No. 57 stone with a minimum thickness of 4 inches.
- c. The third layer shall be a compacted aggregate base of No. 89 stone with a minimum thickness of 2 inches.

The joints of the permeable interlocking concrete pavers shall be filled with No. 89 stone.

[2 points]

(5) Pervious concrete pavement surfaces: Pervious concrete pavement shall be a minimum thickness of 6 inches. The pervious concrete pavement shall be placed on a base in accordance with the following:

- a. For parking areas with light traffic the pervious concrete pavement shall be placed on an aggregate base of No. 57 stone at a minimum thickness of 6 inches. The aggregate base shall be separated from the subgrade by non-woven geotextile fabric.
- b. For driveways the pervious concrete shall be permitted to be placed on the subgrade provided it is separated from the subgrade with a non-woven geotextile fabric

[2 points]

(6) Alternative pavement designs. Other approved pavement surface designs.
(Effective January 1, 2011)

CHAPTER 7 ENERGY EFFICIENCY

SECTION 703 PRESCRIPTIVE PATH

*Revise Section 703.4.6, as follows:

Delete Item **(1)** in its entirety.

Revise Item **(4)** to read as follows:

(4) Any type (closed, direct expansion): ≥ 24 EER / ≥ 4.3 COP
(Effective January 1, 2011)

*Revise Table 703.5.1(2), ‘Electric Water Heating’, to read as follows:

**Table 703.5.1(2)
Electric Water Heating**

Size (gallons)	Energy Factor	POINTS
30 to <40	0.95	1
40 to <50	0.94	1
50 to <65	0.93	1
65 to <80	0.91	1
80 to <100	0.90	1
≥100	0.86	1

(Effective January 1, 2011)

**CHAPTER 8
WATER EFFICIENCY**

*Revise Section 801.8, ‘Rainwater collection and distribution’, to read as follows:

(1) Rainwater is collected and used to offset municipal and well water use.

- (a) Systems up to 300 gallons [1 point]
- (b) Systems more than 300 gallons [5 points]

(Remainder of section left unchanged)

(Effective January 1, 2011)

**CHAPTER 9
INDOOR ENVIRONMENTAL QUALITY**

**SECTION 903
MOISTURE MANAGEMENT: VAPOR, RAINWATER, PLUMBING, HVAC**

*Revise Section 903.2.1 to add exceptions as follows:

- Exceptions:**
- A. Driveways
 - B. Sidewalks

C. Patio/Porch
(Effective January 1, 2011)

*Add item # 4 to Section 903.4.1, to read as follows:

- (4) Implement five (5) of the best practices from ANSI/GREENGUARD Environmental Institute Mold And Moisture Management Standard For New Construction (ANSI/GEI – MMS1001), an overall moisture management program, as part of the overall building design, construction and operation.

[5 Points]
(Effective January 1, 2011)

CHAPTER 10 OPERATION, MAINTENANCE, AND BUILDING OWNER EDUCATION

SECTION 1002

*Revise Title of Section 1002 to read as follows:

1002 TRAINING OF BUILDING OWNERS ON OPERATION AND MAINTENANCE FOR ONE-AND TWO-FAMILY DWELLINGS
(Effective January 1, 2011)

*Revise Section 1002.1, ‘Training of building owners’, to read as follows:

1002.1 Training of building owners. Building owners are familiarized with the green building goals and strategies implemented and the impacts of the owners practices on the costs of operating the building. Training is provided to the responsible party(ies) regarding all equipment operation and control systems. Systems include, but are not limited to, the following:
(Remainder of section left unchanged)
(Effective January 1, 2011)

SECTION 1003 CONSTRUCTION, OPERATION, AND MAINTENANCE MANUALS AND TRAINING FOR MULTI-UNIT BUILDINGS

*Delete Section 1003, ‘CONSTRUCTION, OPERATION, AND MAINTENANCE MANUALS AND TRAINING FOR MULTI-UNIT BUILDINGS’, without substitution.
(Effective January 1, 2011)

**CHAPTER 11
REFERENCED STANDARDS**

**SECTION 1101
GENERAL**

*Add new Section 1101.2.1, to read as follows:

1101.2.1 Replace all International Code Council (ICC) references with the corresponding current Georgia State Minimum Standard Code as adopted and amended by the Department of Community Affairs.
(Effective January 1, 2011)

*Add new 'Appendix C' as follows:

APPENDIX C

SPECIAL GREEN INSPECTOR PREREQUISITES

**SECTION F101
GENERAL**

C101.1 Scope. This appendix specifies the prerequisite insurance and qualification requirements for individuals possessing a G1 ICC Certified Green Inspector Certification to be considered a Special Green Inspector.

C101.2 Eligibility. To be eligible to become a Special Green Inspector an individual shall have the following computer skills:

- 1) Microsoft Office 2003 or later and a working knowledge of Word and Excel
- 2) The ability to scan and e-mail a copy of a signed form
- 3) The ability to send an electronic photo attachment to an e-mail

C101.3 Professional or field experience. In addition to meeting the requirements in Section C101.2, an individual shall have at least one year of professional or field experience in home building, including at least one of the following:

- 1) Residential trade contractor or builder experience either on the jobsite or in management
- 2) Superintendent or other jobsite supervision
- 3) Licensed or qualified home inspector

- 4) Residential design or architectural work
- 5) Residential land development management
- 6) Green building verification for another green certification
- 7) Construction consulting or training
- 8) Construction inspection

C101.4 Green building experience. In addition to meeting the requirements in Sections C101.2 and C101.3, an individual shall have at least one of the following:

- 1) Three years of professional field experience in green and/or sustainable home building
- 2) At least 12 hours of formal green training
- 3) Designation by the National Association of Home Builders Research Center as a Certified Green Professional
- 4) NARI Green Building Certification from the National Association of the Remodelers Industry
- 5) Professional certification from Green Advantage
- 6) RESNET Green Rater Certification
- 7) LEED Accredited Professional Certification
- 8) EarthCraft Technical Advisor
- 9) Experience as a green building verifier for another program for at least two years

C101.5 Insurance. An individual shall also obtain the following minimum insurance coverage prior to conducting work as a Special Green Inspector:

- 1) General Liability: \$1,000,000
- 2) Automobile Liability: \$500,000
- 3) Workers Compensation: As required by law
- 4) Employer's Liability: \$500,000 (typically part of Workers Compensation)

(Effective January 1, 2011)

End of Amendments.



Determining Equivalency:

Comparison of the National Green Building Standard and LEED

National Green Building Standard (NGBS) Overview

The National Green Building Standard (NGBS) is the first and only residential green building rating system to receive approval from the American National Standards Institute (ANSI). ANSI approval is important because it is third-party confirmation of balance, representation, openness, consensus, and due process in the standard's development process. The 2008 NGBS Consensus Committee was comprised of 42 individuals representing a variety of government agencies, municipalities, home building industry professionals, and non-profit organizations, including the U.S. Green Building Council (USGBC). The 2012 NGBS followed a similarly rigorous and inclusive ANSI development process.

The NGBS is also the first and solely residential green building standard to be amongst the International Code Council's (ICC) suite of I-codes. As the industry standard for green residential development, the NGBS is embedded within the International Green Construction Code (IgCC).

Although USGBC's Leadership in Energy and Environmental Design (LEED) certification pre-dates the NGBS, **it is incorrect to assume that LEED is more stringent than the NGBS.** The truth is that the NGBS is just as rigorous, if not more rigorous, than the LEED rating systems. In addition, the flexibility of the NGBS provides an effective and affordable tool to encourage a green transformation. Further, if we are to be successful in transforming the way we design, build, maintain, and operate our buildings, homes and communities, we will need to provide architects, builders, remodelers, developers, engineers, building scientists, realtors, appraisers, financiers, homeowners, renters, government agencies, and code officials with a truckload of innovative, effective, affordable, tools to help them reach that goal.

NGBS vs. LEED NC Scope

The NGBS is designed specifically for residential construction, development, and renovation. LEED NC is intended for use in the construction of both commercial office buildings and multifamily residential buildings. While commercial and multifamily buildings may share construction materials and methods, occupancy matters and thus the NGBS is uniquely suited to residential occupancy.

Side-by-Side Comparison: NGBS and LEED Practices

NGBS	LEED NC
6 categories of green practices: <ul style="list-style-type: none"> • Lot & Site Development • Resource Efficiency • Energy Efficiency • Water Efficiency • Indoor Environmental Quality • Operation, Maintenance, and Building Owner Education <p><i>(* Each NGBS category includes an innovative practices section.)</i></p>	7 categories of green practices: <ul style="list-style-type: none"> • Sustainable Site • Materials and Resources • Energy & Atmosphere • Water Efficiency • Indoor Environmental Quality • Regional Priority • Innovation in Design*

Categories of Green Practices

The NGBS and LEED have practices in five identical categories: (1) Water Efficiency; (2) Energy Efficiency; (3) Sustainable Sites; (4) Resource Efficiency; and (5) Indoor Environmental Quality. LEED offers a separate category for Innovation in Design. The NGBS alternatively recognizes innovative green practices in each of its six categories. LEED also offers a section for Regional Priority. The NGBS provides greater flexibility for architects and developers to recognize regional priorities because the NGBS is a more expansive, flexible point-based system. The NGBS has a category for Building Operation, Maintenance, and Building Owner Education; LEED NC has no comparable category.

Mandatory Requirements Comparison

Both NGBS and LEED have mandatory practices necessary to attain certification at any level.

LEED NC has a total of eight Prerequisites. One LEED Prerequisite is identical to an NGBS Mandatory Practice (Minimum Energy Performance at the Certified/Bronze level). For six LEED Prerequisites, the NGBS has an identical non-mandatory practice that awards points toward certification. Only one LEED Prerequisite is not exactly duplicated in the NGBS (Minimum Indoor Air Quality Performance), however, the NGBS has numerous practices intended to ensure improved indoor air quality.

The NGBS has 36 Mandatory Practices, 12 of which are not required by LEED. Some, but not all, of these NGBS Mandatory Practices are covered by LEED credits, with the notable exception being the NGBS Mandatory Practices for Operation, Maintenance, and Building Owner Education.

Verification Requirements Comparison

NGBS	LEED
Every NGBS project is <u>required to be inspected</u> at least twice by an independent, third-party accredited NGBS Green Verifier. No self-certification or affidavits are allowed. Practices must be visually inspected to receive points, except for a few practices where visual inspection is not applicable or practical and specific alternative verification methods are permitted.	Buildings are <u>not required</u> to be inspected on site for every point claimed toward certification. Documentation, photos, or written assertions are allowed in lieu of a visual inspection.

Certification Requirements

Both programs offer four levels of certification. NGBS offers Bronze, Silver, Gold, or Emerald. LEED offers Certified, Silver, Gold, or Platinum.

Within the NGBS, no one category of green practices is weighted as more important than another. All projects must achieve a minimum point threshold in every category of green building practice to be certified at any level. The NGBS is the only national program with this level of cross-category stringency, making it the most rigorous and comprehensive green building rating system.

For LEED, buildings may attain points in any category to achieve the total points required for a given certification level; LEED does not require point minimums in every category of the green building rating system.

Helpful Links for National Green Building Standards (NGBS)

Dept. of Community Affairs - Georgia allows for the adoption of NGBS with amendments.

<https://www.dca.ga.gov/local-government-assistance/construction-codes-industrialized-buildings/construction-codes>

National Association of Home Builders Supports NGBS

<https://www.nahb.org/advocacy/industry-issues/sustainability-and-green-building/national-green-building-standard-certification>

Atlanta strengthens LEED requirements

<https://www.atlantaga.gov/Home/Components/News/News/7103/>

RESOLUTION – CITY OF OXFORD, GEORGIA

NEWTON COUNTY HAZARD MITIGATION PLAN UPDATE 2020

WHEREAS, Newton County and its municipalities recognize that it is threatened by several different types of natural and man-made hazards that can result in loss of life, property loss, economic hardship and threats to public health and safety; and

WHEREAS, the Federal Emergency Management Agency (FEMA) has required that every county and municipality have a pre-disaster mitigation plan in place, and requires the adoption of such plans in order to receive funding from the Hazard Mitigation Grant Program; and

WHEREAS, a Hazard Mitigation Plan is a community’s plan for evaluating hazards, identifying resources and capabilities, selecting appropriate actions, and developing and implementing the preferred mitigation action to eliminate or reduce future damage in order to protect the health, safety and welfare of the residents in the community; and

WHEREAS, the Newton County Hazard Mitigation Plan Update 2020 has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and

WHEREAS, the Plan will be updated every five years;

NOW, THEREFORE, BE IT RESOLVED, by the Mayor and City Council of Oxford, Georgia, that:

1)The City of Oxford, Georgia, has adopted the Newton County Hazard Mitigation Plan 2020 Update; and

2)It is intended that the Plan be working document and is the first of many steps toward improving rational, long-range mitigation planning and budgeting for New County and its municipalities.

PASSED, APPROVED AND ADOPTED by the Mayor and City Council of Oxford,

Georgia, in regular session this _____ day of _____, 2022.

Mayor

City Clerk



**NEWTON COUNTY
HAZARD MITIGATION
PLAN UPDATE
2020 - 2025**

Newton County Emergency Management Agency

Lux Mitigation and Planning Corp.

**Newton County, Georgia
Hazard Mitigation Plan Update
2020 – 2025**



Prepared for the Newton County Board of Commissioners
1124 Clark Street
Covington, Georgia 30014
770.784.2000
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**Newton County's
Hazard Mitigation Plan 2020 Update**

This document was funded in part by the Hazard Mitigation Planning Grant awarded to the Newton County Emergency Management Agency by the Georgia Emergency Management Agency (GEMA) to fulfill the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000). Newton County's 2015 Hazard Mitigation Plan was updated by the Newton County Hazard Mitigation Plan Update Committee and was prepared by Lux Mitigation and Planning Corp. For additional information, please contact Newton County Emergency Management Agency.

Director Jody Nolan
Newton County Emergency Management Agency
8134 Geiger Street
Covington, GA 30014
jody.nolan@covington-newton911.com
678.342.5326

Resolution – Newton County

RESOLUTION – NEWTON COUNTY, GEORGIA

NEWTON COUNTY HAZARD MITIGATION PLAN 2020 UPDATE

WHEREAS, Newton County and its municipalities recognize that it is threatened by several different types of natural and man-made hazards that can result in loss of life, property loss, economic hardship and threats to public health and safety; and

WHEREAS, the Federal Emergency Management Agency (FEMA) has required that every county and municipality have a pre-disaster mitigation plan in place, and requires the adoption of such plans in order to receive funding from the Hazard Mitigation Grant Program; and

WHEREAS, a Hazard Mitigation Plan is a community’s plan for evaluating hazards, identifying resources and capabilities, selecting appropriate actions, and developing and implementing the preferred mitigation actions to eliminate or reduce future damage in order to protect the health, safety and welfare of the residents in the community; and

WHEREAS, the Newton County Hazard Mitigation Plan 2020 Update has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and

WHEREAS, the Plan will be updated every five years;

NOW, THEREFORE, BE IT RESOLVED, by the Board of Commissioners of Newton County, Georgia, that:

- 1) Newton County, Georgia, has adopted the Newton County Hazard Mitigation Plan 2020 Update; and
- 2) It is intended that the Plan be a working document and is the first of many steps toward improving rational, long-range mitigation planning and budgeting for Newton County and its municipalities.

PASSED, APPROVED AND ADOPTED by the Board of Commissioners of Newton County, Georgia, in regular session this _____ day of _____, 2020.

Chairperson

County Clerk

Resolution – Newton County Municipalities

Requirement §201.6(c)(5)

RESOLUTION – CITY OF COVINGTON, GEORGIA

NEWTON COUNTY HAZARD MITIGATION PLAN UPDATE 2020

WHEREAS, Newton County and its municipalities recognize that it is threatened by several different types of natural and man-made hazards that can result in loss of life, property loss, economic hardship and threats to public health and safety; and

WHEREAS, the Federal Emergency Management Agency (FEMA) has required that every county and municipality have a pre-disaster mitigation plan in place, and requires the adoption of such plans in order to receive funding from the Hazard Mitigation Grant Program; and

WHEREAS, a Hazard Mitigation Plan is a community’s plan for evaluating hazards, identifying resources and capabilities, selecting appropriate actions, and developing and implementing the preferred mitigation actions to eliminate or reduce future damage in order to protect the health, safety and welfare of the residents in the community; and

WHEREAS, the Newton County Hazard Mitigation Plan Update 2020 has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and

WHEREAS, the Plan will be updated every five years;

NOW, THEREFORE, BE IT RESOLVED, by the Mayor and City Council of Covington, Georgia, that:

- 1) The City of Covington, Georgia, has adopted the Newton County Hazard Mitigation Plan 2020 Update; and
- 2) It is intended that the Plan be a working document and is the first of many steps toward improving rational, long-range mitigation planning and budgeting for Newton County and its municipalities.

PASSED, APPROVED AND ADOPTED by the Mayor and City Council of

Covington, Georgia, in regular session this ____ day of _____, 2020.

Mayor

City Clerk

RESOLUTION – CITY OF MANSFIELD, GEORGIA

NEWTON COUNTY HAZARD MITIGATION PLAN UPDATE 2020

WHEREAS, Newton County and its municipalities recognize that it is threatened by several different types of natural and man-made hazards that can result in loss of life, property loss, economic hardship and threats to public health and safety; and

WHEREAS, the Federal Emergency Management Agency (FEMA) has required that every county and municipality have a pre-disaster mitigation plan in place, and requires the adoption of such plans in order to receive funding from the Hazard Mitigation Grant Program; and

WHEREAS, a Hazard Mitigation Plan is a community’s plan for evaluating hazards, identifying resources and capabilities, selecting appropriate actions, and developing and implementing the preferred mitigation actions to eliminate or reduce future damage in order to protect the health, safety and welfare of the residents in the community; and

WHEREAS, the Newton County Hazard Mitigation Plan Update 2020 has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and

WHEREAS, the Plan will be updated every five years;

NOW, THEREFORE, BE IT RESOLVED, by the Mayor and City Council of Mansfield, Georgia, that:

1) The City of Mansfield, Georgia, has adopted the Newton County Hazard Mitigation Plan 2020 Update; and

2) It is intended that the Plan be a working document and is the first of many steps toward improving rational, long-range mitigation planning and budgeting for Newton County and its municipalities.

PASSED, APPROVED AND ADOPTED by the Mayor and City Council of

Mansfield, Georgia, in regular session this ____ day of _____, 2020.

Mayor

City Clerk

RESOLUTION – CITY OF NEWBORN, GEORGIA

NEWTON COUNTY HAZARD MITIGATION PLAN UPDATE 2020

WHEREAS, Newton County and its municipalities recognize that it is threatened by several different types of natural and man-made hazards that can result in loss of life, property loss, economic hardship and threats to public health and safety; and

WHEREAS, the Federal Emergency Management Agency (FEMA) has required that every county and municipality have a pre-disaster mitigation plan in place, and requires the adoption of such plans in order to receive funding from the Hazard Mitigation Grant Program; and

WHEREAS, a Hazard Mitigation Plan is a community’s plan for evaluating hazards, identifying resources and capabilities, selecting appropriate actions, and developing and implementing the preferred mitigation actions to eliminate or reduce future damage in order to protect the health, safety and welfare of the residents in the community; and

WHEREAS, the Newton County Hazard Mitigation Plan Update 2020 has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and

WHEREAS, the Plan will be updated every five years;

NOW, THEREFORE, BE IT RESOLVED, by the Mayor and City Council of Newborn, Georgia, that:

- 1) The City of Newborn, Georgia, has adopted the Newton County Hazard Mitigation Plan 2020 Update; and
- 2) It is intended that the Plan be a working document and is the first of many steps toward improving rational, long-range mitigation planning and budgeting for Newton County and its municipalities.

PASSED, APPROVED AND ADOPTED by the Mayor and City Council of

Newborn, Georgia, in regular session this ____ day of _____, 2020.

Mayor

City Clerk

RESOLUTION – CITY OF OXFORD, GEORGIA

NEWTON COUNTY HAZARD MITIGATION PLAN UPDATE 2020

WHEREAS, Newton County and its municipalities recognize that it is threatened by several different types of natural and man-made hazards that can result in loss of life, property loss, economic hardship and threats to public health and safety; and

WHEREAS, the Federal Emergency Management Agency (FEMA) has required that every county and municipality have a pre-disaster mitigation plan in place, and requires the adoption of such plans in order to receive funding from the Hazard Mitigation Grant Program; and

WHEREAS, a Hazard Mitigation Plan is a community’s plan for evaluating hazards, identifying resources and capabilities, selecting appropriate actions, and developing and implementing the preferred mitigation actions to eliminate or reduce future damage in order to protect the health, safety and welfare of the residents in the community; and

WHEREAS, the Newton County Hazard Mitigation Plan Update 2020 has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and

WHEREAS, the Plan will be updated every five years;

NOW, THEREFORE, BE IT RESOLVED, by the Mayor and City Council of Oxford, Georgia, that:

- 1) The City of Oxford, Georgia, has adopted the Newton County Hazard Mitigation Plan 2020 Update; and
- 2) It is intended that the Plan be a working document and is the first of many steps toward improving rational, long-range mitigation planning and budgeting for Newton County and its municipalities.

PASSED, APPROVED AND ADOPTED by the Mayor and City Council of Oxford, Georgia, in regular session this ____ day of _____, 2020.

Mayor

City Clerk

RESOLUTION – CITY OF PORTERDALE, GEORGIA

NEWTON COUNTY HAZARD MITIGATION PLAN UPDATE 2020

WHEREAS, Newton County and its municipalities recognize that it is threatened by several different types of natural and man-made hazards that can result in loss of life, property loss, economic hardship and threats to public health and safety; and

WHEREAS, the Federal Emergency Management Agency (FEMA) has required that every county and municipality have a pre-disaster mitigation plan in place, and requires the adoption of such plans in order to receive funding from the Hazard Mitigation Grant Program; and

WHEREAS, a Hazard Mitigation Plan is a community’s plan for evaluating hazards, identifying resources and capabilities, selecting appropriate actions, and developing and implementing the preferred mitigation actions to eliminate or reduce future damage in order to protect the health, safety and welfare of the residents in the community; and

WHEREAS, the Newton County Hazard Mitigation Plan Update 2020 has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and

WHEREAS, the Plan will be updated every five years;

NOW, THEREFORE, BE IT RESOLVED, by the Mayor and City Council of Porterdale, Georgia, that:

- 1) The City of Porterdale, Georgia, has adopted the Newton County Hazard Mitigation Plan 2020 Update; and
- 2) It is intended that the Plan be a working document and is the first of many steps toward improving rational, long-range mitigation planning and budgeting for Newton County and its municipalities.

PASSED, APPROVED AND ADOPTED by the Mayor and City Council of

Porterdale, Georgia, in regular session this ____ day of _____, 2020.

Mayor

City Clerk

Preface

Mitigation Vision for the Future

Emergency Managers succeed or fail based on how well they follow the following fundamental principles of emergency management, mitigation, preparedness, response, and recovery. Purposefully, our emergency management forefathers put the word mitigation first as a “means” to prevent or minimize the effects of disasters.

Mitigation is commonly defined as sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects. Hazard mitigation focuses attention and resources on community policies and actions that will produce successive benefits over time. A mitigation plan states the aspirations and specific courses of action that a community intends to follow to reduce vulnerability and exposure to future hazard events. These plans are formulated through a systematic process centered on the participation of citizens, businesses, public officials, and other community stakeholders.

Mitigation forms, or should form, the very foundation of every emergency management agency. To reduce, minimize, or eliminate hazards in their communities, emergency management agencies adopt and implement mitigation practices. The Federal DMA 2000 sets the benchmark and outlines the criteria for communities with the vision to implement hazard mitigation practices in their communities.

Newton County and its municipalities realize the benefits achieved by the development and implementation of mitigation plans and strategies in their community. Newton County’s elected officials, public safety organizations, planners, and many others have proven that by working together towards the development and implementation of this plan, they can reduce the loss of life and property in their communities.

The jurisdictions covered by this plan include the following:

Newton County
City of Covington
City of Mansfield
City of Newborn
City of Oxford
City of Porterdale

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CHAPTER ONE
-
INTRODUCTION

Summary of Updates for Chapter One

The following table provides a description of each section of this chapter and a summary of the changes that have been made to the Newton County Hazard Mitigation Plan 2015.

Chapter 1 Section	Updates
Introduction	<ul style="list-style-type: none"> • Verbiage updated
Authority	<ul style="list-style-type: none"> • Verbiage updated
Funding	<ul style="list-style-type: none"> • Verbiage updated to match 2019 grant information
Scope	<ul style="list-style-type: none"> • Verbiage updated
Purpose	<ul style="list-style-type: none"> • Verbiage updated
Consistency with Federal Guidelines	<ul style="list-style-type: none"> • Verbiage updated
Plan Review	<ul style="list-style-type: none"> • Verbiage updated • Updated mitigation meeting dates for 2020 planning process
Hazard Mitigation Plan Update Committee	<ul style="list-style-type: none"> • Updated committee list to match the 2019-2020 planning participants • Updated to meet Federal guidelines
Public Participation	<ul style="list-style-type: none"> • Updated to match the 2019-2020 planning process
Multi-Jurisdictional Considerations	<ul style="list-style-type: none"> • Updated with requirement descriptions
Incorporation of Existing Plans, Studies, and Resources	<ul style="list-style-type: none"> • Updated with new plan, study, and resource incorporations

Introduction

The Newton County Hazard Mitigation Plan Update is the first phase of a multi-hazard mitigation strategy for the entire community. This Plan encourages cooperation among various organizations and crosses political sub-divisions. As written, this Plan fulfills the requirements of the Federal DMA 2000. DMA 2000 provides federal assistance to state and local emergency management agencies and other disaster response organizations to reduce damage from disasters. The Act is administered by GEMA and FEMA.

It is important that state and local government, public-private partnerships, and community citizens can see the results of these mitigation efforts; therefore, the goals and strategies need to be achievable. Newton County's Hazard Mitigation Plan Update Committee adopted the following goals during plan development:

- GOAL 1 Maximize the use of all resources by promoting intergovernmental coordination and partnerships in the public and private sectors
- GOAL 2 Harden communities against the impacts of disasters through the development of new mitigation strategies and strict enforcement of current regulations that have proven effective
- GOAL 3 Reduce and, where possible, eliminate repetitive damage, loss of life and property from disasters
- GOAL 4 Bring greater awareness throughout the community about potential hazards and the need for community preparedness

This plan complies with all requirements and scope of work as described in Newton County's Hazard Mitigation Grant application.

Authority

In the past, federal legislation has provided funding for disaster relief, recovery, and some hazard mitigation planning. The DMA 2000 is the latest legislation to improve the planning aspect of that process; it reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. The DMA 2000 establishes a pre-disaster hazard mitigation program and designates new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). Section 322 identifies the new requirements for planning activities and increases the amount of HMGP funds available to states that have developed a comprehensive mitigation plan prior to the disaster.

State and local communities must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds. Local mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities. To implement the new DMA 2000 requirements, FEMA prepared an Interim Final Rule, published in the Federal Register on February 26, 2002 at 44 CFR Parts 201 and 206, which establishes planning and funding criteria for states and local communities.

Developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans, Newton County's Updated Hazard Mitigation Plan will be brought forth to each participating jurisdiction in Newton County to be formally adopted. The Plan shall be routinely monitored and revised to maintain compliance with the following provisions, rules, and legislation:

Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390); and

FEMA's Interim Final Rule published in the Federal Register on February 26, 2002, at 44 CFR Part 201.

Funding

Newton County was awarded a \$32,000 Hazard Mitigation Planning Grant by FEMA through GEMA for the update of Newton County's 2015 Hazard Mitigation Plan. FEMA contributed 75% and GEMA contributed 10% of the total cost of the Plan Update. The Hazard Mitigation Planning Grant required a 15% match by Newton County. This match was fulfilled entirely (100%) by In-Kind contributions – time spent by county and municipal employees, local stakeholders, representatives from organizations, and citizen volunteers updating the Plan was provided instead of cash from the County's budget.

Scope

The scope of the Newton County Hazard Mitigation Plan Update encompasses all areas of Newton County, including municipalities. The Plan identifies all natural and technological hazards that could threaten life and property in Newton County. The scope of this Plan includes both short and long-term mitigation strategies with implementation and possible sources of project funding.

The Hazard Mitigation Plan Update is organized to incorporate the requirements of Interim Final Rule 44 CFR 201.4.

Chapter One includes an overview of the Hazard Mitigation Plan Update, the overall goals of the plan, and details of the planning process as required by Interim Final Rule 44 CFR 201.4(c)(1).

Chapter Two of the Plan details the Newton County profile, including the demographics, municipalities, and history of the county.

Chapter Three identifies the risk assessment process, past natural hazard events with associated losses, and current natural hazard risks. Potential losses are also analyzed as required by Interim Final Rule 44 CFR 201.4(c)(2). Additionally, Chapter Three identifies and analyzes potential technological hazards faced by Newton County.

Chapter Four identifies Newton County's hazard mitigation goals and objectives, mitigation strategies and actions, and sources of potential funding for mitigation projects as required by Interim Final Rule 44 CFR 201.4(c)(3).

Chapter Five identifies the maintenance and implementation strategies for the Plan. The process for evaluation of the Hazard Mitigation Plan implementation progress is also detailed as required by Interim Final Rule 44 CFR 201.4(c)(4) and (5).

Purpose

The purpose of the Newton County Hazard Mitigation Plan Update is to:

- Protect life, promote safety, and preserve property by reducing the potential for future damages and economic losses that result from natural and technological hazards;
- Make communities in Newton County safer places to live, work, and play;
- Qualify for grant funding in both the pre-disaster and post-disaster environments;
- Speed the recovery and redevelopment process following future disaster events;
- Demonstrate a firm local commitment to hazard mitigation principles; and
- Comply with state and federal legislative requirements for local multi-jurisdictional hazard mitigation plans.

Consistency with Federal and State Mitigation Policies

The Plan is intended to enhance and complement state and federal recommendations for the mitigation of natural and technological hazards in the following ways:

- Substantially reduce the risk of life, injuries, and hardship from the destruction of natural and technological disasters on an ongoing basis;
- Create greater public awareness about the need for individual preparedness and about the need to build safer, more disaster resistant communities;
- Develop strategies for long-term community sustainability during community disasters; and,
- Develop governmental and business continuity plans that will continue essential private sector and governmental activities during disasters.

FEMA publishes several guidance documents for local governments on mitigating natural disasters. The updated Newton County Hazard Mitigation Plan recognizes, adopts, incorporates, and endorses the following principles:

- Develop a strategic mitigation plan for Newton County;
- Enforce current building codes;
- Develop incentives to promote mitigation;
- Incorporate mitigation of natural hazards into land use plans;
- Promote awareness of mitigation opportunities and programs throughout our community on a continual basis; and,
- Identify potential funding sources for mitigation projects.

The private sector is often an overlooked segment of the community during disasters. It is vital that this sector of a community is included in mitigation efforts that are consistent with state and federal recommendations, such as the following:

- Develop mitigation incentives with insurance agencies and lending institutions;

- Encourage the creation of a business continuity plan for the continuance of commerce during and following a disaster; and,
- Partner with local businesses to educate customers about potential hazards in the community and possible mitigation ideas.

Individual citizens must be made aware of the hazards they may encounter. Additionally, they must be educated on how to protect themselves from the hazards they face. They must be shown that mitigation is an important part of reducing loss of life and property in their community. Their support is critical to the success of any mitigation effort. The updated Newton County Hazard Mitigation Plan supports the following FEMA recommendations regarding individual citizens:

- Become educated on the hazards that may impact your community;
- Become part of the process by supporting and encouraging mitigation programs that reduce vulnerability to disasters; and,
- An individual's responsibility is to safeguard his/her family, as well as themselves, prior to a disaster event.

Plan Review

Requirement §201.6(c)(1)

The contractor, Lux Mitigation and Planning, had the primary responsibility for collecting updated information and presenting pertinent data to the Plan Update Committee. An online, Dropbox folder was created for Newton County’s Plan Update. The approved 2015 Hazard Mitigation Plan was uploaded to the Dropbox folder, and the link to the folder was emailed to all members of the Hazard Mitigation Plan Update Committee. Each chapter of the 2015 Plan was reviewed. Hazard vulnerability and risk assessment data was updated, as was critical infrastructure information.

Special attention and consideration were given to the review and edit of mitigation strategies listed in the 2015 Plan. The Plan Update Committee examined each strategy and determined whether the strategy had been completed, needed to be modified, was in progress, or no longer applied. The Committee was highly encouraged to create new mitigation strategies to meet the current needs of the county and municipalities. Mitigation strategies from other Georgia counties were reviewed to help with the creation of new strategies. When the Committee agreed a new mitigation action would be beneficial, it was tailored to Newton County’s needs and was included in the 2020 Plan. The contractor sent the Committee, including sporadically attending participants, regular emails which contained a Dropbox link to the most updated version of the Plan and encouraged the Committee to thoroughly critique each version.

Due to the COVID-19 Pandemic, the meeting calendar for the Newton County Hazard Mitigation Planning Committee had to be altered to meet the goals of the committee while adhering to proper protocols to limited the spread of the SARS CoV-2 Virus. The final 2 meetings of the Newton County Hazard Mitigation Planning Committee were held virtually to foster the planning process while allowing for the safest possible environment for all participants. These virtual meetings were held on July 29 and 30, 2020 through the Zoom meeting platform.

Newton County’s Hazard Mitigation Plan Update Meeting Dates:

Thursday, January 30, 2020	Kick-Off Meeting
Thursday, February 27, 2020	Hazard Identification and Prioritization; Update Critical Facilities Information (Public Meeting #1)

Wednesday, July 29, 2020

Analysis of Hazard Profile Research;
Review and Edit 2015 Hazard Mitigation Strategies; Identify New Hazard Mitigation Strategies

Thursday, July 30, 2020

Review and Edit 2020 Hazard Mitigation Plan - Final Draft;
Update Plan Distribution List; Discuss Available Hazard Mitigation Grants (Public Meeting #2)

Each section of Newton County’s 2015 Hazard Mitigation Plan has been revised in some manner. Therefore, a summary of those changes will be listed in the first section of each chapter. Significant additions/modifications to this Plan include the following:

- Extreme Temperatures added to Natural Hazards
- Infrastructure Failure added to Technological Hazards
- Emerging Infectious Diseases added to Technological Hazards

Hazard Mitigation Plan Update Participants

Requirement §201.6(b)(2)

The following 58 participants contributed to the update of Newton County's 2015 Hazard Mitigation Plan: *(in alphabetical order)*

Jan'l Adair

Environmental Health and Safety Manager
Michelin Tread Technologies

James Brown

Director
Newton County Water Resources Department

Beryl Budd

Wildfire Prevention Specialist – Georgia Forestry Commission
City Arborist – City of Oxford

Chester Clegg

Transportation Director
Newton County Public Works Department

Michael W. Conner

Fire Chief
Newton County Fire Services

James Cox

Captain
City of Covington Fire Department

Jason Cripps

Chief
Porterdale Police Department

Scottie Croy

Assistant Director
City of Oxford Public Works and Utilities

Mary Darby

Director
City of Covington Planning and Zoning Department

Cathy Davis*Grants Coordinator*

Newton County Finance Department

Bryan Fazio*Public Information Officer*

Newton County Board of Commissioners

Keyra Fray*Risk Manager*

Newton County School System

Robbie Groves*Environmental Compliance Specialist*

City of Social Circle

Jack Harper*Emergency Preparedness Specialist*

Gwinnett, Newton, and Rockdale County Health Department

David Harvey*Police Chief*

City of Oxford Police Department

Tracy Hernandez*Zoning Administrator*

Newton County Development Services Department

Vickie Henry*Volunteer*

Covington Women's Club (General Federation of Women's Clubs)

Steve Horton*Mayor*

City of Covington

Scheree Howard*Executive Administrative Coordinator*

Newton County Fire Services

Nwaka Hughes

Executive Assistant to County Manager
Newton County Board of Commissioners

Jeana Hyde

City Administrator and Clerk
City of Mansfield

Jason Johnson

Director
Newton County Facilities Management Department

Judy Johnson

Director
Newton County Development Services Department

Lloyd Kerr

County Manager
Newton County Board of Commissioners

Josh Kirkham

Safe Scouting and Operations Director
Boy Scouts of America

Douglas E. Kitchens

Captain
Newton County Sheriff's Office

Denise Lark

Regional Resource Coordinator, Region 5
Georgia Department of Family and Children Services

Barton Lowrey

Development Director
Atlanta Area Council, Boy Scouts of America

Greg Mann

Director
Newton County Information Systems Department

Carol L. Martin, BSN, RN
School Health Specialist
Newton County School System

Dwayne Mask
Deputy Director
Newton County Recreation Department

Pamela Maxwell
Safety and Risk Manager
Newton County Human Resources and Risk Management Department

Reverend Audray M^cClay (RAM)
Crew Supervisor; Health and Safety Officer
Newton County Solid Waste Management Authority

Carl Morrow
Director
Walton County Emergency Management Agency

Jonathan “John” F. Napoli
Supervisor
City of Mansfield

Jody B. Nolan
Director
Newton County Emergency Management Agency

Gregory Pace
Crew Leader
Newton County Public Works Department

Buster Palmer
Fleet Manager
Newton County Transportation Department

Wendy Peacock
Administrative Coordinator
Newton County Emergency Management Agency

Randy Peters

Senior Crew Leader

Newton County Public Works Department

Jody A. Reid Sr.

Superintendent

City of Oxford Utility Department

Mark Reiswig

Emergency Preparedness Director

Gwinnett, Newton, and Rockdale County Health Department

Laurie Riley

Keep Newton Beautiful Manager

Newton County Water Resources Department

Elisa Rowe

Town Clerk/Town Manager

Town of Newborn

Michael Sapp

Chief Ranger

Georgia Forestry Commission

Amanda Shoemaker

Director

Newton County Human Resources and Risk Management Department

Scott Sirotkin

Geographic Information Systems Coordinator; Acting Floodplain Administrator

Newton County Geographic Information Systems Department

Tim Smith

Accreditation Manager; Office Coordinator

City of Covington Public Works Department

Billy Stanley

Supervisor

Newton County Building Services Department

Brad Stapp

Deputy Chief

Newton County Fire Services

Crystal Stevens

Accreditation and Training Supervisor

Covington-Newton 911 Communications Center

Heidi Stewart

Geographic Information Systems Analyst

Newton County Geographic Information Systems Department

Matt Taylor

Recreation Administrator

Newton County Recreation Commission

Robert Thomas

Captain of Inspections

Newton County Fire Prevention Bureau

Donnie Tudor

Deputy Chief of Operations

City of Covington Fire Department

Jim Tudor

Disaster Action Team Volunteer

American Red Cross

Wendell Wagstaff

Captain

City of Covington Police Department

Anessa Westmoreland

Operations Manager

Covington-Newton 911 Communications Center

Jeremy Whigham

Ranger

Boy Scouts of America

Brittany White*Director*

Newton County Finance Department

Cindy Wiemann*Director*

Newton County Animal Services

The Plan Update Committee relied on their consultant to guide them through the update process. During meetings, the participants had productive discussions, expanded their professional networks, asked thoughtful questions, made important decisions, and provided critical input during key stages in the update process. Efforts were made to involve all county and municipal departments, as well as community organizations and local businesses, which may have a role in the implementation of mitigation actions and/or policies. These efforts included sending invitations via email to attend the Kick-off Meeting, sending reminder emails before each upcoming meeting, emailing pertinent information throughout the process, and requesting the review and critique of each chapter in the updated Plan.

The municipalities of Newborn and Porterdale did not have direct representation who attended meetings of the Newton County Hazard Mitigation Planning Committee. Both municipalities were included in all communication regarding the planning process, invitation emails, and drafts sent by both Lux Mitigation and Planning and Newton County Emergency Management Agency. However, Newton County provides most services, include emergency management and fire protection for these two municipalities. As such, representation of Newborn and Porterdale was provided by EMA Director Jody Nolan and Newton County Fire Chief Michael W. Conner during the meeting process.

In August 2020, Newborn and Porterdale were provided a “City/Town Worksheet” and a copy of the updated Newton County Hazard Mitigation Plan to ensure their participation in the process and their review of the document. Upon completion, information provided by the municipalities, including capabilities and services, notable past hazard events, and any new municipal-specific strategies were added to the 2020 Newton County Hazard Mitigation Plan. Chief Jason Cripps, the Porterdale Police Chief, and Elisa Rowe, the Town Clerk/Manager of Newborn, completed this participation document on behalf of their municipalities. This incorporation process was completed in September 2020.

All neighboring counties – Butts, Henry, Jasper, Morgan, Rockdale, and Walton – were asked to peer review the 2020 Mitigation Plan draft. The Plan was sent to each

County EMA office. Additionally, the EMA Directors from surrounding counties were asked to attend Plan Update Committee meetings in hopes they would share mitigation ideas from their own counties. Walton County Emergency Management Director Carl Morrow attended and participated in several meetings of the Newton County Hazard Mitigation Planning Committee.

Public Participation

Requirement §201.6(b)(1)

State Requirement Element F2

Public awareness is a key component of any community's overall mitigation strategy. As citizens become more involved in decisions that affect their safety, they may develop a greater respect for the natural hazards present in their community, and thus, may take the steps necessary to reduce potential impacts of those hazards.

The following local organizations and businesses participated in the update of Newton County's 2015 Mitigation Plan: American Red Cross, Boy Scouts of America, Covington Women's Club, and Michelin Tread Technologies

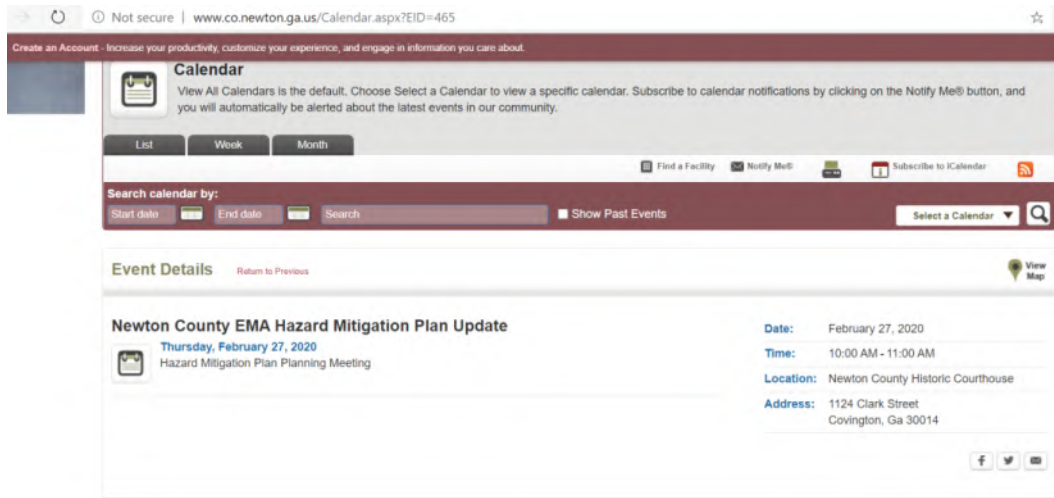
The Plan Update Committee took it upon themselves to ensure the processes undertaken for the development, implementation, and maintenance of the 2020 Hazard Mitigation Plan adequately considered public needs and viewpoints.

A list of public outreach initiatives can be found below:

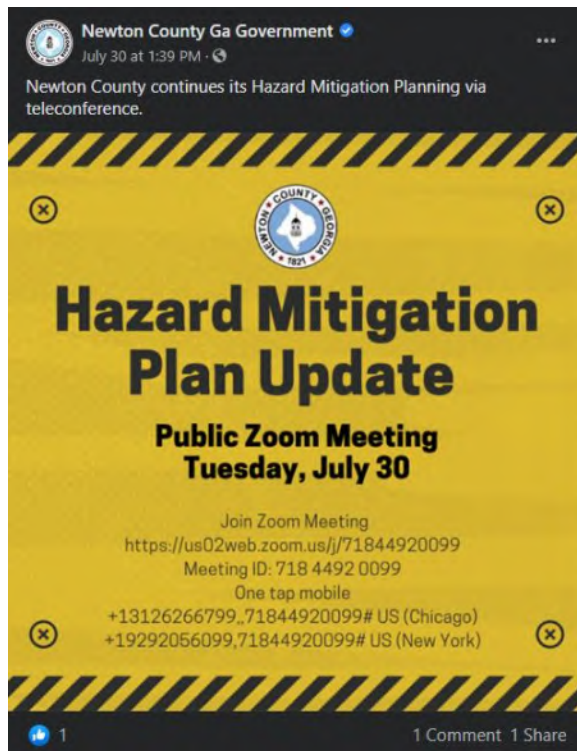
- Email reminders were sent to all Plan Update Committee members, as well as other stakeholders, prior to every meeting. Recipients were encouraged to share the meeting invitation with anyone they thought would be an asset to the Plan Update process or anyone who may want to learn more about what a Hazard Mitigation Plan is.
- A Public Meeting was held on February 27, 2020 in conjunction with the regularly scheduled Newton County Hazard Mitigation Planning Committee meeting. This meeting was advertised on the Newton County Government webpage events calendar. No members of the public attended and no public feedback was provided.
- A Public Meeting was held on July 30, 2020 in conjunction with the regularly scheduled virtual meeting of the Newton County Hazard Mitigation Planning Committee. This meeting was advertised on the Newton County government Facebook page. No members of the public attended and no public feedback was provided.
- The Emergency Management Director for all neighboring jurisdictions – Butts, Henry, Jasper, Morgan, Rockdale, and Walton Counties – were included on all meeting invitations and reminder emails for the Newton County Hazard Mitigation Plan Update. Walton County EMA Director Carl Morrow attended and participated in several meetings.

Documentation of Public Meeting Notice

Public Meeting Notice – Newton County Government webpage – Calendar (February 27, 2020 Meeting)



Public Meeting Notice – Newton County Board of Commissioners Facebook Page (July 30, 2020 Meeting)

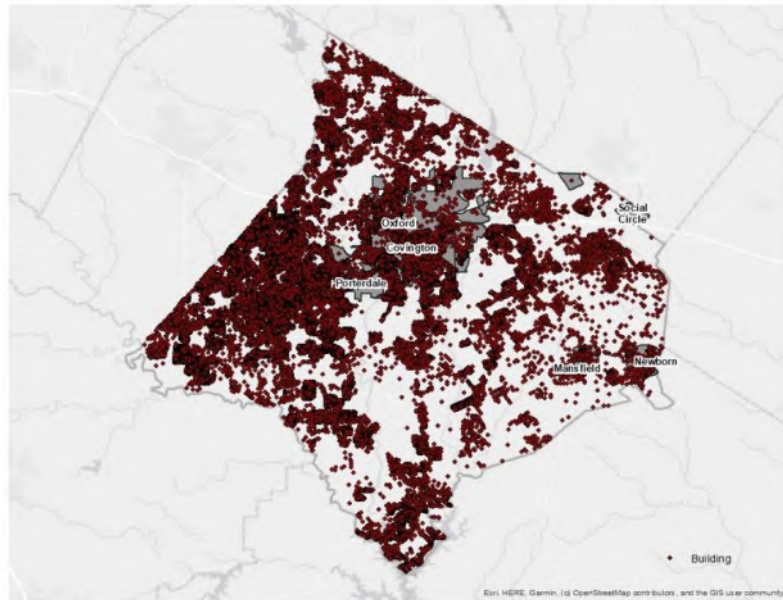


Multi-Jurisdictional Considerations

FEMA does not require cities and towns to adopt a local Hazard Mitigation Plan. However, the Federal DMA 2000 requires that all municipalities, wishing to be eligible to receive Hazard Mitigation Grants through FEMA, must adopt a local multi-hazard mitigation plan and must update that plan every five years. Newton County’s most recent Hazard Mitigation Plan was approved by FEMA in 2015. The 2020 Mitigation Plan is the third five-year update. This FEMA-approved 2020 Hazard Mitigation Plan makes Newton County, the City of Covington, the City of Mansfield, the City of Newborn, the City of Oxford, and the City of Porterdale eligible for FEMA’s Hazard Mitigation Grant Program, Flood Assistance Mitigation Grants, and Pre-Disaster Mitigation Grants.

As set forth by Georgia House Bill 489, the Emergency Management Agency is the implementing agency for projects pertaining to hazard mitigation. Newton County is dedicated to work in the best interests of the County, as well as its municipalities. A few mitigation strategies in Newton County’s 2020 Mitigation Plan apply to a specific municipality. Unless noted otherwise, mitigation strategies apply equally to all jurisdictions. During the creation and update of this Plan, Newton County Emergency Management Agency solicited and received participation from the following Newton County municipalities: Covington, Mansfield, Newborn, Oxford, and Porterdale.

Distribution of Buildings in Newton County



Source: 2020 Newton County HAZUS Report

Incorporation of Existing Plans, Studies, and Resources

Requirement §201.6(b)(3)

State Requirement Element F3

Existing Plans

2015 Newton County Pre-Disaster Hazard Mitigation Plan
2019 State of Georgia Hazard Mitigation Plan
2014 State of Georgia Hazard Mitigation Plan
Newton County Local Emergency Operations Plan
Georgia Forestry Commission's Newton Co. Community Wildfire Protection Plan
Newton County Joint Comprehensive Plan

Studies

2020 Hazard Risk Analyses (HAZUS Report)
2017 United States Department of Agriculture Ag Census
2010 United States Census and 2016/2017 Census Estimates
2009 Newton County Flood Insurance Study
Radeloff, V. C., R. B. Hammer, S. I Stewart, J. S. Fried, S. S. Holcomb, and J. F. McKeefry. 2005. *The Wildland Urban Interface in the United States*. Ecological Applications 15:799-805.

Resources

2014 City of Boston Natural Hazard Mitigation Plan Update
2010 Camden County Joint Hazard Mitigation Plan Update
2010 Northern Virginia Hazard Mitigation Plan Update
National Climactic Data Center
National Weather Service
Newton County Tax Assessor's Data
Newton County Website
Georgia Mitigation Information System Database
Colorado State University (Hurricane mapping)
United States Geological Survey
FEMA Flood Insurance Rate Maps
National Flood Insurance Program
United States Coast Guard National Response Center Data
Georgia Department of Transportation
Georgia Safe Dams Program
Southern Group of State Foresters Wildfire Risk Assessment

Application of Existing Plans and Studies

Existing Planning Mechanism	Reviewed? Yes/No	Incorporation into 2020 Mitigation Plan
2015 Newton County Hazard Mitigation Plan	Yes	Baseline for the 2020 Plan; updated mitigation strategies; updated hazards; updated Newton County information
2014 State of Georgia Hazard Mitigation Plan	Yes	Hazard descriptions; potential hazards; mapping mechanisms; potential mitigation strategies that could be adopted on a local level
Newton County Local Emergency Operations Plan (LEOP)	Yes	Identification of current resources; identification of current capabilities
Georgia Forestry’s Newton County Community Wildfire Protection Plan (CWPP)	Yes	Mitigation strategies for wildfire and drought; historical data
2017 USDA Agriculture Census	Yes	Agricultural data regarding potential losses for drought and wildfire
2010 United State Census	Yes	To update Newton County’s profile information
2009 Newton County Flood Insurance Study	Yes	Identify potential flood prone areas; prioritization of flood-related mitigation strategies
Newton County Comprehensive Plan	Yes	To identify future development trends; identify mitigation strategies to curb trends in a direction that considers the hazards of the area
Newton County Flood Mitigation Assistance Plan	No	No such plan exists
2020 Newton County HAZUS Report	Yes	Hazard Analysis

CHAPTER TWO
-
NEWTON COUNTY PROFILE

Summary of Updates for Chapter Two

The following table provides a description of each section of this chapter and a summary of the changes that have been made to the Newton County Hazard Mitigation Plan 2015.

Chapter 2 Section	Updates
Past Hazards	<ul style="list-style-type: none"> • This information involved a review of the hazards listed in the previous plan. • Information was updated for the last 50 years
History	<ul style="list-style-type: none"> • Expanded and updated from previous plan
Past Events	<ul style="list-style-type: none"> • Identification of major hazard events in Newton County for the last 50 years • Focus on Federal Declarations and events since the last Hazard Mitigation Plan Update
Demographics	<ul style="list-style-type: none"> • Updated data to the 2017 Census estimate information
Economy	<ul style="list-style-type: none"> • Updated data and information
Government	<ul style="list-style-type: none"> • Updated verbiage
Municipalities	<ul style="list-style-type: none"> • New Section – Not a standalone section in 2015 Plan
Transportation	<ul style="list-style-type: none"> • Updated data and information
Climate	<ul style="list-style-type: none"> • Updated data and information
Utilities	<ul style="list-style-type: none"> • Updated data and information
NFIP Compliance	<ul style="list-style-type: none"> • New Section – Not a standalone section in 2015 Plan



Past Hazards

Newton County, Georgia, has faced many natural hazards in its long history. Severe thunderstorms have been the most prevalent of these hazards. In the last 50 years, Newton County has been subjected to 139 documented severe thunderstorm events. These events include torrential rainfall, hail, thunderstorm-force winds, and lightning.

Tornadoes, which can sometimes spawn from severe thunderstorms, have also occurred, although with much less frequency. In Newton County, there have been 9 documented tornadoes in the last 50 years.

Because of heavy rainfall, either within Newton County or upstream, flooding has also occurred. In the National Climactic Data Center (NCDC) databases of the National Weather Service, there is documentation of 10 flooding events for Newton County.

Winter storms and heavy snowfall have affected Newton County over the last 50 years. Because these natural events are barely an annual occurrence, the pre-planning and preparedness component of emergency management is not as robust as northern or western states that routinely see this type of weather. The NCDC recorded 21 winter storms or heavy snow events for Newton County with one of those events occurring in the last five years.

Newton County has been impacted by other less severe or less frequent hazards in the past. These hazards include, but are not limited to, the following: drought, excessive heat, tropical cyclones, earthquakes, and wildfires.

Newton County has had 14 Presidential Disaster Declarations (FEMA-declared major disasters) – three of which have occurred since the adoption of the 2015 Hazard Mitigation Plan (two for Hurricane Irma in 2017 and one for Severe Storms and Flooding).

History

Newton County lies approximately thirty miles east of Atlanta along Interstate 20. Its irregular star shape encompasses 276.4 miles. Named for Sergeant John Newton, a Revolutionary War (1775-83) hero, the county was formed on December 24, 1821, from parts of Henry, Jasper, and Walton counties. In 1821 the center of the area's activity was a settlement called Winton at the Brick Store, a general store and stagecoach stop. The Brick Store still stands, but U.S. Highway 278, which alternately parallels and crisscrosses the newer Interstate 20 eastward to Augusta, now lies over the stagecoach route.

State law required that the seat of the new county be as close as possible to the geographical center of the county, so a site between the Ulcoufatchee (later Alcovy) and Yellow River was designated the county seat, and the surrounding lots were auctioned. Dried Indian Creek, so named from the settlers' discovery of the body of an Indian tied to a tree and dried by the sun, crossed this land. The new town was named Newtonsboro, but eight months later, in December 1822, the name was changed to Covington, in honor of General Leonard Covington, a hero in the War of 1812 (1812-15).

The county's other incorporated towns date from throughout the nineteenth century. Newborn was settled around 1819 while still part of Jasper County.

Porterdale, settled in the 1820s to establish a foundry, held to its industrial roots until late in the twentieth century, when its large textile mill finally closed. Oxford was incorporated in 1839 to support Emory College, chartered in 1836; a second campus, opened in Atlanta in 1919, became Emory University, and the original campus is now called Oxford College of Emory University. Mansfield flourished from about 1896. Newton County's unincorporated areas today are Almon, Brick Store, Cornish Mountain, Dial Town, Gum Creek, Magnet, Rocky Plains, Salem, Starrsville, and Stewart.

In 1864 Union General William T. Sherman and his troops passed through Covington and Oxford on the way to Savannah. Numerous historical markers in the county attest to related events, and several well-known written accounts describe this period.

Newton County has had a railroad since 1836, when planters, mill owners, and professional men organized a line from Madison, east of Covington, to the Chattahoochee River near Atlanta. This route is still heavily traveled by long freight trains. Covington Municipal Airport, located near a large industrial park north of Covington, provides facilities for small planes, and I-20 offers easy access to Interstates 75 and 85, and to Atlanta's Hartsfield-Jackson International Airport. Though the cotton plantations are long gone, some farms remain in the county.

Due to the location, transportation connections, and ready labor force, many employers find the county appealing.

The county's population has steadily grown since the mid-twentieth century.

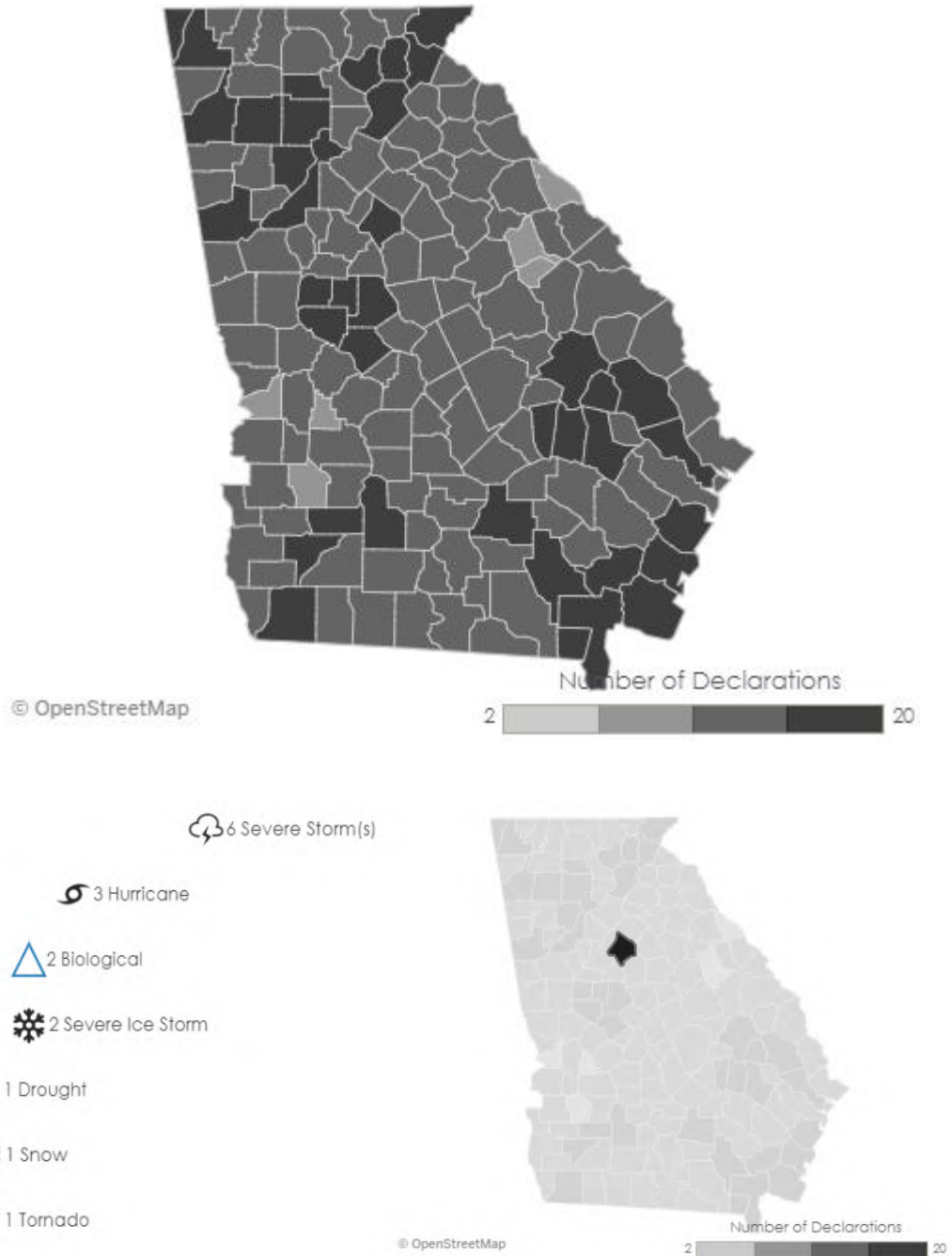
In recent years Newton County's landmarks and landscape have become recognizable to people across the United States. Two popular television series of the late twentieth century, *The Dukes of Hazzard* and *In the Heat of the Night*, were filmed in the county, as were scenes from various motion pictures, including *My Cousin Vinny* (1992), and several television specials.



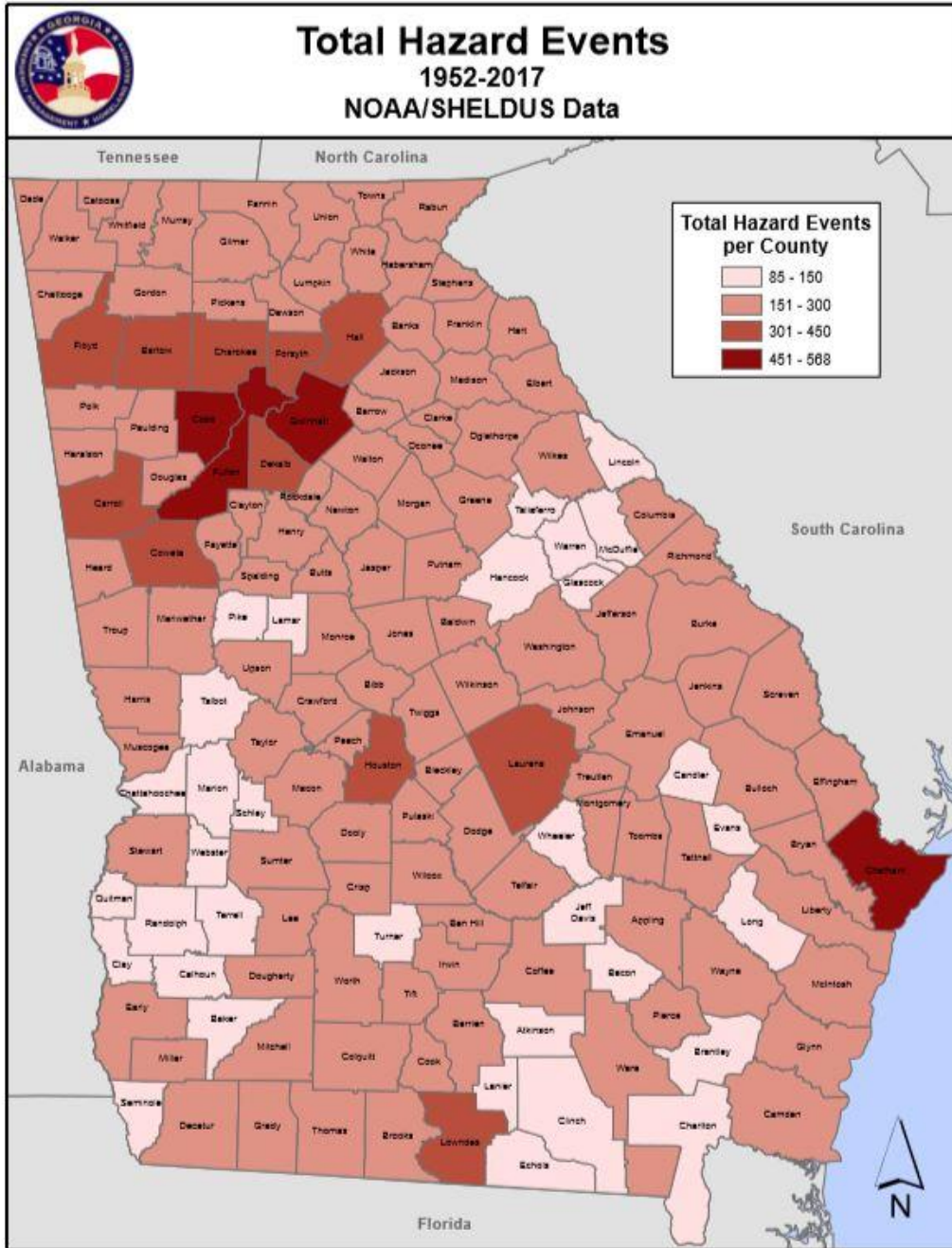
Notable Past Events

- **2020, COVID-19 Pandemic (Federal Declaration x2)**
- **2017, Hurricane Irma (Federal Declaration x2)**
- 2017, Tornado (EF1)
- **2016, Severe Storms and Flooding (Federal Declaration)**
- 2015, Flash Flood Event
- 2014, Tornado (EF0)
- **2014, Severe Winter Storm (Federal Declaration x2)**
- 2013, Tornado (EF2)
- **2011, Tornado (EF1) (Federal Declaration)**
- **2009, Flooding (Federal Declaration)**
- 2009, Tornado (EF1)
- 2008, Tornado (EF0)
- 2005, Winter Storm
- **2000, Winter Storm (Federal Declaration)**
- **1998, Severe Storms/Flooding (Federal Declaration)**
- **1994, Tropical Storm Alberto (Federal Declaration)**
- **1993, Blizzard/Winter Storm (Federal Declaration)**
- **1990, Tornado (F1) (Federal Declaration)**
- 1980, Tornado (F1)
- 1978, Tornado (F1)
- **1977, Drought (Federal Declaration)**

Federal Disaster Declarations



Source: Federal Emergency Management Agency (FEMA)



Source: 2019 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Demographics

County

	2000 Census	2010 Census	2017 Census Estimates
Population	62,001	99,958	105,042
White	75.3%	53.8%	52.0%
African American	22.2%	40.9%	43.3%
Hispanic/Latino	1.9%	4.6%	5.1%
Asian	0.7%	0.9%	1.0%
American Indian	0.2%	0.2%	0.3%
Two or More Races	1.0%	2.1%	2.6%
Median Age	33.3	34.7	36.2
Median Household Income	\$44,875	-----	\$52,784
Persons in Poverty	10.0%	-----	16.7%
Homeowners	77.7%	75.1%	69.0%

Municipalities

	2000 Census	2010 Census	2017 Census Estimates
Covington	11,547	13,118	13,728
Mansfield	392	410	454
Newborn	520	696	819
Oxford	1,892	2,134	2,088
Porterdale	1,281	1,429	1,526

Economy

Newton County’s economy is primarily agricultural with some light industry. Newton County’s cost of living is 4.5% below the national average. The unemployment rate in Newton County is 3.0%, which is slightly below the State average of 3.2% and the National average of 3.5%. Newton County has a median household income of \$52,784, which is slightly above the national average of \$51,914.

The ten largest private employers in Newton County are:

Company	Product/Service
C.R. Bard, Inc.	Medical Devices
Covington Moulding Co.	Plastic Fabrication
General Mills Operations, Inc.	Food Production
Hire Dynamics, LLC	Staffing Solutions
Newton Health System, Inc.	Healthcare
Nasshinbo Automotive Manufacturing, Inc.	Automotive Parts
Pactiv Corporation	Food Packaging Manufacturing
South East Employee Leasing Service	Staffing Solutions
The Kroger Company	Grocery
Walmart	Department Retail Store

The above list is in alphabetical order, not in order of company size. This data is according to the Georgia Department of Labor, 2018.

Government

The form of government specified in the County Charter is known as Commission-Administrator form of government, which provides for an elected body of Commissioners, one from each of five geographic districts, who are elected in staggered four-year terms, a chairman, who is elected countywide, and a County Administrator to oversee the day to day management of the County. Although each County Commissioner is elected as a representative from their respective districts, they represent the interests of the entire county and all its citizens.

The main duties of the Board of Commissioners is to pass local laws, known as ordinances, that regulate a variety of things that promote the health, safety and welfare of the citizens covered by them; to pass a balanced budget each year that funds its own operations as well as to allocate funds to the four Constitutional Officers, other elected officials, the courts and a variety of programs put in place by the State but funded locally; to ensure that necessary services are funded and provided; to set the millage rate for the County government and many other secondary duties.

The Board of Commissioners sets the County millage rate each year to fund a portion of the County budget. They also receive the millage rate that is set by the Board of Education and an assessment by the State which is submitted to the Georgia Department of Revenue each year.

The Board receives, deliberates, and passes local ordinances each year and amends many others to reflect the changing times. Both require that a public hearing be held, and these are normally held during the regular Commission meetings. They also pass several resolutions and proclamations throughout the year. Generally, with some exceptions, the Board can pass any local law and ordinance they feel is needed for the County so long as it does not violate the laws of the State or Federal government or the Constitutional rights of any individual. These are researched thoroughly by legal staff before ever being brought to a hearing.

The Board of Commissioners provide many services that citizens expect through the revenues that are raised annually. These include Fire Protection and Ambulance service; E-911 dispatch services; Zoning and Planning; Inspections; Code Enforcement; Animal Control; Public Library; Public Works; and agencies that service all of these such as Building Maintenance, Vehicle Maintenance, and Emergency Management Services. The budget also funds state mandated services such as Law Enforcement and Detention; Superior, Probate, Magistrate and Juvenile courts; Tax Assessment and Tax Collection services; Elections management; District Attorney (shared with other counties) and some smaller funding for local agencies under the State of Georgia.

Transportation

Newton County's transportation system consists primarily of state highways and county-maintained roads. Interstate 20, US Highways 278 as well as State highways 11, 12, 20, 36, 81, 138, 142, 162, and 212 are major transportation routes that carry the majority of passenger and commercial traffic in and out of Newton County. Congestion in these transportation corridors create traffic problems, primarily because of population growth. There are no interstates or mass transit systems servicing Newton County.

Freight rail service, owned and operated by CSX Transportation, traverse the central part of Newton County.

The Covington Municipal Airport, located 3 miles north of the central business district of Covington, is a city-owned public-use airport. The airport has a single 6,000-foot asphalt runway.

Climate

Newton County, like much of Georgia, enjoys a temperate climate with four well-defined seasons: warm to hot summers; brisk fall temperatures; relatively brief, cool winters; and a warm spring season. As a result, there exists a long growing season in Georgia, perfect for ornamental and economic-boosting agricultural plants. As one of the southernmost counties in Georgia, Newton County does have a longer warm to hot period and can typically run 3-5 degrees warmer than state temperature averages.

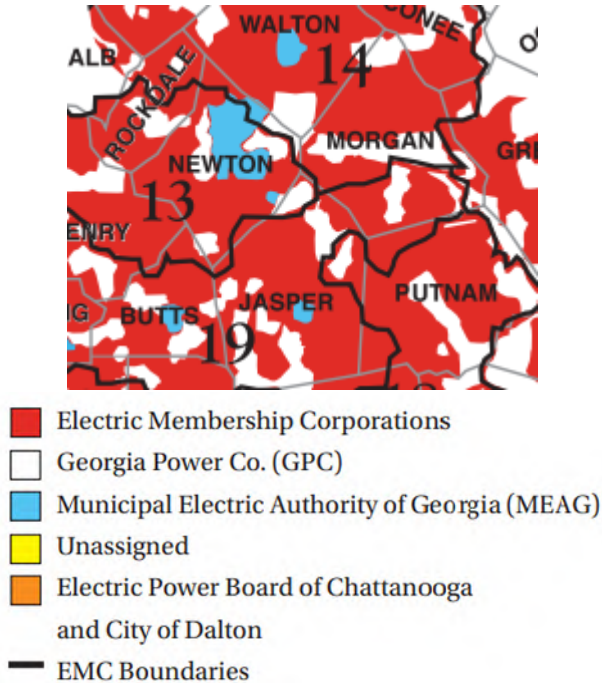
AVERAGE MONTHLY TEMPERATURES IN GEORGIA (FAHRENHEIT)

Month	Average Georgia Temperature	Average Newton County Temperature
January	46	45
February	49	46
March	56	55
April	63	59
May	70	68
June	77	76
July	80	77
August	79	80
September	74	75
October	64	64
November	56	52
December	48	45

Utilities

Newton County’s utility needs are met by a variety of public and private entities.

Electrical power in Newton County is provided by the Snapping Shoals Electric Membership Corporation (EMC), the City of Covington, Central Georgia EMC, Walton EMC, and Georgia Power.



Propane and natural gas are the primary sources of heating and cooking fuel for Newton County’s residents. The City of Covington is the primary natural gas provider in Newton County. Some areas of Newton County remain reliant on the delivery of propane as a fuel source for heat and cooking.

NFIP Compliance

JURISDICTION	PARTICIPATING?	PARTICIPATION DATE
NEWTON COUNTY	YES	7/5/1983
COVINGTON	YES	3/2/1983
MANSFIELD	NO	-----
NEWBORN	NO	-----
OXFORD	YES	3/17/2014
PORTERDALE	YES	1/19/1983

Neither Mansfield nor Newborn have any 100-year (1% annual risk) floodplain areas

Municipalities

City of Covington



Covington was incorporated in 1822 as the seat of the newly organized Newton County. It was named for US Army Brigadier General and US Congressman Leonard Covington, who was a War of 1812 hero.

In recent years, Covington has become a favorite location for filmmakers and is known to many as “The Hollywood of the South.” Covington has been used as a filming location for the Dukes of Hazzard (1978), The Cannonball Run (1980), In the Heat of the Night (1988-1994), Sweet Home Alabama (2002), Vampire Diaries (2009-2017), Doctor Sleep (2019), and Disney’s Jungle Cruise (2020).

Covington remains the county seat of Newton County and hosts many of the county’s government offices. Covington is governed by a mayor and six councilmembers – three each from the East and West ward districts.

The City of Covington provides the following services to its citizens: Administrative, Natural Gas, Water and Sewer, Electricity, Road Construction and Maintenance, Solid Waste, Stormwater Management, Fire Services, Law Enforcement, Planning and Zoning, and GIS support for all City of Covington departments. The City of Covington also owns and operates the Covington Municipal Airport.

City of Mansfield

The City of Mansfield is situated in southeastern Newton County near the Jasper County line. Mansfield formed along the Middle Georgia and Atlantic Railroad that traveled from Gordon to Covington, GA. Mansfield, like many other agricultural communities, has undergone growth and decline several times according to the rise and fall of economic prosperity and population. Mansfield is currently home to the Beaver Manufacturing Company and several other small commercial enterprises.

Mansfield is governed by a Mayor, Mayor Pro Tempore, and four councilmembers.

The City of Mansfield provides many services to its citizens. These include Administrative, Water, Sewer, Electric Services, and Planning/Zoning.

Mansfield occupies a total of just over 1 square mile of land and has a population of less than 500 people.

Town of Newborn

The Town of Newborn occupies 1.6 square miles in the eastern part of Newton County near the Morgan and Jasper County lines. Newborn was first known as “Sandtown” and was settled by Rufus Broome, his wife, and her two brothers. The name Newborn first shows up in the records as in 1839. During the Civil War, Newborn became a staging area for supplies for the Confederate Army due to its quick access to the railroad in Covington. General Tecumseh Sherman visited Newborn on November 19, 1864 on his march to the sea after the fall of Atlanta. Sherman and his troops marched through the area on what would eventually become Highway 142. In January 1866, a tornado struck the Town of Newborn, killing four and injuring 12 others. Newborn was incorporated as a town in 1894 by the Georgia General Assembly.

The Town of Newborn is governed by a mayor and four councilmembers, one of whom serves as Mayor Pro Tem. All elections are citywide and elected officials serve 4-year, staggered terms. Newborn provides Administrative services, Garbage and Solid Waste, Street Construction and Maintenance, Parks/Recreation, and Planning/Zoning to its citizens. Newborn was impacted by the April 2011 tornado outbreak.

City of Oxford

The City of Oxford occupies just over 2 square miles immediately to the north of Covington in north central Newton County. Oxford was established by the Methodist Episcopal Church in 1839 and incorporated as a city in 1914. The city grew out from Oxford College, which was founded by the Methodist Episcopal Church one mile north of Covington in 1836. The College was originally known as Emory College. Oxford was named after Oxford University in England, which was the alma mater of the founders of the Methodist Church. Emory College moved to Atlanta in 1915 and became Emory University, although the campus at Oxford continued to be utilized a preparatory academy. By the mid-1930s, it was transformed once again into Emory Junior College at Oxford as a two-year junior college. In the 1960s, it became Oxford College of Emory University. Oxford is also home to the Orna Villa, a mansion built in 1825 that is on the National Registry of Historic Places and served as a hospital during the Civil War.

Oxford is governed by a mayor and six councilmembers. Oxford provides several services to its citizens. These include Administrative, Planning/Zoning, Parks/Recreation, Solid Waste Collection, Water, Stormwater Management, Road Construction and Maintenance, Electric Service, and Law Enforcement.

City of Porterdale

The City of Porterdale is situated along the Yellow River to the southwest of the City of Covington. Porterdale is best known for the Porterdale Mill. In fact, Porterdale was named after the mill's owner, Oliver S. Porter when it was incorporated by the Georgia General Assembly in 1917. Build in 1899 by the Bibb Manufacturing Company, it served as a twine mill along the banks of the Yellow River. The mill attracted workers to the community in search of a better life. The homes in the area were owned and maintained by the mill for their workers. However, the mill closed in the 1970s, which led to the deterioration of the mill and the surrounding homes. Porterdale became a haven for those on hard times and crime and drugs soon followed. In 2006, the Porterdale Mill, which was in ruins, was purchased and a bold project was undertaken to turn the mill into lofts overlooking the Yellow River. This event became the impetus for the New Porterdale. As people came from all over to live in The Lofts, small business began to grow to support the new community. The crime and decay began to be replaced by this new, thriving community. New playgrounds, a library, and an event center have all been added to the area. Porterdale has become an example the phoenix that can rise from the ashes of the past and take its place in Georgia's great tradition of history and tourism.

Porterdale is governed by a mayor and five councilmembers. All elections are citywide and elected officials serve 4-year, staggered terms. The City of Porterdale provides several services to its citizens. These include law enforcement, fire protection, garbage and solid waste, parks/recreation, stormwater and sewage, water, road construction and maintenance, planning/zoning, and public works.

CHAPTER THREE
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HAZARD PROFILES

Summary of Updates for Chapter Three

The following table provides a description of each section of this chapter, and a summary of the changes that have been made to the Newton County Hazard Mitigation Plan 2015.

Chapter 3 Section	Updates
Risk Assessment	<ul style="list-style-type: none"> • Expanded the explanation of the Risk Assessment • Added an explanation of each part of the Hazard Information
Natural Hazard Thunderstorms	<ul style="list-style-type: none"> • Updated and consolidated hazard profile with new data • Added hail hazard • Content revised
Natural Hazard Winter Storms	<ul style="list-style-type: none"> • Updated and consolidated hazard profile with new data • Content revised
Natural Hazard Flooding	<ul style="list-style-type: none"> • Updated and consolidated hazard profile with new data • Land Use and Development trends updated to include municipal NFIP information • Incorporated 2020 HAZUS Report Information • Content revised
Natural Hazard Tornado	<ul style="list-style-type: none"> • New Section – Not in 2015 Plan as a Stand-Alone Section • Split from Severe Thunderstorms Section • Incorporated 2020 HAZUS Report Information • Content revised
Natural Hazard Drought	<ul style="list-style-type: none"> • Updated and consolidated hazard profile with new data • Content revised

Natural Hazard Wildfire	<ul style="list-style-type: none"> • Updated and consolidated hazard profile with new data • Content revised
Natural Hazard Earthquake	<ul style="list-style-type: none"> • Updated and consolidated hazard profile with new data • Content revised
Natural Hazard Tropical Cyclone	<ul style="list-style-type: none"> • Updated and consolidated hazard profile with new data • Content revised
Natural Hazard Extreme Temperatures	<ul style="list-style-type: none"> • New Section – Not in 2015 Plan
Technological Hazard Hazardous Materials	<ul style="list-style-type: none"> • Updated hazard description • Updated and consolidated hazard profile data • Content revised
Technological Hazard Dam Failure	<ul style="list-style-type: none"> • Updated hazard description • Updated and consolidated hazard profile data • Content revised
Technological Hazard Transportation	<ul style="list-style-type: none"> • Updated hazard description • Updated and consolidated hazard profile data • Content revised
Technological Hazard Terrorism	<ul style="list-style-type: none"> • Updated hazard description • Updated and consolidated hazard profile data • Content revised
Technological Hazard Infrastructure Failure	<ul style="list-style-type: none"> • New Section – Not in 2015 Plan
Technological Hazard Emerging Infectious Diseases	<ul style="list-style-type: none"> • New Section – Not in 2015 Plan

Risk Assessment

Requirement §201.6(c)(2)(i and ii)

Requirement §201.6(d)(3)

The Newton County Hazard Mitigation Planning Committee conducted a comprehensive Threat and Hazard Identification and Risk Assessment (THIRA) for Newton County and all municipalities. This assessment developed the hazard basis for this plan. The assessment includes the following components for each hazard:

1. *Hazard Identification:* The Newton County Hazard Mitigation Planning Committee identified nine natural hazards and six technological hazards for this Hazard Mitigation Plan. This is an increase of one natural hazard and two technological hazards from the previous iteration of the plan. Each hazard was identified using statistical data and records from a variety of sources. The list of hazards is based upon frequency, severity of impact, probability, potential losses, and vulnerability.
2. *Hazard Description:* Each hazard was described in detail. Many hazard descriptions came from the Georgia Hazard Mitigation Plan since many of the hazards that could impact the state could also potentially impact Newton County.
3. *Profile of Hazards:* Each hazard was profiled as to how it could potentially impact Newton County.
4. *Assets Exposed to the Hazard:* The plan considers critical facilities and infrastructure as part of the vulnerability assessment. This assessment determines the vulnerability of the municipalities and attempts to identify the populations most vulnerable to each hazard, although many have potential countywide impacts.
5. *Estimated Potential Losses:* Using critical facility and past history data, an estimation of potential losses due to a particular hazard event were determined.
6. *Land Use and Development Trends:* Land use trends were considered when determining the potential future impacts of each hazard. This is of importance regarding flooding and dam failure events.
7. *Multi-Jurisdictional Concerns:* Each jurisdiction was considered when determining the potential hazard impact.

At the second meeting of the Newton County Hazard Mitigation Plan Update Committee, the attendees participated in a risk assessment of hazard for Newton County. This risk assessment was based upon two primary factors: 1. How likely is a hazard to occur; 2. How prepared the committee meeting participants felt the community was for each hazard. This risk assessment relied on the committee meeting attendees to identify the hazards and then rank them by those two factors. As a result, the risk assessment could be skewed by the meeting participants, recency bias, and/or how the hazard would directly impact the organizations represented at this meeting. After additional discussion with the Newton County Hazard Mitigation Plan Update committee at future meetings, the hazards in this chapter were the agreed upon list. Several of the hazards identified by the committee members were consolidated into expanded hazard descriptions. Those incorporations are notated in the below hazard ranking.

Hazard	Likelihood Score	Preparedness Score	Total Score
Severe Thunderstorms	137	10	147
Terrorism	5	77	82
Tornado	60	17	77
Flooding	66	10	76
Epidemic/Pandemic*	7	67	74
Severe Winter Weather	43	6	49
Hazardous Materials Incident	32	15	47
Utility Failure**	16	24	40
Earthquake	2	26	28
Wildfire	8	17	25
Electromagnetic Pulse/Solar Storm***	3	20	23
Tropical Cyclone	20	0	20
Dam Failure	0	12	12
Water Contamination****	2	10	12
Extreme Temperatures	10	3	13
Drought	5	5	10
Economic Incident**	1	7	8
Transportation Incident	3	1	4
Fuel Disruption**	0	3	3
Mudslide*****	0	0	0
Zoonotic Disease*	0	0	0

* Epidemic/Pandemic and Zoonotic Disease was changed to Emerging Infectious Diseases
 ** Utility Failure/Economic Incident/Fuel Disruption were combined under Infrastructure Failure
 ***Electromagnetic Pulse was removed since mitigation efforts for this would be considered on a national scale
 **** Water Contamination was incorporated into HazMat Incident and Terrorism
 *****Mudslides were removed due to lack of committee support

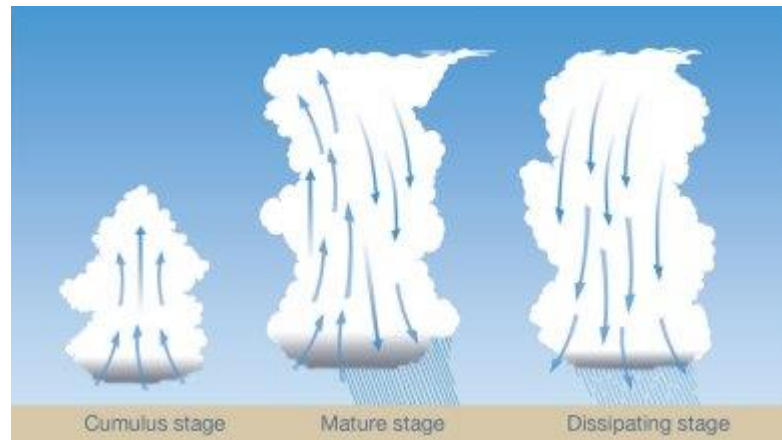
Natural Hazard: **Thunderstorms**

Hazard Description

This section provides general and historical information about thunderstorms, including high wind, lightning, and hail. Other elements of thunderstorms, such as tornadoes and flooding, are addressed in their own sections.

Thunderstorms are formed when moist air near the earth's surface is forced upward through some catalyst (convection or frontal system). As the moist air rises, the air condenses to form clouds. Because condensation is a warming process, the cloud continues to expand upward. When the initial updraft is halted by the upper troposphere, both the anvil shape and a downdraft form. This system of up-drafting and down-drafting air columns is termed a "cell."

As the process of updrafts and downdrafts feeds the cell, the interior particulates of the cloud collide and combine to form rain and hail, which falls when the formations are heavy enough to push through the updraft. The collision of water and ice particles within the cloud creates a large electrical field that must discharge to reduce charge separation. This discharge is the lightning that occurs from cloud to ground or cloud to cloud in the thunderstorm cell. In the final stage of development, the updraft weakens as the downdraft-driven precipitation continues until the cell dies.



Each thunderstorm cell can extend several miles across its base and to reach 40,000 feet in altitude. Thunderstorm cells may compound and move abreast to form a squall line of cells, extending farther than any individual cell's potential.

Natural Hazard: Thunderstorms*(Hazard Description Continued)*

In terms of temporal characteristics, thunderstorms exhibit no true seasonality in that occurrences happen throughout the year. Convectively, driven systems dominate the summer while frontal driven systems dominate during the other seasons. The rate of onset is rapid in that a single cell endures only 20 minutes. However, various cells in different stages of development may form a thunderstorm that lasts up to a few hours as it moves across the surface.

In terms of magnitude, the National Weather Service defines thunderstorms in terms of severity as a severe thunderstorm that produces winds greater than 57 mph and/or hail of at least 1 inch in diameter and/or a tornado. The National Weather Service chose these measures of severity as parameters more capable of producing considerable damage. Therefore, these are measures of magnitude that may project intensity.

Lightning

Lightning occurs when the difference between the positive and negative charges of the upper layers of the cloud and the earth's surface becomes great enough to overcome the resistance of the insulating air. The current flows along the forced conductive path to the surface (in cloud to ground lightning) and reaches up to 100 million volts of electrical potential. In Georgia, lightning strikes peak in July, with June and August being second highest in occurrence.

Hail

Hail is a form of precipitation that forms during the updraft and downdraft-driven turbulence within the cloud. The hailstones are formed by layers of accumulated ice (with more layers creating larger hailstones) that can range from the size of a pea to the size of a grapefruit. Hailstones span a variety of shapes but usually take a spherical form. Hailstorms mostly endanger cars but have been known to damage aircraft and structures.

Hazard Profile

Severe thunderstorms, including high winds, hail, and lightning, are a serious threat to the residents and infrastructure of Newton County. Severe thunderstorms are the most frequently occurring natural hazard in Newton County. Many of these storms include high winds, lightning, and hail. Hail up to 1.75 inches was recorded in Newton County on several occasions, most recently in 2013. Thunderstorm winds of 75 mph have been reported on many occasions in Newton County, with the most recent occurring in 2017. While there have been dozens of documented thunderstorm events affecting Newton County over the last 50 years, it is likely that

Natural Hazard: Thunderstorms

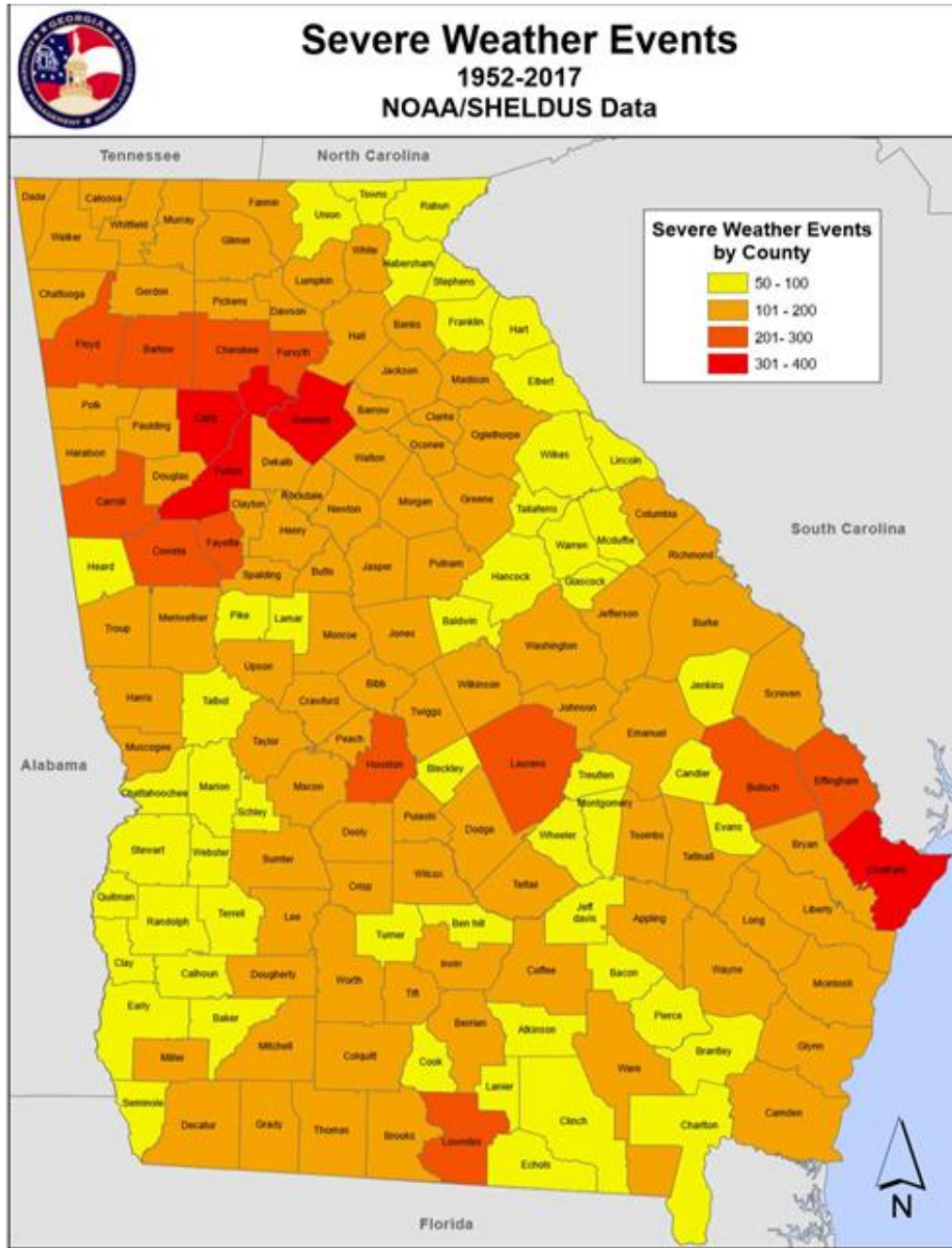
the official number is a low estimate due to poor record keeping in decades past. For example, only 22 thunderstorm events were recorded between 1970 and 1990, likely a vast underestimation of actual events.

Hailstone size	Measurement		Updraft Speed	
	in.	cm.	mph	km/h
bb	< 1/4	< 0.64	< 24	< 39
pea	1/4	0.64	24	39
marble	1/2	1.3	35	56
dime	7/10	1.8	38	61
penny	3/4	1.9	40	64
nickel	7/8	2.2	46	74
quarter	1	2.5	49	79
half dollar	1 1/4	3.2	54	87
walnut	1 1/2	3.8	60	97
golf ball	1 3/4	4.4	64	103
hen egg	2	5.1	69	111
tennis ball	2 1/2	6.4	77	124
baseball	2 3/4	7.0	81	130
tea cup	3	7.6	84	135
grapefruit	4	10.1	98	158
softball	4 1/2	11.4	103	166

Most of the available information relating to severe thunderstorm events in Newton County fails to describe damage estimates in any detail. With each thunderstorm event, there are likely unreported costs related to infrastructure costs, public safety response costs, utility repair costs, and personal home and business repair costs. Thunderstorms have occurred during all parts of the day and night and in every month in Newton County.

The Newton County Hazard Mitigation Plan Update Committee utilized data from the National Climatic Data Center, the National Weather Service, numerous weather-related news articles, and the Newton County LEOP in researching severe thunderstorms and their potential impacts on the county. All information has been gathered on a countywide basis. All thunderstorm hazard data included for Newton County is limited to countywide data and is not broken down by jurisdiction.

Natural Hazard: **Thunderstorms**



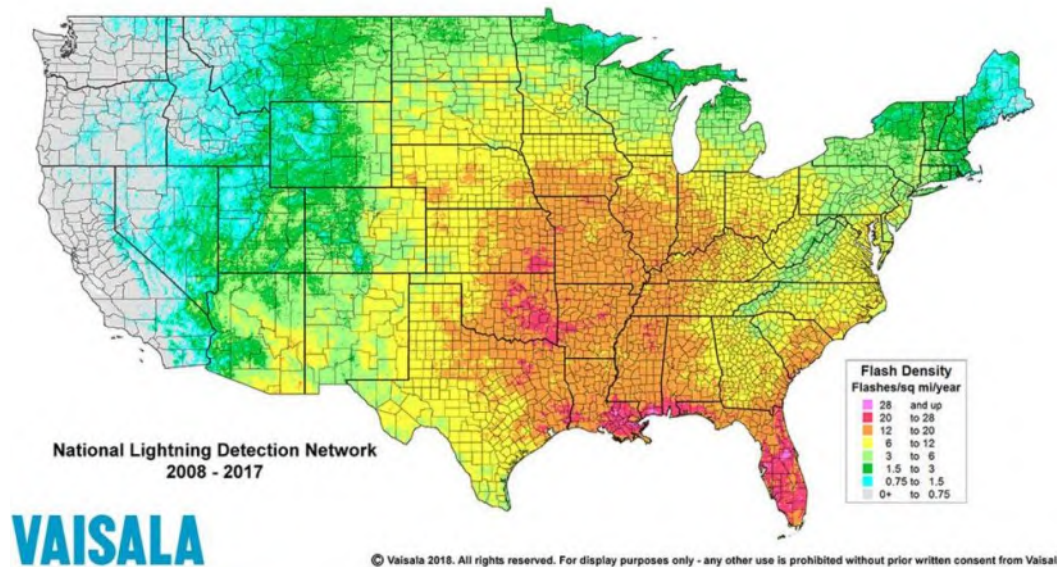
Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Thunderstorms

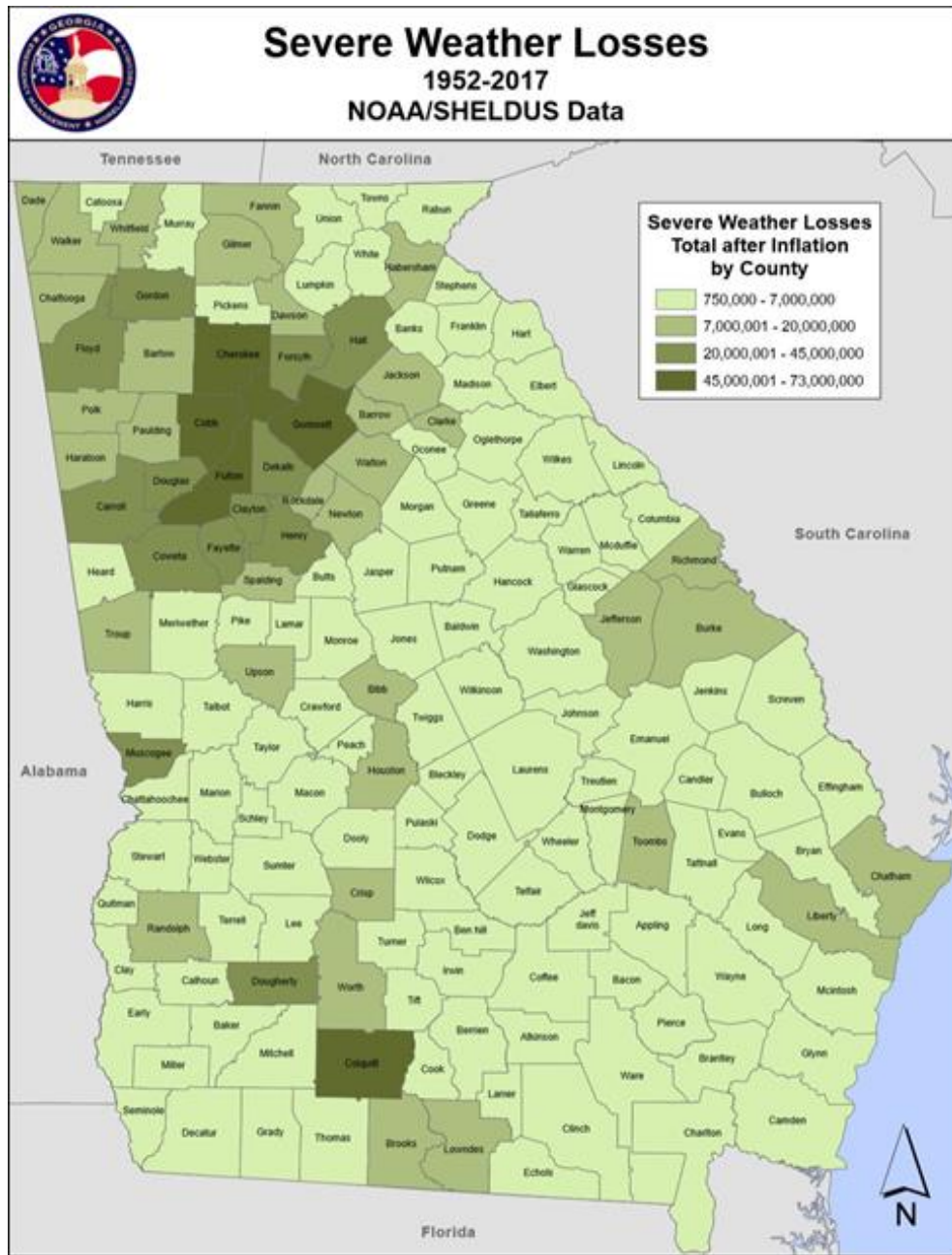
(Hazard Profile Continued)

During the last 50 years, 139 thunderstorm events were recorded in Newton County, with 117 of those occurring in the last 30 years. This number includes 47 hail events and only 9 lightning reports. According to these records, Newton County has a 1.1% daily chance of a thunderstorm event based upon data from the last 30 years. Over the last 10 years, Newton County has averaged 4.2 thunderstorm events per year (42 events). Due to improved record keeping protocols, the Newton County Hazard Mitigation Plan Update Committee believes the data from the last ten years provides a more accurate representation of the thunderstorm threat to the county. The Newton County Hazard Mitigation Plan Update Committee has also determined that the lightning threat is severely under-reported, as shown in the NCDC data numbers. For additional historical data, please see Appendix D.

As indicated by the below graphics, Newton County averages between 6 and 12 flashes of cloud to ground lightning per square mile per year. That equals a 1.6% to 3.3% chance of a cloud-to-ground lightning strike on any given day. This shows a much higher indication of lightning occurrences than has been reported to the National Weather Service and the National Climatic Data Center. It is the determination of the Newton County Hazard Mitigation Plan Update Committee that this data shows a more accurate representation of the scope of the threat that lightning poses to the citizens and infrastructure of Newton County.



Natural Hazard: **Thunderstorms**



Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Thunderstorms

Severe thunderstorm winds, which are defined as winds of at least 58 mph in conjunction with a convective event, have occurred with many thunderstorms that have affected Newton County. These winds can exceed 100 mph and cause damage comparable to weak tornadoes. Below are two maps that identify the wind risk and the hazard wind score for the State of Georgia, including Newton County. The Hazard Wind Score maps use the following scale:

Hazard Score	Wind Speeds
1	<90 mph gust
2	91 – 100 mph gust
3	101 – 110 mph gust
4	111 – 120 mph gust
5	>120 mph gust

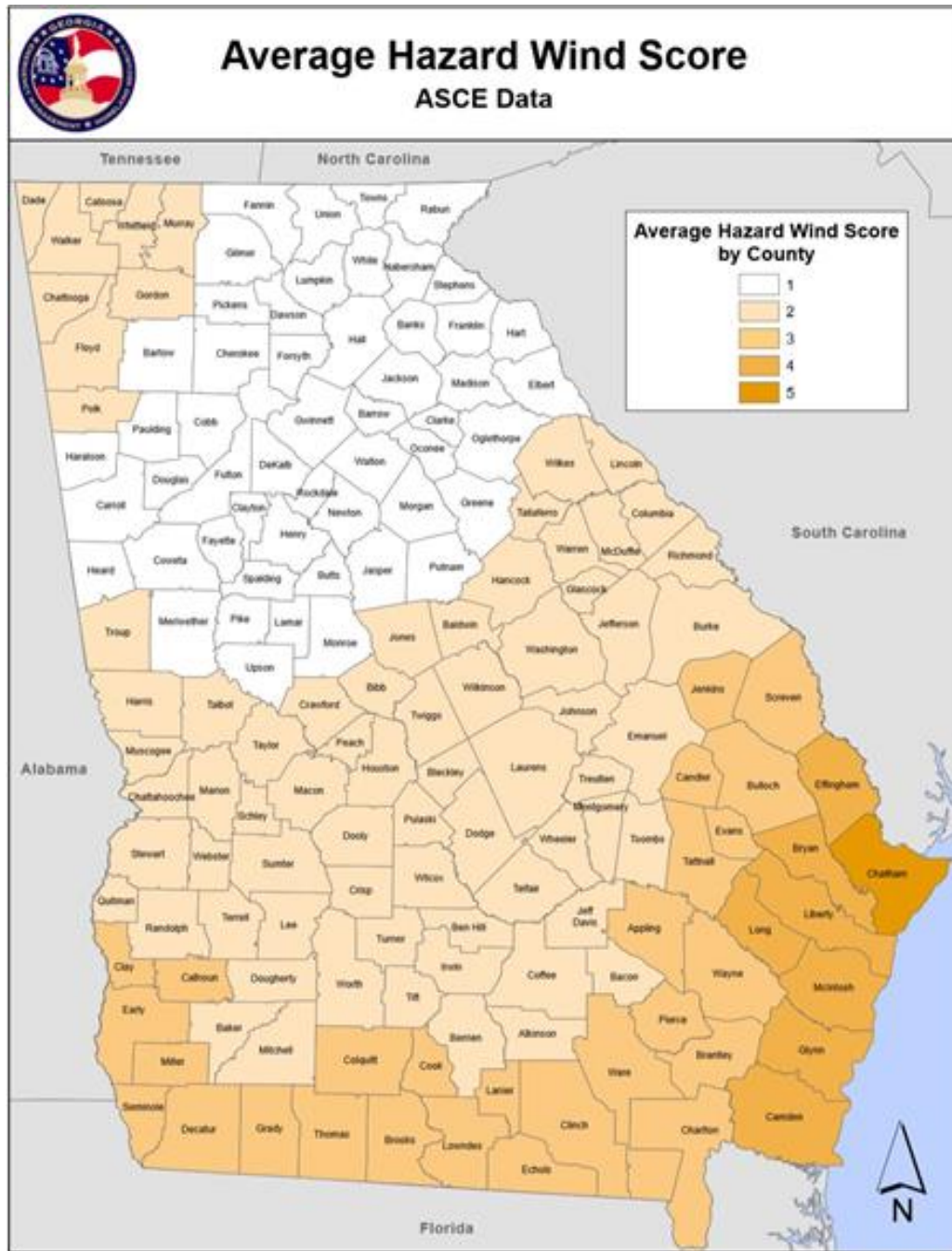
<i>Municipality</i>	<i># of Thunderstorms</i>	<i>Annual Risk</i>
<i>Covington</i>	38	100%
<i>Mansfield</i>	2	8%
<i>Newborn</i>	2	8%
<i>Oxford</i>	8	32%
<i>Porterdale</i>	11	44%
<i>COUNTYWIDE/ UNINCORPORATED AREA</i>	62	100%

This Table identifies the number of Thunderstorms for municipalities over the last 25 years

Assets Exposed to the Hazard

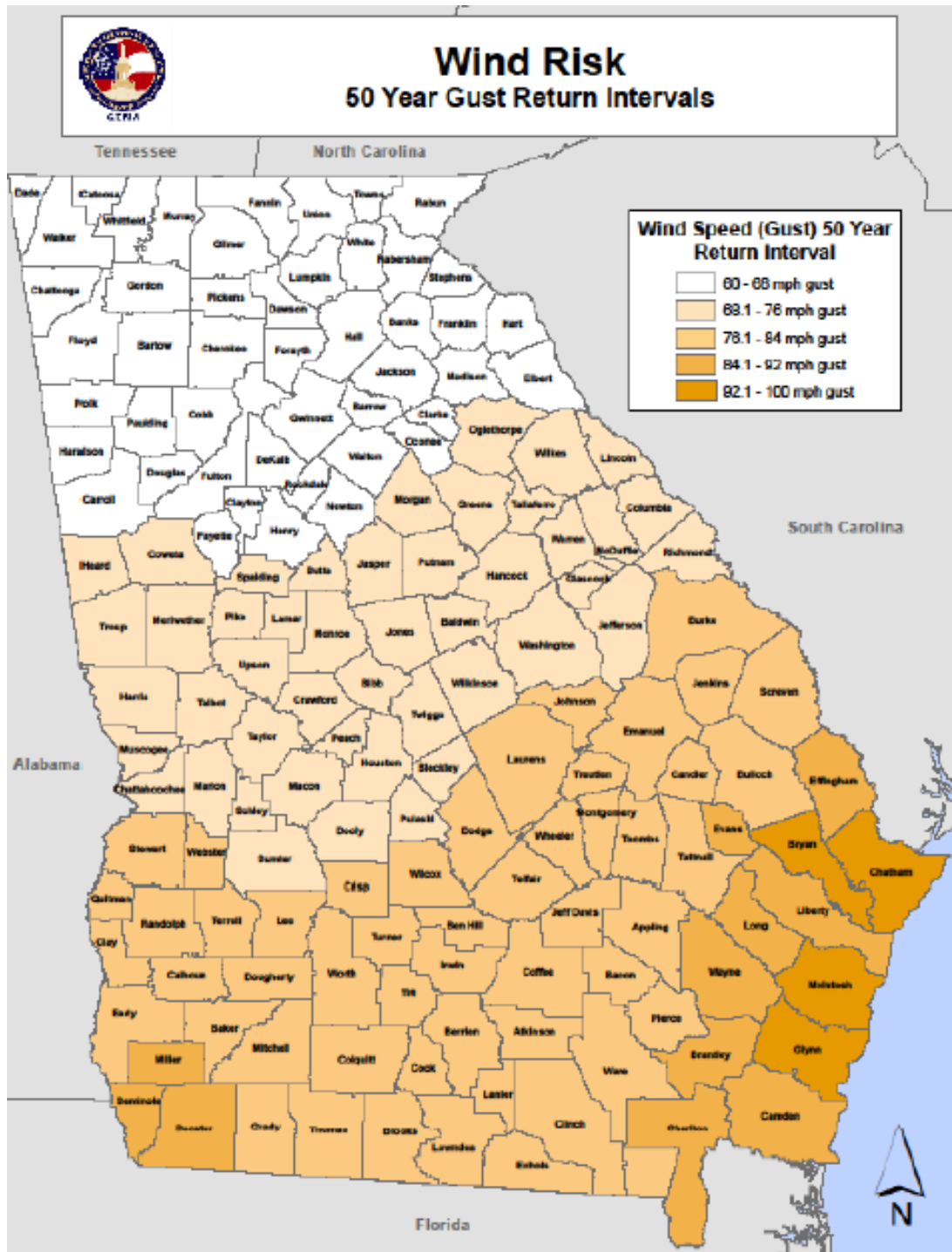
In evaluating assets that are susceptible to severe thunderstorms, the Newton County HMPC determined that all public and private property is at threat by severe thunderstorms, including all critical facilities. This is due to the lack of spatially prejudice of severe thunderstorm events.

Natural Hazard: **Thunderstorms**



Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: **Thunderstorms**



Natural Hazard: Thunderstorms*Estimated Potential Losses*

Estimates of damage for the past events of the last 50 years are over \$5.9 million, or \$119,140 annually. However, all estimated damages reported have occurred over the last 25 years. When extrapolated over 25 years, the annual average doubles to \$238,280. These numbers are thought to be a gross underestimation of actual past damages.

Land Use & Development Trends

Newton County currently has no land use trends related to Thunderstorms beyond continued population growth – particularly around the Cities of Covington, Oxford, and Porterdale and in areas near the Henry and Rockdale County lines.

Multi-Jurisdictional Considerations

Thunderstorm events have occurred across all areas of Newton County. Crop damage from thunderstorm events would likely have the greatest impact in the rural areas of Newton County. However, property damage numbers would be highest in more heavily populated areas due to greater population density. Thunderstorms have the potential to impact all areas of Newton County.

Hazard Summary

Thunderstorm events pose one of the greatest threats of property damage, injuries, and loss of life in Newton County. Thunderstorm events are the most frequently occurring weather event that threatens Newton County. As a result, the Newton County HMPC recommends that the mitigation measures identified in this plan for thunderstorms should be aggressively pursued due to the frequency of this hazard and the ability for this hazard to affect any part of Newton County.

Natural Hazard: **Thunderstorms**

Thunderstorm Events Since 2015 in Newton County

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
COVINGTON	NEWTON CO.	GA	05/26/2015	16:20	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
FAIRVIEW	NEWTON CO.	GA	06/18/2015	17:15	EST-5	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
STEWART	NEWTON CO.	GA	08/06/2015	14:07	EST-5	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
ABIDE AWHILE	NEWTON CO.	GA	03/01/2016	21:04	EST-5	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K
STARRSVILLE	NEWTON CO.	GA	06/02/2016	20:05	EST-5	Thunderstorm Wind	50 kts. EG	0	0	6.00K	0.00K
PORTERDALE	NEWTON CO.	GA	06/14/2016	14:10	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
PORTERDALE	NEWTON CO.	GA	06/14/2016	14:10	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.50K	0.00K
STEWART	NEWTON CO.	GA	06/17/2016	13:55	EST-5	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K
OAK HILL	NEWTON CO.	GA	07/11/2016	17:55	EST-5	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ABIDE AWHILE	NEWTON CO.	GA	08/06/2016	22:45	EST-5	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K
JAMESTOWN	NEWTON CO.	GA	04/03/2017	12:18	EST-5	Thunderstorm Wind	60 kts. EG	0	0	200.00K	0.00K
JERUSALEM	NEWTON CO.	GA	04/03/2017	12:23	EST-5	Thunderstorm Wind	65 kts. EG	0	0	100.00K	0.00K
JERUSALEM	NEWTON CO.	GA	07/07/2017	17:36	EST-5	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
HAYSTON	NEWTON CO.	GA	07/26/2017	17:30	EST-5	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K

<u>FAIRFIELD</u>	NEWTON CO.	GA	10/28/2017	16:41	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
<u>ALMON</u>	NEWTON CO.	GA	02/07/2018	10:15	EST-5	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K
<u>SNAPPING SHOALS</u>	NEWTON CO.	GA	03/19/2018	22:54	EST-5	Hail	1.00 in.	0	0	4.00K	0.00K
<u>MARBLE VALLEY</u>	NEWTON CO.	GA	03/19/2018	22:55	EST-5	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
<u>ROCKY PLAINS</u>	NEWTON CO.	GA	06/03/2018	18:00	EST-5	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
<u>PORTERDALE</u>	NEWTON CO.	GA	06/25/2018	14:08	EST-5	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
<u>LASSITER</u>	NEWTON CO.	GA	06/25/2018	14:34	EST-5	Thunderstorm Wind	55 kts. EG	1	1	20.00K	0.00K
<u>ALCOVY</u>	NEWTON CO.	GA	08/01/2018	18:18	EST-5	Thunderstorm Wind	45 kts. EG	0	0	3.00K	0.00K
<u>FAIRFIELD</u>	NEWTON CO.	GA	02/12/2019	14:34	EST-5	Thunderstorm Wind	60 kts. EG	0	0	25.00K	0.00K
<u>STEWART</u>	NEWTON CO.	GA	04/09/2019	09:15	EST-5	Thunderstorm Wind	50 kts. EG	0	0	22.00K	0.00K
<u>MELODY</u>	NEWTON CO.	GA	06/18/2019	15:40	EST-5	Thunderstorm Wind	40 kts. EG	0	0	0.01K	0.00K
<u>DIXIE</u>	NEWTON CO.	GA	06/22/2019	15:28	EST-5	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
<u>HAYSTON</u>	NEWTON CO.	GA	06/23/2019	15:24	EST-5	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
<u>JERUSALEM</u>	NEWTON CO.	GA	06/24/2019	19:44	EST-5	Thunderstorm Wind	45 kts. EG	0	0	2.00K	0.00K
<u>COVINGTON</u>	NEWTON CO.	GA	09/13/2019	20:50	EST-5	Thunderstorm Wind	45 kts. EG	0	0	5.00K	0.00K

Natural Hazard: Winter Storms*Hazard Description*

Severe winter storms bring the threat of ice and snow. There are many types of frozen precipitation that could create a severe winter weather event. Freezing rain consists of super cooled falling liquid precipitation freezing on contact with the surface when temperatures are below freezing. This results in an ice glazing on exposed surfaces including buildings, roads, and power lines. Sleet is easily discernable from freezing rain in that the precipitation freezes before hitting the surface. Often this sleet bounces when hitting a surface and does not adhere to the surface. However, sleet can compound into enough depths to pose some threat to motorists and pedestrians.

A heavy accumulation of ice, which is often accompanied by high winds, can devastate infrastructure and vegetation. Destructiveness in the southern states is often amplified due to the lack of preparedness and response measures. Also, the infrastructure was not designed to withstand certain severe weather conditions such as weight build-up from snow and ice. Often, sidewalks and streets become extremely dangerous to pedestrians and motorists. Primary industries, such as farming and fishing, suffer losses through winter seasons that produce extreme temperatures and precipitation.

Within Georgia, the impacts of winter storms are often contained within the northern part of the State. However, events like the 1993 “storm of the century” illustrated the vast impacts that one storm can have on the entire state. The winter storms with the greatest impacts on Georgia are the result of coastal storms coming up from the Gulf of Mexico, including the winter storms in 1973 and 1993. The 1973 storm produced snowfalls of up to 19 inches in parts of Central Georgia including the City of Thomaston in Upson County. Also, a major ice storm occurred in 2014, bringing up to 1 inch of ice to the eastern portion of the State near Augusta.

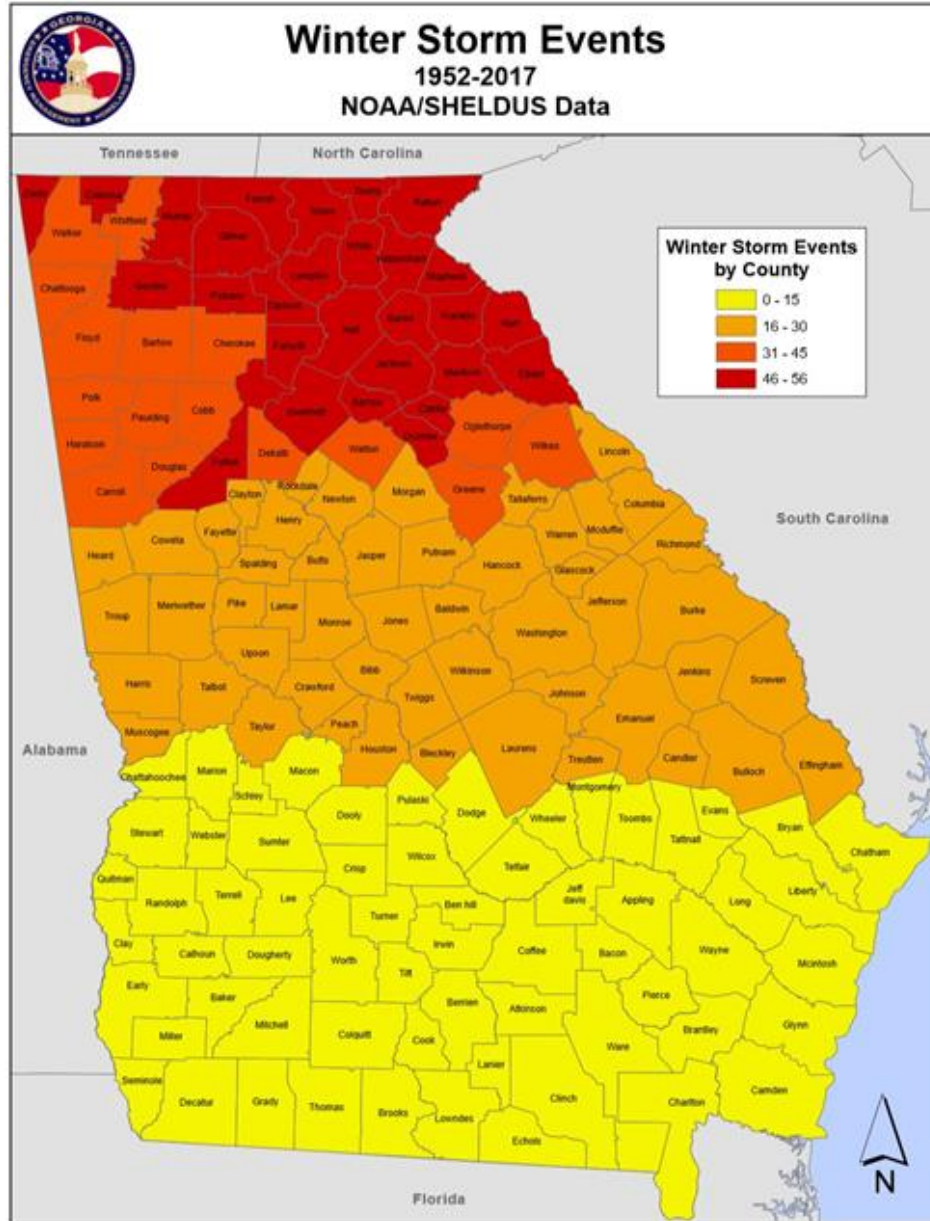
Severe winter weather exhibits seasonal qualities in that most occur within the months of January to March, with the highest probability of occurrence in February. The rate of onset and duration varies from storm to storm, depending on the weather system driving the storm. Severe winter weather rarely frequents the State of Georgia. However, the impacts of the storms substantiate severe winter weather’s inclusion in the risk assessment.

Hazard Profile

While winter storms are not as frequent of an occurrence in Newton County as they are in areas in the Northern US, they still have the potential to wreak havoc on the community when they do occur. Winter storms in Newton County typically cause drastic damage to infrastructure, such as roads, power lines, and bridges. They also

Natural Hazard: **Winter Storms**

can cause damage to private property, businesses, and trees throughout the county. Due to the county’s elevation changes, many highways have steep grades that can become dangerous during icy conditions. The large number of trees in Newton County can also become a hazard when the tree limbs become weighed down with snow and ice and begin to break and fall to the ground, potentially damaging private property, public property, or injuring people and animals.



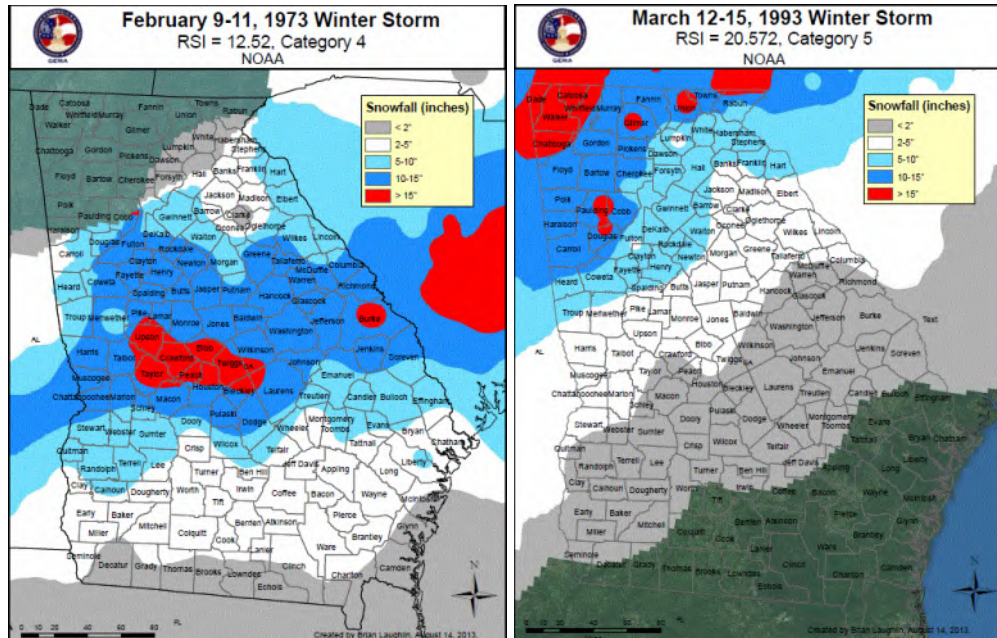
Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Winter Storms

(Hazard Profile Continued)

During the past twenty-five years, documentation exists for 22 winter storm events in Newton County. No consolidated data can be located prior to this timeframe. On average, Newton County has averaged a winter storm every 1.14 years. This equates to an annual risk of 88%. Due to improved record keeping techniques, the HMPC believes that looking at the record for the last 25-year period provides a more accurate representation of the threat of winter storms for Newton County. All winter storm data has been gathered on a countywide basis. For additional historical data, please see Appendix D. All winter storm hazard data included for Newton County is limited to countywide data and is not broken down by jurisdiction.

Individual events of Winter Weather can be drastically different depending on many factors, including the duration of the event, the type of precipitation involved, and the depth of the precipitation. Winter Storm events can be a light dusting of snow, ¼ inch of ice, or over a foot of snow. Other factors, such as wind, can influence the strength of these events, as happened with wind-blown snow during the March 1993 Winter Storm event. During the 1973 snow event, parts of Newton County reported up to 15 inches of snow and all areas received at least 10 inches of snow.

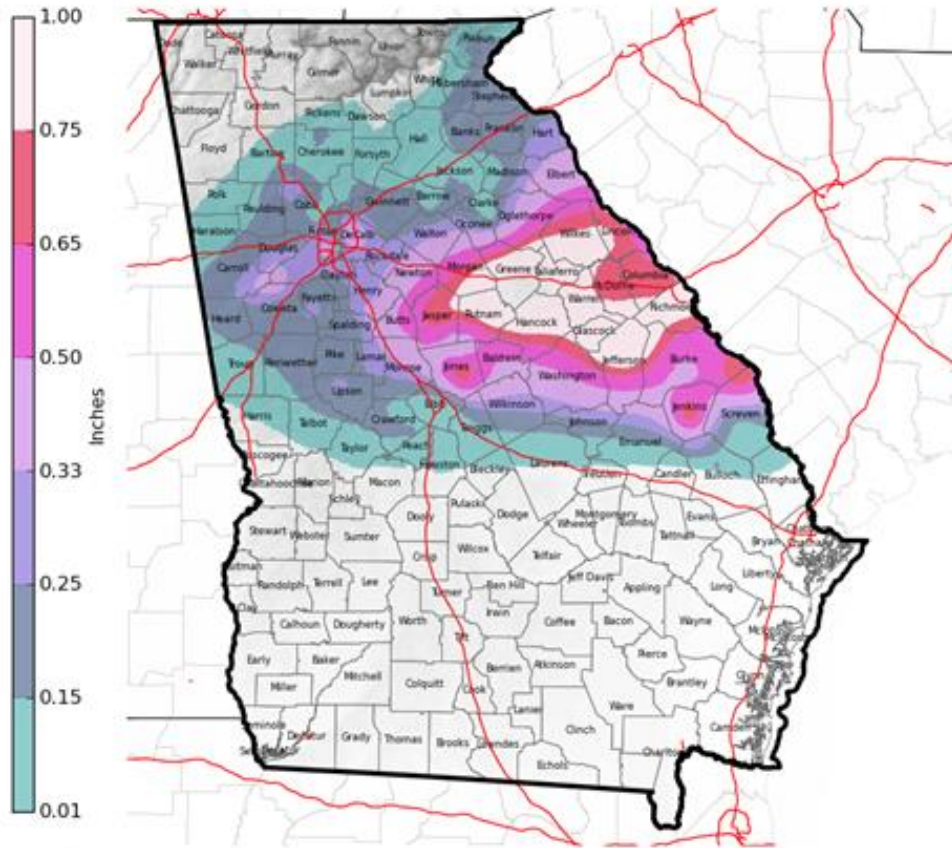


Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Winter Storms

Ice events are another type of winter storm that has impacted Newton County in the past. These types of winter storms can be particularly crippling due to the increased threat of tree falls related to the weight of accumulated ice and subsequent utility infrastructure failure. The 2014 Ice Storm produced significant ice accumulations over much of North Central Georgia, including Newton County. While areas farther east, such as Augusta, saw the greatest impacts, Newton County had ice accumulations around 0.33 inch for most areas with an isolated pocket of over 0.65 inch in the east and southeast part of the county near the Jasper County border. This storm led to widespread power outages with some residents without power for over two days.

Preliminary Ice Totals ending Feb. 13, 2014

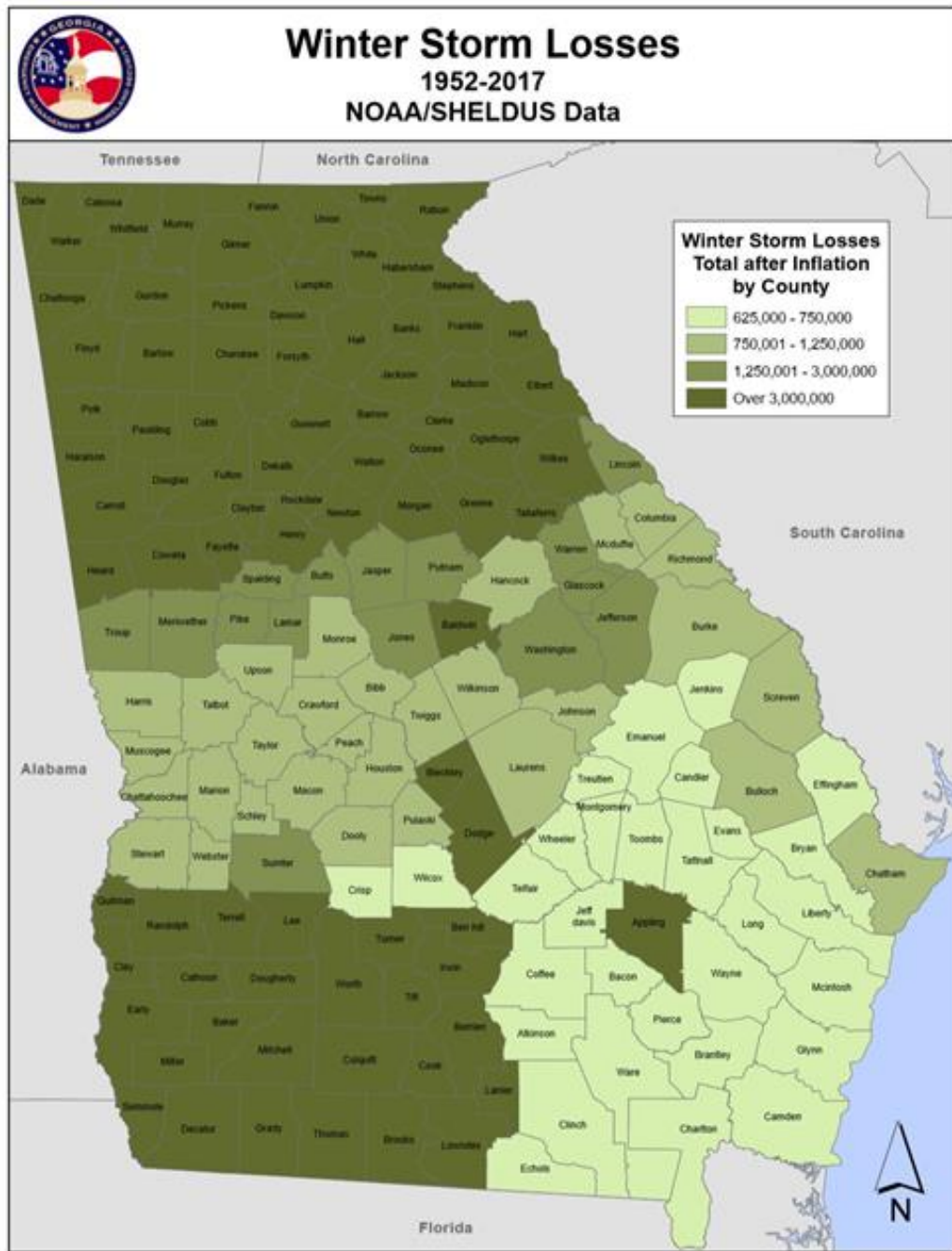


National Weather Service
Peachtree City, GA
03/03/2014 01:58 PM EST

Follow Us:   
weather.gov/atlanta

Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Winter Storms



Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Winter Storms

Assets Exposed to the Hazard

Since winter storms are indiscriminate regarding location, the Newton County HMPC determined that all public and private property, including all critical infrastructure, are susceptible to impacts from winter storms.

Estimated Potential Losses

Total estimated losses for winter storm events of the last 50 years indicate a total of over \$1.25 million in losses. Extrapolated over 50 years, this averages out to \$25,160 per year. However, nearly all the documented winter storms with loss information have occurred over the last 20 years. As such, the average loss per year for the last 20 years is \$62,900 per year. It is estimated that these numbers are a gross underestimation of the impact of past winter storms and caution is expressed when using these figures to make loss determinations for winter storms in Newton County.

Land Use & Development Trends

Newton County currently has no land use trends related to Winter Storms beyond continued population growth – particularly around the Cities of Covington, Oxford, and Porterdale and in areas near the Henry and Rockdale County lines.

Multi-Jurisdictional Considerations

All portions of Newton County could potentially be impacted by a winter storm, including freezing rain, sleet, and snow. Therefore, all mitigation actions identified regarding winter storms should be pursued on a countywide basis and including all municipalities.

Hazard Summary

Winter storms, which can include freezing rain, sleet, or snow, typically afford communities some advance warning, which is different from many other severe weather phenomena. The National Weather Service issues winter storm watches, advisories, and warnings as much as a day before the storm's impacts begin. Unfortunately, communities in the Southern United States are not equipped to handle winter storms due to their relative infrequent nature. Oftentimes, communities can face severe impact from these storms. The Newton County HMPC recognizes the potential threats winter storms could have on the community and have identified specific mitigation actions as a result.

Natural Hazard: **Winter Storms**

Winter Storm Events since 2015 in Newton County

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
Totals:							0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/22/2016	16:00	Winter Weather		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/09/2017	05:00	Winter Weather		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/16/2018	20:00	Winter Storm		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	02/08/2020	13:00	Winter Weather		0	0	0.00K	0.00K

Natural Hazard: Flooding

Requirement §201.6(c)(2)(ii)

Requirement §201.6(c)(3)(ii)

Hazard Description

Flooding is a temporary overflow of water on normally dry lands adjacent to the source of water, such as a river, stream, or lake. The causes of flooding include mass sources of precipitation, such as tropical cyclones, frontal systems, and isolated thunderstorms combined with other environmental variables, such as changes to the physical environment, topography, ground saturation, soil types, basin size, drainage patterns, and vegetative cover. Adverse impacts may include structural damages, temporary backwater effects in sewers and drainage systems, death of livestock, agricultural crop loss, loss of egress and access to critical facilities due to roads being washed-out or over-topped and unsanitary conditions by deposition of materials during recession of the floodwaters.

Floods are loosely classified as either coastal or riverine. Coastal flooding occurs when normally dry, low-lying land is flooded by sea water. Coastal flooding is usually associated with tropical cyclones in Georgia. Riverine flooding occurs from inland water bodies such as streams and rivers. Riverine flooding is often classified based on rate of onset. The first is slow to build, peak, and recede, often allowing enough time for evacuations. The other type of riverine flood is referred to as a “flash” flood, which rapidly peaks and recedes, thus giving insufficient time for evacuations. Flash floods are typically considered the most dangerous of these types.

On a broad scale, flooding can occur around any body of water or low-lying surface given enough precipitation or snowmelt. The spatial extent of the flooding event depends on the amount of water overflow but can usually be mapped because of existing floodplains (areas already prone to flooding).

Flooding in Georgia is highly dependent on precipitation amounts and is highly variable. Certain seasons are more prone to flooding to a greater likelihood of excessive precipitation. Typically, the wet seasons are during the winter, early spring, and midsummer. Late spring and fall are usually drier seasons.

Hazard Profile

The Newton County HMPC researched flooding information for the last fifty years. The main sources of information used by the Newton County HMPC came from the National Climatic Data Center, the Newton County Emergency Operations Plan, and news media sources. It was determined that flooding has caused

Natural Hazard: Flooding*(Hazard Profile Continued)*

significant damage on many occasions over the last 20 years. One significant flooding event that affected Newton County occurred in 2009. This event caused over \$700,000 in reported damages, including an entire mobile home park flooding in the Barrington area of unincorporated Newton County. This event was caused by 8-12 inches of rain falling in a 12-hour timeframe after a series of previous rain events caused heavily saturated soils in the area. This rainfall event, combined with significant rainfall in areas upriver from Newton County, led to a significant flooding event. This event led to a federal declaration for Newton County. Many area creeks and rivers, including the Yellow River and Big Haynes Creek, reached record levels. While data was collected for the entire 50-year timeframe, little information was available regarding flood events over that period, possibly due to poor record keeping. All flood data was gathered on a countywide basis.

Flood events within Newton County are typically associated with areas of special flood hazard as identified on Flood Rate Insurance Maps (FIRMs) published by FEMA. Relatively little information is available regarding flooding damage estimates. However, with each flooding event, it is likely that significant costs arose related to road repair, infrastructure repair, and public safety response operations. Most of the flood damage in Newton County's history appears to be related to roads and culverts washing out because of flood waters. All flooding hazard data included for Newton County is limited to countywide data and is not broken down by jurisdiction.

Newton County has many flood gauges that provide information on potential impacted areas from floodwaters. The flood gauge on Big Haynes Creek near Milstead indicates that flood stage is reached at 12 feet, which would lead to flooding of woodland areas upstream and downstream from the gauge. At 14 feet, water will begin to enter the backyards of homes on Highlands Forest Lane, Highland Creek Way, and Highlands Ridge Lane. At 17 feet, Moderate flood stage is reached, and water will be approximately 3 feet deep in backyards of residences on Highlands Forest Lane, Highland Creek Way, and Highlands Ridge Lane. At 20 feet, water begins to enter some of the residences along the roadways mentioned above. At 22 feet, Major Flood Stage is reached, and water will be approximately 2 feet deep in some residences. This river gauge has a high mark of 22.46 in September of 2009.

The City of Oxford would see sporadic direct impacts from a 100-year flooding event. For example, one home on East Soule Street could see up to 6 inches of water

Natural Hazard: Flooding

inside the residences in a 100-year flood event. The same level of inundation could be expected for several homes on Wentworth Drive.

For the City of Covington, impacts would likely be scattered and in small pockets across the jurisdiction. One area that has seen significant flooding from past storm events is the Newton Plaza shopping center near the intersection of Highway 278 and Highway 81. Flooding related to Dried Indian Creek would potentially inundate the parking lot and several stores in the plaza with up to 2 feet of water. Flooding from this waterway would also lead to up to a foot of water in other businesses on Pace Street and Emory Street. Residences on Corley Street, Usher Street, Owens Street, and Clark Street could also potentially see up to a foot of water from a 100-year flood event.

Situated in a bend on the Yellow River, Porterdale is mostly built upon higher ground that is well above the 100-year floodplain. The most significant impact that Porterdale would face would be the blocking of Highway 41 and the potential washout of the Highway 81/South Broad Street bridge across the Yellow River. However, there would be some direct impacts to businesses and residences. The business district along Main Street would see up to 10 businesses directly impacted by flood waters. It would be anticipated that water would reach 1-3 feet deep in some of these businesses in a 100-year flood event. Residences, such as those along Railroad Street, could see up to 6 inches of water inundate those locations.

Neither Mansfield nor Newborn have any 100-year floodplain areas within their jurisdictions. The impacts of a flood on these two municipalities would be directly related to blocked access roads outside of their jurisdictional control. This includes Highways 142 (for Newborn) and 213 (for Mansfield).

<i>Municipality</i>	<i># of Flood Events</i>	<i>Annual Risk</i>
<i>Covington</i>	2	8%
<i>Mansfield</i>	1	4%
<i>Newborn</i>	1	4%
<i>Oxford</i>	1	4%
<i>Porterdale</i>	1	4%
<i>COUNTYWIDE/ UNINCORPORATED AREA</i>	6	24%

**Based Upon Data from the Last 25 Years*

Natural Hazard: Flooding

There are 10 documented flood events over the last 50 years. Based on the 50-year record, it can be inferred that such an event is likely to occur every 5 years in Newton County. This relates to a 20% chance of a flood event occurring in a given year. However, all identified flood event have occurred over the last 25 years. When extrapolated over 25 years, Newton County has averaged a flood every 2.5 and has a 40% annual chance of a flood event occurring.

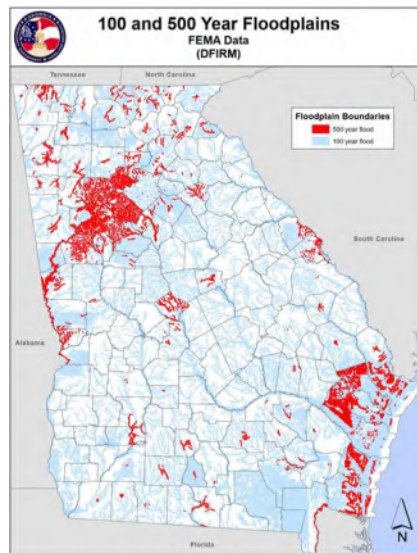
For additional historical data, please see Appendix D.

Assets Exposed to the Hazard

To evaluate the assets that would potentially be impacted by flooding, the Newton County HMPC attempted to identify known structures within, or close to, the 100-year floodplain. There are 489 buildings identified in the flood plain – 462 residential buildings, 23 commercial building, and 6 industrial building. These buildings are assessed at over \$34 million.

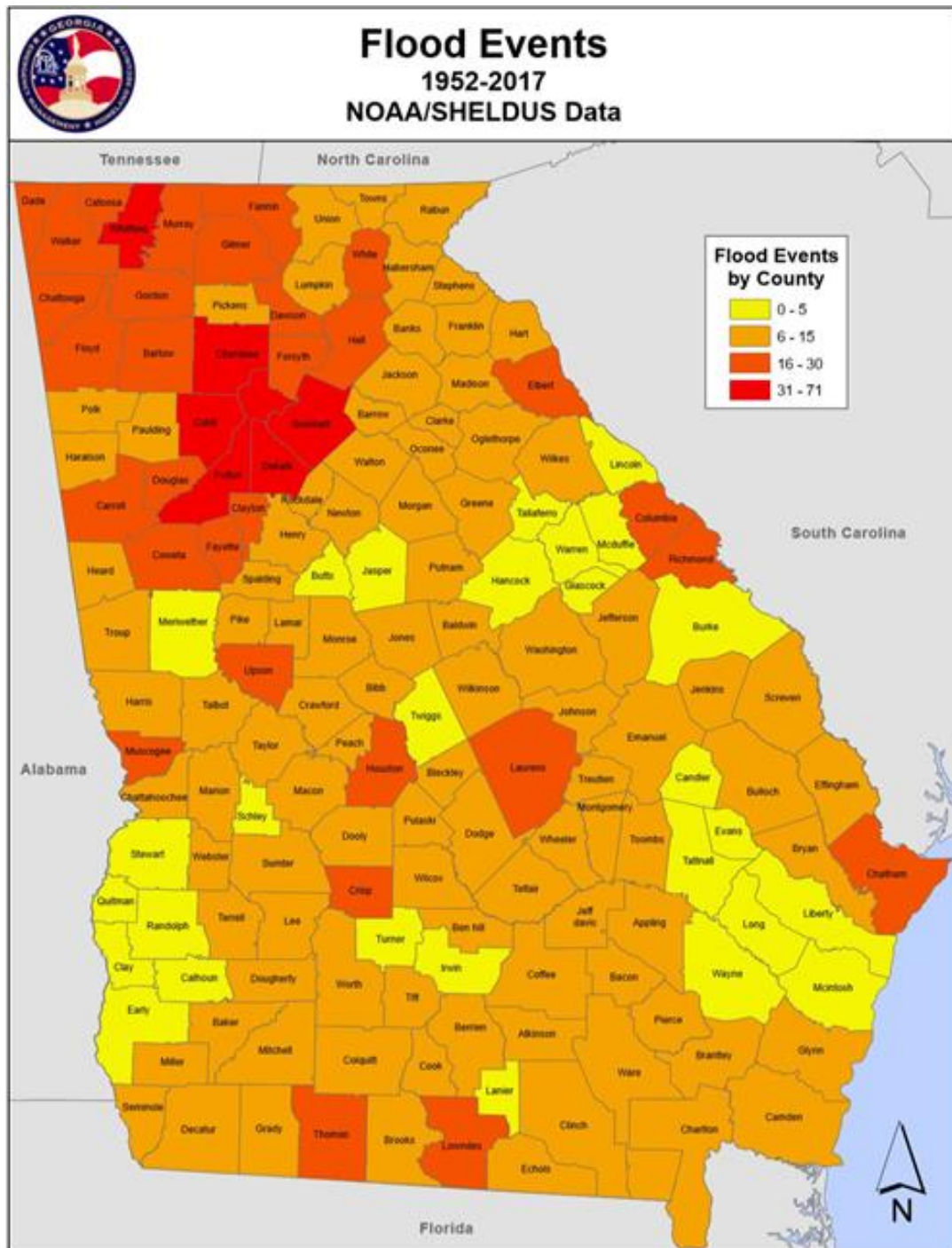
Estimated Potential Losses

The flooding events in Newton County over the last 50 years have led to nearly \$1.5 million in damages. Extrapolated over 50 years, this results in an annual average of \$29,940 per year. However, all reported damages have occurred in the last 22 years. As a result, the average over the last 22 years is \$68,045 annually. These estimations are believed to be a gross underestimation of both prior and potential damages from flood events.



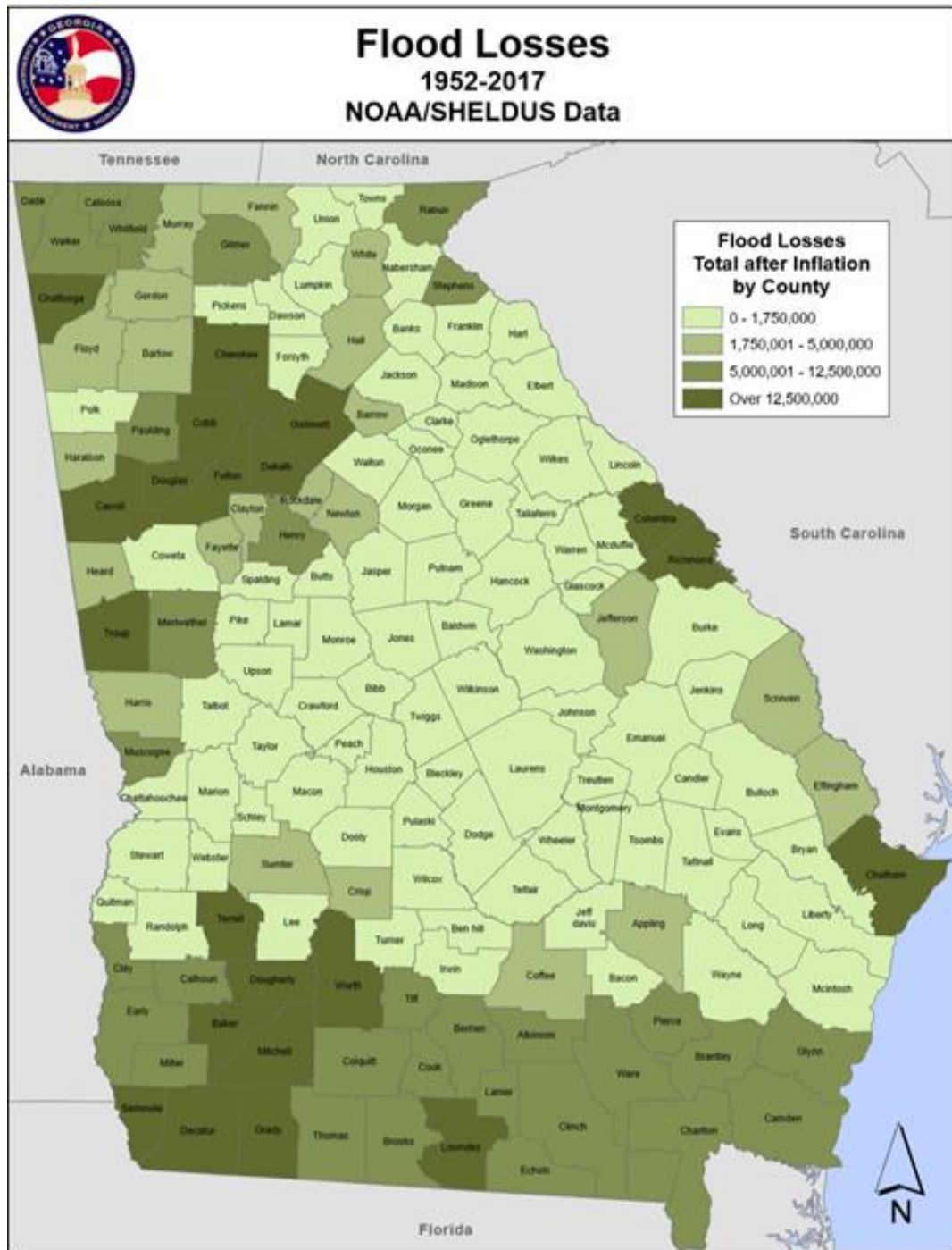
Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: **Flooding**



Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

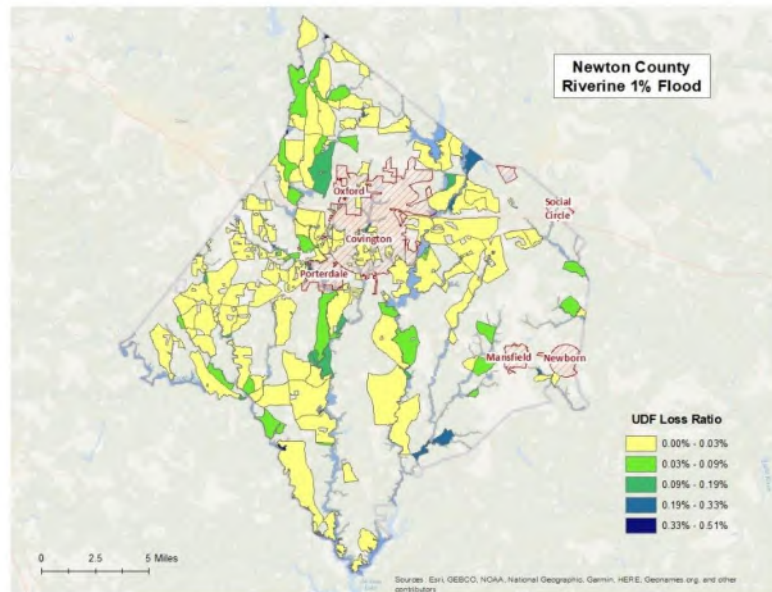
Natural Hazard: **Flooding**



Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Flooding

Based upon the 2020 Newton County HAZUS report, a flood equivalent to the 1% riverine flood levels could result in losses more than \$34 million (489 buildings) – the vast majority (over \$31 million) of which is in unincorporated Newton County. Over \$2.5 million in potential losses are in the City of Covington. However, it is possible that some areas may not experience total losses while others may be inundated with flood water who are not designated in the 1% riverine flood areas. Additionally, there are no critical facilities located in the 1% riverine flood areas.



Source: 2020 Newton County HAZUS Report

Land Use & Development Trends

Newton County participates in the National Flood Insurance Program (NFIP) and follows the program’s guidelines to ensure future development is carried out in the best interests of the public. The County (CID No. 130143) first entered the NFIP on July 5, 1983. According to the NFIP guidelines, the County has executed a Flood Damage Prevention Ordinance. This ordinance attempts to minimize the loss of human life and health as well as minimize public and private property losses due to flooding. The ordinance requires any potential flood damage be evaluated at the time of initial construction and that certain uses be restricted or prohibited based on this evaluation. The ordinance also requires that potential homebuyers be notified that a property is located in a flood area. In addition, all construction must adhere to the Georgia State Minimum Standard Codes and the International Building Codes. Currently, the Newton County municipalities of Covington, Oxford, and

Natural Hazard: Flooding

Porterdale also participate in NFIP through the application of appropriate NFIP-compliant ordinances and regulations. There are no 100-year floodplain (1% annual risk) areas in the City of Mansfield of the Town of Newborn.

There are 3 repetitive loss residential properties identified in Newton County. All three properties are in unincorporated Newton County and have a total assessed value of \$129,175.

Multi-Jurisdictional Considerations

During a large-scale flood event, many portions of Newton County would potentially be impacted by flooding. However, the area’s most prone to flooding have historically been those areas located within the 100-year floodplain – particularly those areas along the Yellow River and its tributaries and distributaries. All of Newton County, including all municipalities, could potentially be impacted by a flood event.

Hazard Summary

Flooding has the potential to inflict significant damage within Newton County, particularly along the Yellow River and its tributaries and distributaries. Mitigation of flood damage requires the community to be aware of flood-prone areas, including roads, bridges, and critical facilities. The Newton County HMPC identified flooding as a hazard requiring mitigation measures and identified specific goals, objectives, and action items they deemed necessary to lessen the impact of flooding for their communities. Newton County and its municipalities have implemented many mitigation strategies beyond ordinances and land use regulations in an attempt to curb flooding.

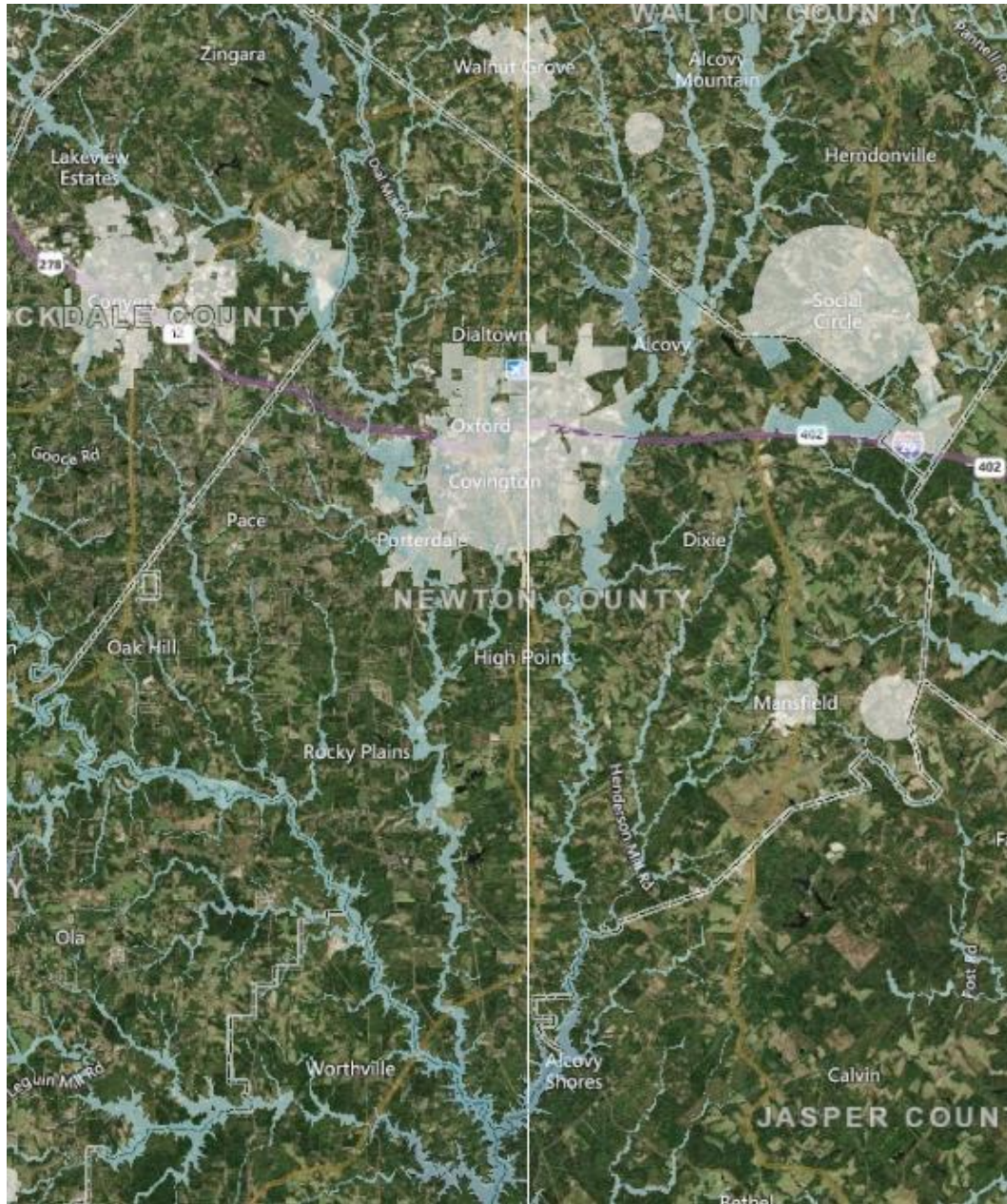
There are three repetitive loss properties identified in Newton County.

Flood Events in Newton County Since 2015

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
Totals:								0	0	786.00K	0.00K
<u>COVINGTON</u>	NEWTON CO.	GA	12/30/2015	12:55	EST-5	Flash Flood		0	0	781.00K	0.00K
<u>ROCKY PLAINS</u>	NEWTON CO.	GA	06/20/2017	01:30	EST-5	Flash Flood		0	0	5.00K	0.00K

Natural Hazard: **Flooding**

Newton County



Natural Hazard: **Flooding**

Mansfield and Newborn



Covington, Oxford, and Porterdale



Note: All “light blue” shaded areas indicate the extent of the 100-year (or 1% annual) flood risk

All Flood Maps are from the Georgia DFIRM Flood Map Program

Natural Hazard: **Flooding**

Big Haynes Creek near Milstead

Flood Categories (in feet)

Major Flood Stage:	22
Moderate Flood Stage:	17
Flood Stage:	12
Action Stage:	9
Low Stage (in feet):	0

Historic Crests

- (1) 22.46 ft on 09/23/2009
 - (2) 17.60 ft on 12/25/2015
 - (3) 17.02 ft on 05/07/2003
 - (4) 16.89 ft on 04/20/2019
 - (5) 14.20 ft on 02/07/2020
- [Show More Historic Crests](#)

(P): Preliminary values subject to further review.

Recent Crests

- (1) 14.20 ft on 02/07/2020
 - (2) 16.89 ft on 04/20/2019
 - (3) 13.72 ft on 12/31/2015
 - (4) 17.60 ft on 12/25/2015
 - (5) 12.59 ft on 01/25/2010
- [Show More Recent Crests](#)

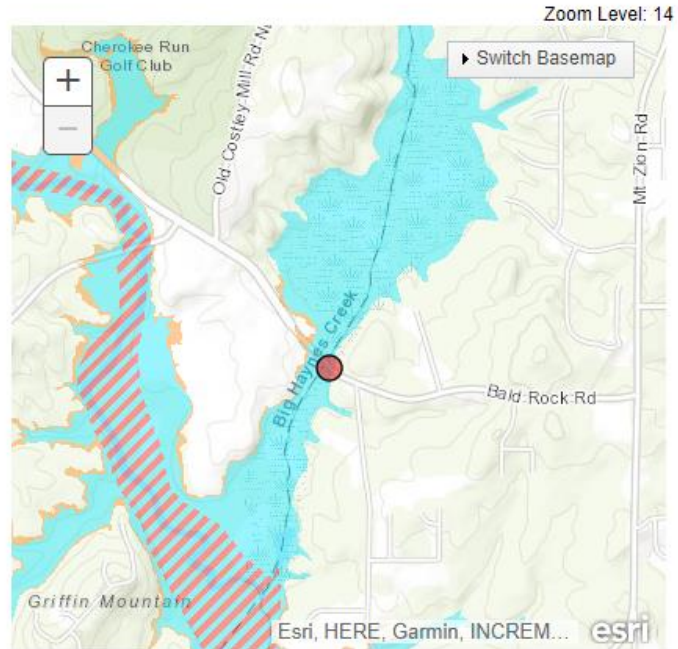
(P): Preliminary values subject to further review.

Low Water Records

- (1) 2.38 ft on 09/06/2007



For more information on your flood risk go to www.floodsmart.gov.



Legend

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

Natural Hazard: **Flooding**

Yellow River near Rocky Plains

Flood Categories (in feet)

Major Flood Stage:	26
Moderate Flood Stage:	22
Flood Stage:	18
Action Stage:	16

Historic Crests
 (1) 22.09 ft on 12/26/2015
 (2) 20.55 ft on 04/21/2019
 (3) 20.07 ft on 12/31/2015
 (4) 19.12 ft on 02/08/2020
 (5) 18.24 ft on 01/26/2010
[Show More Historic Crests](#)

(P): Preliminary values subject to further review.

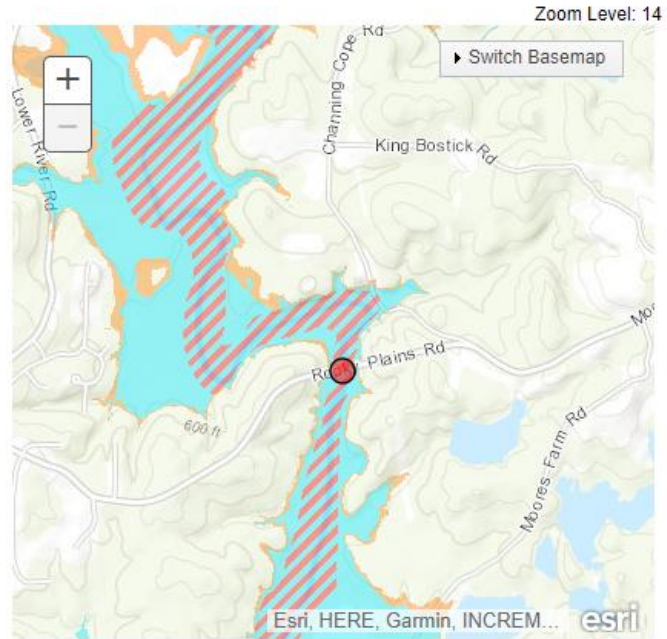
Recent Crests
 (1) 19.12 ft on 02/08/2020
 (2) 20.55 ft on 04/21/2019
 (3) 20.07 ft on 12/31/2015
 (4) 22.09 ft on 12/26/2015
 (5) 17.24 ft on 02/07/2010
[Show More Recent Crests](#)

(P): Preliminary values subject to further review.

Low Water Records
 Currently none available.



For more information on your flood risk go to www.floodsmart.gov.



Legend

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

Natural Hazard: Tornado*Hazard Description*

A tornado is a violently rotating column of air (seen only when containing condensation, dust, or debris) that is in contact with the surface of the ground. Exceptionally large tornadoes may not exhibit the classic “funnel” shape, but may appear as a large, turbulent cloud near the ground or a large rain shaft. Destructive because of strong winds and windborne debris, tornadoes can topple buildings, roll mobile homes, uproot vegetation, and launch objects hundreds of yards.

Most significant tornadoes (excluding some weak tornadoes and waterspouts) stem from the right rear quadrant of large thunderstorm systems where the circulation develops between 15,000 and 30,000 feet. As circulation develops, a funnel cloud, a rotating air column aloft, or tornado descends to the surface. These tornadoes are typically stronger and longer-lived. The weaker, shorter-lived tornadoes can develop along the leading edge of a singular thunderstorm. Although tornadoes can occur in most locations, most of the tornado activity in the United States in the Midwest and Southeast. Tornadoes can occur anywhere within the State of Georgia.

In terms of the continuum of area of impact for hazard events, tornadoes are fairly isolated. Typically ranging from a few hundred to one or two miles across, tornadoes affect far less area than larger meteorological events such as tropical cyclones, winter storms and severe weather events. An exact season does not exist for tornadoes. However, most occur between early spring to mid-summer (February-June). The rate of onset of tornado events is rapid. Typically, the appearance of the first signs of the tornado is the descending funnel cloud. This sign may be only minutes from the peak of the event, giving those in danger minimal sheltering time. However, meteorological warning systems attempt to afford those in danger more time to shelter. The frequency of specific tornado intensities is undetermined because no pattern seems to exist in occurrence. Finally, the duration of tornado events ranges from the few minutes of impact on a certain location to the actual tornado lasting up to a few hours.

Tornadoes are measured after the occurrence using the subjective intensity measures. The Enhanced Fujita Scale describes the damage and then gives estimates of magnitude of peak 3-second gusts in miles per hour.

Natural Hazard: **Tornado**

EF Number	3 Second Gust (mph)	Damage
0	65–85	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
1	86–110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
2	111–135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
3	136–165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
4	166–200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
5	More than 200	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena occur.

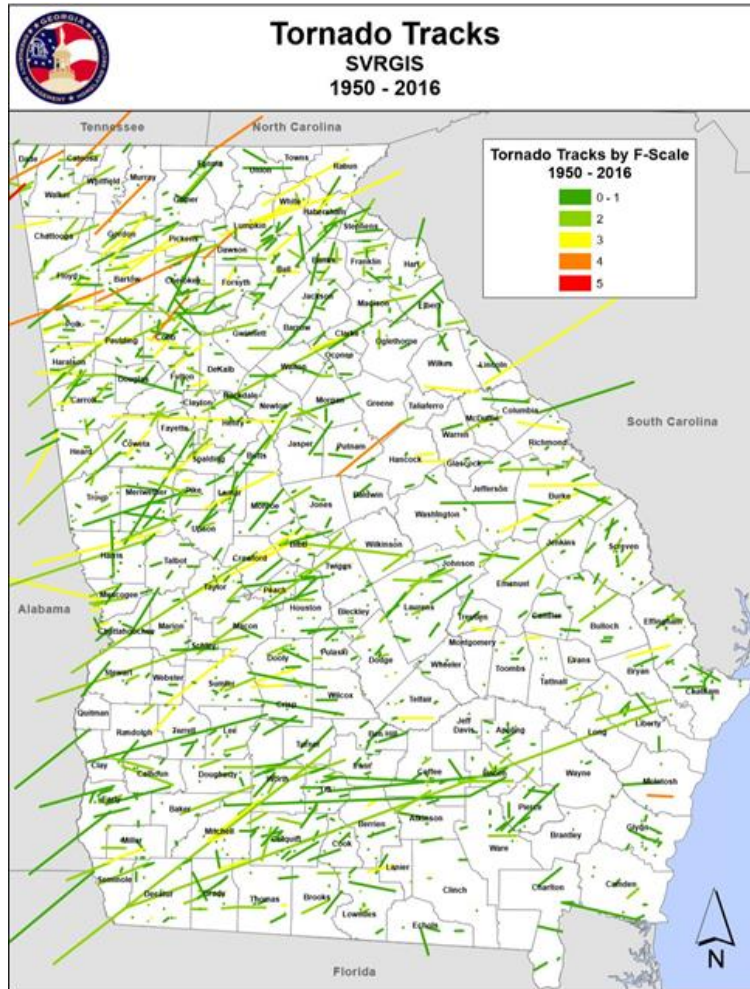
Hazard Profile

All areas within Newton County are vulnerable to the threat of a tornado. Due to the indiscriminate and unpredictable nature of tornadoes, there is no reliable method to determine where or when a tornado will strike. There have been 9 documented tornadoes in the last 50 years in Newton County. It is likely that other tornadoes have occurred within this timeframe, but available records are limited in nature.

Based on the 50-year information available for Newton County, a tornado occurs every 5.6 years. On an annual basis, Newton County has an 18% chance of being impacted from a tornado event. When only the last twenty years are considered, the likelihood of a tornado affecting Newton County increases significantly to 30% (6 tornadoes since 2000).

Natural Hazard: **Tornado**

Individual tornado events can cause extreme damage to an area. This holds true for Newton County, as well. The strongest documented tornado to impact Newton County was an EF2 in 2013. This storm traveled 7.6 miles through both the City of Mansfield and the Town of Newborn in eastern Newton County before entering Morgan County. The tornado significantly damaged 8 homes and caused damage to businesses in Mansfield. The costliest Tornado in the last 50 years occurred in February of 2009. The EF1 tornado tracked approximately 2.8 miles through south central Newton County and caused over \$625,000 in damages. This storm caused extensive damage to approximately 30 homes in a heavily wooded subdivision. Almost all the damage associated with this tornado was the result of fallen trees. For additional historical data, please see Appendix D. All tornado hazard data included for Newton County is limited to countywide data and is not broken down by jurisdiction.

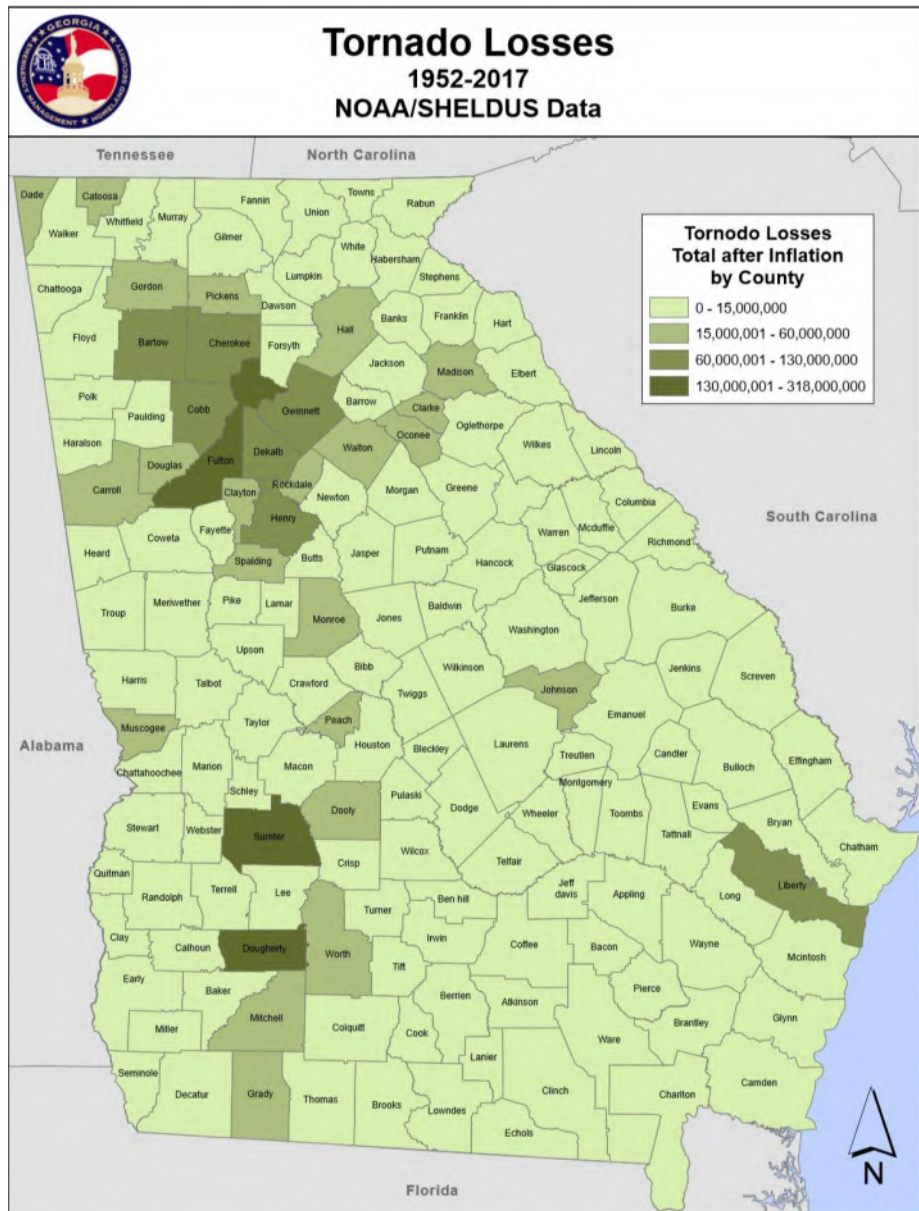


Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: **Tornado**

Assets Exposed to the Hazard

In evaluating assets that are susceptible to tornadoes, the Newton County HMPC determined that all public and private property is threatened by tornadoes, including all critical facilities. This is due to the lack of spatial prejudice of tornadoes.



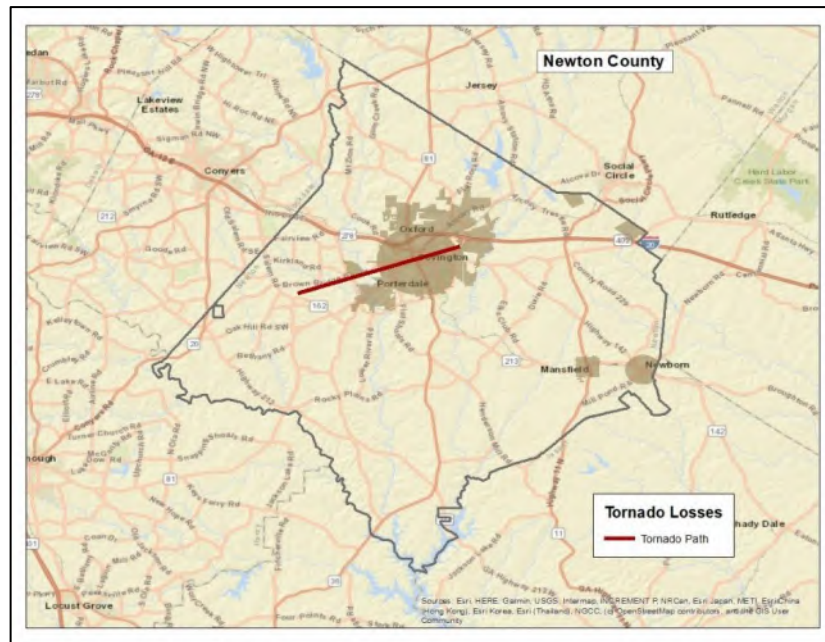
Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Tornado

Estimated Potential Losses

Estimates of damage for the past events of the last 50 years are over \$2 million, or \$41,560 annually.

Within the 2020 Newton County HAZUS report, a theoretical tornado path for an EF3 was identified that would inflict maximum damage. HAZUS estimated that this theoretical tornado would cause damage to approximately 1,257 buildings and result in losses more than \$85 million with the City of Covington suffering the greatest economic impacts.



Source: 2020 Newton County HAZUS Report

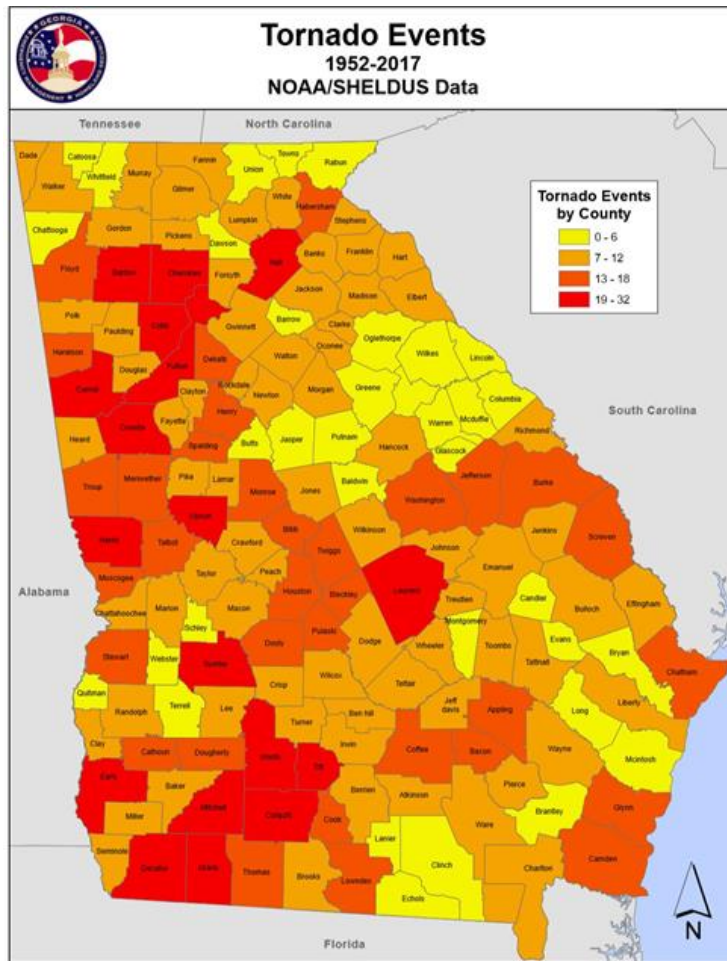
Land Use & Development Trends

Newton County main land use trend related to Tornadoes involves continued population growth – particularly around the Cities of Covington, Oxford, and Porterdale and in areas near the Henry and Rockdale County lines.

Multi-Jurisdictional Considerations

All portions of Newton County could potentially be impacted by a tornado due to the indiscriminate nature of tornadic events. Therefore, all mitigation actions identified regarding tornadoes should be pursued on a countywide basis and included all municipalities.

Natural Hazard: **Tornado**



Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Hazard Summary

Newton County remains at risk to potential damage from tornadoes, especially considering the average of one tornado every 5.6 years over the last 50 years. Should a tornado strike in densely populated areas of the county, significant damage or loss of life could occur. Due to the destructive power of tornadoes, it is essential that the mitigation measures identified in this plan regarding tornado activity receive full consideration.

Tornadoes in Newton County since 2015

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
DIALTOWN	NEWTON CO.	GA	04/05/2017	11:09	EST-5	Tornado	EF1	0	0	25.00K	0.00K

Natural Hazard: Drought*Hazard Description*

Drought is a normal, recurrent feature of climate consisting of a deficiency of precipitation over an extended period (usually a season or more). This deficiency results in a water shortage for some social or environmental sector. Drought should be judged relative to some long-term average condition of balance between precipitation and evapotranspiration in a particular area that is considered “normal.” Drought should not be viewed as only a natural hazard because the demand people place on water supply affects perceptions of drought conditions. From limited water supplies in urban areas to insufficient water for farmland, the impacts of drought are vast.

Droughts occur in virtually every climatic zone and on every continent. Because the impacts of drought conditions are largely dependent on the human activity in the area, the spatial extent of droughts can span a few counties to an entire country.

Temporal characteristics of droughts are drastically different from other hazards due to the possibility of extremely lengthy durations as well as a sluggish rate of onset. Drought conditions may endure for years or even decades. This factor implicates drought as having a high potential to cause devastation on a given area. The duration characteristic of droughts is so important that droughts are classified in terms of length of impact. Droughts lasting 1 to 3 months are considered short term, while droughts lasting 4 to 6 months are considered intermediate and droughts lasting longer than 6 months are long term. With the slow rate of onset, most populations have some inkling that drought conditions are increasingly present. However, barring drastic response measures, most only must adapt to the changing environment.

Seasonality has no general impact on droughts in terms of calendar seasons. However, “wet” and “dry” seasons obviously determine the severity of drought conditions. In other words, areas are less susceptible to drought conditions if the area is experiencing a wet season. The frequency of droughts is undetermined, because the hazard spans such a long period of time. However, climatologists track periods of high and low moisture content similarly to the tracking of cooling and warming periods.

Hazard Profile

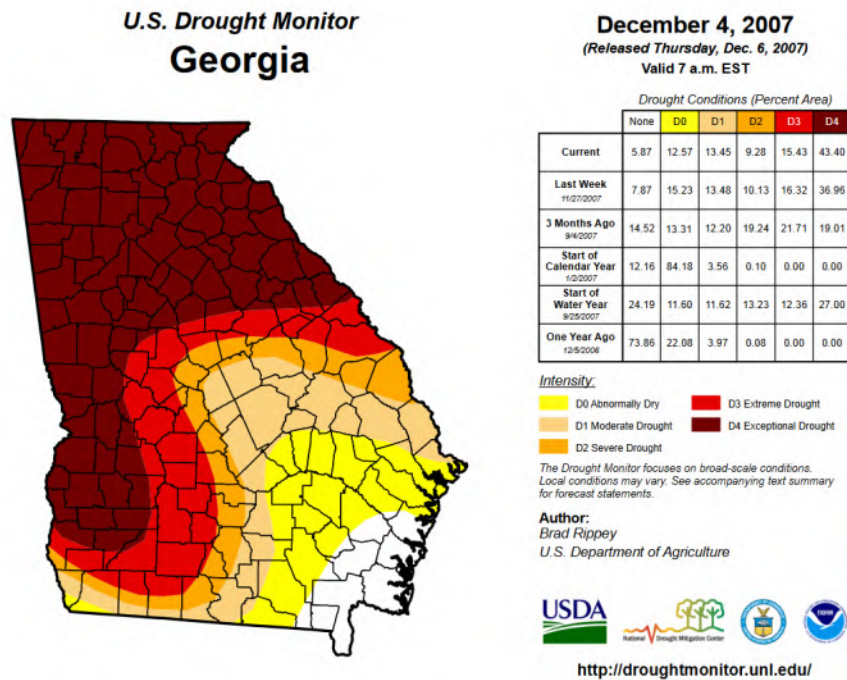
The Newton County HMPC reviewed data for the last 50 years regarding drought conditions. Historically, agricultural losses have accounted for the vast amount of losses related to drought conditions.

Natural Hazard: **Drought**

(Hazard Profile Continued)

Due to poor record keeping and the unpredictable nature of drought conditions, reliability of historical data for the last 50 years is low. Newton County has been impacted by 7 drought events in the last 22 years, according to data from the National Climatic Data Center. This amounts to a 32% chance of a drought for a given year over the last 22 years. The economic impact of these droughts, including crop damage, is not available. All drought hazard data included for Newton County is limited to countywide data and is not broken down by jurisdiction.

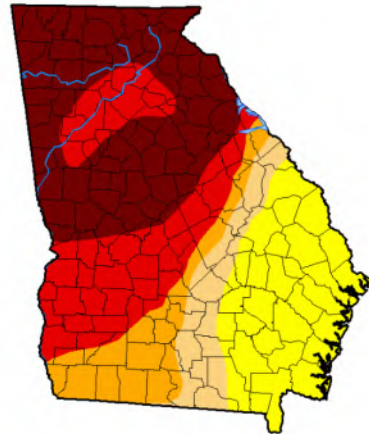
There have been two recent examples of “exceptional” drought events affecting Newton County. These events occurred in 2007 and 2016. Both events reached the D4 (Exceptional Drought) designation, according to data from the United States Drought Monitor. Below are maps of these two events.



Source: USDA Drought Monitor – University of Nebraska-Lincoln

Natural Hazard: **Drought**

U.S. Drought Monitor
Georgia



November 22, 2016
(Released Wednesday, Nov. 23, 2016)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	76.64	67.76	56.60	33.78
Last Week 11-15-2016	15.69	84.31	69.18	58.03	52.39	22.25
3 Months Ago 08-22-2016	26.02	73.98	48.97	28.68	5.92	0.00
Start of Calendar Year 01-01-2016	67.36	12.64	0.00	0.00	0.00	0.00
Start of Water Year 09-01-2015	35.37	64.63	45.94	34.50	14.67	1.58
One Year Ago 11-24-2015	88.41	11.59	0.00	0.00	0.00	0.00

Intensity:
 D0 Abnormally Dry D3 Extreme Drought
 D1 Moderate Drought D4 Exceptional Drought
 D2 Severe Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Heim
NCEI/NOAA



<http://droughtmonitor.unl.edu/>

Source: USDA Drought Monitor – University of Nebraska-Lincoln

Events of this extent can cause water shortages for residential and corporate needs, as well as affecting the ability for firefighting operations to be properly effective. Drought conditions of this extent can have devastating effects on the local agricultural industries, which has occurred in previous D4 level droughts.

Assets Exposed to the Hazard

While drought conditions do not typically pose a direct threat to structures, secondary hazards from drought such as increased wildfire threat, does pose a significant threat to all public and private property in Newton County, including all critical facilities. Water resources could also become scarce during a drought, a condition that would potentially affect all Newton County residences and critical facilities.

Estimated Potential Losses

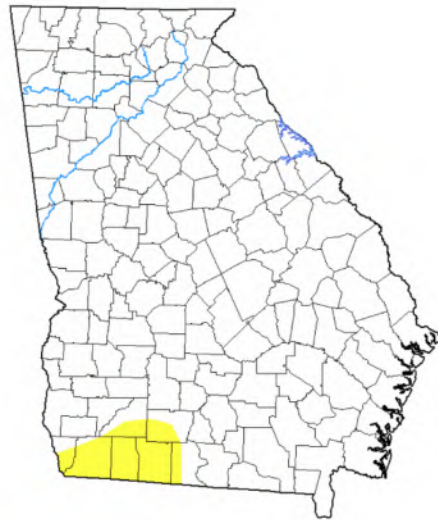
No damage to structures or critical facilities is expected as a direct result of drought conditions. However, crop damage and subsequent losses can be expected to occur because of drought conditions. The degree of losses would depend on the duration of the drought, severity of the drought, temperatures during the drought, season in which the drought occurs, and the specific needs of the involved crops. Water system shortages and need for supply assistance for those systems could also lead to economic losses associated with the drought. The only recent drought with economic impact data is the 2000 drought, which led to \$2.9 million in crop damage in Newton County.

Natural Hazard: Drought

According to the 2017 Agriculture Census data, Newton County’s market value of products sold was \$12,354,000. \$1,869,000 of that total represented crop sales, accounting for 15.1% of the total. Livestock sales accounted for 84.9%, or \$10,485,000, of the total value.

Georgia

Current Map > Georgia



Map released: Thurs. January 2, 2020

Data valid: December 31, 2019 at 7 a.m. EST

Intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Author(s):

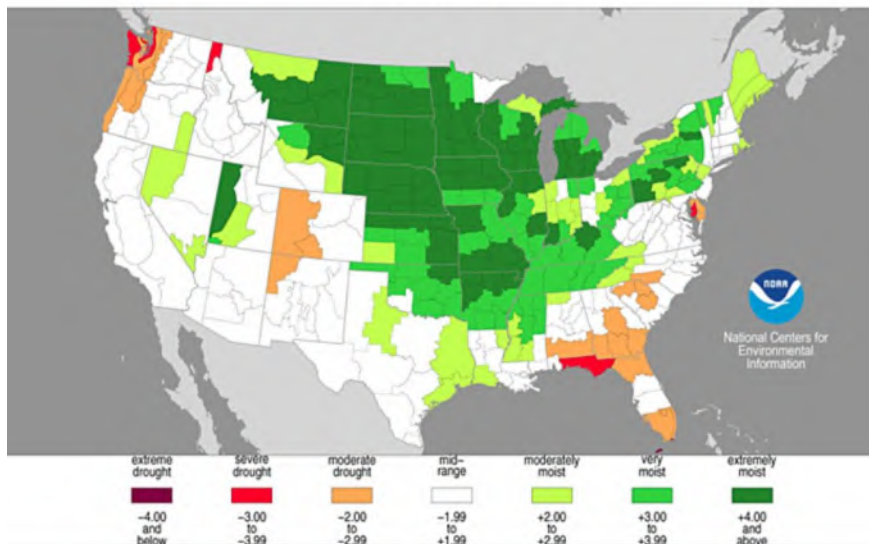
Brad Pugh, NOAA/CPC

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying [text summary](#) for forecast statements.

Source: United States Drought Monitor (University of Nebraska-Lincoln)

Palmer Drought Severity Index

November, 2019



Source: National Integrated Drought Information System

Natural Hazard: Drought*Land Use & Development Trends*

As growth continues, drought can become a larger threat for Newton County due to the increased reliance on water infrastructure and wells countywide. This increased pull on these resources in Newton County could quicken or deepen the impacts of a drought for residential, commercial, and industrial areas.

Multi-Jurisdictional Considerations

All portions of Newton County could potentially be impacted by a drought, but agricultural areas of the county are potentially more at risk. Therefore, all mitigation actions identified regarding drought should be pursued on a countywide basis and include all municipalities.

Hazard Summary

Drought conditions can cause significant economic stress on the agriculture and forestry interests of Newton County. The potential negative secondary impacts of drought are numerous. They include increased wildfire threat, decreased water supplies for residential and industrial needs, stream-water quality, and water recreation facilities. The Newton County HMPC recognizes the potential threats drought conditions could have on the community and have identified specific mitigation actions as a result.

Natural Hazard: **Drought**

Drought Events since 2015 in Newton County

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	06/01/2016	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	07/01/2016	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	08/01/2016	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	09/01/2016	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	10/01/2016	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	11/01/2016	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/01/2016	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/01/2017	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	09/24/2019	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	10/01/2019	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	11/01/2019	00:00	EST-5	Drought		0	0	0.00K	0.00K

Natural Hazard: Wildfire*Hazard Description*

A wildfire is an uncontained fire that spreads through the environment. Wildfires can consume large areas, including infrastructure, property, and resources. When massive fires, or conflagrations, develop near populated areas, evacuations could possibly ensue. Not only do the flames impact the environment, but the massive volumes of smoke spread by certain atmospheric conditions also impact the health of nearby populations.

Wildfires result from the interaction of three crucial elements: fuel, ignition (heat), and oxygen. Natural and manmade forces cause the three crucial elements to coincide in a manner that produces wildfire events. Typically, fuel consists of natural vegetation. However, as the urban and suburban footprint expands, wildfires may utilize other means of fuel, such as buildings. In terms of ignition or source of heat, the primary source is lightning. However, humans are more responsible for wildfires than lightning. Manmade sources vary from the unintentional, such as fireworks, campfires, or machinery, to intentional arson. With these two elements provided, the wildfires may spread as long as oxygen is present.

Weather is the most variable factor affecting wildfire behavior. Strong winds propel wildfires quickly across most landscapes unless firebreaks are present. Shifting winds create erratic wildfires, which can complicate fire management efforts. Dry conditions provide faster-burning fuels, either making the area more vulnerable to wildfire or increasing the mobility of preexisting wildfires.

Wildfires are notorious for spawning secondary hazards, such as flash flooding and landslides, long after the original fire is extinguished. Both flash flooding and landslides result from fire consuming the natural vegetation that provides precipitation interception and infiltration as well as slope stability.

All of Georgia is prone to wildfire due to the presence of wildland fuels associated with wildfires. Land cover associated with wildland fuels includes coniferous, deciduous, and mixed forest; shrubland; grassland and herbaceous; transitional; and woody and emergent herbaceous wetlands. The spatial extent of wildfire events greatly depends on both the factors driving the fire as well as the efforts of fire management and containment operations.

In terms of seasonality, wildfires can occur during any season of the year. However, drier seasons, which vary within the State of Georgia, are more vulnerable to severe wildfires because of weather patterns and the abundant quick-burning fuels. In terms of rate of onset and duration, wildfires vary depending on the available fuels and weather patterns.

Natural Hazard: Wildfire

Some wildfires can engulf an area in a matter of minutes from the first signs whereas others may be slower burning and moving. The frequency of wildfires is not typically measured because of the high probability of human ignition being statistically unpredictable. Magnitude and intensity are typically only measured by size of the wildfire and locations of burning.

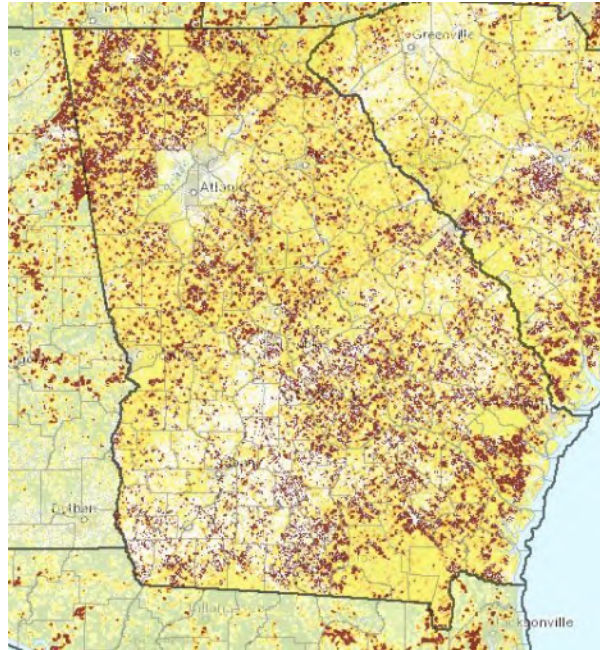
Three classes of fires include understory, crown, and ground fires. Naturally-induced wildfires burn at relatively low intensities, consuming grasses, woody shrubs, and dead trees. These understory fires often play an important role in plant reproduction and wildlife habitat renewal and self-extinguish due to low fuel loads or precipitation. Crown fires, which consist of fires consuming entire living trees, are low probability but high consequence events due to the creation of embers that can be spread by the wind. Crown fires typically match perceptions of wildfires. In areas with high concentrations of organic materials in the soil, ground fires may burn, sometimes persisting undetected for long periods until the surface is ignited.

Hazard Profile

Wildfires pose a serious threat to Newton County. This is a result of the high amount of forestland and vegetation available to fuel potential wildfires. Also, there is an increasing amount of wildland-urban interface (WUI) in Newton County, which is defined as areas where structures and other human development meets undeveloped wildland properties. 98.6% of Newton County’s population lives within the WUI. All wildfire hazard data included for Newton County is limited to countywide data and is not broken down by jurisdiction.

Jurisdiction	% of Population in WUI
Newton County	98.6%
Covington	96.3%
Mansfield	100%
Newborn	100%
Oxford	100%
Porterdale	99.4%

According to the 2017 Newton County Community Wildfire Protection Plan (CWPP) produced by the Georgia Forestry Commission, Newton County has averaged 20.2 wildfires a year from 2007 to 2017. These fires have consumed an averaged 69.8 acres per year over that time period. This equates to a 5.5% daily chance of a wildfire occurring.

Natural Hazard: Wildfire*Georgia Wildfire Ignition Density*

Source: Southern Group of State Foresters Wildfire Risk Assessment Portal

Assets Exposed to the Hazard

All public and private property located within the Wildland-Urban Interface, including critical infrastructures, are susceptible to impacts from wildfires. Due to the large area of wildland area in Newton County and the large amount of WIU, all public and private property, including critical infrastructures, could be directly or indirectly impacted by the threat of wildfire. Of the 5 Firewise communities reviewed in the CWPP, four – FFA/FCCLA Center, Porterdale, Newborn, and Johnson Terrace - were classified as having a “moderate risk” to wildfire. One community – Mansfield – was classified as having a low risk.

Estimated Potential Losses

Little information is available regarding damages, in terms of dollars, for wildfire losses in Newton County. According to the 2017 Ag Census by the USDA, Newton County has just over \$1.8 million in annual crop sales. These areas would potentially be impacted by a wildfire event.

Natural Hazard: Wildfire*Land Use & Development Trends*

With the continued increase in population, Wildland-Urban Interface (WUI) is increasing in Newton County. The WUI creates areas where fire can easily move from wildland areas into developed areas and threaten structures and human life. The expansion of the WUI in Newton County complicated wildland fire management operations and planning initiatives. This development trend is expected to continue in the future. This land development trend led to three communities – Quail Valley, Willow Wood, and Fairfield – to be classified as having “Extreme” risk to wildfire according to the 2017 Community Wildfire Protection Plan. One additional community – Brown Terrace – was classified as having a “High” risk.

Multi-Jurisdictional Considerations

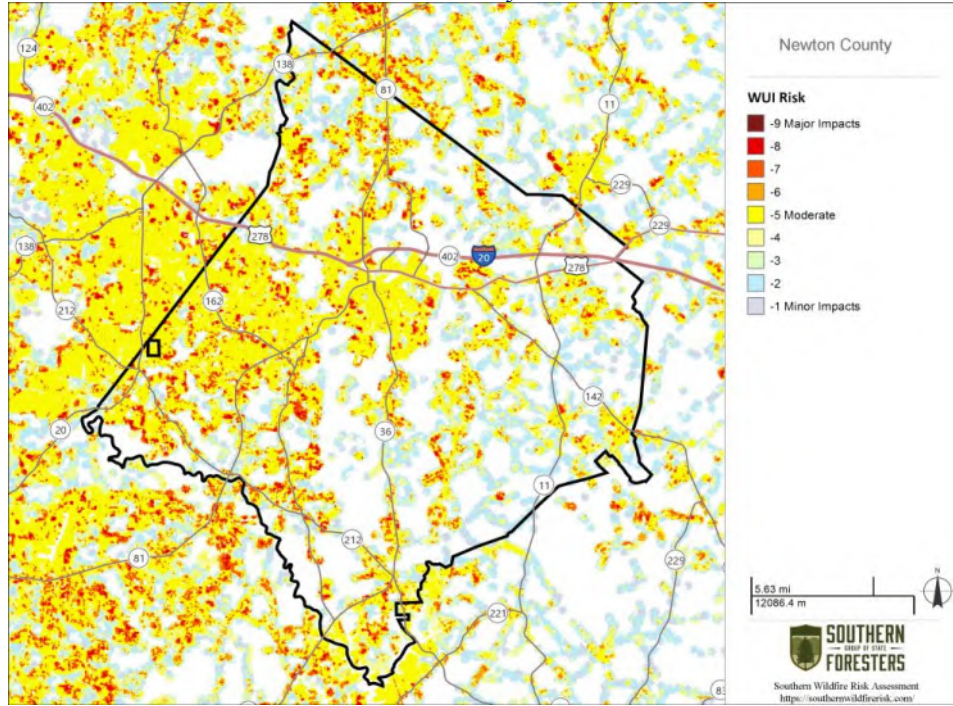
All portions of Newton County, including all municipalities, could potentially be impacted by a wildfire due to the large amount of Wildland-Urban Interface, but the less developed areas of the county are more vulnerable. Therefore, all mitigation actions identified regarding wildfires should be pursued on a countywide basis and include all municipalities.

Hazard Summary

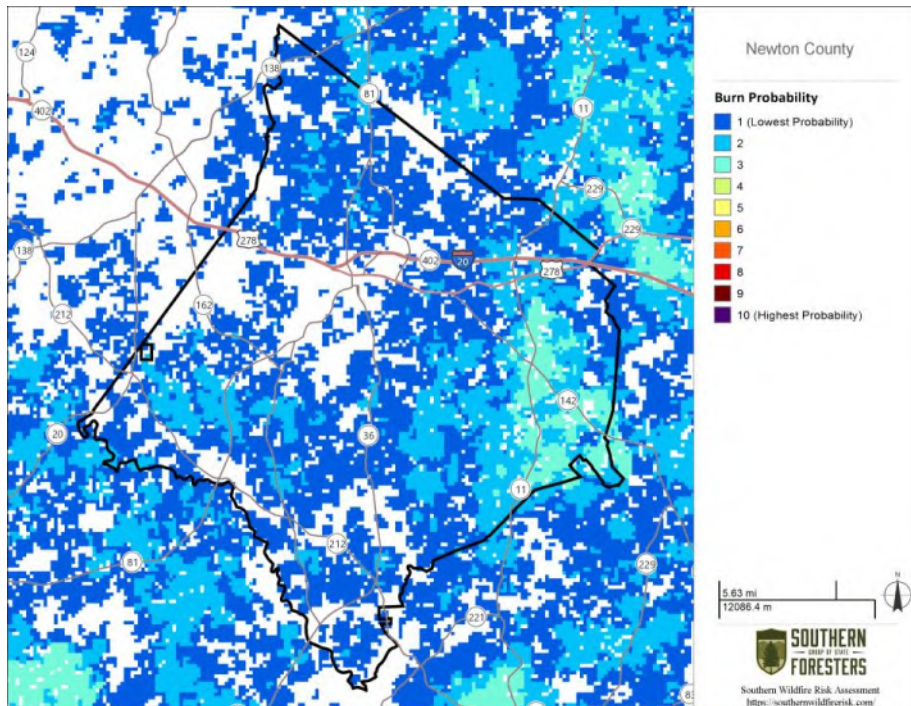
Wildfire is a significant threat to Newton County due to the increased amount of Wildland-Urban Interface. The increasing amount of area where structures and other human development meets undeveloped, wildland property is where 98.6% of Newton County’s population lives. The mitigation measures identified in this plan should be aggressively pursued based on the high frequency of this hazard and the ability for wildfires to inflict devastation anywhere in Newton County.

Natural Hazard: **Wildfire**

Newton County WUI Risk

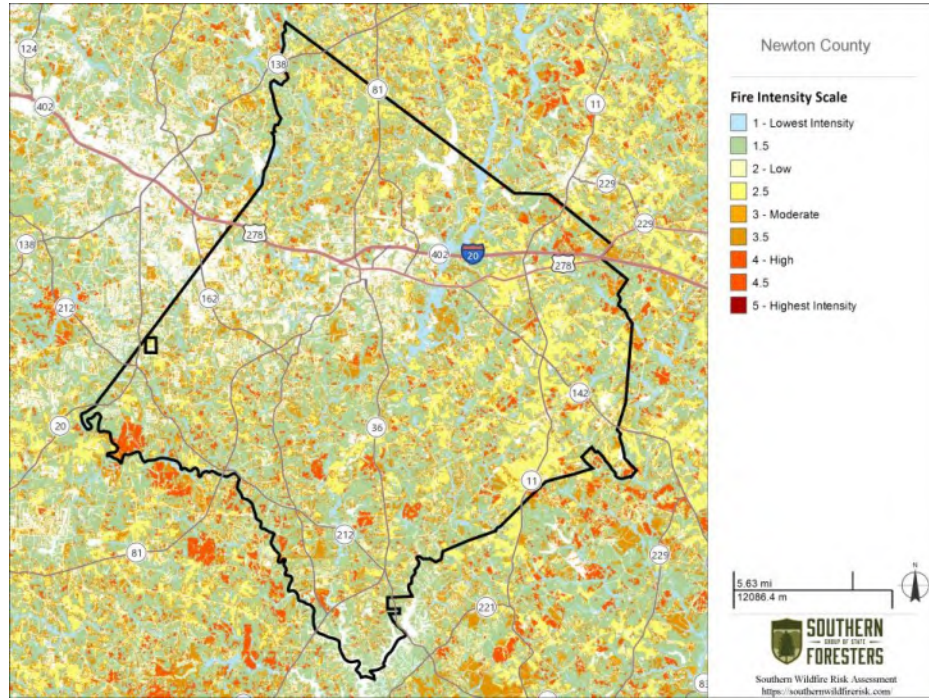


Newton County Burn Probability

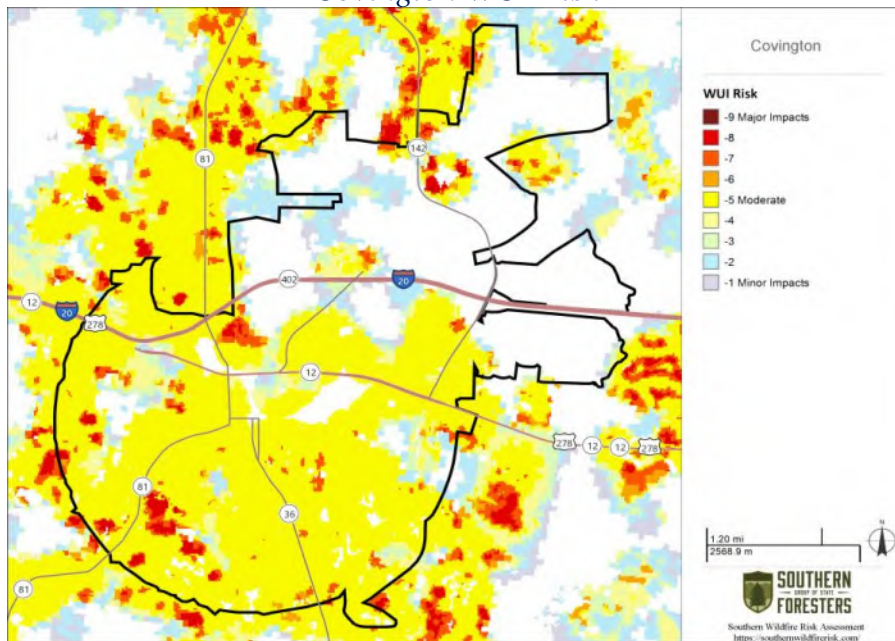


Natural Hazard: **Wildfire**

Newton County Fire Intensity Scale

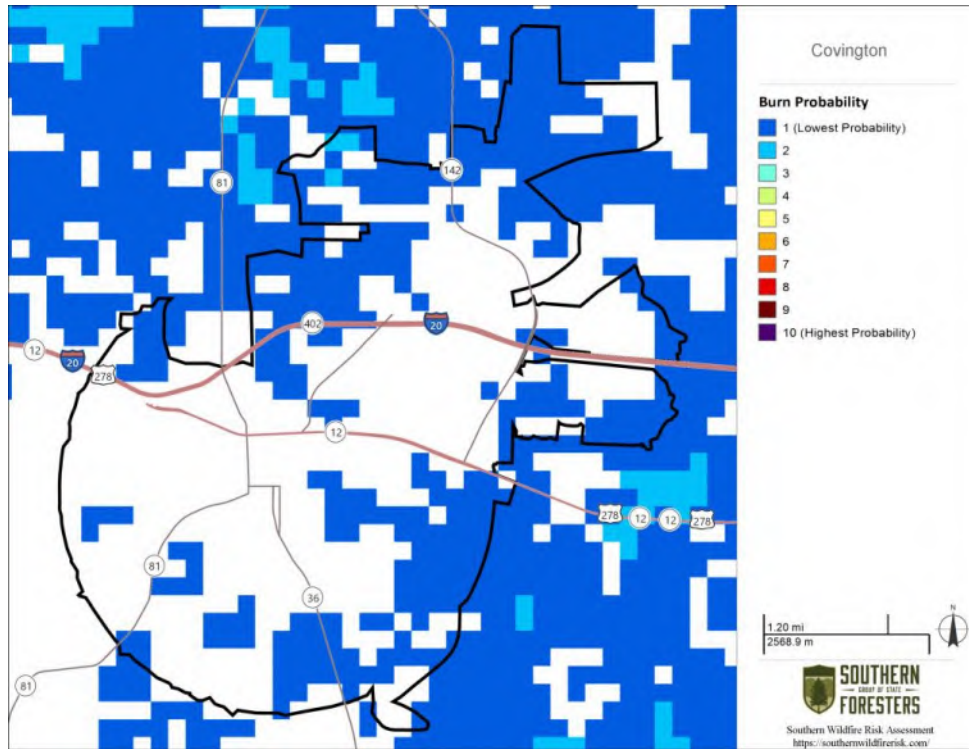


Covington WUI Risk

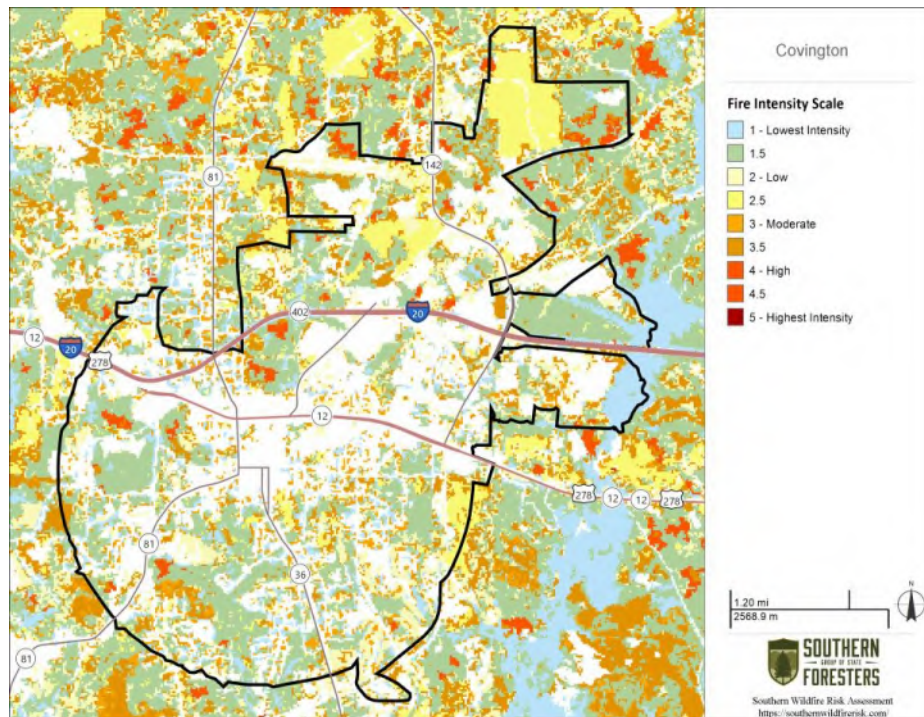


Natural Hazard: **Wildfire**

Covington Burn Probability

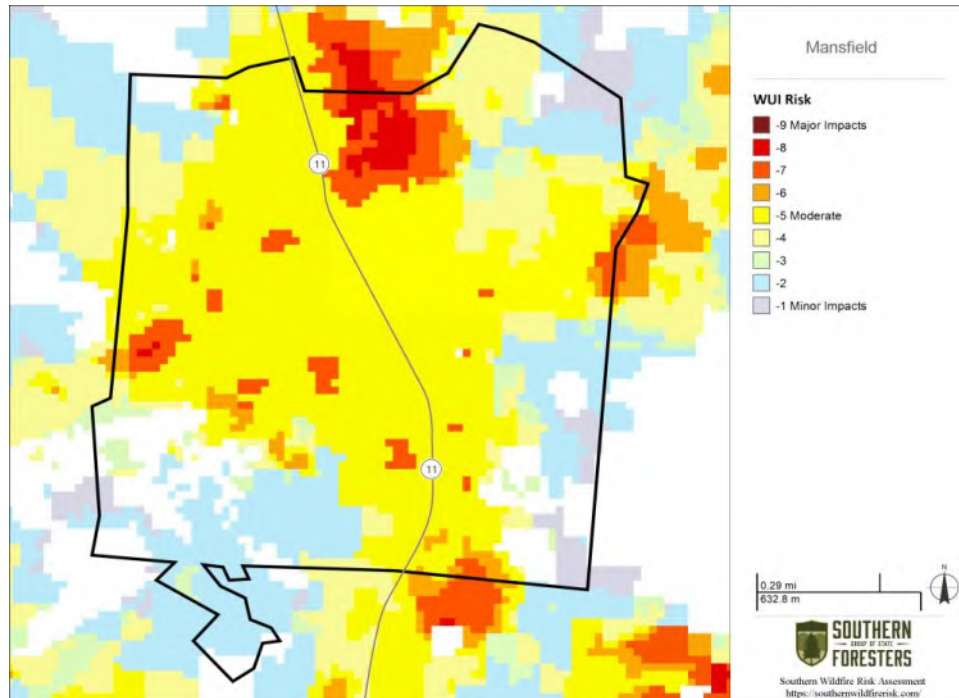


Covington Fire Intensity Scale

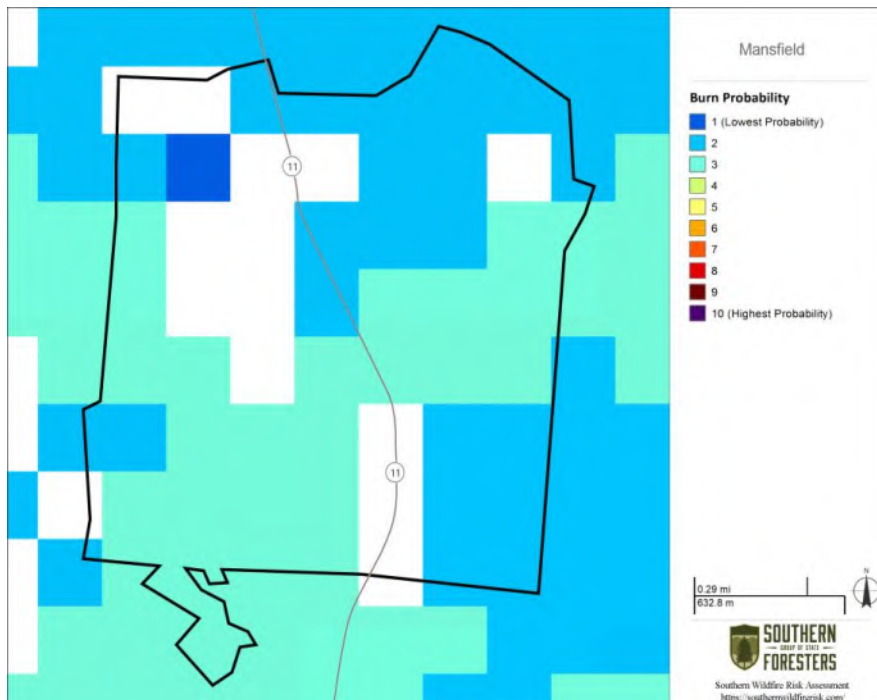


Natural Hazard: **Wildfire**

Mansfield WUI Risk

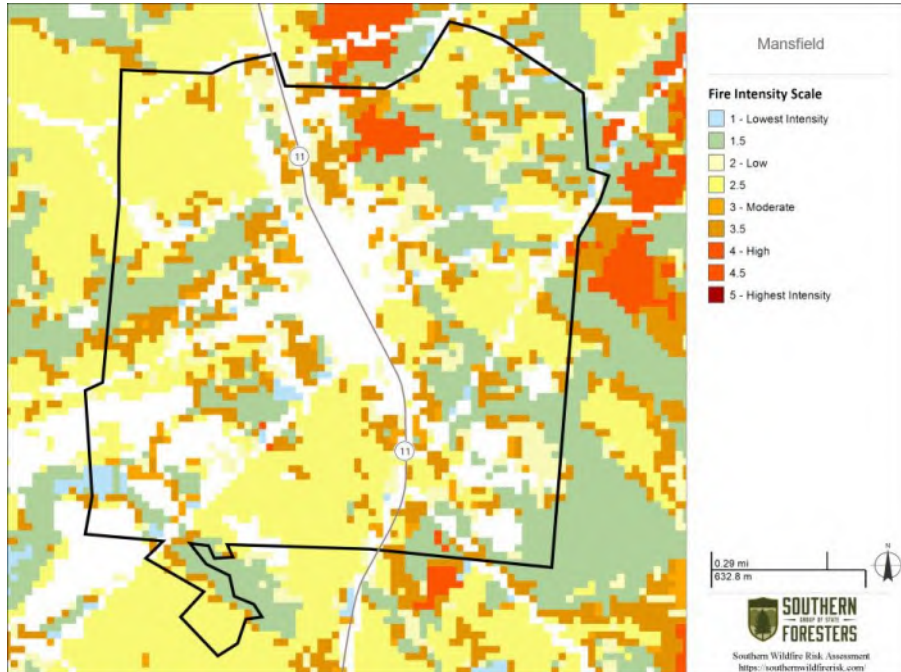


Mansfield Burn Probability

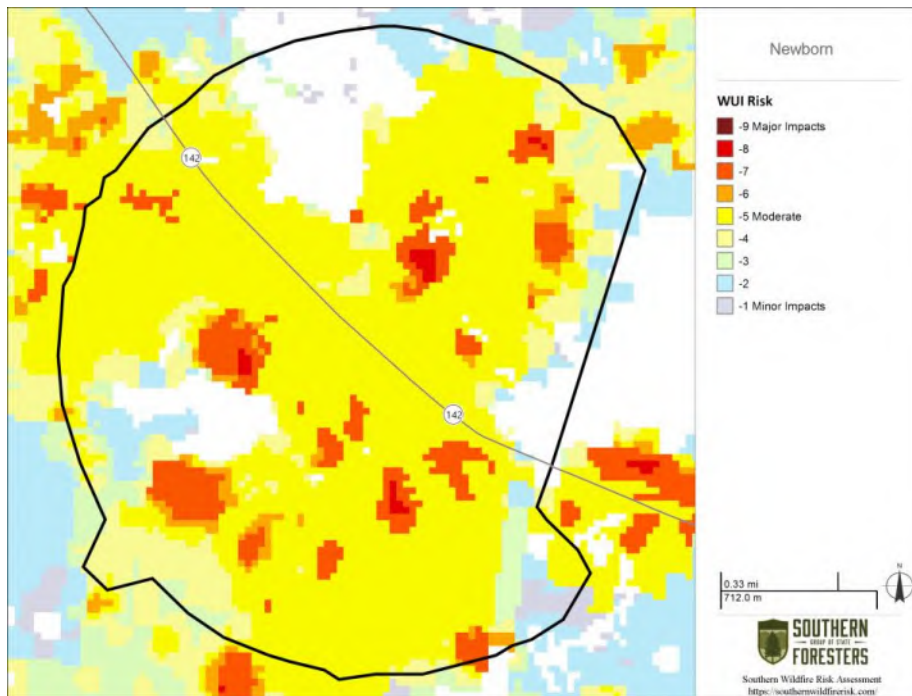


Natural Hazard: **Wildfire**

Mansfield Fire Intensity Scale

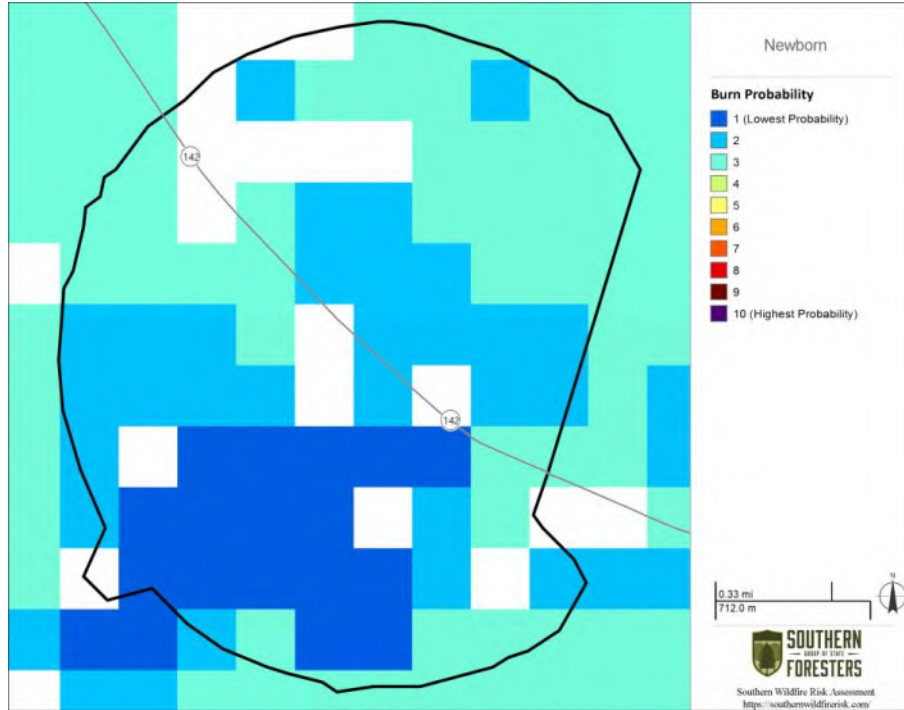


Newborn WUI Risk

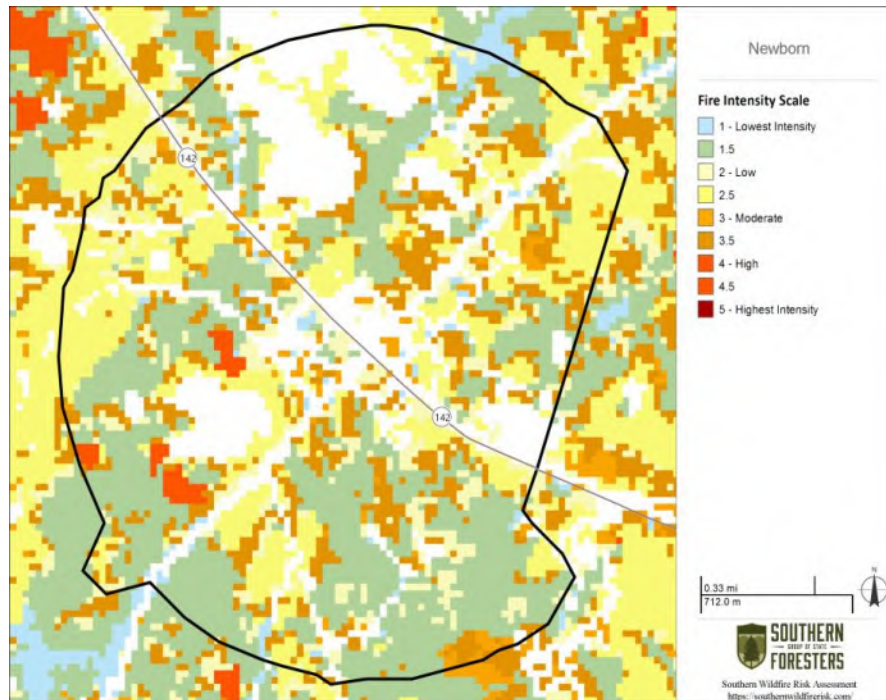


Natural Hazard: **Wildfire**

Newborn Burn Probability

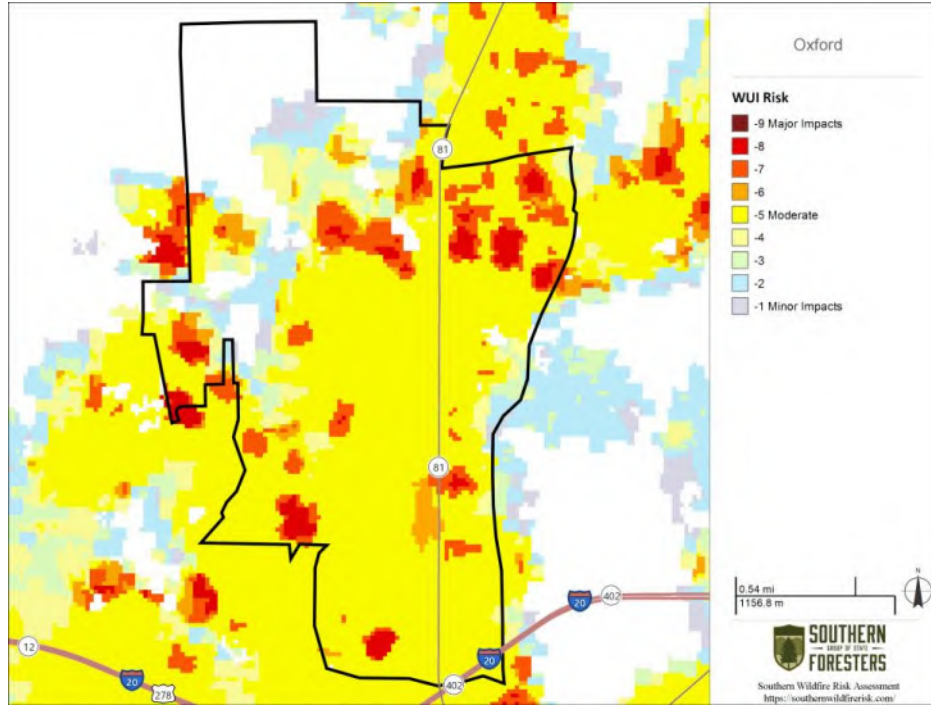


Newborn Fire Intensity Scale

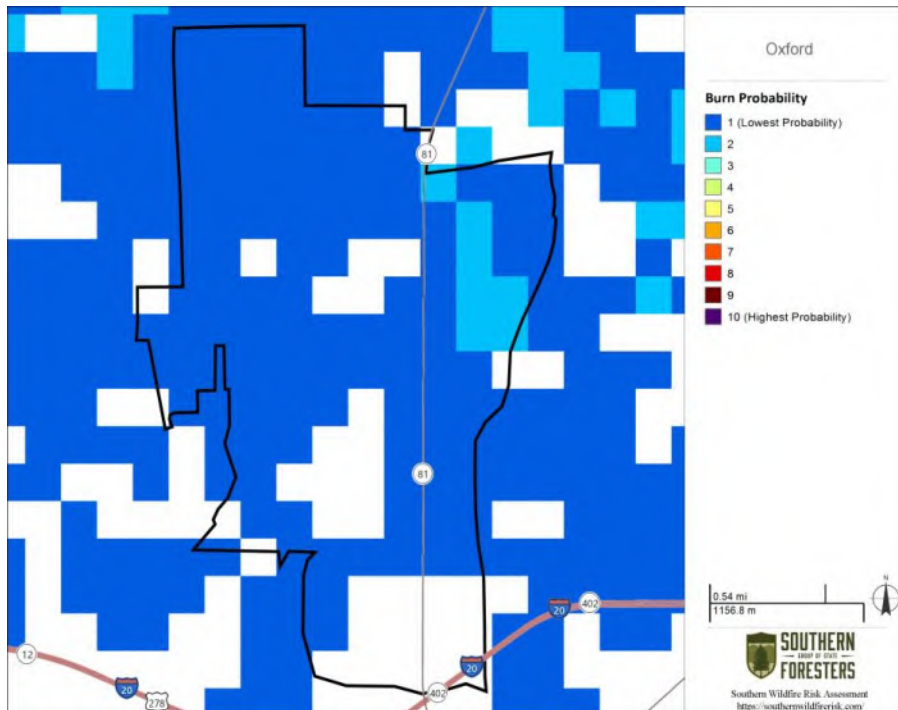


Natural Hazard: **Wildfire**

Oxford WUI Risk

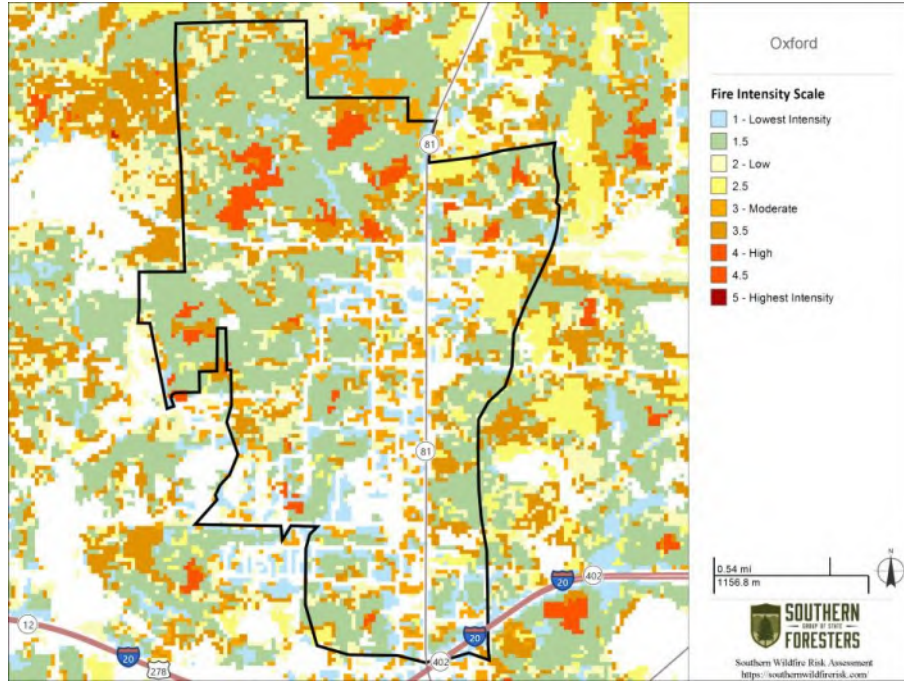


Oxford Burn Probability

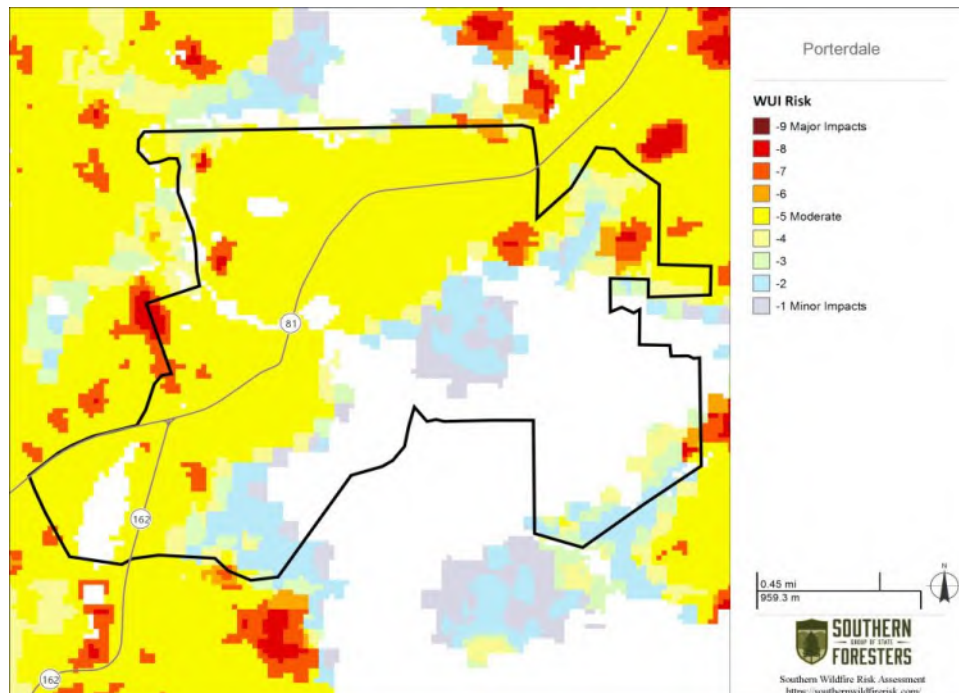


Natural Hazard: **Wildfire**

Oxford Fire Intensity Scale

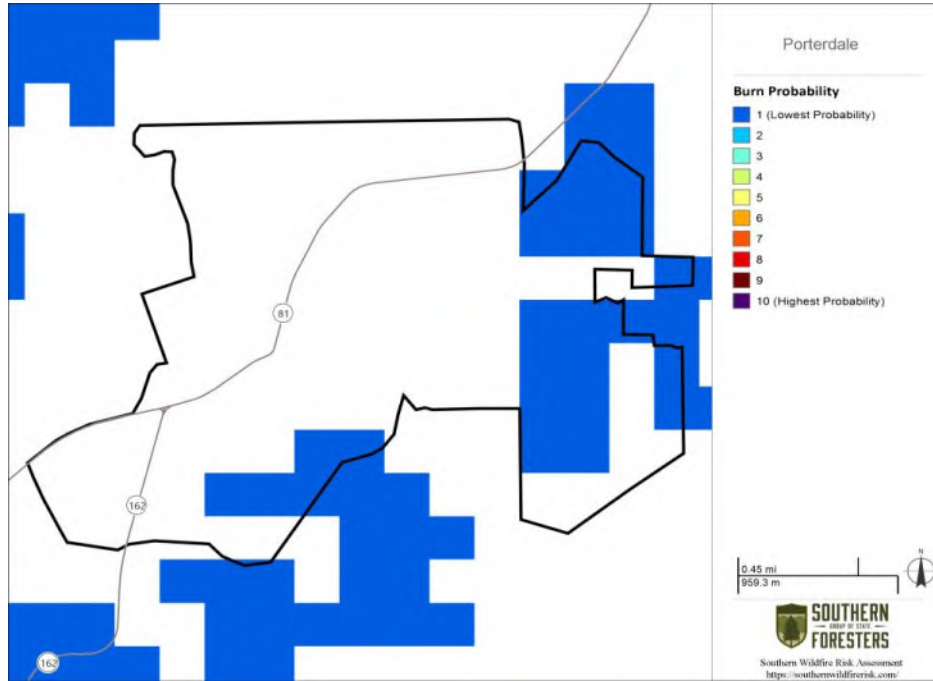


Porterdale WUI Risk

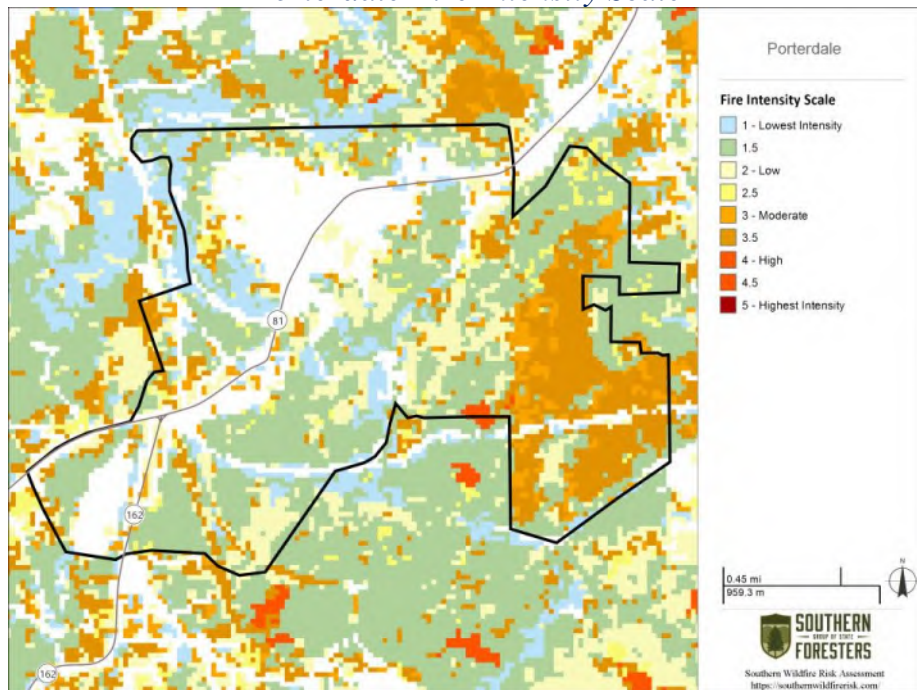


Natural Hazard: **Wildfire**

Porterdale Burn Probability



Porterdale Fire Intensity Scale



All maps in this section are from the Southern Group of State Foresters Wildfire Risk Assessment Portal

Natural Hazard: Earthquakes*Hazard Description*

Earthquakes are generally defined as the sudden motion or trembling of the Earth's surface caused by an abrupt release of slowly accumulated strain. This release typically manifests on the surface as ground shaking, surface faulting, tectonic uplifting and subsidence, or ground failures, and tsunamis. In the United States, earthquake activity east of the Rocky Mountains is relatively low compared to the Western states because it is away from active plate boundaries and the plate interior strain rates are known to be very low.

The physical property of earthquakes that causes most of the damage within the United States is ground shaking. The vibrations from the seismic waves that propagate outward from the epicenter may cause failure in structures not adequately designed to withstand earthquakes. Because the seismic waves have different frequencies of vibration, the waves disseminate differently through sub-surface materials. For example, high frequency compression and shear waves arrive first, whereas lower frequency Rayleigh and love waves arrive later. Not only are the speeds varied between seismic waves, but also the types of movement. The surface vibration may be horizontal, vertical, or a combination of the two, which causes a wider array of structures to collapse.

Another manifestation of earthquakes is surface faulting. This phenomenon is defined as the offset or tearing of the earth's surface by a differential movement across a fault. Structures built across active faults tend to sustain damage regularly. There are no active faults within or near Georgia. Distinct inactive faults are known within the state north of the Columbus to Macon to Augusta fall line and running generally northeast-southwest.

The third earthquake phenomenon that causes damage is tectonic uplift and subsidence. Tectonic uplift can cause shallowing of the harbors and waterways while tectonic subsidence can cause permanent or intermittent inundation. Due to the association of tectonic uplift and subsidence with active faults, Georgia is not at risk to these phenomena.

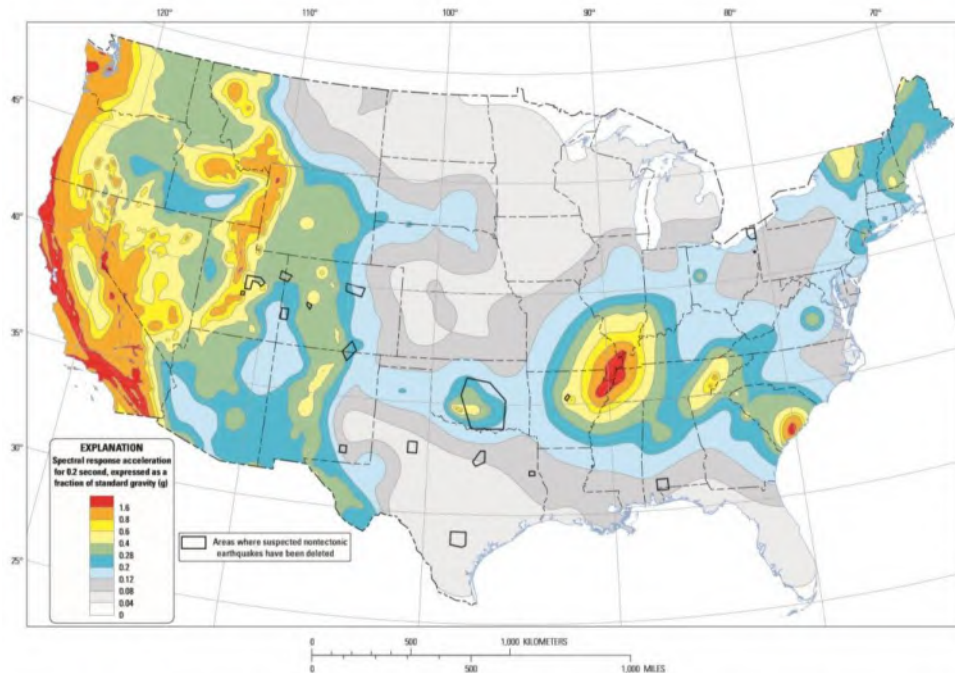
The fourth earthquake damage-causing phenomena are earthquake-induced ground failures, including liquefaction and landslides. During an earthquake, the areas that are rich in sand and silt have groundwater within 30 feet of the surface temporarily behave as viscous fluids during strong ground shaking. Structures built on these materials can settle, topple, or collapse as the ground "liquefies" beneath it. Landslides can also form when earthquake shaking or seismic activity dislodges rock and debris on steep slopes, triggering rock falls, avalanches, and slides.

Natural Hazard: Earthquakes

Also, unstable, or nearly unstable, slopes consisting of clay soils may lose shear strength when disturbed by ground shaking and fail, resulting in a landslide. Georgia is at very low risk of seismic induced liquefaction or landslides.

The last of the earthquake-induced phenomena are tsunamis, which are large, gravity-driven waves triggered by the sudden displacement of a large volume of water. The waves produced travel in all directions from the origin at speeds of up to 600 miles per hour. In deep water, tsunamis normally have small wave heights. However, as the waves reach shallower water near land, the wave speed diminishes, and the amplitude drastically increases. Upon impact with a shoreline, the waves can inundate land rapidly, engulfing everything in its path. Successive wave crests follow, typically arriving minutes to hours later, frequently with later arrivals being more dominant. Frequently, the first tsunami waves are downward, causing dramatic exposure of the beach. Because of this, people are often killed trying to collect newly exposed seashells when the positive waves then arrive.

Although large tsunamis are rare in the eastern coast of the US, the possibility of such events occurring anywhere along the Atlantic and Gulf coast exists.



Two-percent probability of exceedance in 50 years map of 0.2 second spectral response acceleration

Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: **Earthquakes**

Hazard Profile

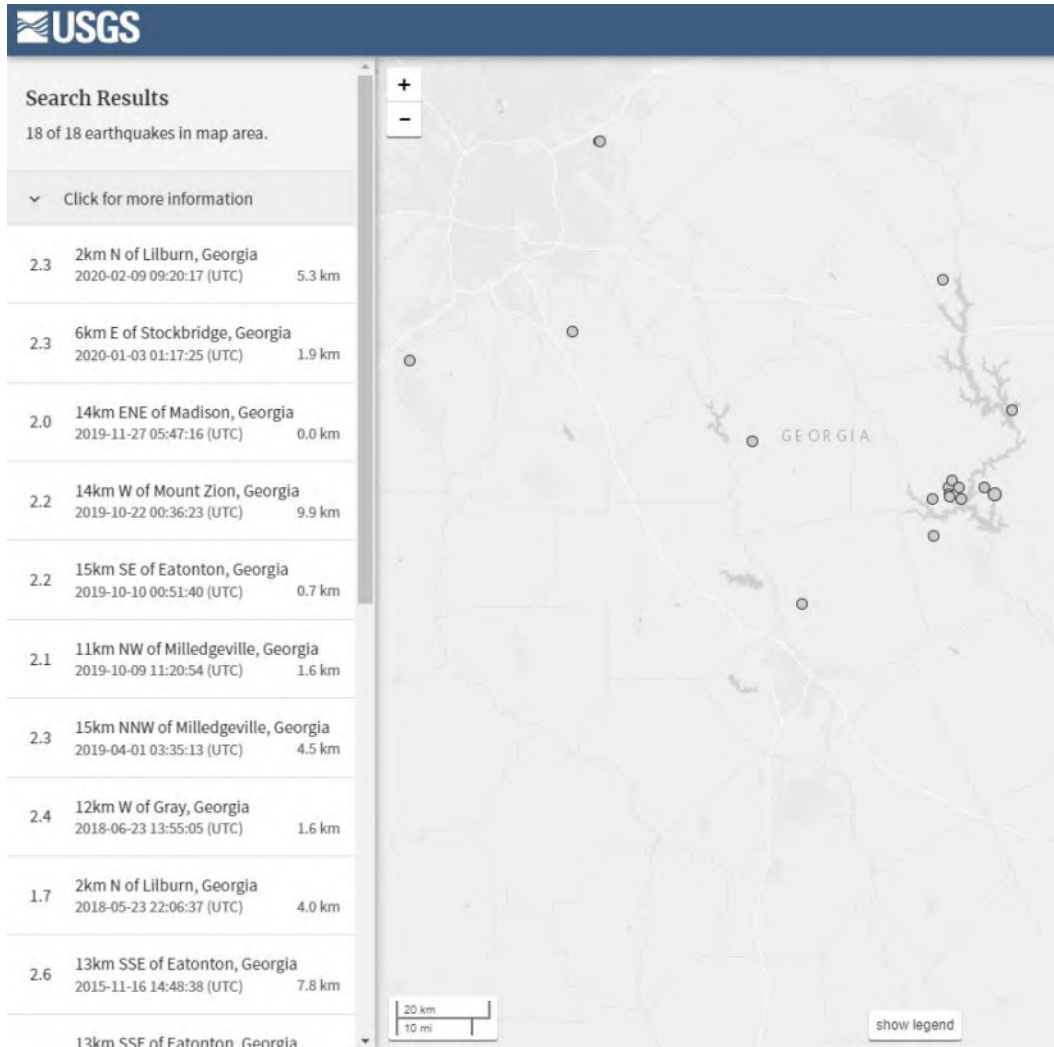
Newton County is one of the 37 Georgia counties with the highest earthquake risk, according to GEMA and Georgia Tech School of Earth and Atmospheric Sciences. In reviewing data of the last 50 years, no earthquakes have originated from within Newton County. A total of 18 earthquakes have originated within 50 miles of Covington, GA in the last 50 years. The closest earthquake to occur near Newton County occurred 9 km west northwest of Monticello, GA in October of 2009. The strongest earthquake to occur within the 50-mile radius was a 3.1 that occurred in Baldwin County in 2009. Newton County has a 36% chance of an earthquake occurring within 50 miles of Covington, GA in any given year. Historically, the 1886 Charleston, SC earthquake, estimated to be between 6.6 and 7.3 on the modern Richter Scale, likely caused impacts to Newton County. Although no historical records exist exhibiting any damages, Newton County was estimated to be in a level VI area of the Modified Mercalli Intensity scale for this event. This would indicate strong shaking felt by everyone inside and outside at the time of the event and characterized by broken windows, movement of heavy furniture, and slight to moderate damage for poorly built buildings. Even with this low number of occurrences, it was determined that if earthquakes occur within or close to the jurisdiction of Newton County, significant damage could occur. Therefore, the Newton County HMPC has determined the threat of earthquakes to be higher than the statistics would indicate. All earthquake hazard data included for Newton County is limited to countywide data and is not broken down by jurisdiction.

Instrumental Intensity	Acceleration (%g)	Velocity (cm/s)	Perceived Shaking	Potential Damage
I	< 0.17	< 0.1	Not Felt	None
II-III	0.17 - 1.4	0.1 - 1.1	Weak	None
IV	1.4 - 3.9	1.1 - 3.4	Light	None
V	3.9 - 9.2	3.4 - 8.1	Moderate	Very light
VI	9.2 - 18	8.1 - 16	Strong	Light
VII	18 - 34	16 - 31	Very Strong	Moderate
VIII	34 - 65	31 - 60	Severe	Moderate to Heavy
IX	65 - 124	60 - 116	Violent	Heavy
X+	> 124	> 116	Extreme	Very Heavy

Natural Hazard: **Earthquakes**

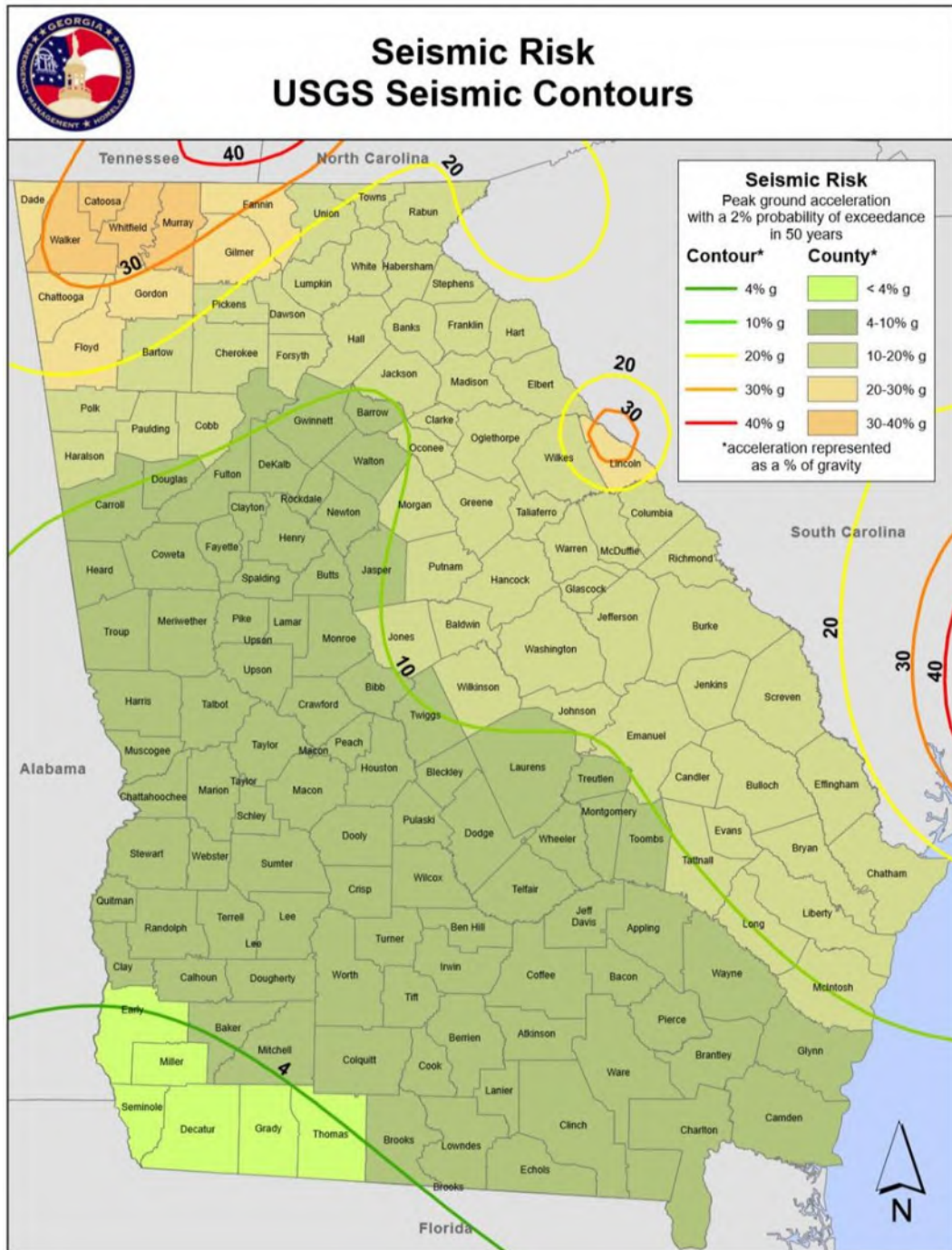
Assets Exposed to the Hazard

The Newton County HMPC determined that all critical facilities and all public and private property within Newton County are susceptible to the impacts of an earthquake due to the lower building codes with regards to earthquakes when compared to other parts of the country. This includes all municipalities.



Source: United States Geological Survey (USGS) Earthquake Hazards Program

Natural Hazard: Earthquakes



Source: 2019-2024 State of Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Earthquakes*Estimated Potential Losses*

Little information is available regarding damages, in terms of dollars, for earthquake losses in Newton County.

Land Use and Development Trends

Newton County currently has no land use trends related to Earthquakes.

Multi-Jurisdictional Considerations

All of Newton County, including all municipalities, potentially could be threatened by earthquakes. As such, all earthquake mitigation actions should be pursued on a countywide basis and include all municipalities.

Hazard Summary

Even with the infrequency of earthquake impacts in Newton County, the potential losses and impacts associated with the event would severely damage the infrastructure and economic viability of the County and all municipalities. The mitigation measures identified in this plan should be pursued based on the high impact potential of this hazard and the ability for earthquakes to inflict widespread devastation anywhere in Newton County.

Natural Hazard: Tropical Cyclone

Hazard Description

The National Weather Service describes tropical cyclones systems in the Atlantic Basin, including the Gulf of Mexico and Caribbean Sea, into four types based on strength.

Tropical Disturbance: A discrete tropical weather system of apparently organized thunderstorms – generally 100 to 300 nautical miles in diameter – originating in the tropics or subtropics, and maintaining its identity for 24 hours or more.

Tropical Depression: An organized system of clouds and thunderstorms with a defined circulation and maximum sustained winds of 38 mph (33 knots) or less.

Tropical Storm: An organized system of strong thunderstorms with a defined circulation and maximum sustained winds of 39 mph to 73 mph (34-63 knots).

Hurricane: An intense tropical weather system with a well-defined circulation, producing maximum sustained winds of 74 mph (64 knots) or greater. Hurricane intensity is classified into five categories using the Saffir-Simpson Hurricane scale. Winds in a hurricane range from 74-95 mph for a Category 1 hurricane to greater than 156 mph for a Category 5 hurricane.

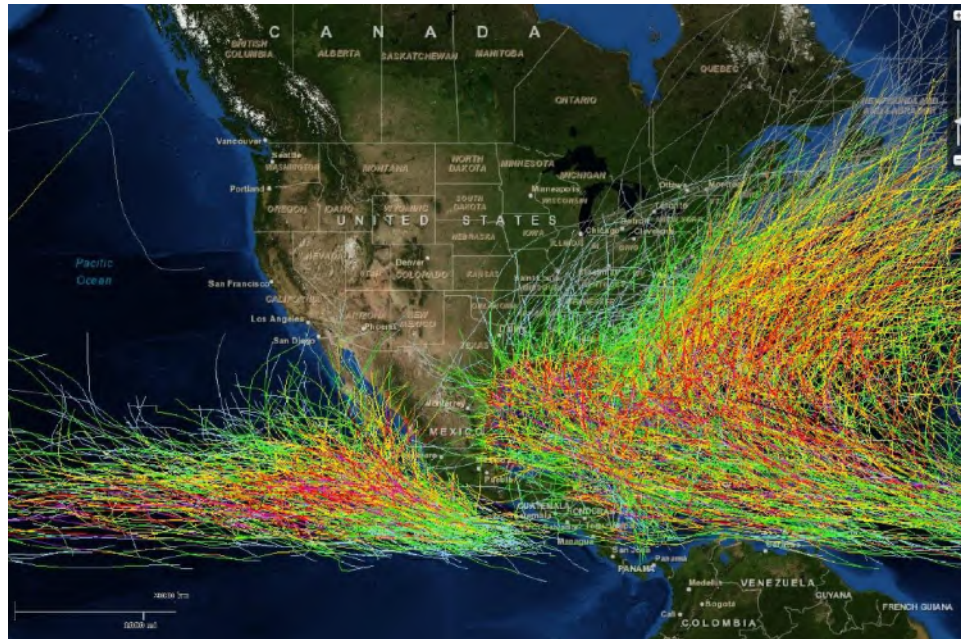
Saffir-Simpson Scale for Hurricane Classification				
Strength	Wind Speed (Kts)	Wind Speed (MPH)	Pressure (Millibars)	Pressure
Category 1	64- 82 kts	74- 95 mph	>980 mb	28.94 "Hg
Category 2	83- 95 kts	96-110 mph	965-979 mb	28.50-28.91 "Hg
Category 3	96-113 kts	111-130 mph	945-964 mb	27.91-28.47 "Hg
Category 4	114-135 kts	131-155 mph	920-944 mb	27.17-27.88 "Hg
Category 5	>135 kts	>155 mph	919 mb	27.16 "Hg
Tropical Cyclone Classification				
Tropical Depression		20-34kts		
Tropical Storm		35-63kts		
Hurricane		64+kts or 74+mph		

Natural Hazard: Tropical Cyclone

Tropical cyclones can cause catastrophic damage to coastlines and areas several hundred miles inland. Tropical cyclones can produce sustained high winds and spawn tornadoes and microbursts. Additionally, tropical cyclones can create storm surges along the coast and cause extensive damage from heavy rainfall. Floods and flying debris from the excessive winds are often the deadly and destructive results of these weather events.

Slow moving tropical cyclones traveling into mountainous regions tend to produce especially heavy rain. Excessive rain can trigger landslides or mudslides. Flash flooding can also occur due to intense rainfall.

Each of these hazards present unique characteristics and challenges; therefore, the following have been separated and analyzed as individual hazards: Tropical cyclones, Thunderstorms, Tornadoes, and Flooding. This section will focus on the direct effects of tropical cyclones.



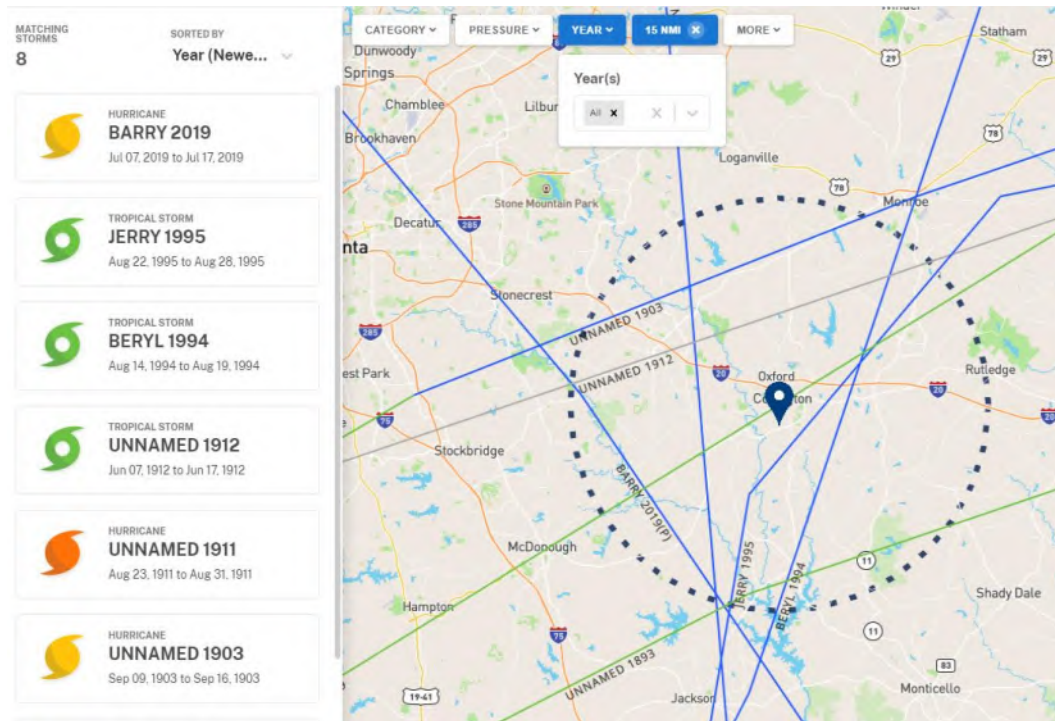
Hazard Profile

Tropical cyclones have directly impacted Newton County on an infrequent basis over the last 50 years. However, the possibility of a hurricane or tropical storm retaining their wind strength as far inland as Newton County is possible.

Natural Hazard: Tropical Cyclone

There have been 15 documented impacts from Topical Cyclones in Newton County. This equates to a 30% chance of a tropical cyclone impacting Newton County in any given year. The Newton County Hazard Mitigation Update Committee believes this percentage is more representative of the potential impact.

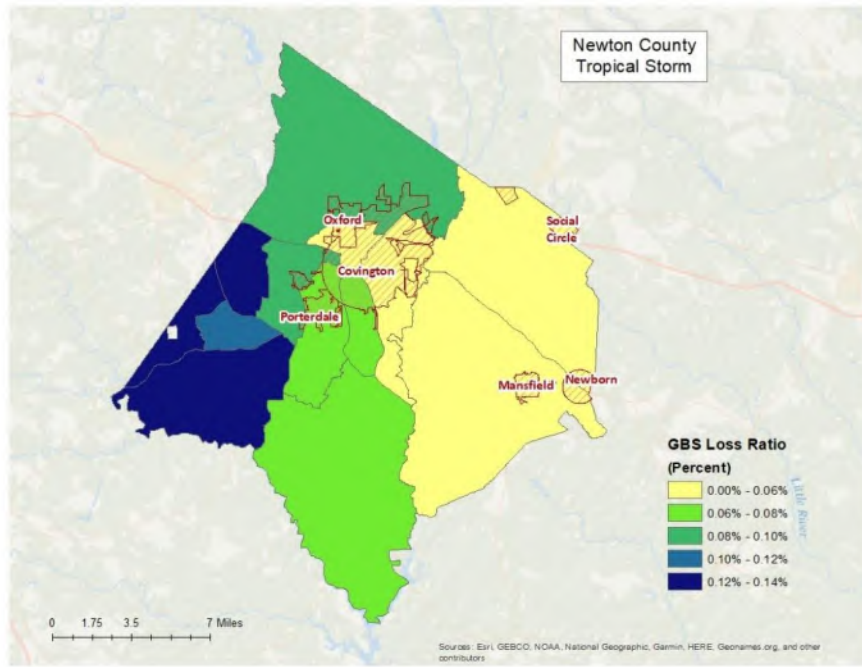
Three Tropical Cyclones – Hurricane Barry in 2019, Tropical Storm Jerry in 1995, and Tropical Storm Beryl in 1994 – have had a track that directly dissected Newton County in the last 50 years. All tropical cyclone hazard data included for Newton County is limited to countywide data and is not broken down by jurisdiction. In 2017, Hurricane Irma dropped over 3.5 inches of rain on Newton County and wind gusts over 40 mph (tropical storm-strength) were reported in the county.



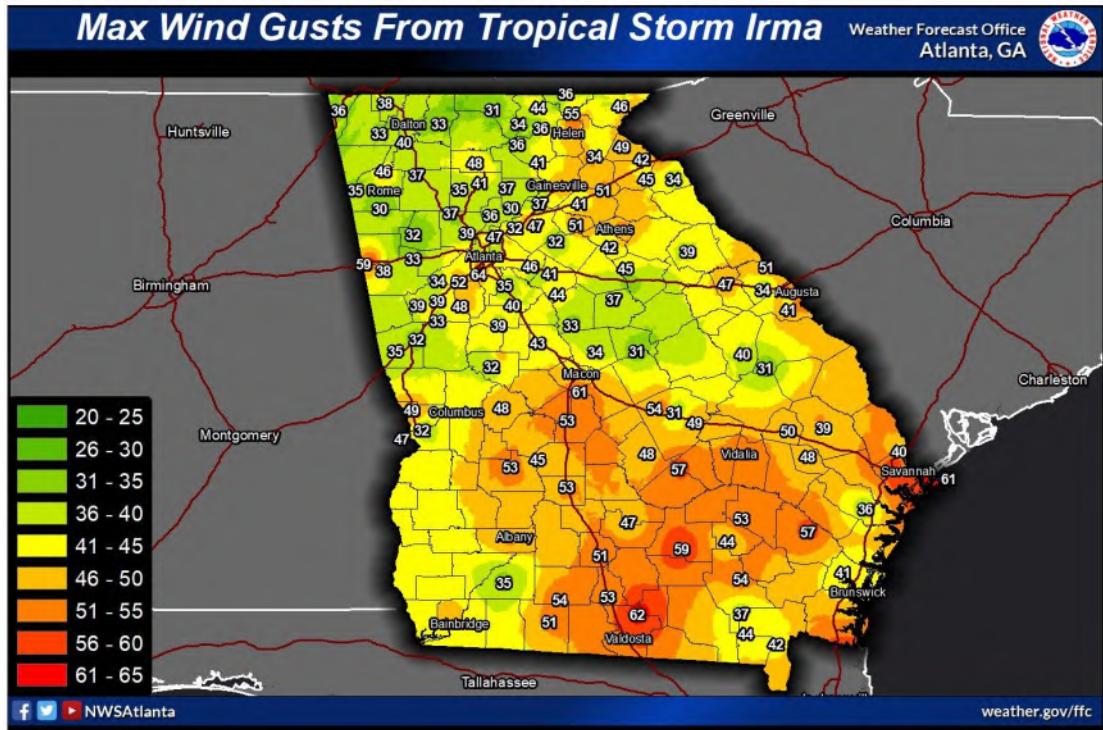
Source: NOAA Office of Coastal Management

Even with the infrequent occurrences, the impacts that would result from hurricane or tropical storm forces on the citizens, infrastructure, and critical facilities of Newton County could be potentially catastrophic in nature.

Natural Hazard: Tropical Cyclone



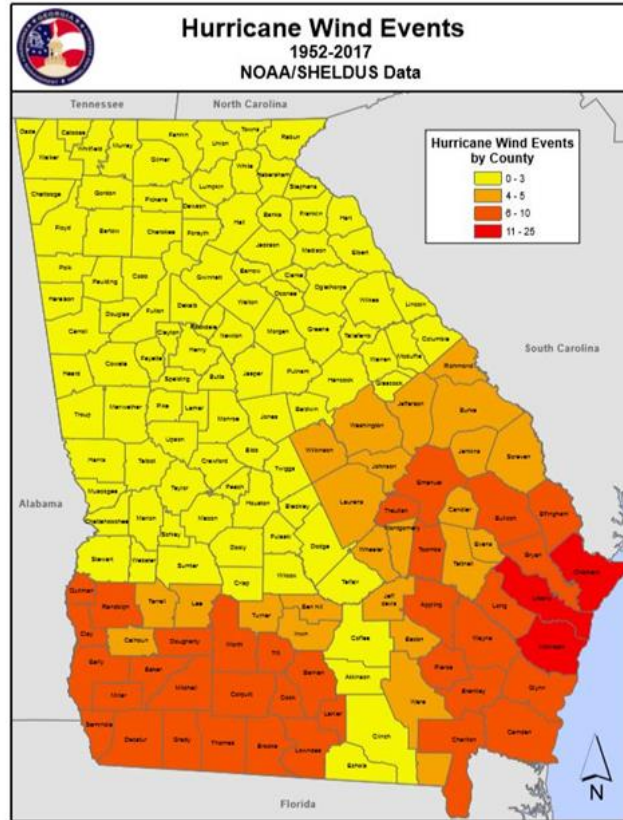
Source: 2020 Newton County HAZUS Report



Natural Hazard: Tropical Cyclone

Assets Exposed to the Hazard

The Newton County HMPC determined that all critical facilities and all public and private property within Newton County are susceptible to the direct and indirect impacts of a tropical cyclone. This includes all municipalities.



Source: 2019-2024 Georgia Hazard Mitigation Strategy and Enhanced Plan

Estimated Potential Losses

Little information is available regarding damages, in terms of dollars, is available for tropical cyclone losses in Newton County. Most losses for these events have been labeled under other impacts, such as tornadoes and flooding. However, the 2020 Newton County HAZUS Report projected a loss ratio of 0.1% and a total loss of over \$7.5 million (30 buildings) for a 100-year (1% annual risk) Tropical Cyclone Event.

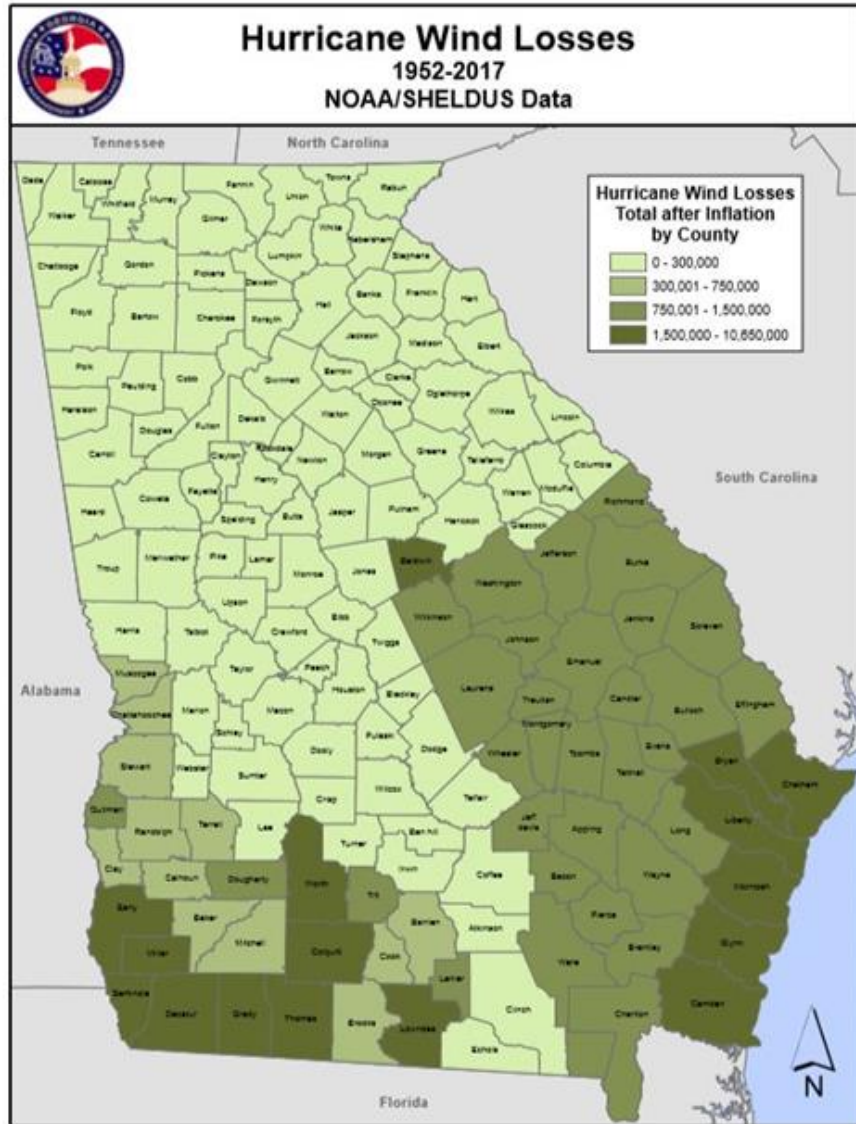
Land Use and Development Trends

Newton County currently has no land use trends related to Tropical Cyclones.

Natural Hazard: Tropical Cyclone

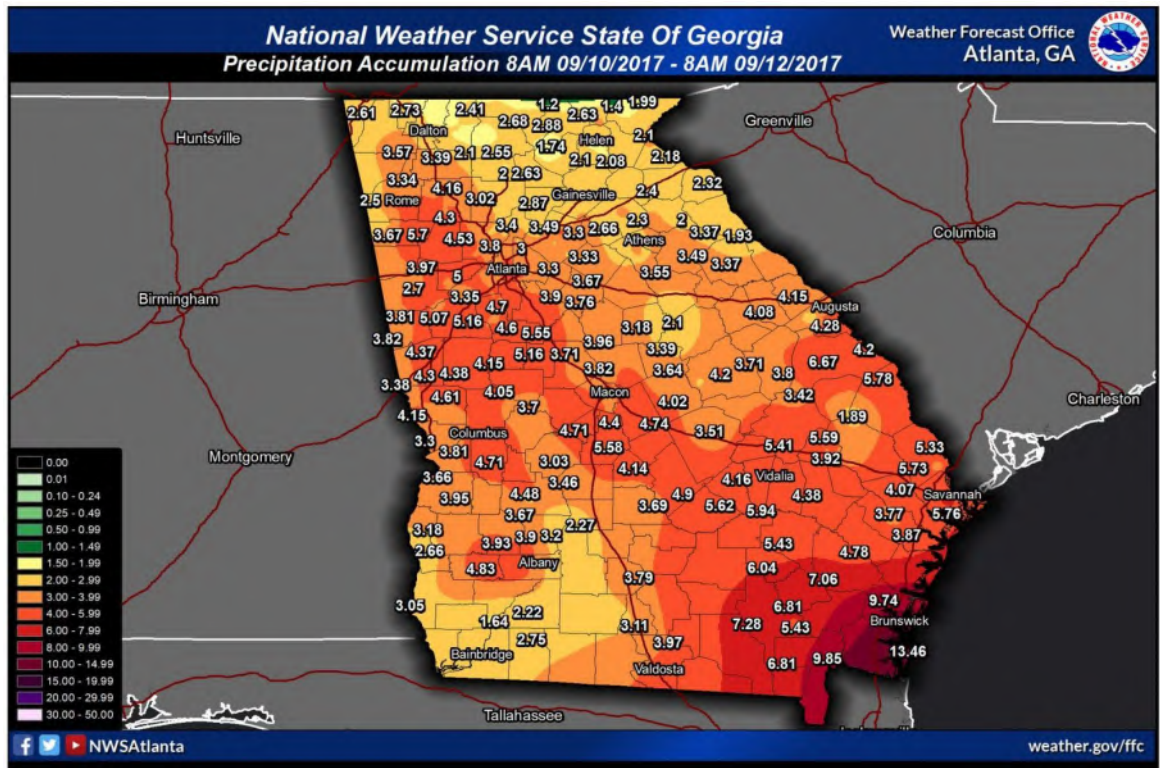
Multi-Jurisdictional Considerations

All of Newton County, including all municipalities, could potentially be threatened by tropical cyclones. As such, all tropical cyclone mitigation actions should be pursued on a countywide basis and include all municipalities.



Source: 2019-2024 Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Tropical Cyclone



Hazard Summary

Even with the relative infrequency of tropical cyclone impacts in Newton County in the recent past, the potential losses and impacts associated with the event would severely damage the infrastructure and economic viability of Newton County and all municipalities. Newton County’s proximity to the Atlantic coast increases the likelihood of a tropical cyclone impacting the area. The mitigation measures identified in this plan for tropical cyclones should be pursued based on the high impact potential of this hazard and the ability for tropical cyclones to inflict widespread devastation anywhere in Newton County. Newton County has had three Federally Declared Disaster related to Tropical Cyclones, most recently in 2017 (Hurricane Irma).

Natural Hazard: **Extreme Temperatures**

Extreme temperatures – both hot and cold – can pose a significant threat to an underprepared population. This is particularly true in areas where a population has a large elderly population, a large population of small children, and a population with lower socioeconomic status.

The term extreme heat can be subjective to a degree. FEMA, in their “Mitigation Ideas” publication defines extreme heat as “the condition where temperatures consistently stay ten degrees or more above a region’s average high temperature for an extended period.” The key to this definition is, extreme heat is relative to the average temperature, regardless of the time of year. For example, the National Center for Environmental Information (NCEI) records heat events in Georgia with 60- and 70-degree temperatures in December and January, simply because they are significantly higher than the average temperature for that time of year. According to www.ready.gov/heat, FEMA also offers another definition of extreme heat: “In most of the United States, extreme heat is defined as a long period (2 to 3 days) of high heat and humidity with temperatures above 90 degrees.” This definition can also lead to some subjectivity in the term “extreme.” For example, people that live in the southern parts of the country are more adapted to temperatures in the 90s and 100s than people that live in the more northern tiers. This is not to say those temperatures are not still dangerous. Notably, in recent years, more heat related deaths have occurred in the southern tier states than the northern tiers. The National Weather Service, however, focuses on “Excessive Heat,” defining it as heat indices of 105 degrees or more using a combination of temperature and humidity as a “real feel.”

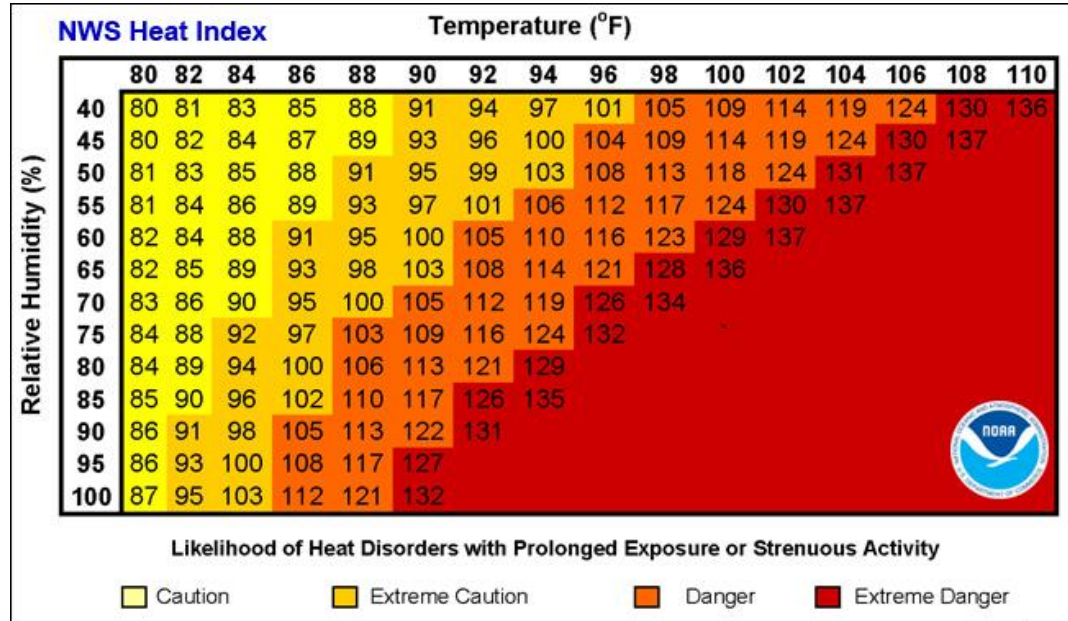
Just as extreme heat can be subjective, so can extreme cold. Just as the National Weather Service utilizes heat index to attempt to quantify extreme heat, wind chill is often utilized to quantify extreme cold. Prolonged and/or unprotected exposure to extreme cold can be detrimental to people and animals. Additionally, it can be detrimental to exposed infrastructure, as well.

Hazard Profile

According to the National Climactic Data Center, Newton County have been exposed to extreme cold/wind chill and excessive heat events on 22 occasions since 1996. This means that Newton County has had 1.1 extreme temperature events per year since 1996. This included 10 extreme cold events and 12 excessive heat events. This averages out to an extreme cold event every 2.4 years (42% annual chance) and an excessive heat event every 2 years (50% annual chance).

Natural Hazard: **Extreme Temperatures**

In August of 2007, Atlanta had 8 days that cleared 100 degrees and set eight maximum temperature records during the month. On August 22nd, temperatures reached 104 degrees, which set a new record for the month of August. The temperature on August 10th was recorded at 105 degrees. The all-time high for Atlanta was set on June 30, 2012 as temperatures reached 106 degrees.



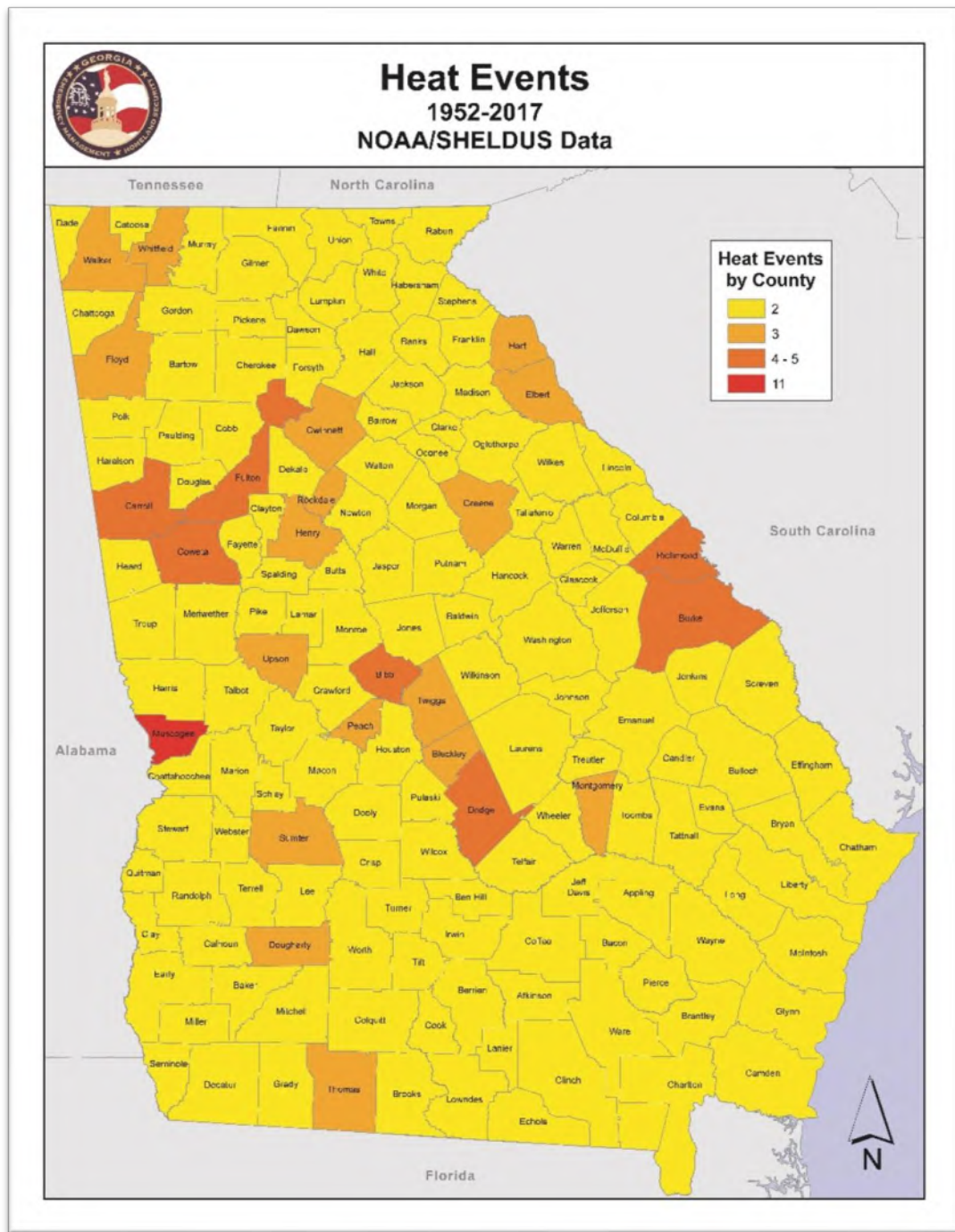
Source: 2019-2024 Georgia Hazard Mitigation Strategy and Enhanced Plan

Newton County has also been exposed to many extreme cold events. Due to its lower latitude and position within Georgia, Newton County can avoid much of the extreme cold temperatures that sometimes plague the mountainous regions of northeast Georgia. However, Newton location and lack of widespread exposure to such events increases the impact those events could have if they were to occur. In 2014, an arctic front sent temperatures into the single digits across north Georgia, including Newton County. This event was accompanied by high winds, which pushed wind chills to -10 degrees in the early morning hours

Assets Exposed to the Hazard

The Newton County HMPC determined that all critical facilities and all public and private property within Newton County are susceptible to the direct and indirect impacts of an extreme temperature event.

Natural Hazard: Extreme Temperatures



Source: 2019-2024 Georgia Hazard Mitigation Strategy and Enhanced Plan

Natural Hazard: Extreme Temperatures

Estimated Potential Losses

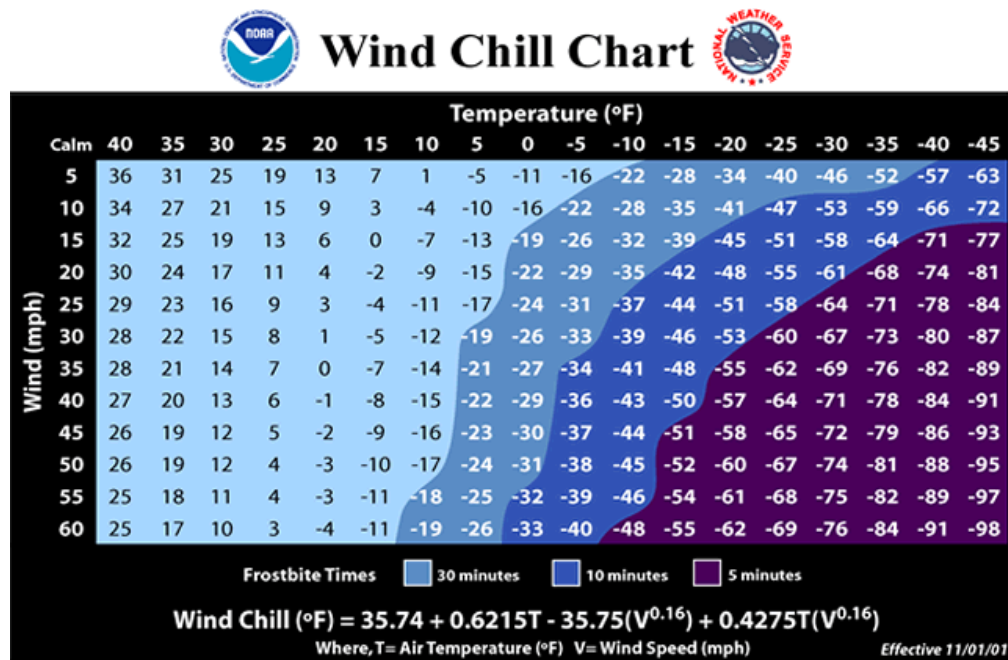
Little information is available regarding damages, in terms of dollars, is available for excessive temperature losses in Newton County. Most losses for these events have been labeled under other impacts, such as drought and severe winter storms.

Land Use and Development Trends

Newton County currently has no land use trends related to extreme temperatures beyond increased population growth.

Multi-Jurisdictional Considerations

All of Newton County, could potentially be threatened by extreme temperatures. As such, all extreme temperature mitigation actions should be pursued on a countywide basis.



Source: National Weather Service

Hazard Summary

Incidents of extreme temperatures – both hot and cold – pose a significant threat to the citizens of Newton County. Newton County’s geographical location increases the likelihood of extreme temperature events with extreme heat events generally considered to be more likely. However, the lack of direct preparation for extreme cold events could lead to greater direct impacts.

Technological Hazard: Hazardous Materials*Hazard Description*

Hazardous materials, or hazmat, refers to any materials that may pose a real hazard to human health and/or the environment because of its quantity, concentration, and/or physical or chemical characteristics. Hazardous materials include explosives, flammables, combustibles, oxidizers, toxic materials, radioactive substances, and corrosives. Specific federal and state regulations exist regarding the transport and storage of hazardous materials.

A hazardous materials spill or release occurs when a hazardous material gets into the environment in an uncontrolled fashion. Response to a hazmat spill or release depends greatly on the type of material involved and the subsequent physical and chemical characteristics. Major sources of hazardous materials spills include transportation accidents on roadways and railways, pipeline breaches, and spills into rivers and creeks. Jurisdictions with facilities that produce, process, or store hazardous materials are at risk, as are facilities that treat or dispose of hazardous materials.

Hazard Profile

Data from the United States Coast Guard National Response Center was reviewed regarding hazardous materials spill history in Newton County. Data is available from 1990 to 2020 and all available data was reviewed. There were 47 NRC reported hazardous materials spills or releases in Newton County over a 30-year period. It is anticipated that many more hazardous materials incidents have occurred over the last 30 years but have not been reported. According to the NRC data, Newton County averages 1.56 hazardous materials incidents of a reportable amount each year. This equates to a 0.4% chance of a hazardous materials spill of a reportable amount on any given day. The greatest threat for a hazardous materials spill comes from the transportation of materials through Newton County. This is particularly true for the Interstate 20 and US Highway 278 corridors that run through the center of the county. Additionally, railroad owned and operated by CSX Transportation traverse the northern portion of Newton County, including the City of Covington.

Of concern to the Newton County Hazard Mitigation Committee is the exposure of water sources to potential hazardous materials incidents. A hazardous materials incident at or near drinking water sources could have devastating effects on a large population in Newton County.

Technological Hazard: Hazardous Materials*Assets Exposed to Hazard*

The environment is particularly vulnerable to the threat posed by hazardous materials. Waterways are at a high risk for contamination from hazardous materials. Water contamination is of concern to the Newton County HMPC. Public and private property located near fixed hazardous materials facilities are also a greater risk than the general population of Newton County. Water contamination from a hazardous materials release is of particular concern to the Newton County Hazard Mitigation Planning Committee.

Estimated Potential Losses

Estimation of potential losses is difficult regarding hazardous materials due to the vast array of potential types of hazardous materials that could be involved in the incident and unknown costs regarding environmental damages. No recorded information was found regarding the losses associated with hazardous materials incidents in Newton County. However, a hazardous materials release, whether in transport or at a fixed facility, would incur significant costs regarding emergency response, potential road closures, evacuations, watershed protection measures, expended man-hours, and cleanup materials, equipment, and personnel.

Land Use and Development Trends

Newton County currently has no land use trends related to Hazardous Materials beyond continued population growth – particularly in and around the Cities of Elberton.

Multi-Jurisdictional Considerations

All of Newton County, including all municipalities, are vulnerable to both fixed facility and transportation-related hazardous materials releases. However, areas along the Interstate 20 and US Highway 278 corridors, including the municipality of Covington, are of particular concern.

Hazard Summary

Hazardous materials incidents pose a significant threat to the citizens, infrastructure, and critical facilities of Newton County. Unknown quantities of hazardous materials are transported daily through Newton County and all municipalities. These materials are often transported via highways. Water contamination because of a hazardous materials spill is of significant concern to the Newton County HMPC. As a result of the threat posed by hazardous materials, the Newton County HMPC has identified mitigation actions directly related to this threat.

Technological Hazard: Dam Failure*Hazard Description*

Georgia law defines a dam as any artificial barrier, which impounds or diverts water, is 25 feet or more in height from the natural bed of a stream or has an impounding capacity at maximum water storage evaluation of 100 acre-feet or more. Dams are generally constructed to provide a ready supply of water for drinking, irrigation, recreation, and other purposes. Dams can be constructed from earth, rock, masonry, concrete, or any combination of these materials.

Dam failure is a term used to describe a significant breach of a dam and the subsequent loss of contained water. Dam failure can cause significant damages downstream to structures, roads, utilities, and crops. Dam failure can also put human and animal lives at risk. National statistics indicate that one-third of all dam failures in the United States are caused by overtopping due to inadequate spillway design, debris blocking spillways, or settlement of the dam crest. Another third of all US dam failures are the result of foundation defects, including settlement and slope instability.

Hazard Profile

Newton County has 4 category I dams and 37 category II dams. Category I dams are those that would pose a possible threat to human life if a failure were to occur. All category I dams must be inspected annually according to Georgia's Safe Dams Act.

The threat of a dam failure in Newton County could potentially lead to downstream flooding. This downstream flooding would have many of the same hazards as a flood event, but with the onset of such an event being much quicker than in a typical flood event. The 46.5-foot Cornish Creek Reservoir Dam is of particular concern because of the large amounts of water stored behind the dam. The Cornish Creek Reservoir Dam has 18,400-acre feet of water stored behind it.

Assets Exposed to Hazard

To evaluate the assets that would potentially be impacted by a dam failure, the Newton County HMPC attempted to identify known structures within, or close to, the 100-year floodplain. All municipalities could be exposed to the hazards of other dams or face secondary hazards from the dams.

Technological Hazard: Dam Failure*Estimated Potential Losses*

Loss estimations are not applicable since it is not known which dam will fail and how significant of failure will occur.

Land Use and Development Trends

Newton County participates in the National Flood Insurance Program (NFIP) and follows the program's guidelines to ensure future development is carried out in the best interests of the public. The County (CID No. 130143) first entered the NFIP on July 5, 1983. According to the NFIP guidelines, the County has executed a Flood Damage Prevention Ordinance. This ordinance attempts to minimize the loss of human life and health as well as minimize public and private property losses due to flooding. The ordinance requires any potential flood damage be evaluated at the time of initial construction and that certain uses be restricted or prohibited based on this evaluation. The ordinance also requires that potential homebuyers be notified that a property is located in a flood area. In addition, all construction must adhere to the Georgia State Minimum Standard Codes and the International Building Codes. Currently, the Newton County municipalities of Covington, Oxford, and Porterdale also participate in NFIP through the application of appropriate NFIP-compliant ordinances and regulations. There are no 100-year floodplain (1% annual risk) areas in the City of Mansfield of the Town of Newborn.

Multi-Jurisdictional Considerations

During a dam failure event, many portions of Newton County would potentially be impacted by flooding. However, the area's most prone to flooding have historically been those areas located within the 100-year floodplain and downstream from dams.

Hazard Summary

Dam failure poses a threat to Newton County and its citizens, infrastructure, and critical facilities. A dam failure could prove catastrophic for areas downstream of the dam, particularly if the failure were to occur at one of the Category II dams located in Newton County. As a result, mitigation efforts for dam failure should be focused in this potentially affected area.

Technological Hazard: Transportation Incident*Hazard Description*

There are many secondary hazards that could be associated with transportation incidents. Injuries or deaths can occur as a result of the impact of a transportation accident, by a hazardous material release because of a transportation incident, or by other related transportations hazards. Transportation can occur via roadways, highways, interstates, railways, air, or navigable waterways. Each transportation type poses their own unique hazard issues and consequences.

Roadway hazards are most likely to be caused by a motor vehicle accident involving one or more cars, trucks, vans, or transport vehicles. These incidents can have injuries because of the impact of the MVA or a hazardous material release into the local environment, including waterways. Railway incidents pose many of the same dangers as motor vehicle accidents. However, the threat of a hazardous materials release is greatly increased when railway transportation incidents are considered.

Air accidents can include commercial airplanes, private airplanes, hot air balloons, helicopters, or other forms of air travel. Each of these incidents can cause a significant threat to human life as well as posing a hazardous material threat due to the cargo being transported or the fuel being used. Navigable waterway incidents can create formidable incidents for response organizations. Because of the waterway, technical expertise is needed to carry out rescue operations, especially in swift-moving waterways. Also, any incident in a waterway is likely to have environmental impacts.

Hazard Profile

Transportation incidents are of a significant concern in Newton County. Passing through Newton County are Interstate 20, US Highway 278, Georgia Highways 11, 12, 20, 36, 81, 138, 142, 162, and 212. In addition to the roadways that traverse Newton County, railroads owned and operated by CSX Railroad also cross through Newton County.

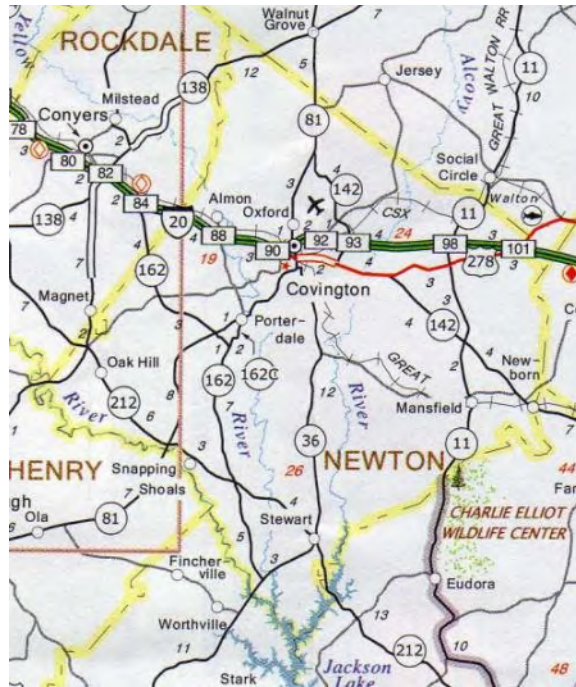
Assets Exposed to Hazard

All assets and critical facilities located along or near any transportation route could potentially be impacted by a transportation incident. Areas within Newton County that are not located along or near a transportation route could still face residual impacts.

Technological Hazard: Transportation Incident

Estimated Potential Losses

Estimated potential losses cannot be anticipated with this event due to the vast number of differing scenarios regarding transportation incidents.



Land Use and Development Trends

Newton County currently has no land use trends related to Transportation Incidents beyond an increase in overall population which, in turn, increases the likelihood and potential impact of a transportation incident. The primary areas of growth have been in and around the Cities of Covington, Oxford, and Porterdale and areas near the Henry and Rockdale County lines.

Multi-Jurisdictional Considerations

Newton County as well as all municipalities could potentially be impacted by a transportation incident. However, areas along the Interstate 20 and US Highway 278 corridors are the greatest at risk. This includes the municipality of Covington.

Hazard Summary

The Newton County HMPC has determined that transportation incidents pose a high risk to their jurisdictions due to the unpredictable nature and likelihood of the incident. As a result, the Newton County HMPC has developed mitigation strategies and actions with transportation incidents in mind.

Technological Hazard: Terrorism*Hazard Description*

The Federal Bureau of Investigation (FBI) defines terrorism as violent acts or acts dangerous to human life that violate federal or state law, appear to be intended to intimidate or coerce a civilian population, affect the conduct of a government by mass destruction, assassination or kidnapping, and is calculated to influence or affect the conduct of a government by intimidation or retaliate against government conduct. Terrorism is usually referenced as being premeditated and politically motivated.

Terrorist acts are, by their very nature, designed and carried out with the intention of inflicting mass casualties and extensive property damage. When an act of terrorism is carried out in a jurisdiction, it will likely be necessary to implement multiple aspects of the emergency management system and summon additional resources from local, state, and federal partners.

Terrorism is generally divided into two types: domestic terrorism and international terrorism. Domestic terrorism is defined as terroristic acts focused on facilities and populations without foreign direction. International terrorism involves activities that are foreign-based and/or sponsored by organizations outside of the United States.

Terrorists often use threats to create fear among the public, to convince citizens that government is powerless to prevent terrorism and to get immediate publicity for their causes. Weapons of Mass Destruction (WMDs), including incendiary, explosive, chemical, biological, radiological, and nuclear agents, have the capability to cause death or serious bodily injury to a significant number of people, thus posing the threat of a catastrophic incident. Terrorism can also include arson, agro-terrorism, armed attack, intentional hazardous materials release, water or food contamination, and attacks on infrastructure and electronic information systems.

Hazard Profile

Terrorism targets have historically been facilities that make a large economic or social impact on the targeted government or jurisdiction. In Newton County, all critical facilities could be potential targets. Terrorism includes a multitude of potential approaches, including agro-terrorism, which is terrorism targeted toward agriculture. Due to the high economic impact (over \$12 million in annual agriculture-related sales) of agriculture in Newton County, agro-terrorism could be of particular concern. Additionally, a terrorist contamination of the water sources is of concern.

Technological Hazard: **Terrorism**

Within Newton County, there are many areas that could be viewed as potential targets for terrorism due to their economic impact on the area. This includes tourist-friendly areas, such as the historic district of the City of Covington.

While active shooter situations are not always classified as terrorism, for this plan, the Newton County HMPC has chosen to classify them as such. Active shooter situations can occur in any location, including businesses, schools, government buildings, and public spaces. Schools are seen as particularly vulnerable to these types of situations due to the high publicity of recent active shooter events. While active shooter events and other acts of terrorism occur worldwide, they have low probability for Newton County but would have devastating impacts if they were to occur. To help mitigate some of these impacts, Newton County has exercised an active shooter response in the past to better prepare for any such event.

Assets Exposed to the Hazard

Due to the unpredictable nature of terrorism, all public and private structures are threatened by the terrorism hazard. This includes all critical facilities.

Estimated Potential Losses

Losses due to terrorism are difficult to estimate due to the unpredictable nature of terrorism. The type of terrorist act carried out, location of the act, and the impact of the act would all affect the potential losses. Please see the critical facilities information for estimated potential losses for each critical facility.

Land Use and Development Trends

Newton County currently has no land use trends related to Terrorism.

Multi-Jurisdictional Considerations

All of Newton County, including all municipalities, are vulnerable to potential acts of terrorism. However, critical facilities and their surrounding areas are considered to be at the greatest risk.

Hazard Summary

Terrorism, while a low-probability hazard, would have devastating effects on Newton County and all municipalities. These impacts would be immediate and long-lasting and could be potentially economically crippling to Newton County and surrounding communities.

Technological Hazard: Infrastructure Failure*Hazard Description*

Infrastructures are particularly vulnerable to both natural and technological hazards. These include electrical utilities, water utilities, gas pipelines, fuel supplies, and other infrastructures that supply vital supplies and services to the community. While an infrastructure failure would most likely be a secondary hazard of one of the other hazards identified in this plan, an infrastructure failure could be a solo incident itself.

A lack of connection with outside sources could lead to public panic, poor emergency response capabilities, and other domino hazards. These events pose a significant threat to many jurisdictions.

Hazard Profile

In case of any failure of a utility infrastructure, general difficulties would be exacerbated for both emergency responders and for the public. The reliance on wireless communications, particularly for the public safety sector, increases the vulnerability of Newton County's emergency response agencies to a utility failure. A natural gas pipeline traverses the northern section of unincorporated Newton County. Both types of pipeline could cause a significant hazardous materials incident if breached or could cause significant gas and natural gas outages across the region if supply were interrupted for an extended period.

Assets Exposed to Hazard

All assets and critical facilities within Newton County could potentially be impacted by an infrastructure failure.

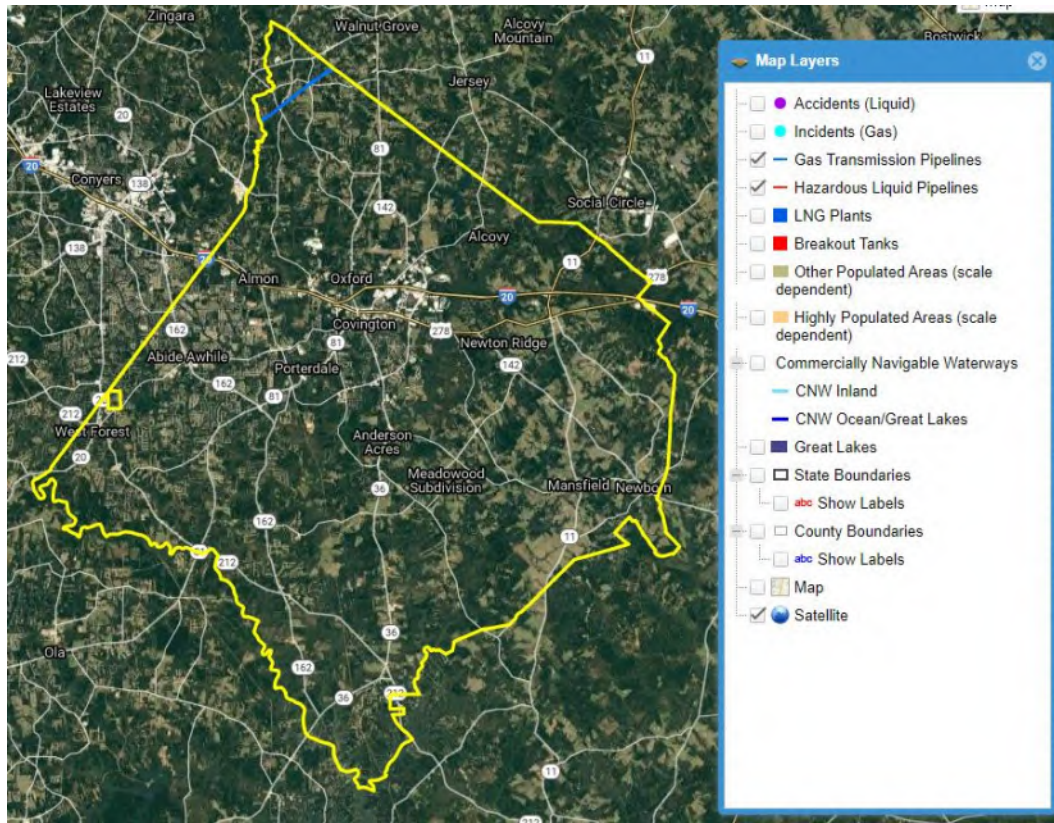
Estimated Potential Losses

Estimated potential losses cannot be anticipated with this event due to the vast number of differing scenarios regarding utility failure.

Land Use and Development Trends

Newton County currently has no land use trends related to infrastructure failures beyond continued population growth and an ever-increasing industrial footprint.

Technological Hazard: **Infrastructure Failure**



Source: National Pipeline Mapping System

Multi-Jurisdictional Considerations

All areas of Newton County could potentially be impacted by an infrastructure failure.

Hazard Summary

The Newton County HMPC has determined that utility failures pose a high risk to their jurisdictions due to the unpredictable nature of the incident. As a result, the Newton County HMPC has developed mitigation strategies and actions with infrastructure failures in mind.

Technological Hazard: Emerging Infectious Diseases*Hazard Description*

Microorganisms, such as bacteria, viruses, parasites, fungi, or prions, surround us within the environment. They can even be found within our own bodies. Most microorganisms are completely harmless, and many are actually beneficial. However, some of these organisms are pathogenic, meaning they cause or can cause disease. Infectious diseases are caused by these pathogenic organisms and are communicable – meaning they can be spread from person to person either directly or indirectly. Direct transmission of the disease occurs through actual physical contact with an infected person or their bodily fluids. Indirect transmission of a disease occurs when an infected person contaminates a surface by sneezing, coughing, etc., and a non-infected person comes into contact with that infected surface. Another means of indirect transmission includes vectors, such as mosquitos, flies, mites, ticks, fleas, rodents, or dogs, which may carry the pathogenic microorganism and transmit it to people via a bite. Infectious diseases can also impact animal populations, particularly livestock and other farm animals. Even though these diseases may not directly affect humans, the economic impact of these diseases can be just as harmful, if not more so, to the community.

Infectious diseases can occur as primary events or they may occur as a cascading result of another disaster, such as a tornado, flood, or winter weather. Infectious diseases can vary greatly in severity and magnitude. According to the World Health Organization, infectious diseases account for three of the ten leading causes of death worldwide – HIV/AIDS, lower respiratory infections, and diarrheal disease. These three events, combined with tuberculosis and malaria, account for 20% of deaths globally.

In Western countries, the impact of infectious diseases has diminished greatly over the last 75 years due to improved sanitation, personal hygiene, vaccinations, and the use of antibiotics. In the United States, only two infectious diseases – seasonal influenza and pneumonia – rank in the top ten leading causes of death. Annually, there are 1,500 deaths in the United States from seasonal influenza and another 52,000 from pneumonia. Children and older adults are the greatest at risk for both.

Emerging infectious diseases are those that are appearing in a population for the first time. Re-emerging infectious diseases are those that may have previously existed in a population, but levels had dropped to the point where it was no longer considered a public health problem until levels once again began increasing.

Technological Hazard: Emerging Infectious Diseases

During the last 25 years, emerging and re-emerging infectious diseases have been on the rise. The below table outlines some of the contributing factors to this rise:

Contributing Factors to Increasing Occurrence of Emerging Diseases	
Agent-Related Factors	
<ul style="list-style-type: none"> • Evolution of pathogenic infectious agents • Development of resistance to drugs • Resistance of disease carriers to pesticides 	
Host-Related Factors	
<ul style="list-style-type: none"> • Human demographic changes (humans inhabiting new areas) • Human behavior (sexual practices and drug use) • Human susceptibility to infection 	
Environment-Related Factors	
<ul style="list-style-type: none"> • Economic development and land use patterns • International travel and commerce • Deterioration of surveillance systems 	

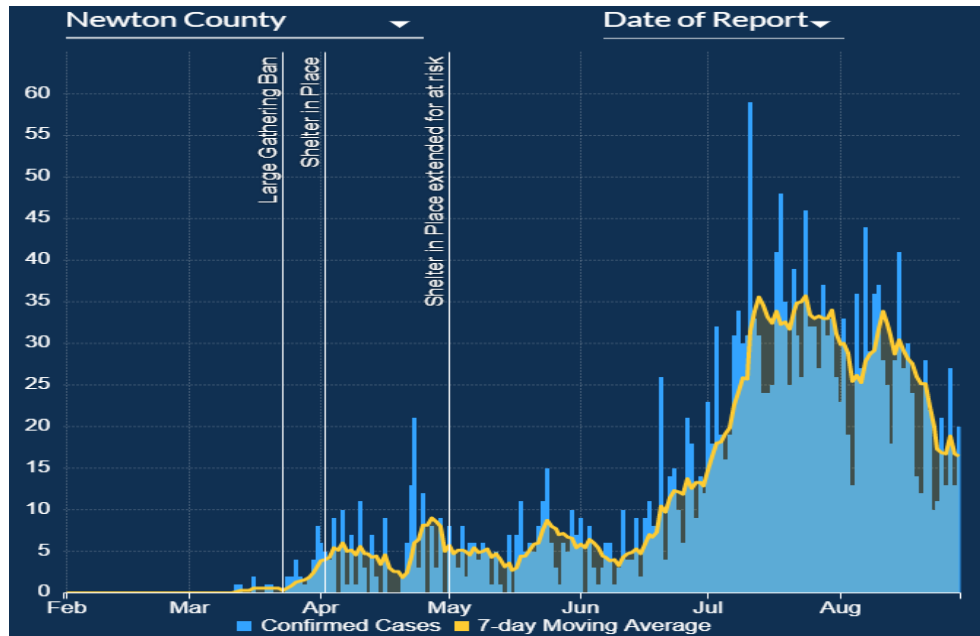
Due to a lack of ready-made vaccines for these diseases and a lack of immunity in the population, emerging and re-emerging infectious diseases are much more likely to escalate to pandemic levels rapidly.

CDC-Identified Emerging and Re-Emerging Infectious Diseases	
Drug-resistant Infections	Mad Cow/Variant Creutzfeldt-Jakob Diseases
Campylobacteriosis	Chagas Disease
Cholera	Cryptococcosis
Cryptosporidiosis (Crypto)	Cyclosporiasis
Cysticercosis	Dengue Fever
Diphtheria	Ebola Hemorrhagic Fever
Group B Streptococcal Infection	Hantavirus Pulmonary Syndrome
Hepatitis C	Hendra Virus Infection
Histoplasmosis	HIV/AIDS
Influenza	Lassa Fever
Legionnaires' Disease and Pontiac Fever	Leptospirosis
Listeriosis	Lyme Disease
Malaria	Marburg Hemorrhagic Fever
Measles	Meningitis
Monkeypox	MRSA
Nipah Virus Infection	Norovirus Infection
Pertussis	Plague
Polio	Rabies
Rift Valley Fever	Rotavirus Infection
Salmonellosis	SARS
Shigellosis	Smallpox
Sleeping Sickness (Trypanosomiasis)	Tuberculosis
Tularemia	Valley Fever (Coccidioidomycosis)
VISA/VRSA	Staphylococcus Aureus
West Nile Virus Infection	Yellow Fever

Technological Hazard: Emerging Infectious Diseases

Hazard Profile

Emerging Infectious diseases are of significant concern to the Newton County HMPC, particularly those that would have an impact on the human population or animal population of Newton County. Newton County would likely see significant economic impacts from an outbreak involving animal populations, such as an Avian Flu, due to the large economic base agriculture provides (over \$100 million in annual sales). The lack of current vaccines and preparatory activities for these diseases has created a situation where the potential impact to Newton County of a pandemic or epidemic could be catastrophic. The most recent pandemic scare in the Central Georgia area was the 2009-2010 H1N1 Swine Flu. There were 1286 cases of H1N1 in Georgia in 2009-2010 and 33 deaths. Most registered cases occurred with people between the ages of 5 and 29. This equates to a mortality rate of just over 2.5% - which is slightly lower than the 3% rate of the 1918-1919 Spanish Flu Pandemic. Additionally, the 2019-2020 COVID-19 Outbreak worldwide has increased the overall level of concern regarding emerging infectious diseases. As of August 29, 2020, there are over 24.9 million confirmed cases worldwide. In Newton County, there have been 2,277 confirmed cases and 60 deaths as of May 22, 2020. This pandemic has closed businesses, schools, and government offices across the county, the State of Georgia, and in Newton County.



Technological Hazard: **Emerging Infectious Diseases**

Over the last 25 years, emerging infectious disease outbreaks have occurred in other parts of the country. These include:

- 1993 Cryptosporidium Outbreak (Milwaukee, Wisconsin – 403,000 people ill and 100 deaths)
- 2010 Whooping Cough Outbreak (California – 9,500 people ill and 10 infant deaths)
- 2014 Measles (Nationwide – 334 cases from January to May 2014 – most in 20 years)
- 2015 H5N2 Avian Flu Outbreak (Midwest – over 25 million chickens and turkeys destroyed as a precautionary measure at 83 locations)

Assets Exposed to the Hazard

Due to the unpredictable nature of emerging infectious diseases, all public and private structures are threatened by the hazard. This includes all critical facilities.

Estimated Potential Losses

Losses due to emerging infectious diseases are difficult to estimate due to the unpredictable nature of the hazard. The type of emerging infectious disease, location of the outbreak, and the impact of the outbreak would all affect the potential losses. Please see the critical facilities information for estimated potential losses for each critical facility.

Land Use and Development Trends

Newton County currently has no land use trends directly related to emerging infectious diseases.

Multi-Jurisdictional Considerations

All of Newton County, including all municipalities, are vulnerable to emerging infectious diseases. However, livestock and other farm animals are considered to be the greatest at risk, along with areas that have a large, concentrated human population, such as schools.

Hazard Summary

An emerging infectious disease would have devastating effects on Newton County and all municipalities. These impacts would be immediate and long-lasting and could be potentially economically crippling. Because of these considerations, the Newton County HMPC has developed mitigation actions with emerging infectious diseases in mind.

CHAPTER FOUR
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HAZARD MITIGATION STRATEGIES

Summary of Updates to Chapter Four

The following table provides a description of each section of this chapter, and a summary of the changes that have been made to the Newton County Hazard Mitigation Plan 2015.

Chapter 4 Section	Updates
Goals and Objectives	<ul style="list-style-type: none"> • Updated goals to match the needs of Newton County and all municipalities
Identification and Analysis of Mitigation Techniques	<ul style="list-style-type: none"> • Content Revised • Reviewed mitigation strategies identified in the 2015 plan and made updates • Identified mitigation strategies that were completed • Identified mitigation strategies to be removed

Goals and Objectives

Requirement §201.6(c)(3)

Requirement §201.6(c)(3)(i)

It is important that State and local government, public-private partnerships, and the average citizen can see the results of these mitigation efforts, therefore, the goals and strategies need to be achievable. The mitigation goals and objectives form the basis for the development of specific mitigation actions. County and municipal officials should consider the listed goals before making community policies, public investment programs, economic development programs, or community development decisions for their communities. The goals of Newton County have changed slightly in the last five years (since 2015) due to specific threat events, such as Hurricane Irma in 2017 and the 2019-2020 COVID-19 Pandemic. Because of the recentness of the impacts of these hazards and the devastation that occurred, these types of events have taken a greater priority, particularly in the increased priority of mitigation strategies directly related to these events and the development of new mitigation strategies related to these hazards.

Each jurisdiction covered by the Newton County Hazard Mitigation plan update – Newton County and the Municipalities of Covington, Mansfield, Newborn, Oxford, and Porterdale – has limited ability to fully implement the mitigation actions described in this plan. These jurisdictions are severely hampered by their small population and tax base when attempting to raise enough revenue to pursue many of these actions. All jurisdictions lack the needed financial strength and staffing to implement all the actions described in this plan. Many of the actions will be pursued through grant programs and by partnering with public and private organizations who can supplement the needed resources to accomplish the goals outlined in this plan. For actions where grant funding or partnerships are not available, Newton County or municipality revenue streams may be supplemented through Special Purpose Local Option Sales Tax (SPLOST) funds, which are voted on by the electorate.

- GOAL 1 Maximize the use of all resources by promoting intergovernmental coordination and partnerships in the public and private sectors

- GOAL 2 Harden communities against the impacts of disasters through the development of new mitigation strategies and strict enforcement of current regulations that have proven effective

- GOAL 3 Reduce and, where possible, eliminate repetitive damage, loss of life and property from disasters

GOAL 4 Bring greater awareness throughout the community about potential hazards and the need for community preparedness

These objectives state a more specific outcome that Newton County strives to accomplish over the next five years. Action steps are the specific steps necessary to achieve these objectives. Objectives are not listed in order of importance.

- OBJECTIVE 1** Reduce damage to property and loss of life through the utilization of preventative activities
- OBJECTIVE 2** Minimize the damage to property and loss of life through property protection measures
- OBJECTIVE 3** Minimize the damage to property and loss of life through natural resource protection activities
- OBJECTIVE 4** Reduce damage to property and loss of life through the utilization of structural mitigation projects
- OBJECTIVE 5** Increase the ability of Newton County, its municipalities, and its citizens to respond to natural and manmade hazards through emergency service measures
- OBJECTIVE 6** Increase public education and awareness of natural hazards
- OBJECTIVE 7** Minimize the impacts on local citizens, industry, and infrastructure of a dam breach
- OBJECTIVE 8** Implement additional protective measures and capabilities in response to manmade incidents
- OBJECTIVE 9** Increase public awareness of local manmade hazards and proper response to those hazards

Identification and Analysis of Mitigation Techniques

Requirement §201.6(c)(3)(iv)

Requirement §201.6(c)(3)(iii)

In updating Newton County's mitigation strategy, a wide range of activities were considered to help achieve the mitigation goals and objectives. This includes the following activities as by the Emergency Management Accreditation Program (EMAP):

- 1) The use of applicable building construction standards;
- 2) Hazard avoidance through appropriate land-use practices;
- 3) Relocation, retrofitting, or removal of structures at risk;
- 4) Removal or elimination of the hazard;
- 5) Reduction or limitation of the amount or size of the hazard;
- 6) Segregation of the hazard from that which is to be protected;
- 7) Modification of the basic characteristics of the hazard;
- 8) Control of the rate of release of the hazard;
- 9) Provision of protective systems or equipment for both cyber and/or physical risks;
- 10) Establishment of hazard warning and communication procedures; and
- 11) Redundancy or duplication of essential personnel, critical systems, equipment, and information materials.

Part of the prioritization includes a general assessment according to the STAPLEE criteria, which stands for Social, Technical, Administrative, Political, Legal, Economic and Environmental. This process led to three designated priorities: High, Medium, and Low. Most items that require grant funding must undergo a full Benefit Cost Analysis to determine the action's actual cost effectiveness prior to funding. This process will be completed as part of the grant opportunity application process.

Strategy Priority	Priority Description	Strategies within this priority
LOW	Low priority strategies are those strategies that will have less direct impact on mitigating Newton County’s hazards, are in the early stages of strategy development, or score poorly on a preliminary cost-benefit analysis	2.j; 2.k; 3.b; 3.d; 5.b; 5.k; 5.o; 5.p; 5.u; 6.a; 6.c; 6.d; 7.c; 7.d; 9.a
MEDIUM	Medium priority strategies are those strategies that will have a direct impact on mitigation Newton County’s hazards, but will not have as large of an anticipated impact as High Priority strategies or may be focused on hazards that are not as potentially impactful or prevalent for Newton County. These strategies may be in the earlier stages of development or score mediocre on a preliminary cost-benefit analysis	1.c; 1.d; 1.e; 1.f; 2.b; 2.e; 2.f; 2.g; 2.i; 3.a; 3.c; 3.e; 4.f; 4.g; 4.j; 5.a; 5.d; 5.e; 5.f; 5.g; 5.h; 5.i; 5.j; 5.s; 5.t; 5.w; 5.x; 5.aa; 6.e; 6.f; 6.g; 6.h; 6.j; 7.a; 7.b; 8.a; 8.f; 8.h; 8.i
HIGH	High priority strategies are those strategies that would have a direct, large impact on mitigation Newton County’s hazards. These strategies are oftentimes well-established needs of Newton County and/or all municipalities and have score high on a preliminary cost-benefit analysis	1.a; 1.b; 2.a; 2.c; 2.d; 2.h; 2.l; 2.m; 4.a; 4.b; 4.c; 4.d; 4.e; 4.h; 4.i; 5.c; 5.l; 5.m; 5.n; 5.r; 5.v; 5.y; 5.z; 6.b; 6.i; 8.b; 8.c; 8.d; 8.e; 8.g; 9.b

The lead agency listed in the Mitigation Strategy charts will be responsible for the jurisdictional administration and implementation of the mitigation strategy prioritization. Prioritization was determined based on many factors. These include the likelihood of the event, the potential impact of the event, the current readiness posture of Newton County for the event, the all-hazard impact of the mitigation strategy, and a cost-benefit analysis for the mitigation action. For example, mitigation actions that address high-likelihood, high-impact events with a low cost would rate higher than low-likelihood, high-impact events with a high cost.

The following Mitigation Charts meet:

[Requirement §201.6\(c\)\(3\)\(ii\)](#)

[Requirement §201.6\(d\)\(3\)](#)

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/Status	Priority	Previous Strategy #
OBJECTIVE 1: Reduce damage to property and loss of life through the utilization of preventative activities																	
1.a	Maintain NFIP Compliance for Newton County and all jurisdictions	Newton County Board of Commissioners and municipal councils <i>Newton County and all municipalities</i>	X									Local budgets	Staff time	12 months	In place; Continue	High	1.a
1.b	Continue to enforce acceptable land uses through planning and regulation	Newton County and municipal planning/zoning <i>Newton County and all municipalities</i>	X		X	X	X		X	X		Local budgets	Staff time	12 months	In place; Continue	High	1.f (mod)
1.c	Take Community Rating System actions as part of NFIP	Newton County, Covington, and Mansfield Planning/Zoning <i>Newton County, Covington, and Mansfield</i>	X									Local budgets	Staff time	36 months	In place in Covington; Under review in Mansfield and Newton County	Medium	1.g (mod)

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
1.d	Offer financial incentive to retrofit manufactured homes with anchoring and support	Newton County and municipal planning and zoning <i>Newton County and all municipalities</i>	X		X	X	X					Local budgets	Staff time	48 months	Ordinance requiring anchoring in place	Medium	2.b
1.e	Use WUI database for planning and zoning decisions	Newton County and municipal planning and zoning <i>Newton County and all municipalities</i>							X			Local budgets	Staff time	12 months	Information gathering underway	Medium	5.a
1.f	Implement zoning requirements, building regulations, and increased educational awareness for WUI – particularly in industrial areas	Newton County Planning and Zoning <i>Newton County and all municipalities</i>							X			Local budgets	Staff time	24 months	Delayed	Medium	5.c
OBJECTIVE 2: Minimize the damage to property and loss of life through property protection measures																	
2.a	Add safe rooms to structures (daycares, schools, hospitals, nursing homes, assisted living facilities, or other vulnerable facilities) housing vulnerable populations	Newton County EMA and facility operators <i>Newton County and all municipalities</i>			X	X	X					Public and private grants and/or local budgets	\$75,000 each	60 months	Some locations in planning stages	High	2.a

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
2.b	Add a tornado shelter at Porterdale City Hall	Newton County EMA and Porterdale City Council <i>City of Porterdale</i>			X	X	X					Public and private grants and/or local budgets	\$75,000	36 months	None – other projects took priority	Medium	2.d
2.c	Add a generator to the Public Works building and Newton County Administration Building	Newton County EMA <i>Newton County and all municipalities</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$200,000	48 months	NEW	High	NEW
2.d	Purchase and install a generator at the water treatment facility	Newton County Water <i>Newton County and all municipalities</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$100,000	30 months	NEW	High	NEW
2.e	Install generator at Porterdale city Hall	Newton County EMA <i>City of Porterdale</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$35,000	30 months	Generator installed at police department	Medium	7.e (mod)
2.f	Install generators at the Health Lodge and Love Dining Hall at Bert Adams Scout Camp	Boy Scouts of America <i>Newton County</i>		X	X	X	X			X		Public and private grants and/or private budgets	\$100,000	48 months	NEW	Medium	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/Status	Priority	Previous Strategy #
2.g	Add generators at 2194 Emory Street and 2116 Stallings Drive	Covington City Council <i>City of Covington</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$50,000	36 months	NEW	Medium	NEW
2.h	Install generator and transfer switch at Mansfield wastewater treatment facility	Mansfield City Council <i>City of Mansfield</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$75,000	36 months	NEW	High	NEW
2.i	Install generator and transfer switch at Mansfield City Hall	Mansfield City Council <i>City of Mansfield</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$35,000	48 months	NEW	Medium	NEW
2.j	Add generators to all critical facilities at Bert Adams Scout Camp	Boy Scouts of America <i>Newton County</i>		X	X	X	X			X		Public and private grants and/or private budgets	\$100,000	60 months	NEW	Low	NEW
2.k	Add a generator to the Newton County DFCS location	Newton County EMA and DFCS <i>Newton County and all municipalities</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$35,000	60 months	NEW	Low	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
2.1	Add generator to Newton County Health Department and mental health department	Newton County EMA <i>Newton County and all municipalities</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$50,000	30 months	NEW	High	NEW
2.m	Install generators at all Newton County critical facilities	Newton County EMA and critical facility operators <i>Newton County and all municipalities</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$6 million	60 months	NEW	High	NEW
OBJECTIVE 3: Minimize the damage to property and loss of life through natural resource protection activities																	
3.a	Develop tree and debris management plans	Newton County EMA <i>Newton County and all municipalities</i>		X	X	X	X		X	X		Public and private grants and/or local budgets	\$10,000	42 months	NEW	Medium	NEW
3.b	Collect data on elevation of stormwater structures and model stormwater	Newton County Stormwater <i>Newton County and all municipalities</i>	X		X		X					Public and private grants and/or local budgets	\$50,000	48 months	Delayed due to budgetary constraints	Low	1.d
3.c	Conduct a tree inventory study along roadways to plan potential impacts	Georgia Forestry <i>Newton County and all municipalities</i>		X	X	X	X			X		Local budgets	Staff time	36 months	Completed in City of Mansfield	Medium	2.c

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
3.d	Remove/Clean up trees as determined in 3.c study	Georgia Forestry <i>Newton County and all municipalities</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$150,000	60 months	NEW	Low	NEW
3.e	Implement controlled burns and mandatory brush control measures	Newton County and municipal Fire <i>Newton County and all municipalities</i>							X			Public and private grants and/or local and private budgets	Staff time	60 months	In place; Performed at Shoals, FFA camp, BSA camp, and City of Mansfield	Medium	5.b
OBJECTIVE 4: Reduce damage to property and loss of life through the utilization of structural mitigation projects																	
4.a	Increase culvert sizes, add storm drains where appropriate, construct detention ponds, and other stormwater measures within Newton County and municipalities	Newton County and municipal Public Works Departments <i>Newton County and all municipalities</i>	X		X		X					Public or private grants and/or local budgets	\$5 million	60 months	Complete at Jeff Cook, Sauls Road, Coral Road, Dobs Rd, Pitts Chapel Rd	High	1.b
4.b	Alleviate flooding issues at Railroad Avenue and County Road 213 East	Newton County Transportation <i>Newton County</i>	X		X		X					Public and private grants and/or local budgets	\$250,000	60 months	NEW	High	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
		Jurisdiction															
4.c	Hire professional planning and design service to eliminate flooding issues within the City of Covington	City of Covington Public Works City of Covington	X		X		X					Public and private grants and/or local budgets	\$50,000	60 months	Projects have been worked on for Pace Street and Emory Street	High	1.c
4.d	Alleviate flooding issues at Pace Street and Usher Street	Covington Public Works City of Covington	X		X		X					Public and private grants and/or local budgets	\$250,000	60 months	NEW	High	NEW
4.e	Extend current water mains and add hydrants to help lower ISO ratings	Newton County Water Newton County and all municipalities						X	X			Public and private grants and/or local budgets	\$2 million	60 months	NEW	High	NEW
4.f	Equip Covington Women’s Club building to be an alternate EOC/Incident Command location	Newton County EMA Newton County and all municipalities	X	X	X	X	X	X	X	X	X	Public and private grants and/or local and private budgets	\$150,000	48 months	NEW	Medium	NEW
4.g	Add safe rooms at the Bert Adams BSA Camp	BSA and Newton County EMA Newton County			X	X	X					Public and private grants and/or local and private budgets	\$300,000	48 months	NEW	Medium	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/Status	Priority	Previous Strategy #
4.h	Build a tornado shelter in the City of Newborn	City of Newborn Council and Newton County EMA <i>Newton County and City of Newborn</i>			X	X	X					Public and private grants and/or local and private budgets	\$200,000	48 months	NEW	High	NEW
4.i	Build a tornado shelter in the City of Mansfield	City of Mansfield Council and Newton County EMA <i>Newton County and City of Mansfield</i>			X	X	X					Public and private grants and/or local and private budgets	\$200,000	48 months	NEW	High	NEW
4.j	Design and construct a Regional Stormwater Management Facility in the City of Covington	Covington Public Works <i>Newton County and all municipalities</i>	X		X		X					Public and private grants and/or local budgets	\$5 million	60 months	None; due to budgetary constraints	Medium	7.a
OBJECTIVE 5: Increase the ability of Upson County, its municipalities, and its citizens to respond to natural and manmade hazards through emergency service measures																	
5.a	Reconnect HAM radio operators to assist Newton County EMA during emergencies	Newton County EMA and ARES <i>Newton County and all municipalities</i>	X	X	X	X	X	X	X	X	X	Local budgets	Staff time	12 months	NEW	Medium	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>											Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
			Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps							
5.b	Host regular drills and exercises with local HAM Radio operators	Newton County EMA <i>Newton County and all municipalities</i>	X	X	X	X	X	X	X	X	X	X	Local budgets	Staff time	24 months	NEW	Low	NEW
5.c	Collect data and create a detailed map of all City of Covington stormwater structures	Covington Public Works <i>City of Covington</i>	X		X		X					Local budgets	Staff time	48 months	Updates in progress	High	1.e	
5.d	Build a fire station near Stanton Springs facilities	Newton County Fire <i>Newton County and all municipalities</i>										Public and private grants and/or local budgets	\$250,000	48 months	NEW	Medium	NEW	
5.e	Relocate Station #15	Newton County Fire <i>Newton County and all municipalities</i>										Public and private grants and/or local budgets	\$250,000	48 months	NEW	Medium	NEW	
5.f	Replace and/or repair the current 23 outdoor warning sirens	Newton County EMA <i>Newton County and all municipalities</i>				X						Public and private grants and/or local budgets	\$600,000	60 months	NEW	Medium	NEW	

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
5.g	Provide NOAA Weather radios to vulnerable populations and local industrial partners	Newton County EMA <i>Newton County and all municipalities</i>	X	X	X	X	X				X	Public and private grants and/or local budgets	\$10,000	36 months	Ongoing; In place	Medium	3.a
5.h	Determine placement and install an outdoor emergency notification alarm/siren system for Newton County and its municipalities	Newton County EMA <i>Newton County and all municipalities</i>				X						Public and private grants and/or local budgets	\$200,000	60 months	Ongoing; In Place	Medium	3.b
5.i	Add a siren at High Point Baptist Church	Newton County EMA <i>Newton County and all municipalities</i>				X						Public and private grants and/or local budgets	\$25,000	24 months	NEW	Medium	NEW
5.j	Purchase scraping and salt/sand spreading equipment for Countywide road operations	Newton County Transportation and municipal Public Works departments <i>Newton County and all municipalities</i>		X							X	Public and private grants and/or local budgets	\$50,000	36 months	City of Covington has purchased	Medium	6.a
5.k	Purchase a minimum of two water buffalos for potable water	Newton County EMA <i>Newton County and all municipalities</i>						X			X	Public and private grants and/or local budgets	\$45,000	48 months	Previous purchased delayed; can be provided by GA National Guard	Low	6.b

Newton County Hazard Mitigation Plan Update 2020

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
5.l	Maintain web-based Emergency Management software and improve training	Newton County EMA <i>Newton County and all municipalities</i>	X	X	X	X	X	X	X	X	X	Local and state budgets	Staff time	12 months	In place from GEMA; training needed	High	6.c
5.m	Host ICS 300 and 400 classes	Newton County EMA <i>Newton County and all municipalities</i>	X	X	X	X	X	X	X	X	X	Local and State budgets	Staff time	18 months	NEW	High	NEW
5.n	Maintain full NIMS Compliance	Newton County EMA <i>Newton County and all municipalities</i>	X	X	X	X	X	X	X	X	X	Local budgets	Staff time	12 months	In Place; continue	High	6.d
5.o	Purchase mobile electronica information signage for county	Newton County EMA and Transportation <i>Newton County and all municipalities</i>	X	X	X	X	X		X	X		Public and private grants and/or local budgets	\$60,000	24 months	MOU in place for GDOT signage	Low	6.e
5.p	Purchase mobile electronica information signage for municipalities	Newton County EMA and municipal public works departments <i>Newton County and all municipalities</i>	X	X	X	X	X		X	X		Public and private grants and/or local budgets	\$200,000	48 months	NEW	Low	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
5.r	Revise annually the study to determine the best locations for fixed and portable generators	Newton County EMA <i>Newton County and all municipalities</i>		X	X	X	X					Local budgets	Staff time	12 months	Study completed; revised to be annual project	High	7.b (mod)
5.s	Purchase a portable boost pump station	Newton County Water <i>Newton County and all municipalities</i>	X		X		X					Public and private grants and/or local budgets	\$20,000	24 months	Under research	Medium	7.c
5.t	Develop a survey procedure and guidance document to inventory structural and non-structural hazards in and around school buildings	Municipal planning departments and Newton County schools <i>Newton County and all municipalities</i>	X		X	X	X					Local budgets	Staff time	12 months	Delayed due to COVID	Medium	8.a
5.u	Hire qualified seismic consultants to estimate potential loss of life and injuries, types of potential damage, and existing vulnerabilities	Newton County EMA and local planning departments <i>Newton County and all municipalities</i>										Local budgets	\$10,000	24 months	Delayed; other projects taking priority	Low	8.b

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/Status	Priority	Previous Strategy #
5.v	Host a tabletop exercise with Newton County and municipal departments taking an all-hazards approach	Newton County EMA <i>Newton County and all municipalities</i>	X	X	X	X	X	X	X	X	X	Local budgets	Staff time	18 months	NEW	High	NEW
5.w	Host sheltering exercises with local administrators, DFCS, EMA, and Red Cross	Newton County EMA <i>Newton County and all municipalities</i>	X			X	X					Local budgets	Staff time	18 months	NEW	Medium	NEW
5.x	Add outdoor warning sirens to Bert Adams Scout Camp	BSA and Newton County EMA <i>Newton County and all municipalities</i>				X						Public and private grants and/or local and private budgets	\$30,000	24 months	NEW	Medium	NEW
5.y	Pursue cloud-based solutions for IT backup needs	Newton County IT <i>Newton County and all municipalities</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$50,000	30 months	NEW	High	NEW
5.z	Purchase portable generators on trailers to move around and meet power backup needs as they arise	Newton County EMA <i>Newton County and all municipalities</i>		X	X	X	X			X		Public and private grants and/or local budgets	\$25,000	24 months	NEW	High	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
5.aa	Establish contracts with local vendors for emergency lighting and generators for critical facilities	Newton County EMA and critical facility operators <i>Newton County and all municipalities</i>		X	X	X	X			X		Local and private budgets	\$50,000	24 months	NEW	Medium	NEW
OBJECTIVE 6: Increase public education and awareness of natural hazards																	
6.a	Include weather storm preparedness in the school curriculum at all grade levels	Newton County Schools <i>Newton County and all municipalities</i>	X	X	X	X	X	X			X	Local budgets	Staff time	18 months	NEW	Low	NEW
6.b	Put Code Red information on tax and utility bills	Covington City Council <i>City of Covington</i>			X	X	X					Local budgets	Staff time	12 months	NEW	High	NEW
6.c	Educate the citizens on illegal dumping and how it can become a projectile in high wind events	Newton County Solid Waste Management <i>Newton County and all municipalities</i>			X	X	X					Public and private grants and/or local budgets	\$10,000	30 months	NEW	Low	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
6.d	Create flier for church bulletins and other community organizations and school children about Code Red and how to sign up	Newton County EMA <i>Newton County and all municipalities</i>			X	X	X					Local budgets	Staff time	36 months	NEW	Low	NEW
6.e	Advertise Code Red in newspaper, on social media, and on county and all municipal websites	Newton County EMA <i>Newton County and all municipalities</i>			X	X	X					Local budgets	Staff time	12 months	NEW	Medium	NEW
6.f	Attend local community group meetings and target elderly organizations to educate the community about Code Red	Newton County EMA <i>Newton County and all municipalities</i>			X	X	X					Local budgets	Staff time	18 months	NEW	Medium	NEW
6.g	Place Code Red information on Mansfield tax bills and utility bills	Mansfield City Council <i>City of Mansfield</i>			X	X	X					Local budgets	Staff time	12 months	NEW	Medium	NEW
6.h	Increase the number of Firewise communities in Newton County by 10 in the next 5 years	Newton County EMA, GFC, and Fire departments <i>Newton County and all municipalities</i>							X			Local and private budgets	Staff time	60 months	NEW	Medium	NEW

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization <i>Jurisdiction</i>	Flood	Winter Weather	Thunderstorm	Tornado	Tropical Cyclone	Drought	Wildfire	Earthquake	Extreme Temps	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
6.i	Educate elementary school students on fire and wildfire safety	GFC, Newton County EMA, and fire departments <i>Newton County and all municipalities</i>							X			Local budgets	Staff time	12 months	NEW	High	NEW
6.j	Implement Firewise public awareness campaign and educate community on Firewise program through social and print media	GFC and Newton and municipal fire departments <i>Newton County and all municipalities</i>							X			Local budgets	\$5,000	24 months	NEW	Medium	NEW

Newton County Hazard Mitigation Plan Update **2020**

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization	Dam Failure	Hazardous Materials	Terrorism	Transportation	Infrastructure Failure	Emer. Disease	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
OBJECTIVE 7: Minimize the impacts on local citizens, industry, and infrastructure of a dam breach														
7.a	Perform a dam breach analysis for Lakewood Estates Dam	Georgia Safe Dams <i>Newton County</i>	X						Local and state budgets	\$10,000	24 months	Delayed; all other complete	Medium	9.a
7.b	Implement a comprehensive inspection, maintenance, and enforcement program for dams	County and municipal planning departments <i>Newton County and all municipalities</i>	X						Local and state budgets	\$15,000	24 months	Partially complete	Medium	9.b
7.c	Install monitoring cameras at all Category I dams	County and municipal planning departments <i>Newton County and all municipalities</i>	X						Public and private grants and/or local budgets	\$7,500	60 months	None; other projects taking priority	Low	9.c
7.d	Implement initial dam planning and design program, dam breach planning, and restrict development in a dam's hydraulic shadow	Newton County and municipal public work and planning departments <i>Newton County and all municipalities</i>	X						Local budgets	Staff time	36 months	None; other projects taking priority	Low	9.d

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization	Dam Failure	Hazardous Materials	Terrorism	Transportation	Infrastructure Failure	Emer. Disease	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
OBJECTIVE 8: Implement additional protective measures and capabilities in response to manmade incidents														
8.a	Install surveillance cameras at known illegal dumping sites	Newton County Solid Waste Management <i>Newton County and all municipalities</i>		X				X	Local budgets	\$5,000	30 months	NEW	Medium	NEW
8.b	Host confined space, diver, swift water rescue, and HazMat training for all public safety or LEPC members	Newton County EMA and fire departments <i>Newton County and all municipalities</i>		X	X	X	X	X	Local and state budgets	Staff time	30 months	NEW	High	NEW
8.c	Host active shooter and hazmat training in the City of Covington	Newton County EMA, Covington PD, and Covington Fire <i>Newton County and all municipalities</i>		X	X				Local and state budgets	Staff time	12 months	NEW	High	NEW
8.d	Acquire additional HazMat response equipment, including a HazMat truck	Newton County Fire <i>Newton County and all municipalities</i>		X	X	X	X	X	Public and private grants and/or local budgets	\$250,000	60 months	Some additional equipment purchased	High	10.a (mod)

Newton County Hazard Mitigation Plan Update **2020**

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization	Dam Failure	Hazardous Materials	Terrorism	Transportation	Infrastructure Failure	Emer. Disease	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
8.e	Purchase 4-gas monitors	Newton County and Covington Fire		X	X	X	X		Public and private grants and/or local budgets	\$20,000	24 months	NEW	High	NEW
8.f	Continue to implement a sewer easement clearing and drainage maintenance program	Newton County and municipal planning departments <i>Newton County and all municipalities</i>		X	X		X		Local budgets	Staff time	36 months	In place in Covington and Mansfield	Medium	10.b
8.g	Create an incident action plan for Beaver Manufacturing for fire and chemical spills	Newton County Fire and Beaver <i>Newton County and Mansfield</i>		X	X				Local budgets	Staff time	12 months	NEW	High	NEW
8.h	Add backup generator power to the Newton County data center and Administration Building	Newton County Information Services <i>Newton County and all municipalities</i>			X		X		Public and private grants and/or local budgets	\$75,000	48 months	NEW	Medium	NEW

Newton County Hazard Mitigation Plan Update **2020**

Strategy #	Mitigation Action	Lead and Supporting Agency, Department, Organization	Dam Failure	Hazardous Materials	Terrorism	Transportation	Infrastructure Failure	Emer. Disease	Funding Source	Estimated Cost	Completion Timeframe	Progress/ Status	Priority	Previous Strategy #
8.i	Pursue funds for cloud data backup for all Newton County data	Newton County Information Services <i>Newton County</i>			X		X		Public and private grants and/or local budgets	TBD	48 months	NEW	Medium	NEW
OBJECTIVE 9: Increase public awareness of local manmade hazards and proper response to those hazards														
9.a	Implement an illegal dumping public education campaign	Newton County Solid Waste Management <i>Newton County and all municipalities</i>		X				X	Local budgets	\$5,000	18 months	NEW	Low	NEW
9.b	Maintain an active LEPC program	Newton County EMA <i>Newton County and all municipalities</i>		X	X	X	X		Local budgets	\$5,000	12 months	Newton and Walton County LEPCs combined to form a joint program – this process has been hindered by COVID	High	11.a

Completed Mitigation Strategies

Previous Strategy #	Strategy Description	Status
1.h	Construct a wetland area near Highway 278	COMPLETE; Elm Street and Pace Street
1.i	Conduct study for the Yellow River bridge and determine whether the bridge can be repaired or if it needs to be replaced	COMPLETE; repaired in 2016
1.j	Implement action determined by the study outlined in mitigation strategy 1.i	COMPLETE
3.c	Purchase or develop a “Reverse 911” type ENS	COMPLETE; code Red implemented in 2018
7.d	Purchase and install a communications tower at the “city barn” location in Porterdale	COMPLETE

CHAPTER FIVE
-
MAINTENANCE AND
IMPLEMENTATION

Summary of Updates for Chapter Five

The following table provides a description of each section of this chapter, and a summary of the changes that have been made to the Newton County Hazard Mitigation Plan 2015.

Chapter 5 Section	Updates
Maintenance	<ul style="list-style-type: none"> • Separated from Plan Update • Content Revised
Plan Distribution	<ul style="list-style-type: none"> • Content Revised
Implementation	<ul style="list-style-type: none"> • Content Revised
Evaluation	<ul style="list-style-type: none"> • Content Revised
Peer Review	<ul style="list-style-type: none"> • Content Revised
Plan Update	<ul style="list-style-type: none"> • Content Revised
Conclusion	<ul style="list-style-type: none"> • Content Revised

Maintenance

Requirement §201.6(c)(4)(iii)

To adhere to best practices, state and federal guidelines, and lessons learned, the Newton County Hazard Mitigation Plan Update Committee has developed a method to ensure the regular review and update of the Plan occurs. Plan maintenance protocols identified during the 2015 Newton County Hazard Mitigation Plan was followed, to the best abilities of Newton County. This most importantly included an increased attempt for public participation and inclusion in the planning process. The Newton County Hazard Mitigation Plan Update Committee will reconvene annually in February to monitor and evaluate the progress of the mitigation strategies in the Plan. Newton County's Emergency Management Director, Jody Nolan, will be responsible for implementing this meeting. The Committee will discuss the following questions annually:

- Do the goals address current and expected hazards and conditions?
- Are the goals and objectives still relevant to the County?
- Has the nature or magnitude of risks changed?
- Does the risk assessment portion of the Plan need to be updated or modified?
- Are the goals and objectives meeting changes in state and federal policy?
- Are the current resources appropriate for implementing the Plan?
- Are there local implementation problems, such as technical, political, legal, or coordination issues with other agencies?
- Did the jurisdictions, agencies, and other partners participate in the plan implementation process as proposed?

The responsible parties for various mitigation strategies will provide a report during this annual meeting regarding the following:

- How well did the implementation processes work?
- Were any difficulties encountered during implementation?
- How successful was the coordination of efforts?
- Are there any suggestions for revision of any strategies?

Newton County's Emergency Management Director will send the minutes from this annual meeting to Newton County Board of Commissioners and the municipalities of Covington, Mansfield, Newborn, Oxford, and Porterdale for review.

If there are any updates or modifications to the Newton County Hazard Mitigation Plan, the Emergency Management Director will forward the changes to the Georgia Emergency Management Agency's Hazard Mitigation Officer. All annual reviews of the Newton County Hazard Mitigation Plan will be open to the public. These meetings will be advertised both in the local newspapers, but also on signage in the publicly used facility hosting the meeting.

Plan Distribution

This Plan will be distributed, but not limited, to the following departments and organizations within Newton County:

- Newton County Board of Commissioners
- Newton County Fire Department
- Newton County Emergency Management Agency
- Newton County Sheriff's Office
- Newton County Transportation
- Newton County Development Services
- Newton County Board of Education
- City of Covington
- City of Mansfield
- City of Newborn
- City of Oxford
- City of Porterdale

A printed copy of the approved Plan will be available for viewing at the Newton County Commissioner's Office located at 1124 Clark Street in Covington, GA 30014. A printed copy of the approved Plan will also be available for viewing at the Newton County Public Library located at 7116 Floyd Street NE in Covington. The existence and location of these copies will be publicized in the County's local newspaper, The Covington News.

All comments, questions, concerns, and opinions about the Plan will be directed to Director Jody Nolan of the Newton County Emergency Management Agency for follow-up.

Implementation

Requirement §201.6(c)(4)(ii)

Each jurisdiction participating in the Newton County Hazard Mitigation Plan is responsible for implementing specific mitigation actions as prescribed in this plan. In the Mitigation Strategies section, every proposed strategy is assigned to a specific local department or agency to assign responsibility and accountability and increase the likelihood of subsequent implementation.

In addition to the designation of a local lead department or agency, some strategies have secondary or assisting department or agencies listed as well. This allows for a sharing of responsibility and coordination of effort for some of the identified strategies that cross lines of departmental responsibility. The completion date has been assigned to assess whether identified mitigation strategies are being implemented in a timely fashion.

Newton County and all municipalities will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified and targeted for the proposed actions listed in the mitigation strategies. It will be the responsibility of each participating jurisdiction to determine additional implementation procedures beyond those listed within the Newton County Hazard Mitigation Plan.

This plan, as a joint effort between Newton County and the Municipalities of Covington, Mansfield, Newborn, Oxford, and Porterdale will serve as a comprehensive mitigation plan. The mitigation strategies, hazard identification, and other information identified in this plan will be integrated into all comprehensive Newton County plans, as well as all municipality plans in the future. Incorporation of these strategies will occur, as necessary, throughout this planning cycle covered by this Hazard Mitigation Plan Update. Aspects of this plan will be integrated into the Newton County Comprehensive Plan during the next planning cycle.

Identified hazards and mitigation strategies of the 2015 Newton County Hazard Mitigation plan were integrated into the Local Emergency Operations Plan, multiple County and City SOPs and SOGs, and future planning and zoning plans. Newton County will integrate mitigation strategies identified in this plan into the Newton County Comprehensive Plan, Community Wildfire Protection Plan, Continuity of Operations Plan, and other future plans. Strategies identified in the previous plan were applied to grant applications, building and zoning requirements, and development planning considerations for Newton County and all municipalities. Many of these strategies will be applied using previously identified

policies and ordinances, including the NFIP compliance ordinances and water-use ordinances, which have now been applied countywide. All jurisdictions have the authority to adopt locally binding ordinances and policies to enhance the mitigation strategies in their jurisdiction.

The Legal and Regulatory Capability survey documents authorities available to the jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that support local hazard mitigation planning efforts. The identified planning and land management tools are typically used by states and local jurisdictions to implement hazard mitigation activities.

Regulatory Tools/Plans	Regulatory Type: Ordinance, Resolution, Codes, Plans, Etc.	Local Authority	State Prohibited	Higher Authority
Building Codes	County/Municipal Code	Yes	No	No
Capital Improvements Plan		Yes	No	No
Comprehensive Plan	Newton County Comprehensive Plan	Yes	No	No
Economic Development Plan	Newton County Comprehensive Plan	Yes	No	Yes
Emergency Management Accreditation Program		No	No	Yes
Emergency Response Plan	Newton County Local Emergency Operations Plan (LEOP)	Yes	No	Yes
Flood Management Plan		Yes	No	No
Historic Preservation		Yes	No	No
National Flood Insurance Program Participation	County and Municipal ordinances and resolutions	Yes	No	Yes
Continuity of Government/		No	No	No

Operations Plan				
Post-Disaster Ordinance	County Ordinance	Yes	No	No
Zoning Ordinances	County and Municipal Codes	Yes	No	No

Opportunities to integrate the requirements of this Plan into the above documents and other local planning mechanisms shall continue to be identified. Hazard mitigation projects will be integrated into future Comprehensive Planning documents, the next update of the Community Wildfire Protection Plan, historic preservation documents, and future zoning ordinances. Although it is recognized that there are many possible benefits to integrating components of this Plan into other local planning mechanisms, the development and maintenance of this stand-alone Hazard Mitigation Plan is deemed by the Newton County Hazard Mitigation Planning Committee to be the most effective and appropriate method to implement local hazard mitigation actions at this time.

Evaluation

Requirement §201.6(c)(4)(i)

Periodic revisions and updates of the Newton County Hazard Mitigation Plan may be required to ensure that the goals of this plan are kept current with federal, state, and local regulations. These revisions should also consider any potential changes in the hazard vulnerability and mitigation priorities of Newton County.

The Newton County Hazard Mitigation Plan Update Committee will meet annually to review the Newton County Hazard Mitigation Plan. During this annual review, mitigation strategies will be reviewed to evaluate the progress that has occurred for each identified mitigation strategy. The Newton County Hazard Mitigation Plan Update Committee will also meet following any disaster event to review the identified mitigation strategies for that hazard and determine if timelines should be adjusted or additional mitigation strategies should be identified and added to the plan. These steps will ensure that the Newton County Hazard Mitigation Plan is continuously updated to allow for changes in hazard vulnerabilities and identified mitigation strategies.

The Newton County Hazard Mitigation Plan Update Committee will complete all evaluations of the Newton County Hazard Mitigation Plan.

Peer Review

State Requirement Element F1

To maintain standards of quality, improve performance, and provide credibility to the Newton County Hazard Mitigation Plan Update, representatives of local emergency management agencies bordering Newton County conducted a peer review of the Plan. The peer review of this Plan constitutes a form of self-regulation, accountability, and new insights offered by qualified professionals in neighboring communities, which face many of the same natural and man-made hazards.

Newton County Hazard Mitigation Plan Update was peer reviewed by:

Betty Jump	Date
Director	
Jasper County Emergency Management Agency	

Carl Morrow	Date
Director	
Walton County Emergency Management Agency	

Glen Goens	Date
Director	
Butts County Emergency Management Agency	

Gwen Ruark	Date
Director	
Morgan County Emergency Management Agency	

Plan Update

Requirement §201.6(c)(4)(i)

The Federal Disaster Mitigation Act of 2000 requires that the Hazard Mitigation Plan be updated at least once every five years. The Newton County Emergency Management Agency is the department responsible with ensuring this requirement is met. The Newton County Hazard Mitigation Plan Update Committee will be involved in this future process and will aid the Newton County Emergency Management Agency in ensuring that all jurisdictions provide input into the planning process. The public will be invited to participate in the planning process through public hearings to be held whenever major updates to this plan are needed and during annual review meetings. This plan will expire in the fourth quarter of 2025; therefore, the approval and adoption of the next plan update must be completed before that time.

In the second quarter of 2024, Newton County plans to begin the Hazard Mitigation Plan Update process for the fourth time. This planning process will include bi-monthly meetings to accomplish the identified goals of the Newton County Hazard Mitigation Plan Update. This process will be headed up by the Newton County Emergency Management Agency. The Newton County Hazard Mitigation Planning Committee will follow a similar process as was undertaken during this planning cycle to complete all FEMA and GEMA requirements for the Hazard Mitigation Plan Update. This process will be completed by the third quarter of 2025 to meet all identified planning deadlines.

Conclusion

As a result of the hazard mitigation planning process, Newton County, and all municipalities therein, as well as additional participating organizations have obtained a great deal of information and knowledge regarding Newton County's disaster history, natural and technological hazards, vulnerabilities, and potential strategies to lessen the impacts of the identified hazards.

One consistent theme identified by the Newton County Hazard Mitigation Planning Committee was the inability to consistently identify geographic locations that were more vulnerable to most hazards due to the widespread potential effects and random impact areas each hazard could have. This was exceedingly true for most natural hazards. Recognizing this challenge, the Newton County Hazard Mitigation Plan Update Committee determined it was best to identify many mitigation goals, objectives, and strategies that were both general and specific in nature. These strategies allow the Newton County Hazard Mitigation Plan Update Committee to adopt strategies that will have the greatest positive effect on the greatest amount of the population.

Appendix A – Newton County Dams Information

Category I Dams

Name	Latitude	Longitude	Height (feet)	Storage (acres)
Cornish Creek Reservoir Dam	33.650000	-83.801944	46.50	18400.00
Covington Las Holding Dam	33.555000	-83.855278	70.00	329.00
Melody Lake Dam	33.590278	-83.772778	30.00	506.00
Stone Lea Lake Dam	33.677570	-83.864520	31.00	530.00

Category II Dams

Name	Latitude	Longitude	Height (feet)	Storage (acres)
Arrow Hatchee Farms Lake Dam	33.647778	-83.781111	26.00	1132.00
Barrs Lake Dam	33.564444	-83.790278	27.00	471.00
Bert Adams Scout Reservation Dam	33.463333	-83.873333	48.00	1812.00
Capes Sausage Company Lake Dam	33.545278	-83.983889	15.00	87.00
Cat Fish Pond Dam	33.634167	-83.822222	31.00	28.00
City Waste Holding Pond Dam	33.551944	-83.868889	40.00	300.00
Club House Lake Dam	33.646944	-83.816944	33.00	78.00
Covington City Lake Dam	33.630000	-83.853333	32.00	745.00
Glawson Lake Dam	33.637500	-83.764167	25.00	475.00
Green Valley Lake Dam	33.586667	-83.758333	13.00	111.00
Greer Lake Dam	33.606944	-83.770000	33.00	312.00
Gross Lake Dam	33.605556	-83.961111	32.00	306.00
Jane Alexander	33.597222	-83.814722	19.00	177.00
Lazy Acres Pond Dam	33.531389	-83.720000	27.00	871.00
Little Springs Farm #6 Lake Dam	33.490333	-83.873056	26.00	38.00
Little Springs Farm Lake Dam #3	33.489139	-83.871667	43.00	135.00
Little Springs Farm Lake Dam #4	33.496722	-83.878306	49.00	741.00
Little Springs Farm Lake Dam No. 2	33.492222	-83.872194	42.00	600.00
Manning Lake Dam No. 1	33.520278	-84.010556	31.00	112.00
Maynard Lake Dam	33.461667	-83.928333	25.00	86.00
Mote Pond Dam	33.545000	-83.733889	28.00	157.00
North Lake Dam	33.680000	-83.683889	27.00	162.00
Paradise Lake Dam	33.555556	-83.964722	28.00	180.00
Penland Lake Dam	33.618056	-83.743056	28.00	110.00
Rolling Acres Lake Dam	33.547222	-83.749167	21.00	257.00
Silver Lake Dam	33.503333	-83.758333	28.00	512.00
Skyline Subdivision Lake Dam	33.566667	-83.759722	27.00	439.00

Smith Lake Dam	33.516111	-83.756944	32.00	84.00
Spears Lake Dam	33.481944	-83.735833	25.00	215.00
Stokes Lake Dam	33.534167	-83.707222	16.00	100.00
Treadwell Lake Dam	33.465833	-83.926389	26.00	94.00
Turners Lake Dam	33.600000	-83.883333	26.00	284.00
Twin Hills Lake	33.656389	-83.806389	26.00	155.00
Wallace and Greer Lake Dam	33.641667	-83.808333	24.00	167.00
Welch Lake Dam	33.561111	-83.681944	24.00	110.00
Yellow River Farm Pond Dam	33.440833	-83.883333	26.00	76.00

Appendix B – Hazard Mitigation Planning Committee Sign-In Sheets

Newton County Hazard Mitigation Plan Update
Kick-off Committee Meeting

Sign-In Sheet

(45)

Thursday, January 30, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
Rev. Audrey McLean (RAM)		amc14100@ncdot.org	Newton County (SWA)
Michael Saff		M.Saff@dcf.state.ga.us	Ga. Forestry
Jeremy Whigham BSA Ranger		jeremy.whigham@xouting.org	Boy Scouts
Jessica Kirkham BSA Director		jess.kirkham@scoutsga.org	BSA
Don Strengh		Donald.Strengh@ncdot.org	GEAT
Beryl Budd		b.budd@dcf.state.ga.us	Ga. Forestry Comm.
Matt Taylor		mtaylor@co.newton.ga.us	Recreation
Jeanne Hyde		jhyde@mansfieldga.gov	City of Mansfield
Sonn Napoli		---	city of mansfield
Soby Reid		jreid@oxfordga.gov	City of Oxford
James Brown		Jbrown@co.newton.ga.us	NCWE

Newton County Hazard Mitigation Plan Update
Kick-off Committee Meeting

Sign-In Sheet

Thursday, January 30, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
Janil Adair EHS Manager		janl.adair@michelin.com	Michelin Tread Tech
Jim Tudor		Jim.Tudor@retacross.com	Red Cross
Pamela Maxwell		pmx@ncc.com	HR / Risk Management
Tim Smith		TS.Smith@cityofcovington.org	Public Works
Brittany White Finsterlin		bwhite@co.newton.ga.us	NCBOC
Bryan Fabrizio		Bfabrizio@co.newton.ga.us	NSBA PIO
Wendell Wauhoff		Wendell.Wauhoff@covingtonplcc.com	CPD
Keyra Frey		keyra.frey@newton.k12.ga.us	NC BOE
Laurie Riley KTB		Riley@co.newton.ga.us	Keep Newton Beautiful
James Cox		jc Cox@cityofcovington.org	Covington Fire
Donnie Tudor		dtudor@cityofcovington.org	Covington Fire

Newton County Hazard Mitigation Plan Update
 Kick-off Committee Meeting

Sign-In Sheet

Thursday, January 30, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
Wendy Flarock / Admin. Serv.	<i>[Signature]</i>	wendy.flarock@newtonga.com	Newton Co. EMA
Buster Palmer / Fleet Maintenance	<i>[Signature]</i>	bpalmer@co.newton.ga.us	Newton Co. BOC
Randy Peters / Senior Crew Leader	<i>[Signature]</i>	RandyPeters@co.newton.ga.us	Newton Co. BOC
Carl Morrow / Director	<i>[Signature]</i>	Carl.Morrow@co.walton.ga.us	Walton County
Robbie Groves / Comp. Sp.	<i>[Signature]</i>	rgroves@socialcirclega.com	City of Social Circle
Scottie Cray / City of Oxford	<i>[Signature]</i>	scottie.cray@icloud.com	City of Oxford
Teson Johnson / Newton County	<i>[Signature]</i>	tjohnson@co.newton.ga.us	Newton Co. Building Services
GREG MANN - IS Director	<i>[Signature]</i>	gmann@co.newton.ga.us	NCBOC
Scott Smith / GIS Coordinator	<i>[Signature]</i>	ssmith@co.newton.ga.us	NCBOC
HEIDI STEWART / GIS Analyst	<i>[Signature]</i>	hstewart@conadon.ga.us	NCBOC
<i>[Signature]</i> / <i>[Signature]</i>	<i>[Signature]</i>	vbj@bnc.com	Carroll County Club

Newton County Hazard Mitigation Plan Update
Kick-off Committee Meeting

Sign-In Sheet



Thursday, January 30, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
Sahire Howard/Executive Admin Coordinator		showard@newton.ga.us	NCFS
MIKE CONNER/Fire Chief		mconner@newton.ga.us	NCFS
Crystal Stevens/911 Agricultural Fire/Sea Westmoreland operations manager		crystal.stevens@ conington-newton911.com	Conington-Newton 911
DANIE LARKE		danie.larke@dnsga.gov	DFCS
Steve Horton		shorton@cityofconington.org	City of Conington
DAVID HARVEY		D.HARVEY@OXFORDPOLICE.NET	OXFORD POLICE
Barton Lowrey		BLOWREY@atlantaboy.org	Boy Scouts
Judgy T. Johnson		jtjohnson@co.newton.ga.us	Newton County

*Newton County Hazard Mitigation Plan Update
Kick-off Committee Meeting*

Sign-In Sheet

Thursday, January 30, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
Mark Reisinger Emergency Preparedness Director Hazard Mitigation		mark.reisinger@ncrhealth.com	Gwinnett, Newton, and Rockdale County Health Departments
		reisinger@newtoncountyga.gov	Newton County, GA

Newton County Hazard Mitigation Plan Update
Committee Meeting #2

Sign-In Sheet

(43)

Thursday, February 27, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
✓ Wendy Flarck	<i>Wendy Flarck</i>	wendy.flarck@newtonga.gov	Newton EMA
✓ Greg Pace	<i>Greg Pace</i>	pace@co.newton.ga.us	NC PW
✓ Frank Peters	<i>Frank Peters</i>	frank.peters@co.newton.ga.us	NC PW
✓ CATHY DAVIS	<i>Cathy Davis</i>	cdavis@co.newton.ga.us	NC BOC
✓ Nwaka Hughes	<i>Nwaka Hughes</i>	nhughes@co.newton.ga.us	NC BOC
✓ Matt Taylor	<i>Matt Taylor</i>	mtaylor@co.newton.ga.us	Recreation
✓ Dwayne mask	<i>Dwayne mask</i>	dmask@co.newton.ga.us	Recreation
✓ Tim Smith	<i>Tim Smith</i>	TJSmith@cityofcovington.org	Covington
✓ Jody Reid	<i>Jody Reid</i>	jreid@oxfordga.gov	City of Oxford
✓ Brad Stapp	<i>Brad Stapp</i>	bstapp@co.newton.ga.us	Newton County Fire
✓ Jason Johns	<i>Jason Johns</i>	jjohnson@co.newton.ga.us	Facilities Management

¹ Also attended: Billy Stanley - Building Services Supervisor - Newton County - March form available to prove attendance.

Newton County Hazard Mitigation Plan Update
Committee Meeting #2

Sign-In Sheet









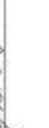
Thursday, February 27, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
✓ Brittany White, Finance Director		blwhite@co.newton.ga.us	Newton County
✓ Jim Tudor		Jim.TUDOR@redcross.org	American Red Cross
✓ Rev. A. M. Gray (RAM)		amgray@co.newton.ga.us	Newton County (SWIFT)
✓ Heidi Stewart, GIS		hstewart@co.newton.ga.us	GIS - Newton
✓ Tracy Hernandez		thernandez@co.newton.ga.us	Dev. Services
✓ LLOYD KERR		lkerr@dnr.state.ga.us	NRBC
✓ Kimberly Angel		Kimberly.angel@genia.gov	CEMA/Hs
✓ Janel Adair		janel.adair@michelin.com	Michelin
✓ Carol Martin, School Health Spec. Needs		martin.carol@newton.k12.ga.us	NESS
✓ John Napoli			CITY OF MARIETTA
✓ Scott Gray		Scott.gray@icloud.com	City of Marietta

Newton County Hazard Mitigation Plan Update
Committee Meeting #2

Sign-In Sheet

Thursday, February 27, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
GREG MANN - IS Director		gmann@nc.newton.nc.us	NCBOC
Jack Harper Envior. Comp		jack.harper@ncnr.health.com	GNR Health Dept
Robbie Groves		rgroves@socialcirclega.com	City of Social Circle
Crystal Stevens 911 Recrd Training and Assessment Director		crystal.stevens@covington-newton.gil.com	Covington Newton 911
Cindy Williams Director		cwilliams@nc.newton.nc.us	NCBOC Services
Amanda Guasale Director		asham@ncbo.com	NCBOC
Robert Thomas		rthomas@nc.newton.nc.us	NCFBP
Hanuka Maxwell SVC		pmcmaxwell@carver.org	NC HUR
Judy B. Nelson		jbnelson@ncbo.com	NC-EMT

Newton County Hazard Mitigation Plan Update
Committee Meeting #2

Sign-In Sheet

Thursday, February 27, 2020

Name/Title	Signature	E-mail Address	Agency/Organization
Kayra Fray		fray.kayra@newton.ga.us	Newton BOE
Jeanne Hyde, City Admin		jhyde@marshfieldga.gov	Marshfield
Beryl Budd		bbudd@f-strateg.us	GFC
Bryan Fazio		Bfazio@ocn.newton.ga.us	Newton County
JAMES COX		jcox@cityofcovington.ga.us	Covington Fire
Barton Leary		blowrey@atlantaboa.org	Boy Scouts
Jeremy Whigham		jwhigham@scouting.org	Boy Scouts
Laurie Riley		lriley@co.newton.ga.us	Keep Newton Beautiful
Doug Kitchens		d.k.kitchens@newton-submitzga.org	NC 50
Chester Joy		ccjoy@ncscout.org	Transportation - Newton
Denise Lark		denise.lark@dhs.ga.gov	Dept. of Family + Children Services

Newton County Hazard Mitigation Plan Update 2020

Virtual Committee Meeting #3 Attendees

via Zoom Video Communications

Wednesday, July 29, 2020

Michael W. Conner

Fire Chief

Newton County Fire Services

Cathy Davis

Grants Coordinator

Newton County Finance Department

Robbie Groves

Environmental Compliance Specialist

City of Social Circle

Vickie Henry

Volunteer

Covington Women's Club (General Federation of Women's Clubs)

Jeana Hyde

City Administrator and Clerk

City of Mansfield

Jason Johnson

Director

Newton County Facilities Management Department

Barton Lowrey

Development Director

Atlanta Area Council, Boy Scouts of America

Greg Mann

Director

Newton County Information Systems Department

Jody B. Nolan

Director

Newton County Emergency Management Agency

Wendy Peacock

Administrative Coordinator

Newton County Emergency Management Agency

Newton County Hazard Mitigation Plan Update 2020

**Virtual Committee Meeting #3 Attendees
via Zoom Video Communications**

Wednesday, July 29, 2020

Laurie Riley

Keep Newton Beautiful Manager

Newton County Water Resources Department

Amanda Shoemaker

Director

Newton County Human Resources and Risk Management Department

Scott Sirotkin

Geographic Information Systems Coordinator; Acting Floodplain Administrator

Newton County Geographic Information Systems Department

Jeremy Whigham

Ranger

Boy Scouts of America

Newton County Hazard Mitigation Plan Update 2020

Virtual Committee Meeting #4 Attendees

via Zoom Video Communications

Thursday, July 30, 2020

Michael W. Conner

Fire Chief

Newton County Fire Services

James Cox

Captain

City of Covington Fire Department

Mary Darby

Director

City of Covington Planning and Zoning Department

Robbie Groves

Environmental Compliance Specialist

City of Social Circle

Vickie Henry

Volunteer

Covington Women's Club (General Federation of Women's Clubs)

Steve Horton

Mayor

City of Covington

Jeana Hyde

City Administrator and Clerk

City of Mansfield

Jason Johnson

Director

Newton County Facilities Management Department

Denise Lark

Regional Resource Coordinator, Region 5

Georgia Department of Family and Children Services

Barton Lowrey

Development Director

Atlanta Area Council, Boy Scouts of America

Newton County Hazard Mitigation Plan Update 2020
Virtual Committee Meeting #4 Attendees
via Zoom Video Communications
Thursday, July 30, 2020

Greg Mann
Director
Newton County Information Systems Department

Carl Morrow
Director
Walton County Emergency Management Agency

Jody B. Nolan
Director
Newton County Emergency Management Agency

Wendy Peacock
Administrative Coordinator
Newton County Emergency Management Agency

Laurie Riley
Keep Newton Beautiful Manager
Newton County Water Resources Department

Amanda Shoemaker
Director
Newton County Human Resources and Risk Management Department

Heidi Stewart
Geographic Information Systems Analyst
Newton County Geographic Information Systems Department

Jeremy Whigham
Ranger
Boy Scouts of America

Appendix C – Newton County Critical Facilities

Name	Jurisdiction	Address
Heard-Mixon Elementary School	<i>Newton County</i>	14110 Highway 36
Livingstone Elementary School	<i>Newton County</i>	3657 Highway 81 South
Indian Creek Middle School	<i>Newton County</i>	11051 South Covington Bypass Road
Middle Ridge Elementary School	<i>Newton County</i>	11649 South Covington Bypass Road
East Newton Elementary School	<i>Newton County</i>	2186 Dixie Road
Mansfield Elementary School	<i>Mansfield town</i>	45 East Third Avenue
Palmer Stone Elementary School	<i>Oxford town</i>	1110 North Emory
City of Covington Water System	<i>Covington city</i>	2119 Williams St
ASFC Outreach Therapeutic Counseling Service	<i>Covington city</i>	
Georgia Perimeter College -- Newton Campus	<i>Newton County</i>	
Newton County MRF	<i>Newton County</i>	
Newton County Fire Service Station 06	<i>Newton County</i>	
Ficquett Elementary School and Sharp Learning	<i>Newton County</i>	
Cousins Middle School	<i>Newton County</i>	
Clements Middle School	<i>Newton County</i>	
Fairview Elementary School	<i>Newton County</i>	
West Newton Elementary School	<i>Newton County</i>	
Porterdale Elementary and Newton High Schools	<i>Newton County</i>	
Newton County Fire Station 04	<i>Newton County</i>	
United Cerebral Palsy BELMONT	<i>Covington city</i>	
Veterans Memorial Middle School	<i>Covington city</i>	
United Cerebral Palsy TANYARD	<i>Newborn town</i>	
NEWTON CO-FOREST TOWER/LWR RVR RDS (SL)	<i>Newton County</i>	Forest Tower + Lwr Rvr Rds S Of
NEWTON CO - LOWER RIVER RD Forest Tower	<i>Newton County</i>	
Covington Police Dept - Housing Auth Precinct	<i>Covington city</i>	Nixon Cir
Covington Police Department	<i>Covington city</i>	
Stewart Volunteer Fire Department	<i>Newton County</i>	14671 Hwy 36
Newton County Fire Station 02	<i>Newton County</i>	3687 Hwy 162 S
GA Forestry Commission - Newton-Rockdale	<i>Newton County</i>	2707 Access Rd

Covington City Hall	<i>Covington city</i>	
Covington Wastewater Treatment Facility	<i>Covington city</i>	
Newton County Fire Station 01	<i>Newton County</i>	
Newton County Fire Station 10	<i>Newton County</i>	11240 Hwy 36
Covington Fire Department	<i>Covington city</i>	
Newton County Sheriff's Office and Jail	<i>Covington city</i>	
Newton County Courthouse	<i>Newton County</i>	
Porter Memorial Library	<i>Covington city</i>	
Newton County Board of Commissioners	<i>Newton County</i>	11885 Alcovy Rd
Newton General Hospital	<i>Newton County</i>	5126 Hospital Drive
Newton General Hospital	<i>Newton County</i>	
Tabernacle Christian School	<i>Newton County</i>	
CrossRoads Psycho-Ed Center	<i>Covington city</i>	2109 Newton Dr.
Mansfield Wastewater Treatment Facility	<i>Mansfield town</i>	365 Loyd Rd
Mansfield Water System	<i>Mansfield town</i>	
Mansfield City Hall	<i>Mansfield town</i>	
Newborn Town Hall	<i>Newborn town</i>	
City of Newborn	<i>Newborn town</i>	Church St
City of Oxford	<i>Oxford town</i>	308 Watson St
Oxford City Hall	<i>Oxford town</i>	
Oxford Police and Fire Department	<i>Oxford town</i>	
Newton County Fire Station 08	<i>Newton County</i>	
Covington Municipal Airport	<i>Newton County</i>	
Oxford College	<i>Oxford town</i>	
Oxford Police Department	<i>Oxford town</i>	810 Whatcoat St
Newton Co Fire Sta 11 and Porterdale Police Dept	<i>Porterdale town</i>	
Porterdale Police Department	<i>Porterdale town</i>	2 Main St
Porterdale City Hall	<i>Porterdale town</i>	2400 Main St

Appendix D – Hazard Data Tables

Thunderstorms

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								2	3	5.958M	0.00K
NEWTON CO.	NEWTON CO.	GA	06/26/1971	20:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	07/19/1971	13:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	07/18/1979	14:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	07/24/1980	20:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	06/11/1981	13:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	08/07/1981	14:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	06/12/1982	11:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	07/01/1983	16:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	07/02/1983	16:15	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/09/1984	07:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	05/03/1984	14:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	11/10/1984	18:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

NEWTON CO.	NEWTON CO.	GA	11/10/1984	18:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/05/1985	19:55	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	06/07/1985	16:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	08/01/1985	18:05	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	05/07/1986	16:25	CST	Hail	1.75 in.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	11/20/1986	09:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	07/27/1987	18:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/25/1988	14:25	CST	Hail	1.00 in.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	06/24/1988	13:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/04/1989	15:05	CST	Thunderstorm Wind	0 kts.	0	2	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	05/05/1989	14:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	01/25/1990	09:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	02/10/1990	05:33	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	02/16/1990	06:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	03/16/1990	18:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

NEWTON CO.	NEWTON CO.	GA	03/16/1990	18:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/10/1990	17:16	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	08/02/1990	14:10	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	08/02/1990	14:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	08/02/1990	14:35	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	08/29/1990	20:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	03/01/1991	17:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/09/1991	19:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/19/1991	16:25	CST	Hail	0.75 in.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/27/1991	08:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/27/1991	17:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/27/1991	18:05	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/29/1991	15:00	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	05/05/1991	14:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	04/24/1992	22:50	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

NEWTON CO.	NEWTON CO.	GA	06/26/1992	13:15	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
NEWTON CO.	NEWTON CO.	GA	06/26/1992	16:05	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Snapping Shoals	NEWTON CO.	GA	05/15/1995	16:52	EST	Thunderstorm Wind	0 kts.	1	0	95.00K	0.00K
Covington	NEWTON CO.	GA	09/01/1995	16:47	EST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
COVINGTON	NEWTON CO.	GA	06/12/1996	18:35	EST	Hail	0.75 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	06/25/1996	14:53	EST	Thunderstorm Wind		0	0	1.00K	0.00K
COUNTYWIDE	NEWTON CO.	GA	02/21/1997	14:45	EST	Thunderstorm Wind		0	0	2.00K	0.00K
OXFORD	NEWTON CO.	GA	04/22/1997	17:50	EST	Thunderstorm Wind		0	0	3.00K	0.00K
COVINGTON	NEWTON CO.	GA	04/22/1997	18:00	EST	Thunderstorm Wind		0	0	7.50K	0.00K
COVINGTON	NEWTON CO.	GA	05/03/1997	08:20	EST	Hail	0.75 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/28/1997	17:21	EST	Hail	1.00 in.	0	0	0.00K	0.00K
PORTERDALE	NEWTON CO.	GA	07/28/1997	17:34	EST	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/28/1997	17:45	EST	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/28/1997	17:45	EST	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	08/14/1997	15:30	EST	Thunderstorm Wind		0	0	10.00K	0.00K

COVINGTON	NEWTON CO.	GA	02/17/1998	09:10	EST	Hail	0.88 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	04/03/1998	20:55	EST	Hail	1.00 in.	0	0	0.00K	0.00K
OXFORD	NEWTON CO.	GA	05/03/1998	20:54	EST	Hail	0.75 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	05/29/1998	17:55	EST	Hail	1.00 in.	0	0	0.00K	0.00K
STEWART	NEWTON CO.	GA	05/23/1999	18:00	EST	Thunderstorm Wind		0	0	2.00K	0.00K
OXFORD	NEWTON CO.	GA	06/30/1999	15:10	EST	Thunderstorm Wind		0	0	2.00K	0.00K
OXFORD	NEWTON CO.	GA	07/24/1999	15:40	EST	Thunderstorm Wind		0	0	0.20K	0.00K
OXFORD	NEWTON CO.	GA	07/24/1999	15:50	EST	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/24/1999	16:40	EST	Hail	1.75 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/24/1999	17:00	EST	Thunderstorm Wind		0	0	0.20K	0.00K
STEWART	NEWTON CO.	GA	07/24/1999	17:07	EST	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	08/13/1999	14:30	EST	Hail	1.00 in.	0	0	0.00K	0.00K
PORTERDALE	NEWTON CO.	GA	08/25/1999	16:50	EST	Hail	1.75 in.	0	0	0.00K	0.00K
PORTERDALE	NEWTON CO.	GA	08/25/1999	17:11	EST	Hail	1.75 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	04/28/2000	00:00	EST	Lightning		0	0	500.00K	0.00K

COVINGTON	NEWTON CO.	GA	06/25/2000	13:09	EST	Hail	0.75 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	06/25/2000	13:30	EST	Hail	0.88 in.	0	0	0.00K	0.00K
PORTERDALE	NEWTON CO.	GA	07/11/2000	15:35	EST	Hail	0.75 in.	0	0	0.00K	0.00K
STEWART	NEWTON CO.	GA	07/11/2000	16:10	EST	Thunderstorm Wind		0	0	15.00K	0.00K
PORTERDALE	NEWTON CO.	GA	07/30/2000	17:20	EST	Thunderstorm Wind		0	0	5.00K	0.00K
COUNTYWIDE	NEWTON CO.	GA	02/16/2001	19:00	EST	Thunderstorm Wind		0	0	30.00K	0.00K
COUNTYWIDE	NEWTON CO.	GA	06/03/2001	17:19	EST	Thunderstorm Wind		0	0	1.00K	0.00K
PORTERDALE	NEWTON CO.	GA	07/05/2001	17:25	EST	Thunderstorm Wind		0	0	1.00K	0.00K
ROCKY PLAINS	NEWTON CO.	GA	08/29/2001	19:00	EST	Lightning		0	0	0.50K	0.00K
COVINGTON	NEWTON CO.	GA	04/28/2002	21:35	EST	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/31/2002	17:00	EST	Thunderstorm Wind		0	0	0.50K	0.00K
COVINGTON	NEWTON CO.	GA	08/06/2002	18:30	EST	Thunderstorm Wind		0	0	10.00K	0.00K
COUNTYWIDE	NEWTON CO.	GA	11/11/2002	05:00	EST	Thunderstorm Wind		0	0	30.00K	0.00K
COVINGTON	NEWTON CO.	GA	02/22/2003	07:15	EST	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
COVINGTON	NEWTON CO.	GA	05/02/2003	17:32	EST	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K

COVINGTON	NEWTON CO.	GA	05/02/2003	17:32	EST	Hail	0.88 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	05/02/2003	18:25	EST	Hail	0.88 in.	0	0	0.00K	0.00K
OXFORD	NEWTON CO.	GA	07/22/2003	13:30	EST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
STEWART	NEWTON CO.	GA	08/10/2003	17:26	EST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
NEWBORN	NEWTON CO.	GA	08/10/2003	17:26	EST	Lightning		0	0	25.00K	0.00K
MANSFIELD	NEWTON CO.	GA	08/10/2003	17:26	EST	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	08/10/2003	18:25	EST	Hail	1.75 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	06/07/2004	18:20	EST	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
COVINGTON	NEWTON CO.	GA	07/07/2004	22:30	EST	Lightning		0	0	4.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/07/2004	22:30	EST	Hail	0.75 in.	0	0	0.00K	0.00K
COUNTYWIDE	NEWTON CO.	GA	07/14/2004	18:49	EST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
COVINGTON	NEWTON CO.	GA	08/05/2004	16:00	EST	Thunderstorm Wind	39 kts. EG	0	0	1.50K	0.00K
COVINGTON	NEWTON CO.	GA	12/10/2004	16:55	EST	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
DIALTOWN	NEWTON CO.	GA	02/21/2005	20:35	EST	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	02/21/2005	21:28	EST	Hail	0.75 in.	0	0	0.00K	0.00K

ALMON	NEWTON CO.	GA	03/22/2005	14:48	EST	Hail	0.75 in.	0	0	0.00K	0.00K
NEWBORN	NEWTON CO.	GA	03/22/2005	15:35	EST	Hail	0.88 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	04/07/2005	18:00	EST	Hail	1.75 in.	0	0	70.00K	0.00K
COVINGTON	NEWTON CO.	GA	04/07/2005	19:15	EST	Lightning		0	0	1.00K	0.00K
COVINGTON	NEWTON CO.	GA	04/22/2005	13:17	EST	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
COVINGTON	NEWTON CO.	GA	05/20/2005	11:15	EST	Hail	0.75 in.	0	0	0.00K	0.00K
COUNTYWIDE	NEWTON CO.	GA	05/20/2005	11:30	EST	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
COUNTYWIDE	NEWTON CO.	GA	07/06/2005	22:00	EST	Thunderstorm Wind	56 kts. EG	0	0	250.00K	0.00K
ALCOVY	NEWTON CO.	GA	08/29/2005	18:25	EST	Thunderstorm Wind	32 kts. EG	0	0	0.50K	0.00K
OAK HILL	NEWTON CO.	GA	06/23/2006	17:23	EST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
OAK HILL	NEWTON CO.	GA	06/23/2006	17:23	EST	Hail	1.00 in.	0	0	0.00K	0.00K
PORTERDALE	NEWTON CO.	GA	01/05/2007	11:46	EST-5	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/19/2007	14:00	EST-5	Lightning		0	0	200.00K	0.00K
MANSFIELD	NEWTON CO.	GA	08/24/2007	17:46	EST-5	Lightning		0	0	25.00K	0.00K
OXFORD	NEWTON CO.	GA	03/14/2008	21:36	EST-5	Hail	0.75 in.	0	0	0.00K	0.00K

OXFORD	NEWTON CO.	GA	03/15/2008	15:30	EST-5	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ALMON	NEWTON CO.	GA	03/15/2008	15:30	EST-5	Hail	1.75 in.	0	0	700.00K	0.00K
STEWART	NEWTON CO.	GA	03/15/2008	16:37	EST-5	Hail	1.75 in.	0	0	700.00K	0.00K
STEWART	NEWTON CO.	GA	04/04/2008	19:00	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
OAK HILL	NEWTON CO.	GA	07/05/2008	12:58	EST-5	Hail	0.75 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	07/05/2008	13:20	EST-5	Hail	0.75 in.	0	0	0.00K	0.00K
ALCOVY	NEWTON CO.	GA	07/21/2008	19:40	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	08/02/2008	19:00	EST-5	Hail	0.75 in.	0	0	0.00K	0.00K
ALMON	NEWTON CO.	GA	08/02/2008	19:00	EST-5	Thunderstorm Wind	43 kts. EG	0	0	2.00K	0.00K
STEWART	NEWTON CO.	GA	02/18/2009	18:42	EST-5	Hail	1.75 in.	0	0	0.00K	0.00K
DIALTOWN	NEWTON CO.	GA	03/28/2009	15:44	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
STEWART	NEWTON CO.	GA	04/10/2009	21:21	EST-5	Hail	1.75 in.	0	0	150.00K	0.00K
STEWART	NEWTON CO.	GA	04/10/2009	21:28	EST-5	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
COVINGTON	NEWTON CO.	GA	04/23/2009	19:50	EST-5	Hail	0.75 in.	0	0	0.00K	0.00K
BARRINGTON	NEWTON CO.	GA	02/22/2010	04:24	EST-5	Lightning		0	0	25.00K	0.00K

BEAVER CREEK	NEWTON CO.	GA	09/27/2010	17:54	EST-5	Thunderstorm Wind	42 kts. EG	0	0	40.00K	0.00K
ROCKY PLAINS	NEWTON CO.	GA	11/30/2010	16:38	EST-5	Thunderstorm Wind	37 kts. EG	0	0	1.00K	0.00K
ALMON	NEWTON CO.	GA	04/04/2011	23:13	EST-5	Thunderstorm Wind	56 kts. EG	0	0	100.00K	0.00K
COVINGTON	NEWTON CO.	GA	05/26/2011	17:35	EST-5	Hail	1.25 in.	0	0	0.00K	0.00K
ROCKY PLAINS	NEWTON CO.	GA	05/26/2011	17:35	EST-5	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
COVINGTON	NEWTON CO.	GA	06/09/2011	16:00	EST-5	Hail	1.50 in.	0	0	0.00K	0.00K
PORTERDALE	NEWTON CO.	GA	06/15/2011	19:33	EST-5	Hail	1.25 in.	0	0	0.00K	0.00K
STEWART	NEWTON CO.	GA	06/15/2011	21:05	EST-5	Thunderstorm Wind	39 kts. EG	0	0	1.00K	0.00K
ROCKY PLAINS	NEWTON CO.	GA	07/13/2011	17:30	EST-5	Hail	1.50 in.	0	0	0.00K	0.00K
ROCKY PLAINS	NEWTON CO.	GA	07/13/2011	17:30	EST-5	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
OXFORD	NEWTON CO.	GA	07/17/2012	13:20	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.50K	0.00K
OAK HILL	NEWTON CO.	GA	07/17/2012	14:15	EST-5	Lightning		0	0	10.00K	0.00K
LASSITER	NEWTON CO.	GA	07/27/2012	16:36	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
COVINGTON	NEWTON CO.	GA	01/30/2013	15:40	EST-5	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
JERUSALEM	NEWTON CO.	GA	03/18/2013	18:15	EST-5	Hail	1.75 in.	0	0	1.220M	0.00K

PORTERDALE	NEWTON CO.	GA	04/28/2013	14:43	EST-5	Hail	1.75 in.	0	0	1.216M	0.00K
FAIRFIELD	NEWTON CO.	GA	04/28/2013	14:56	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
ROCKY PLAINS	NEWTON CO.	GA	05/31/2014	16:45	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
PORTERDALE	NEWTON CO.	GA	06/19/2014	19:48	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
ROCKY PLAINS	NEWTON CO.	GA	08/17/2014	16:21	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
STARRSVILLE	NEWTON CO.	GA	12/23/2014	10:00	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
COVINGTON	NEWTON CO.	GA	05/26/2015	16:20	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
FAIRVIEW	NEWTON CO.	GA	06/18/2015	17:15	EST-5	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
STEWART	NEWTON CO.	GA	08/06/2015	14:07	EST-5	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
ABIDE AWHILE	NEWTON CO.	GA	03/01/2016	21:04	EST-5	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K
STARRSVILLE	NEWTON CO.	GA	06/02/2016	20:05	EST-5	Thunderstorm Wind	50 kts. EG	0	0	6.00K	0.00K
PORTERDALE	NEWTON CO.	GA	06/14/2016	14:10	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
PORTERDALE	NEWTON CO.	GA	06/14/2016	14:10	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.50K	0.00K
STEWART	NEWTON CO.	GA	06/17/2016	13:55	EST-5	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K
OAK HILL	NEWTON CO.	GA	07/11/2016	17:55	EST-5	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K

<u>ABIDE AWHILE</u>	NEWTON CO.	GA	08/06/2016	22:45	EST-5	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K
<u>JAMESTOWN</u>	NEWTON CO.	GA	04/03/2017	12:18	EST-5	Thunderstorm Wind	60 kts. EG	0	0	200.00K	0.00K
<u>JERUSALEM</u>	NEWTON CO.	GA	04/03/2017	12:23	EST-5	Thunderstorm Wind	65 kts. EG	0	0	100.00K	0.00K
<u>JERUSALEM</u>	NEWTON CO.	GA	07/07/2017	17:36	EST-5	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
<u>HAYSTON</u>	NEWTON CO.	GA	07/26/2017	17:30	EST-5	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
<u>FAIRFIELD</u>	NEWTON CO.	GA	10/28/2017	16:41	EST-5	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
<u>ALMON</u>	NEWTON CO.	GA	02/07/2018	10:15	EST-5	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K
<u>SNAPPING SHOALS</u>	NEWTON CO.	GA	03/19/2018	22:54	EST-5	Hail	1.00 in.	0	0	4.00K	0.00K
<u>MARBLE VALLEY</u>	NEWTON CO.	GA	03/19/2018	22:55	EST-5	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
<u>ROCKY PLAINS</u>	NEWTON CO.	GA	06/03/2018	18:00	EST-5	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
<u>PORTERDALE</u>	NEWTON CO.	GA	06/25/2018	14:08	EST-5	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
<u>LASSITER</u>	NEWTON CO.	GA	06/25/2018	14:34	EST-5	Thunderstorm Wind	55 kts. EG	1	1	20.00K	0.00K
<u>ALCOVY</u>	NEWTON CO.	GA	08/01/2018	18:18	EST-5	Thunderstorm Wind	45 kts. EG	0	0	3.00K	0.00K
<u>FAIRFIELD</u>	NEWTON CO.	GA	02/12/2019	14:34	EST-5	Thunderstorm Wind	60 kts. EG	0	0	25.00K	0.00K
<u>STEWART</u>	NEWTON CO.	GA	04/09/2019	09:15	EST-5	Thunderstorm Wind	50 kts. EG	0	0	22.00K	0.00K

<u>MELODY</u>	NEWTON CO.	GA	06/18/2019	15:40	EST- 5	Thunderstorm Wind	40 kts. EG	0	0	0.01K	0.00K
<u>DIXIE</u>	NEWTON CO.	GA	06/22/2019	15:28	EST- 5	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
<u>HAYSTON</u>	NEWTON CO.	GA	06/23/2019	15:24	EST- 5	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
<u>JERUSALEM</u>	NEWTON CO.	GA	06/24/2019	19:44	EST- 5	Thunderstorm Wind	45 kts. EG	0	0	2.00K	0.00K
<u>COVINGTON</u>	NEWTON CO.	GA	09/13/2019	20:50	EST- 5	Thunderstorm Wind	45 kts. EG	0	0	5.00K	0.00K
<u>COVINGTON</u>	NEWTON CO.	GA	03/31/2020	11:10	EST- 5	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K

Flooding

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
Totals:							0	0	1.497M	0.00K
<u>COUNTYWIDE</u>	NEWTON CO.	GA	03/07/1996	03:30	EST	Flash Flood	0	0	0.00K	0.00K
<u>NEWTON (ZONE)</u>	NEWTON (ZONE)	GA	03/08/1998	07:00	EST	Flood	0	0	5.00K	0.00K
<u>COVINGTON</u>	NEWTON CO.	GA	11/11/2002	05:45	EST	Flood	0	0	0.00K	0.00K
<u>COUNTYWIDE</u>	NEWTON CO.	GA	05/08/2003	04:16	EST	Flash Flood	0	0	0.00K	0.00K
<u>MANSFIELD</u>	NEWTON CO.	GA	07/22/2003	08:45	EST	Flash Flood	0	0	0.00K	0.00K
<u>NEWTON (ZONE)</u>	NEWTON (ZONE)	GA	09/07/2004	09:00	EST	Flood	0	0	5.00K	0.00K
<u>NEWBORN</u>	NEWTON CO.	GA	09/16/2009	20:00	EST-5	Flash Flood	0	0	1.00K	0.00K
<u>BARRINGTON</u>	NEWTON CO.	GA	09/21/2009	15:58	EST-5	Flood	0	0	700.00K	0.00K
<u>COVINGTON</u>	NEWTON CO.	GA	12/30/2015	12:55	EST-5	Flash Flood	0	0	781.00K	0.00K
<u>ROCKY PLAINS</u>	NEWTON CO.	GA	06/20/2017	01:30	EST-5	Flash Flood	0	0	5.00K	0.00K

Winter Storms

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	1.258M	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/18/1996	18:00	EST	Heavy Snow		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/22/2000	13:00	EST	Ice Storm		0	0	980.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/28/2000	19:00	EST	Ice Storm		0	0	32.79K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/19/2000	00:00	EST	Winter Storm		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/02/2002	06:00	EST	Heavy Snow		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/25/2004	05:00	EST	Ice Storm		0	0	5.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	02/26/2004	00:00	EST	Winter Storm		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/28/2005	20:00	EST	Winter Storm		0	0	200.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/15/2005	00:00	EST	Ice Storm		0	0	5.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/16/2008	22:00	EST-5	Winter Weather		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/19/2008	13:00	EST-5	Winter Weather		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	03/01/2009	13:00	EST-5	Heavy Snow		0	0	35.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	02/12/2010	14:00	EST-5	Heavy Snow		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/25/2010	17:00	EST-5	Winter Weather		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/09/2011	20:00	EST-5	Heavy Snow		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	02/09/2011	22:00	EST-5	Winter Weather		0	0	0.00K	0.00K

NEWTON (ZONE)	NEWTON (ZONE)	GA	01/28/2014	12:00	EST-5	Winter Storm	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	02/12/2014	07:00	EST-5	Ice Storm	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/22/2016	16:00	EST-5	Winter Weather	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/09/2017	05:00	EST-5	Winter Weather	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/16/2018	20:00	EST-5	Winter Storm	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	02/08/2020	13:00	EST-5	Winter Weather	0	0	0.00K	0.00K

Tornadoes

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
Totals:								0	1	2.078M	0.00K
<u>NEWTON CO.</u>	NEWTON CO.	GA	05/08/1978	18:20	CST	Tornado	F1	0	0	250.00K	0.00K
<u>NEWTON CO.</u>	NEWTON CO.	GA	05/17/1980	18:10	CST	Tornado	F1	0	0	25.00K	0.00K
<u>NEWTON CO.</u>	NEWTON CO.	GA	02/10/1990	05:15	EST	Tornado	F1	0	0	250.00K	0.00K
<u>OAK HILL</u>	NEWTON CO.	GA	05/11/2008	04:43	EST-5	Tornado	EF0	0	0	1.00K	0.00K
<u>LASSITER</u>	NEWTON CO.	GA	02/18/2009	20:05	EST-5	Tornado	EF1	0	0	625.00K	0.00K
<u>NEWBORN</u>	NEWTON CO.	GA	04/28/2011	00:11	EST-5	Tornado	EF1	0	0	400.00K	0.00K
<u>JERUSALEM</u>	NEWTON CO.	GA	04/19/2013	12:12	EST-5	Tornado	EF2	0	1	500.00K	0.00K
<u>STEWART</u>	NEWTON CO.	GA	11/23/2014	17:12	EST-5	Tornado	EF0	0	0	2.00K	0.00K
<u>DIALTOWN</u>	NEWTON CO.	GA	04/05/2017	11:09	EST-5	Tornado	EF1	0	0	25.00K	0.00K

Drought

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
Totals:								0	0	0.00K	2.900M
NEWTON (ZONE)	NEWTON (ZONE)	GA	09/01/1997	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	05/01/1999	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	08/01/1999	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	02/01/2000	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	04/01/2000	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	05/01/2000	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	06/01/2000	00:00	EST	Drought		0	0	0.00K	2.900M
NEWTON (ZONE)	NEWTON (ZONE)	GA	07/01/2000	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	10/01/2000	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	10/01/2001	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	11/01/2001	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/01/2001	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	04/01/2002	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	08/01/2002	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/01/2003	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	03/01/2004	00:00	EST	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	05/01/2007	00:00	EST-5	Drought		0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	09/01/2007	00:00	EST-5	Drought		0	0	0.00K	0.00K

NEWTON (ZONE)	NEWTON (ZONE)	GA	10/01/2007	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	11/01/2007	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/01/2007	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	09/01/2011	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	06/01/2016	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	07/01/2016	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	08/01/2016	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	09/01/2016	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	10/01/2016	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	11/01/2016	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	12/01/2016	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	01/01/2017	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	09/24/2019	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	10/01/2019	00:00	EST-5	Drought	0	0	0.00K	0.00K
NEWTON (ZONE)	NEWTON (ZONE)	GA	11/01/2019	00:00	EST-5	Drought	0	0	0.00K	0.00K

Appendix E – Newton County Worksheet 3As

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Newton County
Hazard: Non-Spatially Defined Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	48,384	48,384	100.000%	451,913,290	451,913,290	100.000%	105,042	105,042	100%
Commercial	2,235	2,235	100.000%	413,582,980	413,582,980	100.000%	0	0	#DM/0!
Industrial	551	551	100.000%	267,794,295	267,794,295	100.000%	0	0	#DM/0!
Agricultural	1,685	1,685	100.000%	82,562,590	82,562,590	100.000%	0	0	#DM/0!
Religious/ Non-profit	643	643	100.000%	105,654,210	105,654,210	100.000%	0	0	#DM/0!
Government	782	782	100.000%	236,171,230	236,171,230	100.000%	0	0	#DM/0!
Education	201	201	100.000%	311,391,200	311,391,200	100.000%	0	0	#DM/0!
Utilities	56	56	100.000%	152,822,128	152,822,128	100.000%	0	0	#DM/0!
Total	54,537	54,537	100.000%	2,021,891,923	2,021,891,923	100.000%	105,042	105,042	100%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | | N |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | | N |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | | N |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a
Jurisdiction: Newton County
Hazard: Wildfire Hazard

Inventory of Assets

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	48,384	47,732	98.652%	451,913,290	445,823,519	98.652%	105,042	103,627	99%
Commercial	2,235	2,134	95.481%	413,582,980	394,896,100	95.481%	0	0	#DM/OI
Industrial	551	521	94.555%	267,794,295	253,215,843	94.555%	0	0	#DM/OI
Agricultural	1,685	1,564	92.819%	82,562,590	76,633,763	92.819%	0	0	#DM/OI
Religious/ Non-profit	643	622	96.734%	106,654,210	102,203,606	96.734%	0	0	#DM/OI
Government	782	745	95.269%	236,171,230	224,996,888	95.269%	0	0	#DM/OI
Education	201	187	93.035%	311,391,200	289,702,261	93.035%	0	0	#DM/OI
Utilities	56	45	80.357%	152,822,128	122,803,496	80.357%	0	0	#DM/OI
Total	54,537	53,550	98.190%	2,021,891,923	1,910,270,476	94.479%	105,042	103,627	99%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | Y | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a

Inventory of Assets

Jurisdiction: Newton County

Hazard: Flood Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	48,384	459	0.949%	451,913,290	4,287,124	0.949%	105,042	998	1%
Commercial	2,235	23	1.029%	413,582,980	4,256,111	1.029%	0	0	#DIV/0!
Industrial	551	6	1.089%	267,794,295	2,916,090	1.089%	0	0	#DIV/0!
Agricultural	1,685	0	0.000%	82,562,590	0	0.000%	0	0	#DIV/0!
Religious/ Non-profit	643	0	0.000%	105,654,210	0	0.000%	0	0	#DIV/0!
Government	782	1	0.128%	236,171,230	302,009	0.128%	0	0	#DIV/0!
Education	201	0	0.000%	311,391,200	0	0.000%	0	0	#DIV/0!
Utilities	56	0	0.000%	152,822,128	0	0.000%	0	0	#DIV/0!
Total	54,537	489	0.897%	2,021,891,923	11,761,335	0.582%	105,042	998	1%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | Y | |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | Y | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Covington (Newton County)
Hazard: Non-Spatially Defined Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	5,688	5,688	100.00%	437,863,990	437,863,990	100.00%	13,728	13,728	100%
Commercial	1,206	1,206	100.00%	224,623,340	224,623,340	100.00%	0	0	#DM/0!
Industrial	329	329	100.00%	206,828,840	206,828,840	100.00%	0	0	#DM/0!
Agricultural	3	3	100.00%	88,100	88,100	100.00%	0	0	#DM/0!
Religious/ Non-profit	164	164	100.00%	24,395,350	24,395,350	100.00%	0	0	#DM/0!
Government	313	313	100.00%	161,727,350	161,727,350	100.00%	0	0	#DM/0!
Education	20	20	100.00%	25,212,400	25,212,400	100.00%	0	0	#DM/0!
Utilities	12	12	100.00%	24,088,248	24,088,248	100.00%	0	0	#DM/0!
Total	7,735	7,735	100.00%	1,104,827,618	1,104,827,618	100.00%	13,728	13,728	100%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | | N |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | | N |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | | N |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Covington (Newton County)
Hazard: Wildfire Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	5,688	5,480	96.343%	437,863,990	421,852,086	96.343%	13,728	13,226	96%
Commercial	1,206	1,158	96.020%	234,623,340	215,683,108	96.020%	0	0	#DM/0!
Industrial	329	301	91.489%	206,828,840	185,226,388	91.489%	0	0	#DM/0!
Agricultural	3	3	100.000%	88,100	88,100	100.000%	0	0	#DM/0!
Religious/ Non-profit	164	152	92.683%	24,395,330	22,610,324	92.683%	0	0	#DM/0!
Government	313	287	91.693%	161,727,330	148,298,129	91.693%	0	0	#DM/0!
Education	20	16	80.000%	25,212,400	20,169,920	80.000%	0	0	#DM/0!
Utilities	12	9	75.000%	24,088,248	18,066,186	75.000%	0	0	#DM/0!
Total	7,735	7,406	96.747%	1,104,627,618	1,035,949,239	93.769%	13,728	13,226	96%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|---|---|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | Y | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Covington (Newton County)
Hazard: Flood Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	5,688	32	0.563%	437,893,990	2,483,370	0.563%	13,728	77	1%
Commercial	1,206	13	1.078%	224,623,340	2,421,313	1.078%	0	0	#DIV/0!
Industrial	329	0	0.000%	206,828,840	0	0.000%	0	0	#DIV/0!
Agricultural	3	0	0.000%	88,100	0	0.000%	0	0	#DIV/0!
Religious/ Non-profit	164	0	0.000%	24,395,350	0	0.000%	0	0	#DIV/0!
Government	313	0	0.000%	181,727,350	0	0.000%	0	0	#DIV/0!
Education	20	0	0.000%	25,212,400	0	0.000%	0	0	#DIV/0!
Utilities	12	0	0.000%	24,088,248	0	0.000%	0	0	#DIV/0!
Total	7,735	45	0.582%	1,104,827,818	4,884,683	0.442%	13,728	77	1%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | Y | |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | Y | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Mansfield (Newton County)
Hazard: Non-Spatially Defined Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	316	316	100.000%	13,782,563	13,782,563	100.000%	454	454	100%
Commercial	38	38	100.000%	2,455,490	2,455,490	100.000%	0	0	#DM/0!
Industrial	5	5	100.000%	1,540,600	1,540,600	100.000%	0	0	#DM/0!
Agricultural	8	8	100.000%	421,500	421,500	100.000%	0	0	#DM/0!
Religious/ Non-profit	30	30	100.000%	2,771,110	2,771,110	100.000%	0	0	#DM/0!
Government	30	30	100.000%	876,590	876,590	100.000%	0	0	#DM/0!
Education	4	4	100.000%	1,881,200	1,881,200	100.000%	0	0	#DM/0!
Utilities	5	5	100.000%	1,866,113	1,866,113	100.000%	0	0	#DM/0!
Total	436	436	100.000%	25,595,166	25,595,166	100.000%	454	454	100%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | | N |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | | N |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | | N |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Mansfield (Newton County)
Hazard: Wildfire Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	316	316	100.000%	13,782,563	13,782,563	100.000%	454	454	100%
Commercial	38	38	100.000%	2,455,490	2,455,490	100.000%	0	0	#DN/0!
Industrial	5	5	100.000%	1,540,600	1,540,600	100.000%	0	0	#DN/0!
Agricultural	8	8	100.000%	421,500	421,500	100.000%	0	0	#DN/0!
Religious/ Non-profit	30	30	100.000%	2,771,110	2,771,110	100.000%	0	0	#DN/0!
Government	30	30	100.000%	876,590	876,590	100.000%	0	0	#DN/0!
Education	4	4	100.000%	1,881,200	1,881,200	100.000%	0	0	#DN/0!
Utilities	5	5	100.000%	1,866,113	1,866,113	100.000%	0	0	#DN/0!
Total	436	436	100.000%	25,595,166	25,595,166	100.000%	454	454	100%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | Y | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Mansfield (Newton County)
Hazard: Flood Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	318	0	0.000%	13,782,583	0	0.000%	454	0	0%
Commercial	38	0	0.000%	2,455,490	0	0.000%	0	0	#DIV/0!
Industrial	5	0	0.000%	1,540,800	0	0.000%	0	0	#DIV/0!
Agricultural	8	0	0.000%	421,500	0	0.000%	0	0	#DIV/0!
Religious/ Non-profit	30	0	0.000%	2,771,110	0	0.000%	0	0	#DIV/0!
Government	30	0	0.000%	878,590	0	0.000%	0	0	#DIV/0!
Education	4	0	0.000%	1,881,200	0	0.000%	0	0	#DIV/0!
Utilities	5	0	0.000%	1,886,113	0	0.000%	0	0	#DIV/0!
Total	436	0	0.000%	25,695,186	0	0.000%	454	0	0%

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a **Inventory of Assets**
Jurisdiction: Newborn (Newton County)
Hazard: Non-Spatially Defined Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	367	367	100.000%	19,076,413	19,076,413	100.000%	819	819	100%
Commercial	29	29	100.000%	2,051,800	2,051,800	100.000%	0	0	#DIV/0!
Industrial	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!
Agricultural	15	15	100.000%	956,310	956,310	100.000%	0	0	#DIV/0!
Religious/ Non-profit	9	9	100.000%	599,600	599,600	100.000%	0	0	#DIV/0!
Government	20	20	100.000%	1,000,000	1,000,000	100.000%	0	0	#DIV/0!
Education	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!
Utilities	4	4	100.000%	682,360	682,360	100.000%	0	0	#DIV/0!
TOTAL	444	444	100.000%	24,366,483	#DIV/0!	#DIV/0!	819	#DIV/0!	#DIV/0!

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | Y | N |
|---|---|---|
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | | N |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | | N |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | | N |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Newborn (Newton County)
Hazard: Wildfire Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	367	367	100.000%	19,076,413	19,076,413	100.000%	819	819	100%
Commercial	29	29	100.000%	2,051,800	2,051,800	100.000%	0	0	#DM/0!
Industrial	0	0	#DIV/0!	0	#DIV/0!	#DM/0!	0	#DIV/0!	#DM/0!
Agricultural	15	15	100.000%	956,310	956,310	100.000%	0	0	#DM/0!
Religious/ Non-profit	9	9	100.000%	599,600	599,600	100.000%	0	0	#DM/0!
Government	20	20	100.000%	1,000,000	1,000,000	100.000%	0	0	#DM/0!
Education	0	0	#DIV/0!	0	#DIV/0!	#DM/0!	0	#DIV/0!	#DM/0!
Utilities	4	4	100.000%	682,360	682,360	100.000%	0	0	#DM/0!
Total	444	444	100.000%	24,366,483	#DIV/0!	#DM/0!	819	#DIV/0!	#DM/0!

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | Y | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Newborn (Newton County)
Hazard: Flood Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	387	0	0.000%	19,078,413	0	0.000%	819	0	0%
Commercial	29	0	0.000%	2,051,800	0	0.000%	0	0	#DIV/0!
Industrial	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!
Agricultural	15	0	0.000%	956,310	0	0.000%	0	0	#DIV/0!
Religious/ Non-profit	9	0	0.000%	599,600	0	0.000%	0	0	#DIV/0!
Government	20	0	0.000%	1,000,000	0	0.000%	0	0	#DIV/0!
Education	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!
Utilities	4	0	0.000%	882,360	0	0.000%	0	0	#DIV/0!
Total	444	0	0.000%	24,386,483	#DIV/0!	#DIV/0!	819	#DIV/0!	#DIV/0!

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Oxford (Newton County)
Hazard: Non-Spatially Defined Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community of State	\$ in Hazard Area	% in Hazard Area	# in Community of State	# in Hazard Area	% in Hazard Area
Residential	934	934	100.000%	42,887,343	42,887,343	100.000%	2,088	2,088	100%
Commercial	14	14	100.000%	1,418,900	1,418,900	100.000%	0	0	#DIV/0!
Industrial	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!
Agricultural	7	7	100.000%	223,300	223,300	100.000%	0	0	#DIV/0!
Religious/ Non-profit	19	19	100.000%	1,326,500	1,326,500	100.000%	0	0	#DIV/0!
Government	36	36	100.000%	10,582,900	10,582,900	100.000%	0	0	#DIV/0!
Education	89	89	100.000%	29,728,100	29,728,100	100.000%	0	0	#DIV/0!
Utilities	4	4	100.000%	360,883	360,883	100.000%	0	0	#DIV/0!
Total	1,103	1,103	100.000%	86,527,926	#DIV/0!	#DIV/0!	2,088	#DIV/0!	#DIV/0!

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | | N |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | | N |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | | N |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a **Inventory of Assets**
Jurisdiction: Oxford (Newton County)
Hazard: Wildfire Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	934	934	100.000%	42,887,343	42,887,343	100.000%	2,088	2,088	100%
Commercial	14	14	100.000%	1,418,900	1,418,900	100.000%	0	0	#DIV/0!
Industrial	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!
Agricultural	7	7	100.000%	223,300	223,300	100.000%	0	0	#DIV/0!
Religious/ Non-profit	19	19	100.000%	1,326,500	1,326,500	100.000%	0	0	#DIV/0!
Government	36	36	100.000%	10,582,900	10,582,900	100.000%	0	0	#DIV/0!
Education	89	89	100.000%	29,728,100	29,728,100	100.000%	0	0	#DIV/0!
Utilities	4	4	100.000%	360,883	360,883	100.000%	0	0	#DIV/0!
Total	1,103	1,103	100.000%	86,527,926	#DIV/0!	#DIV/0!	2,088	#DIV/0!	#DIV/0!

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | Y | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a **Inventory of Assets**
Jurisdiction: Oxford (Newton County)
Hazard: Flood Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	934	5	0.535%	42,887,343	229,590	0.535%	2,088	11	1%
Commercial	14	0	0.000%	1,418,900	0	0.000%	0	0	#DIV/0!
Industrial	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	0	#DIV/0!
Agricultural	7	0	0.000%	223,300	0	0.000%	0	0	#DIV/0!
Religious/ Non-profit	19	0	0.000%	1,326,500	0	0.000%	0	0	#DIV/0!
Government	38	0	0.000%	10,582,900	0	0.000%	0	0	#DIV/0!
Education	89	0	0.000%	29,728,100	0	0.000%	0	0	#DIV/0!
Utilities	4	0	0.000%	380,883	0	0.000%	0	0	#DIV/0!
Total	1,103	5	0.453%	88,527,928	#DIV/0!	#DIV/0!	2,088	#DIV/0!	#DIV/0!

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | Y | |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | Y | |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | Y | |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | Y | |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | Y | |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Porterdales (Newton County)
Hazard: Non-Spatially Defined Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	853	853	100.000%	37,896,348	37,896,348	100.000%	1,526	1,526	100%
Commercial	36	36	100.000%	15,265,800	15,265,800	100.000%	0	0	#DIV/0!
Industrial	9	9	100.000%	1,935,500	1,935,500	100.000%	0	0	#DIV/0!
Agricultural	1	1	100.000%	250,700	250,700	100.000%	0	0	#DIV/0!
Religious/ Non-profit	30	30	100.000%	2,624,100	2,624,100	100.000%	0	0	#DIV/0!
Government	41	41	100.000%	2,524,180	2,524,180	100.000%	0	0	#DIV/0!
Education	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!
Utilities	8	8	100.000%	2,737,755	2,737,755	100.000%	0	0	#DIV/0!
Total	978	978	100.000%	63,234,383	#DIV/0!	#DIV/0!	1,526	#DIV/0!	#DIV/0!

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | | N |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | | N |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | | N |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Porterdale (Newton County)
Hazard: Wildfire Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	853	847	99.297%	37,896,348	37,629,785	99.297%	1,526	1,515	99%
Commercial	36	34	94.444%	15,265,800	14,417,700	94.444%	0	0	#DM/OI
Industrial	5	8	88.889%	1,935,500	1,720,444	88.889%	0	0	#DM/OI
Agricultural	1	1	100.000%	250,700	250,700	100.000%	0	0	#DM/OI
Religious/ Non-profit	30	28	93.333%	2,624,100	2,448,160	93.333%	0	0	#DM/OI
Government	41	41	100.000%	2,524,180	2,524,180	100.000%	0	0	#DM/OI
Education	0	0	#DIV/OI	0	#DIV/OI	#DM/OI	0	#DIV/OI	#DM/OI
Utilities	8	6	75.000%	2,737,795	2,053,316	75.000%	0	0	#DM/OI
Total	978	965	98.671%	68,234,383	#DIV/OI	#DM/OI	1,526	#DIV/OI	#DM/OI

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | Y | N |
|---|---|---|
| 1. Do you know where the greatest damages may occur in your area? | | N |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | | N |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | | N |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | | N |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

GEMA Worksheet #3a Inventory of Assets
Jurisdiction: Porterdale (Newton County)
Hazard: Flood Hazard

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

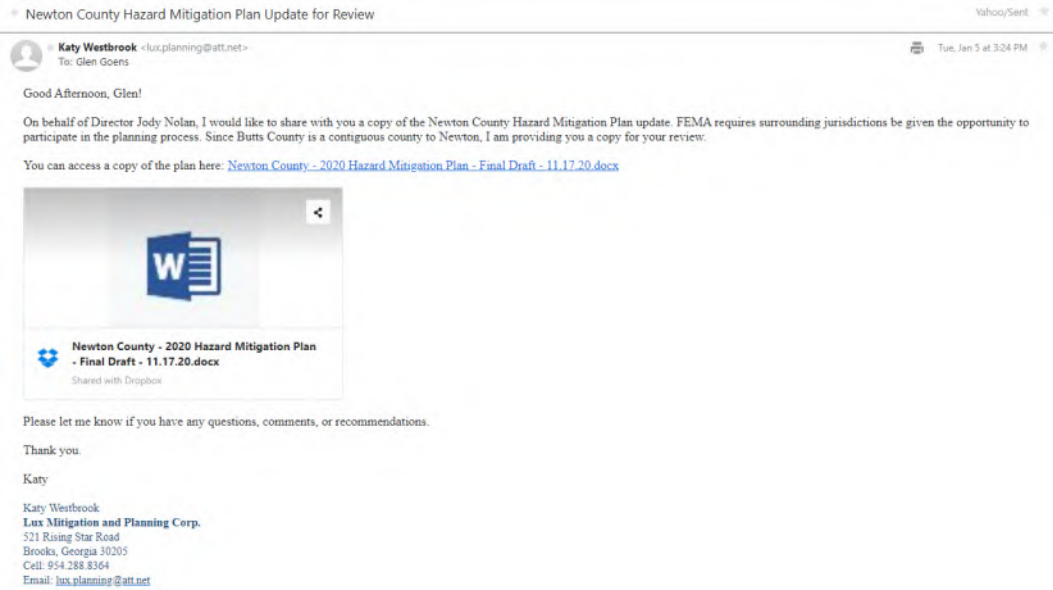
Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community of State	# in Hazard Area	% in Hazard Area	\$ in Community or State	\$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	853	3	0.352%	37,896,348	133,281	0.352%	1,528	5	0%
Commercial	36	3	8.333%	15,265,800	1,272,150	8.333%	0	0	#DIV/0!
Industrial	9	1	11.111%	1,935,500	215,056	11.111%	0	0	#DIV/0!
Agricultural	1	0	0.000%	250,700	0	0.000%	0	0	#DIV/0!
Religious/ Non-profit	30	0	0.000%	2,624,100	0	0.000%	0	0	#DIV/0!
Government	41	0	0.000%	2,524,180	0	0.000%	0	0	#DIV/0!
Education	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	0	#DIV/0!
Utilities	8	0	0.000%	2,737,755	0	0.000%	0	0	#DIV/0!
Total	978	7	0.716%	63,234,383	#DIV/0!	#DIV/0!	1,528	#DIV/0!	#DIV/0!

Task B. Determine whether (and where) you want to collect additional inventory data.

- | | | |
|---|----------|----------|
| | Y | N |
| 1. Do you know where the greatest damages may occur in your area? | Y | |
| 2. Do you know whether your critical facilities will be operational after a hazard event? | | N |
| 3. Is there enough data to determine which assets are subject to the greatest potential damages? | | N |
| 4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? | | N |
| 5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards? | | N |
| 6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? | | N |
| 7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? | | N |

Appendix F – Documentation of Peer Review

Butts County



Jasper County

Newton County Hazard Mitigation Plan Update for Review

Yahoo/Sent



Katy Westbrook <lux.planning@att.net>
To: jasper.county@gema.ga.gov

Tue, Jan 5 at 3:25 PM

Good Afternoon, Ms. Betty!

On behalf of Director Jody Nolan, I would like to share with you a copy of the Newton County Hazard Mitigation Plan update. FEMA requires surrounding jurisdictions be given the opportunity to participate in the planning process. Since Jasper County is a contiguous county to Newton, I am providing you a copy for your review.

You can access a copy of the plan here: [Newton County - 2020 Hazard Mitigation Plan - Final Draft - 11.17.20.docx](#)



Please let me know if you have any questions, comments, or recommendations.

Thank you.

Katy

Katy Westbrook
Lux Mitigation and Planning Corp.
521 Rising Star Road
Brooks, Georgia 30205
Cell: 954.288.8364
Email: lux.planning@att.net

Rockdale County

Newton County Hazard Mitigation Plan Update for Review

Yahoo/Sent



Katy Westbrook <luz.planning@att.net>
To: Daniel Morgan

Tue, Jan 5 at 3:29 PM

Good Afternoon, Director Morgan,

On behalf of Director Jody Nolan, I would like to share with you a copy of the Newton County Hazard Mitigation Plan update. FEMA requires surrounding jurisdictions be given the opportunity to participate in the planning process. Since Rockdale County is a contiguous county to Newton, I am providing you a copy for your review.

You can access a copy of the plan here: [Newton County - 2020 Hazard Mitigation Plan - Final Draft - 11.17.20.docx](#)



Please let me know if you have any questions, comments, or recommendations.


Thank you.


Katy

Katy Westbrook
Luz Mitigation and Planning Corp.
521 Rising Star Road
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Cell: 954.288.8364
Email: luz.planning@att.net

Walton County

Newton County Hazard Mitigation Plan Update for Review Yahoo/Sent

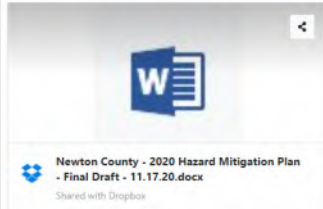
 **Katy Westbrook** <lux.planning@att.net>
To: Carl Morrow

 Tue, Jan 5 at 3:26 PM

Good Afternoon, Carl!

On behalf of Director Jody Nolan, I would like to share with you a copy of the Newton County Hazard Mitigation Plan update. FEMA requires surrounding jurisdictions be given the opportunity to participate in the planning process. Since Walton County is a contiguous county to Newton, I am providing you a copy for your review.

You can access a copy of the plan here: [Newton County - 2020 Hazard Mitigation Plan - Final Draft - 11.17.20.docx](#)



Please let me know if you have any questions, comments, or recommendations.

Thank you.


Katy


Katy Westbrook
Lux Mitigation and Planning Corp.
521 Rising Star Road
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Cell: 954.288.8364
Email: lux.planning@att.net

Morgan County

Newton County Hazard Mitigation Plan Update for Review

Yahoo/Sent

 **Katy Westbrook** <lux.planning@att.net>
To: Gwen Ruark

 Tue, Jan 5 at 3:25 PM

Good Afternoon, Mrs. Gwen!

On behalf of Director Jody Nolan, I would like to share with you a copy of the Newton County Hazard Mitigation Plan update. FEMA requires surrounding jurisdictions be given the opportunity to participate in the planning process. Since Morgan County is a contiguous county to Newton, I am providing you a copy for your review.

You can access a copy of the plan here: [Newton County - 2020 Hazard Mitigation Plan - Final Draft - 11.17.20.docx](#)



Please let me know if you have any questions, comments, or recommendations.

Thank you.

Katy

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Henry County

Newton County Hazard Mitigation Plan Update for Review

Yahoo/Sent



Katy Westbrook <lux.planning@att.net>
To: dash@co.henry.ga.us

Tue, Jan 5 at 3:28 PM

Good Afternoon, Director Ash,

On behalf of Director Jody Nolan, I would like to share with you a copy of the Newton County Hazard Mitigation Plan update. FEMA requires surrounding jurisdictions be given the opportunity to participate in the planning process. Since Henry County is a contiguous county to Newton, I am providing you a copy for your review.

You can access a copy of the plan here: [Newton County - 2020 Hazard Mitigation Plan - Final Draft - 11.17.20.docx](#)



Please let me know if you have any questions, comments, or recommendations.

Thank you.

Katy

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Email: lux.planning@att.net

Appendix G – Documentation of Municipal Participation

Newborn

CITY/TOWN WORKSHEET

Municipality: Town of Newborn
 County: Newton
 Completed by: Elisa Rowe
 Date: August 31, 2020

CAPABILITIES/SERVICES (CHECK ALL THAT APPLY)

- LAW ENFORCEMENT *w/ Newton County*
- FIRE PROTECTION *w/ Newton County*
- GARBAGE AND SOLID-WASTE COLLECTION AND DISPOSAL
- PUBLIC HEALTH FACILITIES AND SERVICES
- STREET AND ROAD CONSTRUCTION AND MAINTENANCE
- PARKS, RECREATIONAL AREAS, PROGRAMS, AND FACILITIES
- STORM-WATER AND SEWAGE COLLECTION AND DISPOSAL SYSTEMS
- DEVELOPMENT, STORAGE, TREATMENT, PURIFICATION, AND DISTRIBUTION OF WATER
- PUBLIC HOUSING
- PUBLIC TRANSPORTATION
- LIBRARIES, ARCHIVES, AND ARTS AND SCIENCES PROGRAMS AND FACILITIES
- TERMINAL AND DOCK FACILITIES AND PARKING FACILITIES
- CODES, INCLUDING BUILDING, HOUSING, PLUMBING, AND ELECTRICAL *w/ Newton County*
- AIR-QUALITY CONTROL
- THE CREATION, MODIFICATION, AND MAINTENANCE OF RETIREMENT OR PENSION SYSTEMS FOR LOCAL-GOVERNMENT EMPLOYEES
- PLANNING, ZONING, AND COMMUNITY DEVELOPMENT *w/ Newton County*
- ELECTRIC OR GAS UTILITY SERVICES
- STREET LIGHTING

GOVERNMENT STRUCTURE

Is this a City or Town: Town

Number of Councilmembers: 4

Are the elections city-wide or is it based on a geographical area (district)?

city wide

Length of term for Councilmembers (in years): 4 years

Are the terms staggered or at the same time? staggered

UNIQUE HAZARDS/INDUSTRY (PLEASE LIST/EXPLAIN)

--

POINTS OF INTEREST/TOURISM (PLEASE LIST/EXPLAIN)

Community Center Town Park

NOTABLE PAST HAZARD EVENTS (PLEASE LIST/EXPLAIN)

Tornado - April 2011

ADDITIONAL NOTES

--

Porterdale

CITY/TOWN WORKSHEET

Municipality: PORTERDALE
 County: NEWTON
 Completed by: CHIEF J. CRIPPS
 Date: 8-31-2020

CAPABILITIES/SERVICES (CHECK ALL THAT APPLY)

- LAW ENFORCEMENT
- FIRE PROTECTION
- GARBAGE AND SOLID-WASTE COLLECTION AND DISPOSAL
- PUBLIC HEALTH FACILITIES AND SERVICES
- STREET AND ROAD CONSTRUCTION AND MAINTENANCE
- PARKS, RECREATIONAL AREAS, PROGRAMS, AND FACILITIES
- STORM-WATER AND SEWAGE COLLECTION AND DISPOSAL SYSTEMS
- DEVELOPMENT, STORAGE, TREATMENT, PURIFICATION, AND DISTRIBUTION OF WATER
- PUBLIC HOUSING
- PUBLIC TRANSPORTATION
- LIBRARIES, ARCHIVES, AND ARTS AND SCIENCES PROGRAMS AND FACILITIES
- TERMINAL AND DOCK FACILITIES AND PARKING FACILITIES
- CODES, INCLUDING BUILDING, HOUSING, PLUMBING, AND ELECTRICAL
- AIR-QUALITY CONTROL
- THE CREATION, MODIFICATION, AND MAINTENANCE OF RETIREMENT OR PENSION SYSTEMS FOR LOCAL-GOVERNMENT EMPLOYEES
- PLANNING, ZONING, AND COMMUNITY DEVELOPMENT
- ELECTRIC OR GAS UTILITY SERVICES
- STREET LIGHTING

GOVERNMENT STRUCTURE

Is this a City or Town: TOWN
 Number of Councilmembers: 5
 Are the elections city-wide or is it based on a geographical area (district)?
CITY WIDE
 Length of term for Councilmembers (in years): 4 YEARS
 Are the terms staggered or at the same time? STAGGERED

UNIQUE HAZARDS/INDUSTRY (PLEASE LIST/EXPLAIN)

LARGE OLD MILL INDUSTRY
TIRE AND CORD
STATE HWY THRU-TOWN
FLOOD ZONES

POINTS OF INTEREST/TOURISM (PLEASE LIST/EXPLAIN)

YELLOW RIVER
OLD MILLS - HISTORIC VALUE SINCE 1806
MANY PARKS
MANY OLD STRUCTURES - HISTORIC
TRAM DECK RENOVATED.

NOTABLE PAST HAZARD EVENTS (PLEASE LIST/EXPLAIN)

FLOODS OF YELLOW RIVER - SEVERAL MAJOR ONES
STORA DAMAGE.

ADDITIONAL NOTES

NA

Appendix H – 2020 Newton County HAZUS Report



Hazard Risk Analyses
Supplement to the Newton County
Joint Hazard Mitigation Plan



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Introduction

The Federal Disaster Mitigation Act of 2000 (DMA2K) requires state, local, and tribal governments to develop and maintain a mitigation plan to be eligible for certain federal disaster assistance and hazard mitigation funding programs.

Mitigation seeks to reduce a hazard’s impacts, which may include loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation must be based on a sound risk assessment that quantifies the potential losses of a disaster by assessing the vulnerability of buildings, infrastructure, and people.

In recognition of the importance of planning in mitigation activities, FEMA Hazus-MH, a powerful disaster risk assessment tool based on geographic information systems (GIS). This tool enables communities of all sizes to predict estimated losses from floods, hurricanes, earthquakes, and other related phenomena and to measure the impact of various mitigation practices that might help reduce those losses.

In 2020, the Georgia Department of Emergency Management partnered with the Carl Vinson Institute of Government at the University of Georgia to develop a detailed risk assessment focused on defining hurricane, riverine flood, and tornado risks in Newton County, Georgia. This assessment identifies the characteristics and potential consequences of the disaster, how much of the community could be affected by the disaster, and the impact on community assets.

Risk Assessment Process Overview

Hazus-MH Version 2.2 SP1 was used to perform the analyses for Newton County. The Hazus-MH application includes default data for every county in the US. This Hazus-MH data was derived from a variety of national sources and in some cases the data are also several years old. Whenever possible, using local provided data is preferred. Newton County provided building inventory information from the county’s property tax assessment system. This section describes the changes made to the default Hazus-MH inventory and the modeling parameters used for each scenario.

County Inventory Changes

The default Hazus-MH site-specific point inventory was updated using data compiled from the Georgia Emergency Management Agency (GEMA). The default Hazus-MH aggregate inventory (General Building Stock) was also updated prior to running the scenarios. Reported losses reflect the updated data sets.

General Building Stock Updates

General Building Stock (GBS) is an inventory category that consists of aggregated data (grouped by census geography — tract or block). Hazus-MH generates a combination of site-specific and aggregated loss estimates based on the given analysis and user input.

The GBS records for Newton County were replaced with data derived from parcel and property assessment data obtained from Newton County. The county provided property assessment data was current as of August 2019 and the parcel data current as of August 2019. Records without improvements were deleted. The parcel boundaries were converted to parcel points located in the centroids of each parcel boundary; then, each parcel point was linked to an assessor record based upon matching parcel numbers. The parcel assessor match-rate for Newton County is 100%. The

generated building inventory represents the approximate locations (within a parcel) of structures. The building inventory was aggregated by census block. Both the tract and block tables were updated. Table 1 shows the results of the changes to the GBS tables by occupancy class.

Table 1: GBS Building Exposure Updates by Occupancy Class*

General Occupancy	Default Hazus-MH Count	Updated Count	Default Hazus-MH Exposure	Updated Exposure
Agricultural	100	4	\$23,127,000	\$122,000
Commercial	1,543	1,161	\$1,016,794,000	\$308,764,000
Education	52	41	\$67,299,000	\$278,779,000
Government	35	26	\$28,054,000	\$9,195,000
Industrial	575	382	\$440,784,000	\$166,112,000
Religious	211	91	\$137,017,000	\$25,558,000
Residential	35,723	37,216	\$8,244,715,000	\$7,125,078,000
Total	38,239	38,921	\$9,957,790,000	\$7,913,608,000

*The exposure values represent the total number and replacement cost for all Newton County Buildings

For Newton County, the updated GBS was used to calculate hurricane wind losses. The flood losses and tornado losses were calculated from building inventory modeled in Hazus-MH as User-Defined Facility

Table 2: Updated Essential Facilities

Classification	Updated Count	Updated Exposure
Covington		
EOC	0	\$0
Care	1	\$22,482,000
Fire	3	\$6,221,000
Police	2	\$35,762,000
School	3	\$6,739,000
Total	9	\$71,204,000
Mansfield		
EOC	0	\$0
Care	0	\$0
Fire	0	\$0
Police	0	\$0
School	1	\$1,742,000
Total	1	\$1,742,000
Newborn		
EOC	0	\$0
Care	0	\$0
Fire	0	\$0
Police	0	\$0
School	0	\$0
Total	0	\$0
Oxford		
EOC	1	\$880,000
Care	0	\$0
Fire	1	\$231,000
Police	1	\$743,000
School	1	\$20,173,000
Total	4	\$22,027,000

7

Classification	Updated Count	Updated Exposure
Porterdale		
EOC	0	\$0
Care	0	\$0
Fire	0	\$0
Police	1	\$598,000
School	0	\$0
Total	1	\$598,000
Social Circle		
EOC	0	\$0
Care	0	\$0
Fire	0	\$0
Police	0	\$0
School	0	\$0
Total	0	\$0
Unincorporated Areas of Newton County		
EOC	0	\$0
Care	0	\$0
Fire	6	\$4,211,000
Police	0	\$0
School	20	\$180,908,000
Total	26	\$185,119,000

Assumptions and Exceptions

Hazus-MH loss estimates may be impacted by certain assumptions and process variances made in this risk assessment.

- The Newton County analysis used Hazus-MH Version 2.2 SP1, which was released by FEMA in May 2015.
- County provided parcel and property assessment data may not fully reflect all buildings in the county. For example, some counties do not report not-for-profit buildings such as government buildings, schools and churches in their property assessment data. This data was used to update the General Building Stock as well as the User Defined Facilities applied in this risk assessment.
- Georgia statute requires that the Assessor's Office assign a code to all of the buildings on a parcel based on the buildings primary use. If there is a residential or a commercial structure on a parcel and there are also agricultural buildings on the same parcel Hazus-MH looks at the residential and commercial "primary" structures first and then combines the value of all

secondary structures on that parcel with the value of the primary structure. The values and building counts are still accurate but secondary structures are accounted for under the same classification as the primary structure. Because of this workflow, the only time that a parcel would show a value for an agricultural building is when there are no residential or commercial structures on the parcel thus making the agricultural building the primary structure. This is the reason that agricultural building counts and total values seem low or are nonexistent.

- GBS updates from assessor data will skew loss calculations. The following attributes were defaulted or calculated:
 - Foundation Type was set from Occupancy Class
 - First Floor Height was set from Foundation Type
 - Content Cost was calculated from Replacement Cost
- It is assumed that the buildings are located at the centroid of the parcel.
- The essential facilities extracted from the GMIS were only used in the portion of the analysis designated as essential facility damage. They were not used in the update of the General Building Stock or the User Defined Facility inventory.

The hazard models included in this risk assessment included:

- Hurricane assessment which was comprised of a wind only damage assessment.
- Flood assessment based on the 1% annual chance event that includes riverine assessments.
- Tornado assessment based on GIS modeling.

Hurricane Risk Assessment

Hazard Definition

The National Hurricane Center describes a hurricane as a tropical cyclone in which the maximum sustained wind is, at minimum, 74 miles per hour (mph)². The term hurricane is used for Northern Hemisphere tropical cyclones east of the International Dateline to the Greenwich Meridian. The term typhoon is used for Pacific tropical cyclones north of the Equator west of the International Dateline. Hurricanes in the Atlantic Ocean, Gulf of Mexico, and Caribbean form between June and November with the peak of hurricane season occurring in the middle of September. Hurricane intensities are measured using the Saffir-Simpson Hurricane Wind Scale (Table 3). This scale is a 1 to 5 categorization based on the hurricane's intensity at the indicated time.

Hurricanes bring a complex set of impacts. The winds from a hurricane produce a rise in the water level at landfall called storm surge. Storm surges produce coastal flooding effects that can be as damaging as the hurricane's winds. Hurricanes bring very intense inland riverine flooding. Hurricanes can also produce tornadoes that can add to the wind damages inland. In this risk assessment, only hurricane winds, and coastal storm surge are considered.

Table 3: Saffir-Simpson Hurricane Wind Scale

Category	Wind Speed (mph)	Damage
1	74 - 95	Very dangerous winds will produce some damage
2	96 - 110	Extremely dangerous winds will cause extensive damage
3	111 - 130	Devastating damage will occur
4	131 - 155	Catastrophic damage will occur
5	> 155	Catastrophic damage will occur

The National Oceanic and Atmospheric Administration's National Hurricane Center created the HURDAT database, which contains all of the tracks of tropical systems since the mid-1800s. This database was used to document the number of tropical systems that have affected Newton County by creating a 20-mile buffer around the county to include storms that didn't make direct landfall in Newton County but impacted the county. Note that the storms listed contain the peak sustained winds, maximum pressure and maximum attained storm strength for the entire storm duration. Since 1859, Newton County has had 12 tropical systems within 20 miles of its county borders (Table 4).

Table 4: Tropical Systems affecting Newton County³

YEAR	DATE RANGE	NAME	MAX WIND(Knots)	MAX PRESSURE	MAX CAT
1859	September 15-18	UNNAMED	81	0	H1

² National Hurricane Center (2011). "Glossary of NHC Terms." National Oceanic and Atmospheric Administration. <http://www.nhc.noaa.gov/aboutgloss.shtml#h>. Retrieved 2012-23-02.

³ Atlantic Oceanic and Meteorological Laboratory (2012). "Data Center." National Oceanic and Atmospheric Administration. http://www.aoml.noaa.gov/hrd/data_sub/re_anal.html. Retrieved 7-20-2015.

YEAR	DATE RANGE	NAME	MAX WIND(knots)	MAX PRESSURE	MAX CAT
1882	September 02-13	UNNAMED	127	1000	H3
1893	September 27 - October 05	UNNAMED	132	948	H4
1896	July 04-12	UNNAMED	98	0	H2
1900	September 11-15	UNNAMED	52	0	TS
1901	September 21 - October 02	UNNAMED	52	0	TS
1903	September 09-16	UNNAMED	92	988	H1
1911	August 23-31	UNNAMED	98	972	H2
1912	June 07-17	UNNAMED	69	0	TS
1959	May 28 - June 02	ARLENE	63	1002	TS
1994	August 14-19	BERYL	58	1013	TS
1995	August 22-28	JERRY	40	1010	TS

Category Definitions:
 TS – Tropical storm
 TD – Tropical depression
 H1 – Category 1 (same format for H2, H3, and H4)
 E – Extra-tropical cyclone



Figure 2: Continental United States Hurricane Strikes: 1950 to 2018⁴

Probabilistic Hurricane Scenario

The following probabilistic wind damage risk assessment modeled a Tropical Storm with maximum winds of 67 mph.

Wind Damage Assessment

Separate analyses were performed to determine wind and hurricane storm surge related flood losses. This section describes the wind-based losses to Newton County. Wind losses were determined from probabilistic models run for the Tropical Storm which equates to the 1% chance storm event. Figure 3 shows wind speeds for the modeled Tropical Storm.

⁴ Source: NOAA National Centers for Environmental Information

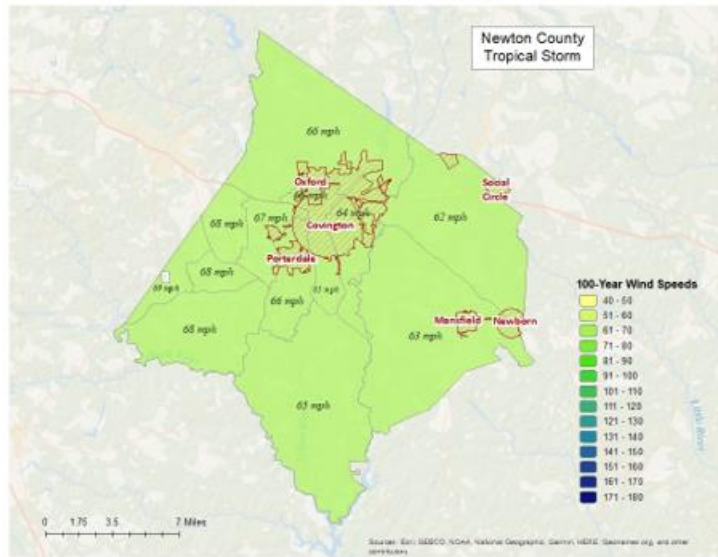


Figure 3: Wind Speeds by Storm Category

Wind-Related Building Damages

Buildings in Newton County are vulnerable to storm events, and the cost to rebuild may have significant consequences to the community. The following table shows a summary of the results of wind-related building damage in Newton County for the Tropical Storm (100 Year Event). The loss ratio expresses building losses as a percentage of total building replacement cost in the county. Figure 4 illustrates the building loss ratios of the modeled Tropical Storm.

Table 5: Hurricane Wind Building Damage

Classification	Number of Buildings Damaged	Total Building Damage	Total Economic Loss ⁵	Loss Ratio
Tropical Storm	30	\$7,530,530	\$11,392,610	0.10%

⁵ Includes property damage (infrastructure, contents, and inventory) as well as business interruption losses.

Note that wind damaged buildings are not reported by jurisdiction. This is due to the fact that census tract boundaries – upon which hurricane building losses are based – do not closely coincide with jurisdiction boundaries.

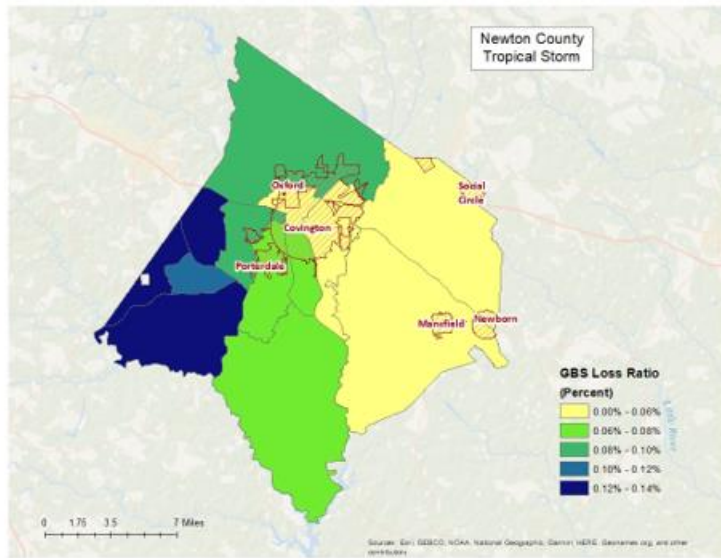


Figure 4: Hurricane Wind Building Loss Ratios

Essential Facility Losses

Essential facilities are also vulnerable to storm events, and the potential loss of functionality may have significant consequences to the community. Hazus-MH identified the essential facilities that may be moderately or severely damaged by winds. The results are compiled in Table 6.

There are 41 essential facilities in Newton County.

Classification	Number
EOCs	1
Fire Stations	10
Care Facilities	1
Police Stations	4
Schools	25

Table 6: Wind-Damaged Essential Facility Losses

Classification	Facilities At Least Moderately Damaged > 50%	Facilities Completely Damaged > 50%	Facilities with Expected Loss of Use (< 1 day)
Tropical Storm	0	0	41

Shelter Requirements

Hazus-MH estimates the number of households evacuated from buildings with severe damage from high velocity winds as well as the number of people who will require short-term sheltering. Since the 1% chance storm event for Newton County is a Tropical Storm, the resulting damage is not enough to displace Households or require temporary shelters as shown in the results listed in Table 7.

Table 7: Displaced Households and People

Classification	# of Displaced Households	# of People Needing Short-Term Shelter
Tropical Storm	0	0

Debris Generated from Hurricane Wind

Hazus-MH estimates the amount of debris that will be generated by high velocity hurricane winds and quantifies it into three broad categories to determine the material handling equipment needed:

- Reinforced Concrete and Steel Debris
- Brick and Wood and Other Building Debris
- Tree Debris

Different material handling equipment is required for each category of debris. The estimates of debris for this scenario are listed in Table 8. The amount of hurricane wind related tree debris that is estimated to require pick up at the public’s expense is listed in the eligible tree debris column.

Table 8: Wind-Related Debris Weight (Tons)

Classification	Brick, Wood, and Other	Reinforced Concrete and Steel	Eligible Tree Debris	Other Tree Debris	Total
Tropical Storm	331	0	2,918	15,551	18,800

Figure 5 shows the distribution of all wind related debris resulting from a Tropical Storm. Each dot represents 20 tons of debris within the census tract in which it is located. The dots are randomly distributed within each census tract and therefore do not represent the specific location of debris sites.

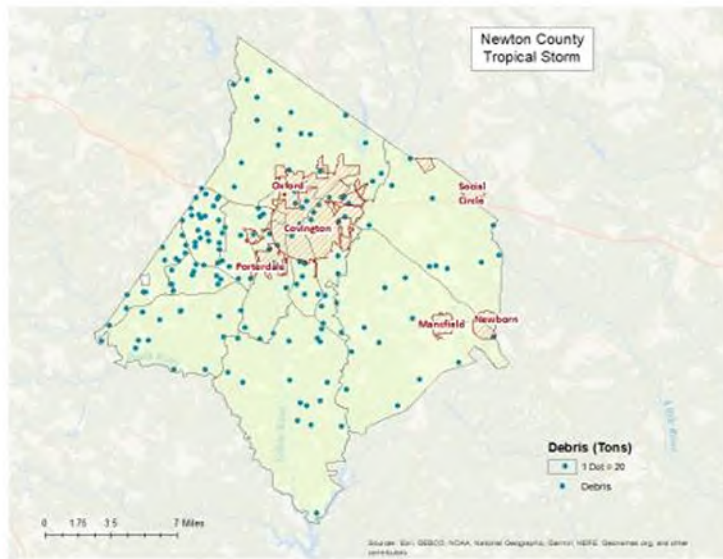


Figure 5: Wind-Related Debris Weight (Tons)

Flood Risk Assessment

Hazard Definition

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the amount and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. Floods can be classified as one of three types: upstream floods, downstream floods, or coastal floods.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause damage over relatively localized areas, but they can be quite severe in the local areas in which they occur. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can be the result of inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at any time of the year in Georgia, but they are most common in the spring and summer months.

Downstream floods, also called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage.

Coastal floods occurring on the Atlantic and Gulf coasts may be related to hurricanes or other combined offshore, nearshore, and shoreline processes. The effects of these complex interrelationships vary significantly across coastal settings, leading to challenges in the determination of the base (1-percent-annual-chance) flood for hazard mapping purposes. Land area covered by floodwaters of the base flood is identified as a Special Flood Hazard Area (SFHA).

The SFHA is the area where the National Flood Insurance Program's (NFIP) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. The owner of a structure in a high-risk area must carry flood insurance, if the owner carries a mortgage from a federally regulated or insured lender or servicer.

The Newton County flood risk assessment analyzed at risk structures in the SFHA.

The following probabilistic risk assessment involves an analysis of a 1% annual chance riverine flood event (100-Year Flood) and a 1% annual chance coastal flood.

Riverine 1% Flood Scenario

Riverine losses were determined from the 1% flood boundaries downloaded from the FEMA Flood Map Service Center in September 2020. The flood boundaries were overlaid with the USGS 10 meter DEM

Riverine 1% Flood Building Damages

Buildings in Newton County are vulnerable to flooding from events equivalent to the 1% riverine flood. The economic and social impacts from a flood of this magnitude can be significant. Table 9 provides a summary of the potential flood-related building damage in Newton County by jurisdiction that might be experienced from the 1% flood. Figure 7 maps the potential loss ratios of total building exposure to losses sustained to buildings from the 1% flood by 2010 census block and Figure 8 illustrates the relationship of building locations to the 1% flood inundation boundary.

Table 9: Newton County Riverine 1% Building Losses

Occupancy	Total Buildings in the Jurisdiction	Total Buildings Damaged in the Jurisdiction	Total Building Exposure in the Jurisdiction	Total Losses to Buildings in the Jurisdiction	Loss Ratio of Exposed Buildings to Damaged Buildings in the Jurisdiction
Covington					
Residential	4,270	32	\$769,223,239	\$1,596,771	0.21%
Commercial	648	13	\$173,147,088	\$1,049,776	0.61%
Oxford					
Residential	601	5	\$99,440,483	\$245,880	0.25%
Porterdale					
Industrial	11	1	\$6,262,826	\$8,165	0.13%
Commercial	17	3	\$6,950,189	\$80,925	1.16%
Residential	697	3	\$107,019,014	\$221,260	0.21%
Unincorporated					
Commercial	454	7	\$123,924,072	\$137,184	0.11%
Government	9	1	\$500,449	\$527	0.11%
Industrial	143	5	\$21,406,222	\$131,771	0.62%
Residential	31,200	419	\$6,072,200,865	\$30,897,221	0.51%
County Total					
	38,050	489	\$7,380,074,449	\$34,369,480	

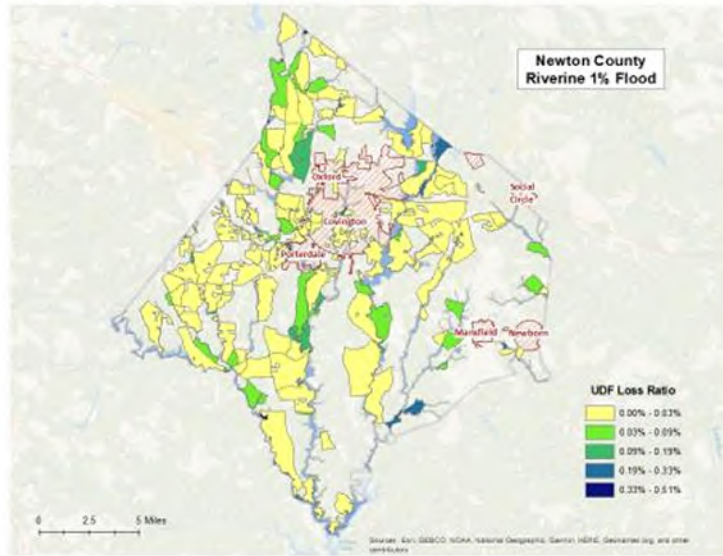


Figure 7: Newton County Potential Loss Ratios of Total Building Exposure to Losses Sustained to Buildings from the 1% Riverine Flood by 2010 Census Block

Riverine 1% Flood Shelter Requirements

Hazus-MH estimates that the number of households that are expected to be displaced from their homes due to riverine flooding and the associated potential evacuation. The model estimates 2,033 households might be displaced due to the flood. Displacement includes households evacuated within or very near to the inundated area. Displaced households represent 6,099 individuals, of which 4,089 may require short term publicly provided shelter. The results are mapped in Figure 9.

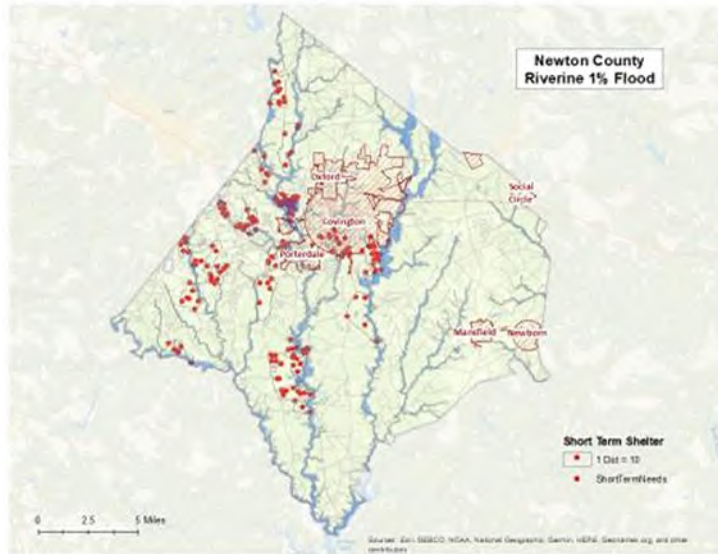


Figure 9: Riverine 1% Estimated Flood Shelter Requirements

Riverine 1% Flood Debris

Hazus-MH estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories:

- Finishes (dry wall, insulation, etc.)
- Structural (wood, brick, etc.)
- Foundations (concrete slab, concrete block, rebar, etc.)

Different types of material handling equipment will be required for each category. Debris definitions applied in Hazus-MH are unique to the Hazus-MH model and so do not necessarily conform to other definitions that may be employed in other models or guidelines.

The analysis estimates that an approximate total of 15,846 tons of debris might be generated: 1) Finishes- 4,925 tons; 2) Structural – 5,687 tons; and 3) Foundations- 5,234 tons. The results are mapped in Figure 10.

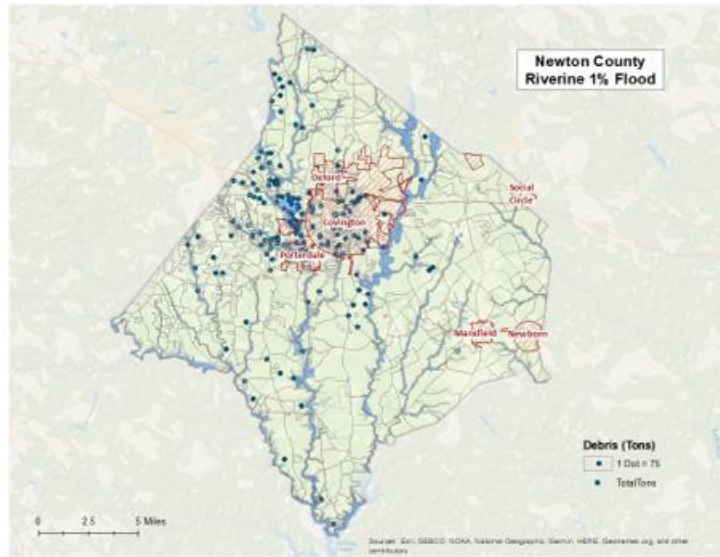


Figure 10: Riverine 1% Flood Debris Weight (Tons)

Tornado Risk Assessment

Hazard Definition

Tornadoes pose a great risk to the state of Georgia and its citizens. Tornadoes can occur at any time during the day or night. They can also happen during any month of the year. The unpredictability of tornadoes makes them one of Georgia's most dangerous hazards. Their extreme winds are violently destructive when they touch down in the region's developed and populated areas. Current estimates place the maximum velocity at about 300 miles per hour, but higher and lower values can occur. A wind velocity of 200 miles per hour will result in a wind pressure of 102.4 pounds per square foot of surface area—a load that exceeds the tolerance limits of most buildings. Considering these factors, it is easy to understand why tornadoes can be so devastating for the communities they hit.

Tornadoes are defined as violently-rotating columns of air extending from thunderstorms and cyclonic events. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently-rotating column of air can reach the ground very quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are classified according to the Fujita tornado intensity scale. Originally introduced in 1971, the scale was modified in 2006 to better define the damage and estimated wind scale. The Enhanced Fujita Scale ranges from low intensity EF0 with effective wind speeds of 65 to 85 miles per hour, to EF5 tornadoes with effective wind speeds of over 200 miles per hour. The Enhanced Fujita intensity scale is included in Table 10.

Table 10: Enhanced Fujita Tornado Rating

Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
EF0 Gale	65-85 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, sign boards damaged, shallow-rooted trees blown over.
EF1 Moderate	86-110 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
EF2 Significant	111-135 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
EF3 Severe	136-165 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
EF4 Devastating	166-200 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.
EF5 Incredible	> 200 mph	1.0-3.1 miles	100-315 miles	Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Source: <http://www.srh.noaa.gov>

Hypothetical Tornado Scenario

For this report, an EF3 tornado was modeled to illustrate the potential impacts of tornadoes of this magnitude in the county. The analysis used a hypothetical path based upon an EF3 tornado event running along the predominant direction of historical tornados (southeast to northwest). The tornado path was placed to travel through Covington. The selected widths were modeled after a re-creation of the Fujita-Scale guidelines based on conceptual wind speeds, path widths, and path lengths. There is no guarantee that every tornado will fit exactly into one of these categories. Table 11 depicts tornado path widths and expected damage.

Table 11: Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
EF-5	2,400	100%
EF-4	1,800	100%
EF-3	1,200	80%
EF-2	600	50%
EF-1	300	10%
EF-0	300	0%

Within any given tornado path there are degrees of damage. The most intense damage occurs within the center of the damage path, with decreasing amounts of damage away from the center. After the hypothetical path is digitized on a map, the process is modeled in GIS by adding buffers (damage zones) around the tornado path. Figure 11 describes the zone analysis.

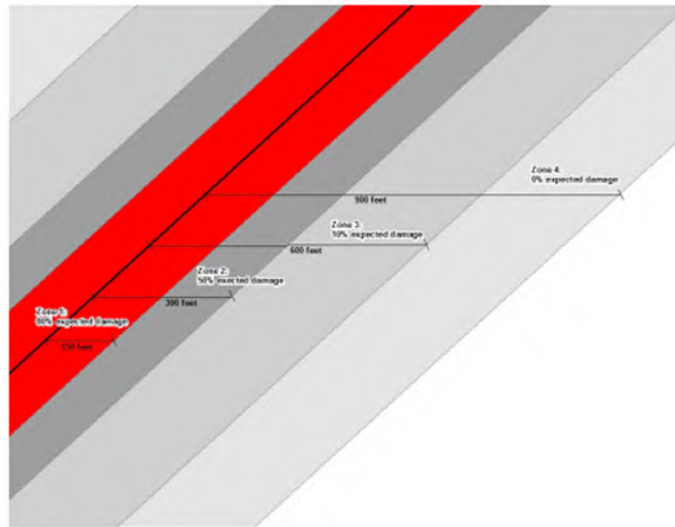


Figure 11: EF Scale Tornado Zones

An EF3 tornado has four damage zones, depicted in Table 12. Major damage is estimated within 150 feet of the tornado path. The outer buffer is 900 feet from the tornado path, within which buildings will not experience any damage. The selected hypothetical tornado path is depicted in Figure 12 and the damage curve buffer zones are shown in Figure 13.

Table 12: EF3 Tornado Zones and Damage Curves

Zone	Buffer (feet)	Damage Curve
1	0-150	80%
2	150-300	50%
3	300-600	10%
4	600-900	0%

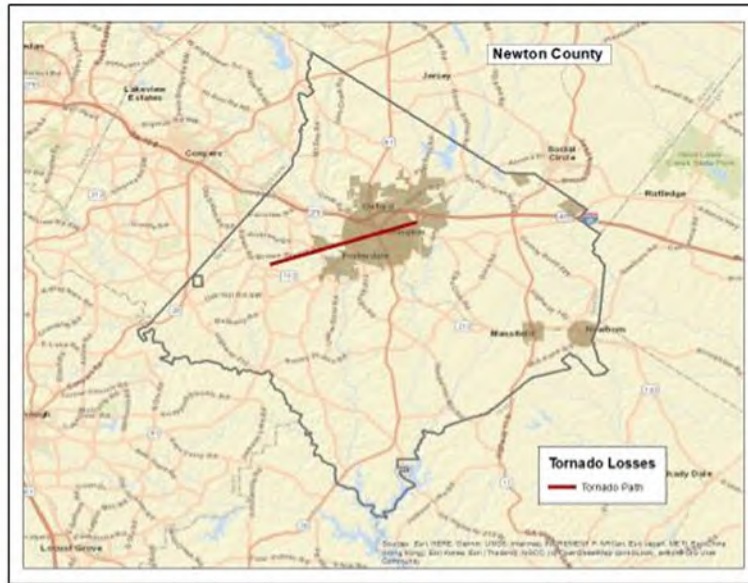


Figure 12: Hypothetical EF3 Tornado Path in Newton County

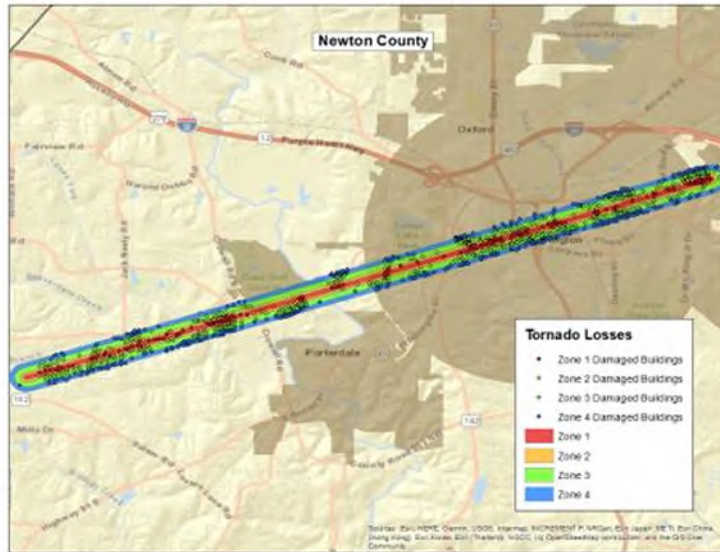


Figure 13: Modeled EF3 Tornado Damage Buffers in Newton County

EF3 Tornado Building Damages

The analysis estimated that approximately 1,257 buildings could be damaged, with estimated building losses of \$85 million. The building losses are an estimate of building replacement costs multiplied by the percentages of damage. The overlay was performed against parcels provided by Newton County that were joined with Assessor records showing estimated property replacement costs. The Assessor records often do not distinguish parcels by occupancy class if the parcels are not taxable and thus the number of buildings and replacement costs may be underestimated. The results of the analysis are depicted in Table 13.

Table 13: Estimated Building Losses by Occupancy Type

Occupancy	Buildings Damaged	Building Losses
Residential	913	\$36,920,745
Commercial	294	\$42,007,260
Industrial	29	\$959,135
Religious	6	\$398,891
Education	5	\$3,013,028
Government	10	\$1,754,651
Total	1,257	\$85,053,710

EF3 Tornado Essential Facility Damage

There were six essential facilities located in the tornado path – two schools, two medical care facilities and two fire stations. Table 14 outlines the specific facility and the amount of damage under the scenario.

Table 14: Estimated Essential Facilities Damaged

Facility	Amount of Damage
Porterdale Elementary School	Major Damage
Newton County Theme School	Major Damage
Piedmont Newton Hospital	Major Damage
Piedmont Newton Hospital	Major Damage
Covington Fire Department Station 2	Minor Damage
Newton County Fire Station 07	Minor Damage

According to the Georgia Department of Education, Porterdale Elementary School's enrollment was approximately 474 students and Newton County Theme School's enrollment was approximately 965 students as of March 2020. Depending on the time of day, a tornado strike as depicted in this scenario could result in significant injury and loss of life. In addition, arrangements would have to be made for the continued education of the students in another location.

The location of the damaged Essential Facility is mapped in Figure 14.

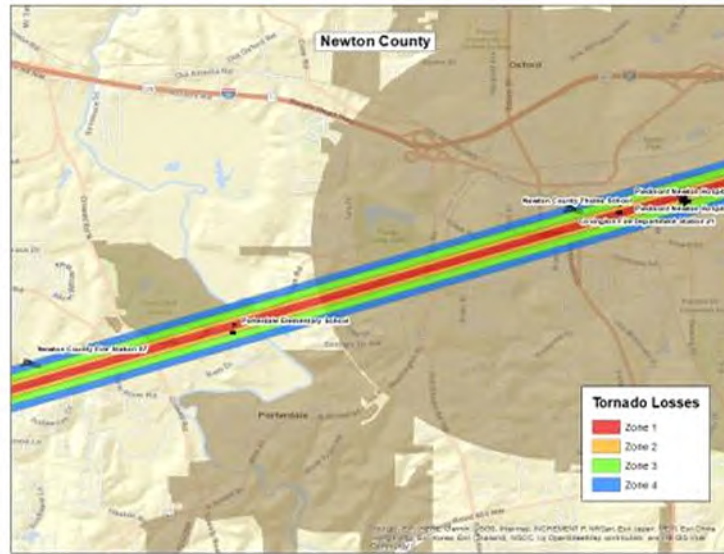


Figure 14: Modeled Essential Facility Damage in Newton County

Exceptions Report

Hazus Version 2.2 SP1 was used to perform the loss estimates for Newton County, Georgia. Changes made to the default Hazus-MH inventory and the modeling parameters used to setup the hazard scenarios are described within this document.

Reported losses reflect the updated data sets. Steps, algorithms and assumptions used during the data update process are documented in the project workflow named PDM_GA_Workflow.doc.

Statewide Inventory Changes

The default Hazus-MH Essential Facility inventory was updated for the entire state prior to running the hazard scenarios for Newton County.

Updates to the Critical Facility data used in GMS were provided by Newton County in September 2020. These updates were applied by The Carl Vinson Institute of Government at the University of Georgia. Table 15 summarizes the difference between the original Hazus-MH default data and the updated data for Newton County.

Table 15: Essential Facility Updates

Site Class	Feature Class	Default Replacement Cost	Default Count	Updated Replacement Cost	Updated Count
EF	Care	\$27,106,000	2	\$22,482,000	1
EF	EOC	\$880,000	1	880,000	1
EF	Fire	\$3,054,000	12	\$10,663,000	10
EF	Police	\$3,233,000	5	\$37,103,000	4
EF	School	\$101,352,000	18	\$209,562,000	25

County Inventory Changes

The GBS records for Newton County were replaced with data derived from parcel and property assessment data obtained from Newton County. The county provided property assessment data was current as of August 2019 and the parcel data current as of August 2019.

General Building Stock Updates

The parcel boundaries and assessor records were obtained from Newton County. Records without improvements were deleted. The parcel boundaries were converted to parcel points located in the centroids of each parcel boundary. Each parcel point was linked to an assessor record based upon matching parcel numbers. The generated Building Inventory represents the approximate locations (within a parcel) of building exposure. The Building Inventory was aggregated by Census Block and imported into

Hazus-MH using the Hazus-MH Comprehensive Data Management System (CDMS). Both the 2010 Census Tract and Census Block tables were updated.

The match between parcel records and assessor records was based upon a common Parcel ID. For this type of project, unless the hit rate is better than 85%, the records are not used to update the default aggregate inventory in Hazus-MH. The Parcel-Assessor hit rate for Newton County was 100%.

Adjustments were made to records when primary fields did not have a value. In these cases, default values were applied to the fields. Table 16 outlines the adjustments made to Newton County records.

Table 16: Building Inventory Default Adjustment Rates

Type of Adjustment	Building Count	Percentage
Area Unknown	196	1%
Construction Unknown	333	1%
Condition Unknown	86	0%
Foundation Unknown	256	1%
Year Built Unknown	115	0%
Total Buildings	38,943	1%

Approximately 1% of the CAMA values were either missing (<Null> or '0'), did not match CAMA domains or were unusable ('Unknown', 'Other', 'Pending'). These were replaced with 'best available' values. Missing Year Built values were populated from average values per Census Block. Missing Condition, Construction and Foundation values were populated with the highest-frequency CAMA values per Occupancy Class. Missing Area values were populated with the average CAMA values per Occupancy Class.

The resulting Building Inventory was used to populate the Hazus-MH General Building Stock and User Defined Facility tables. The updated General Building Stock was used to calculate flood and tornado losses. Changes to the building counts and exposure that were modeled in Newton County are sorted by General Occupancy in Table 1 at the beginning of this report. If replacements cost or building value were not present for a given record in the Assessor data, replacement costs were calculated from the Building Area (sqft) multiplied by the Hazus-MH RS Means (\$/sqft) values for each Occupancy Class.

Differences between the default and updated data are due to various factors. The Assessor records often do not distinguish parcels by occupancy class when the parcels are not taxable; therefore, the total number of buildings and the building replacement costs for government, religious/non-profit, and education may be underestimated.

User Defined Facilities

Building Inventory was used to create Hazus-MH User Defined Facility (UDF) inventory for flood modeling. Hazus-MH flood loss estimates are based upon the UDF point data. Buildings within the flood boundary were imported into Hazus-MH as User Defined Facilities and modeled as points.

Table 17: User Defined Facility Exposure

Class	Hazus-MH Feature	Counts	Exposure
BI	Building Exposure	38,921	\$7,913,698,233
Riverine UDF	Structures Inside 1% Annual Chance Riverine Flood Area	544	\$111,871,836

Assumptions

- Flood analysis was performed on Building Inventory. Building Inventory within the flood boundary was imported as User Defined Facilities. The point locations are parcel centroid accuracy.
- The analysis is restricted to the county boundary. Events that occur near the county boundary do not contain loss estimates from adjacent counties.
- The following attributes were defaulted or calculated:
 First Floor Height was set from Foundation Type
 Content Cost was calculated from Building Cost