Appendix A. Participation Documentation

CONTENTS

Appendix A.1. Public Meeting Documentation

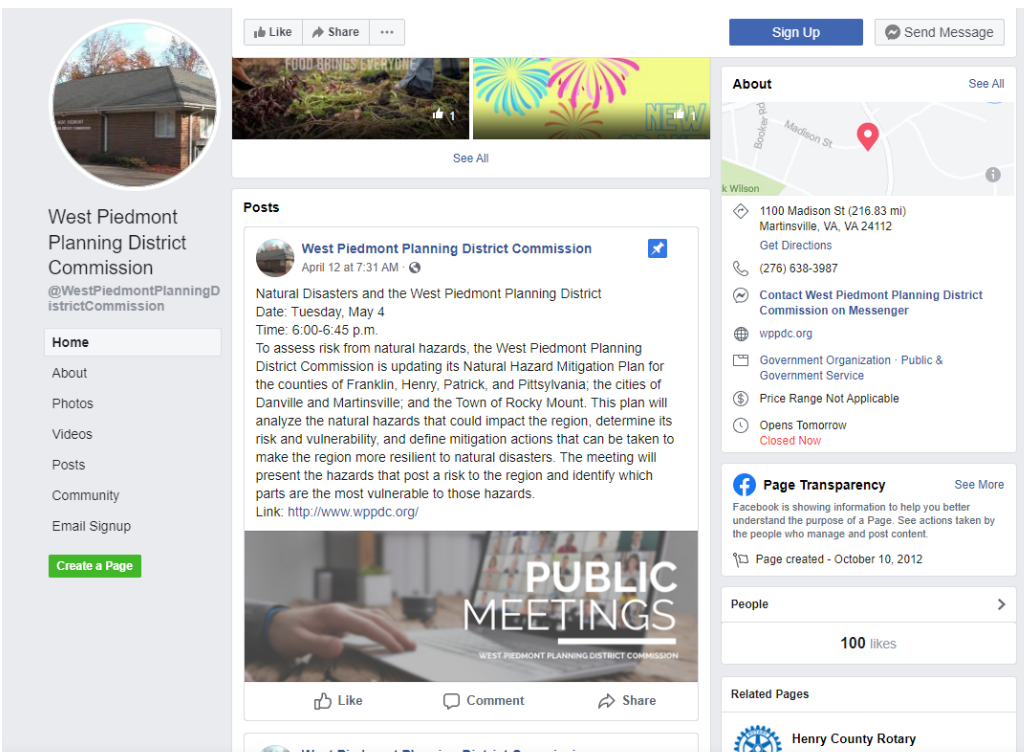


Figure 1. Public Meeting #1 WPPDC Social Media Post

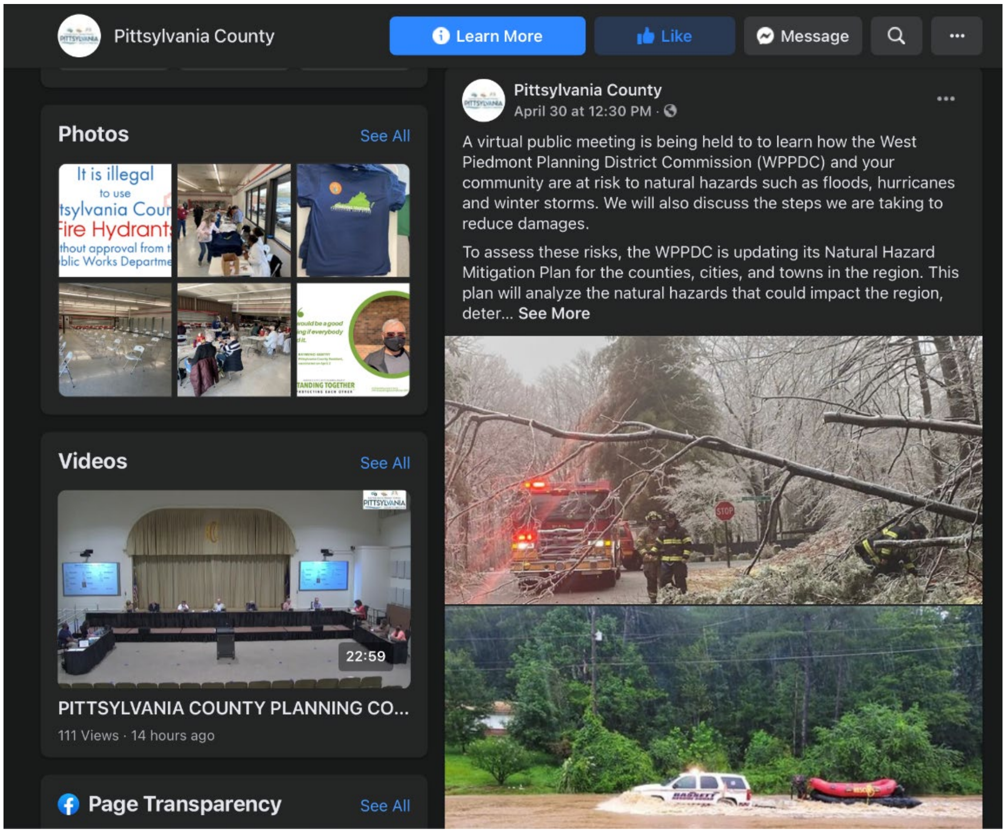


Figure 2. Public Meeting #1 Pittsylvania County Social Media Post

Natural Disasters and the West Piedmont Planning District

Join us to learn how the West Piedmont Planning District Commission (WPPDC) and your community are at risk to natural hazards, such as floods, hurricanes and winter storms, and the steps we are taking to reduce damages.

To assess risk from natural hazards, the WPPDC is updating its Natural Hazard Mitigation Plan for the counties, cities, and towns in the region. This plan will analyze the natural hazards that could impact the region, determine its risk and vulnerability, and define mitigation actions that can be taken to make the region more resilient to natural disasters. The meeting will present the hazards that post a risk to the region and identify which parts are the most vulnerable to those hazards.

To take our brief community survey, please click here: https://www.surveymonkey.com/r/West-Piedmont-Hazard-Survey. To find more information and stay up to date on future meetings and announcements, visit our website at http://www.wppdc.org/hazard-mitigation-plan.

Attend the Virtual Meeting

Date: May 4, 2021

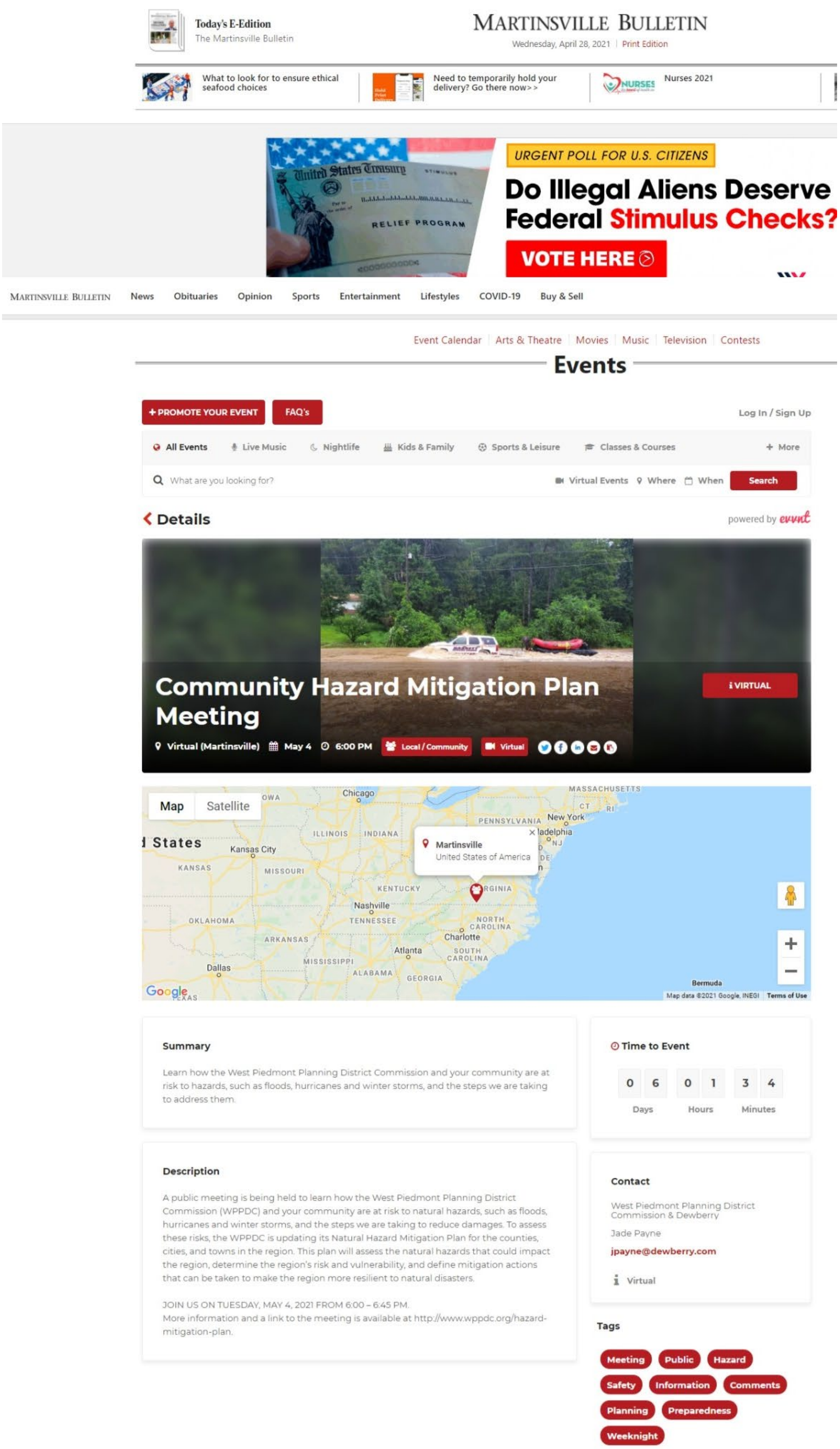
Time: 6:00 to 6:45 PM

Location: Virtual Online Meeting

Meeting Link: https://bit.ly/3whfYdn

Flooding in Henry County, VA

Figure 3. Public Meeting #1 Public Meeting Notice


Today's E-Edition
The Martinsville Bulletin

MARTINSVILLE BULLETIN
Wednesday, April 28, 2021 | Print Edition

What to look for to ensure ethical seafood choices
Need to temporarily hold your delivery? Go there now> >
Nurses 2021

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Events

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Community Hazard Mitigation Plan Meeting

Virtual (Martinsville) May 4 6:00 PM Local / Community Virtual

VIRTUAL

Map Satellite

Martinsville
United States of America

Summary

Learn how the West Piedmont Planning District Commission and your community are at risk to hazards, such as floods, hurricanes and winter storms, and the steps we are taking to address them.

Time to Event

0 6 Days 0 1 Hours 3 4 Minutes

Description

A public meeting is being held to learn how the West Piedmont Planning District Commission (WPPDC) and your community are at risk to natural hazards, such as floods, hurricanes and winter storms, and the steps we are taking to reduce damages. To assess these risks, the WPPDC is updating its Natural Hazard Mitigation Plan for the counties, cities, and towns in the region. This plan will assess the natural hazards that could impact the region, determine the region's risk and vulnerability, and define mitigation actions that can be taken to make the region more resilient to natural disasters.

JOIN US ON TUESDAY, MAY 4, 2021 FROM 6:00 – 6:45 PM.
More information and a link to the meeting is available at http://www.wppdc.org/hazard-mitigation-plan.

Contact

West Piedmont Planning District Commission & Dewberry
Jade Payne
jpayne@dewberry.com
Virtual

Tags

Meeting Public Hazard Safety Information Comments Planning Preparedness Weeknight

Figure 4. Public Meeting #1 Martinsville Bulletin Advertisement

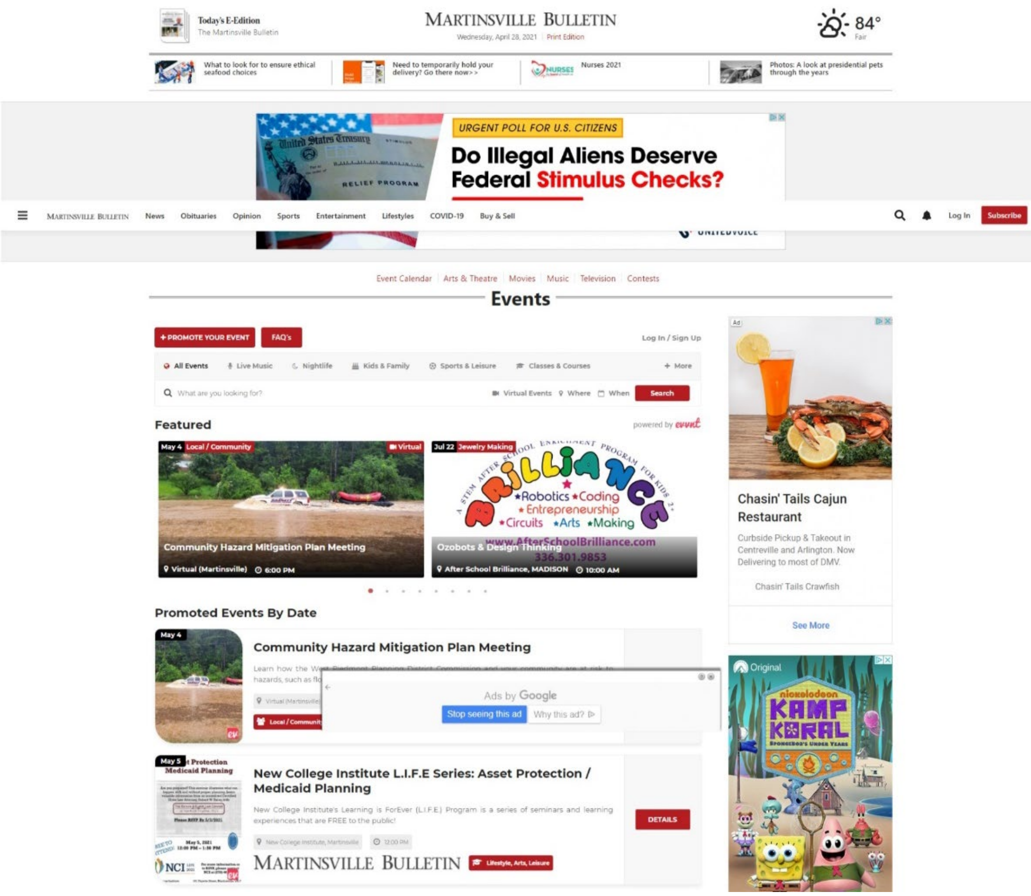


Figure 5. Public Meeting #1 Martinsville Bulletin Advertisement Front Page Feature

Distribution Results

TOTAL NUMBER OF SITES	34
NUMBER OF PUBLISHERS LIVE	27
NUMBER OF PUBLISHERS SUBMITTED	34

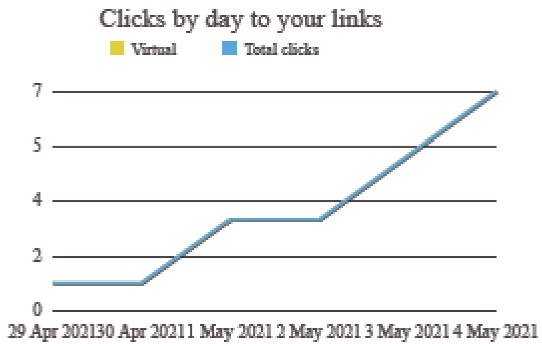
Overall reach

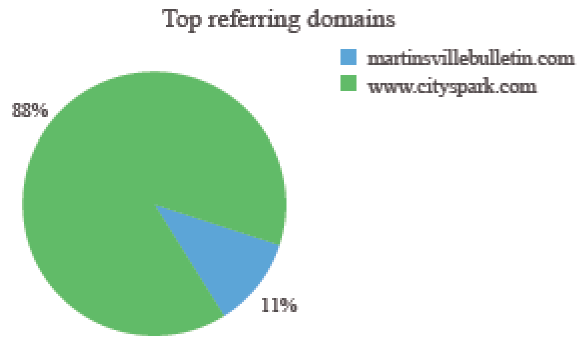
UNIQUE USERS REACHED	29.5M per month
LOCAL UNIQUE USERS REACHED	454K per month
MOBILE APPS	6

Figure 6. Public Meeting #1 Advertisement Distribution Results

Analytics

9 total clicks so far





Publisher Breakdown

Full details of the publishers your event has been promoted to.

3 Targeted sites

SITE NAME	LOCATION	SITE AUDIENCE	LOCAL AUDIENCE	MOBILE APP	STATUS	VIEW
EventsGet	Global	25K	250	-	Promoted	-
EventMaxima	National	25K	250	-	Promoted	-
My Identity Magazine	National	25K	250	-	Promoted	link

11 Global sites

SITE NAME	LOCATION	SITE AUDIENCE	LOCAL AUDIENCE	MOBILE APP	STATUS	VIEW
DearJulius	Global	175K	2K	-	Promoted	link
Evensi	Global	3M	30K	✓	Promoted	link
Eventleaf	Global	26K	256	✓	Promoted	-
Eventrii	Global	5K	48	-	Promoted	link
Events Alert	Global	25K	250	-	Promoted	link
Eventseeker	Global	69K	690	✓	Promoted	-

Figure 7. Public Meeting #1 Advertisement Report (1/3)

Evvnt	Global	100K	1K	✓	Promoted	link
Jorlio	Global	8K	84	-	Promoted	link
The Internet Book	Global	525K	5K	-	Promoted	link
Tockify	Global	100K	1K	-	Promoted	link
What Up In Town	Global	37K	371	✓	Promoted	link

10 National sites

SITE NAME	LOCATION	SITE AUDIENCE	LOCAL AUDIENCE	MOBILE APP	STATUS	VIEW
America From Home Virtual Events	National	35K	350	-	Promoted	link
Bubble Life	National	25K	250	-	Promoted	link
CitySpark	National	38K	377	-	Promoted	-
El Clasificado	National	1.8M	176K	-	Promoted	-
Events Near Here	National	147K	1K	-	Promoted	link
Judys Book	National	120K	1K	✓	Promoted	link
OTL City Guides & Seat Fillers	National	3K	25	-	Promoted	link
Patch	National	21.3M	213K	-	Promoted	link
Seats For Everyone	National	25K	250	-	Promoted	link
WikiDo	National	212K	2K	-	Promoted	link

10 Local sites

SITE NAME	LOCATION	SITE AUDIENCE	LOCAL AUDIENCE	MOBILE APP	STATUS	VIEW
Ashe Post & Times	Local	42K	417	-	Promoted	link

Figure 8. Public Meeting #1 Advertisement Report (2/3)

Chatham Star-Tribune	Local	25K	250	-	Promoted	link
Collegiate Times	Local	25K	250	-	Promoted	link
Hickory Record	Local	167K	2K	-	Promoted	-
Martinsville Bulletin	Local	255K	3K	-	Promoted	link
Roanoke Times	Local	1.1M	11K	-	Promoted	link
Smith Mountain Eagle	Local	25K	250	-	Promoted	link
The Franklin News-Post	Local		0	-	Promoted	link
Times-Virginian	Local	25K	250	-	Promoted	link
Union Star	Local	25K	250	-	Promoted	link

Your event has been promoted to **34** sites with an audience of **29.5M**!

Figure 9. Public Meeting #1 Advertisement Report (3/3)

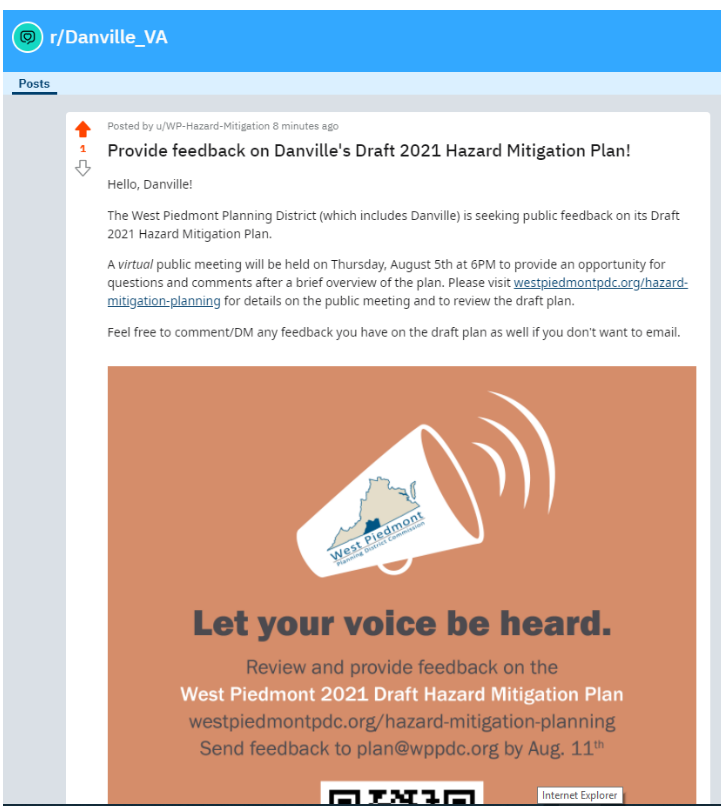


Figure 10. Public Meeting #2 and Draft Review r/Danville_VA Subreddit Post

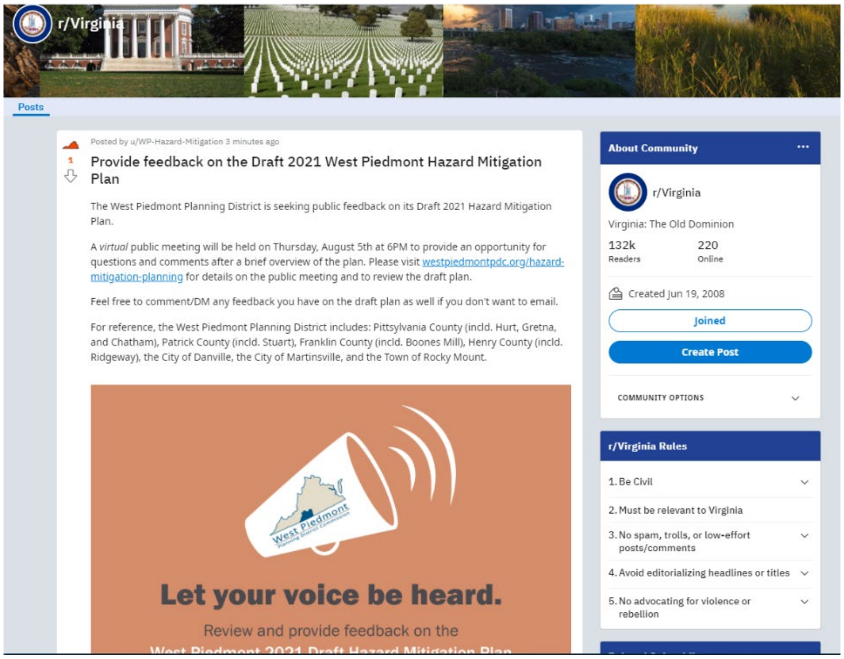


Figure 11. Public Meeting #2 and Draft Review r/Virginia Subreddit Post

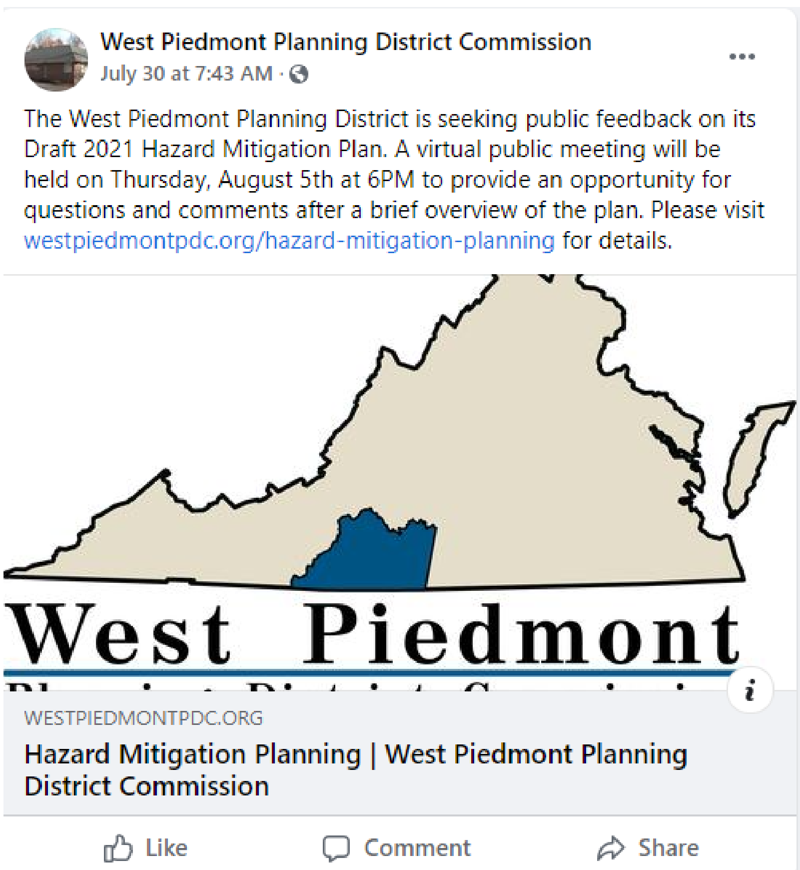
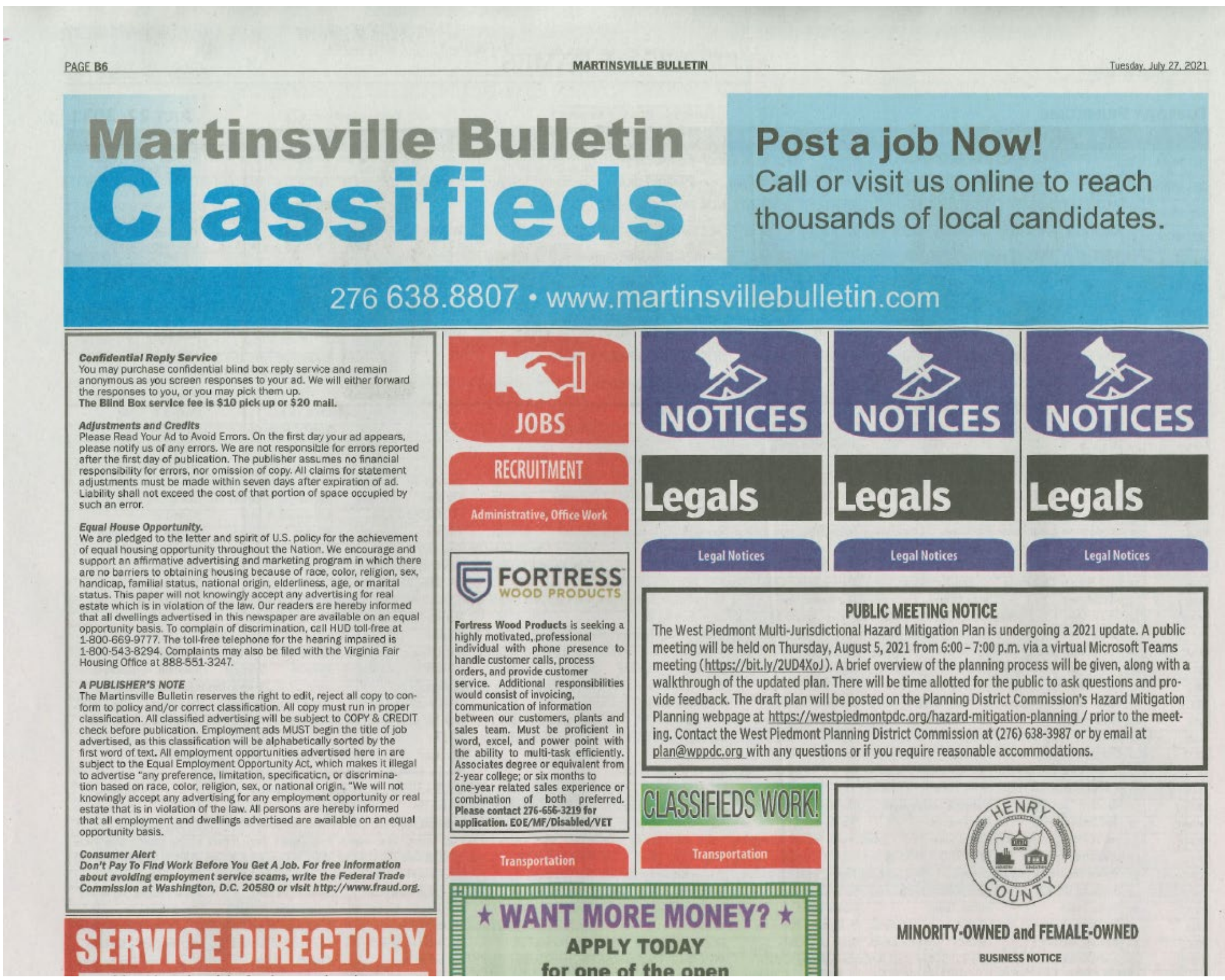


Figure 12. Public Meeting #2 and Draft Review WPPDC Facebook Post

The West Piedmont Planning District is seeking public feedback on its Draft 2021 Hazard Mitigation Plan. A virtual public meeting will be held on Thursday, August 5th at 6PM to provide an opportunity for questions and comments after a brief overview of the plan. Please visit westpiedmontpdc.org/hazard-mitigation-planning for details.

Figure 13. WPPDC Opportunity Tracker Newspaper Public Meeting #2 and Draft Review Advertisement



PAGE B6 MARTINSVILLE BULLETIN Tuesday, July 27, 2021

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A PUBLISHER'S NOTE
The Martinsville Bulletin reserves the right to edit, reject all copy to conform to policy and/or correct classification. All copy must run in proper classification. All classified advertising will be subject to COPY & CREDIT check before publication. Employment ads MUST begin the title of job advertised, as this classification will be alphabetically sorted by the first word of text. All employment opportunities advertised here in are subject to the Equal Employment Opportunity Act, which makes it illegal to advertise "any preference, limitation, specification, or discrimination based on race, color, religion, sex, or national origin. "We will not knowingly accept any advertising for any employment opportunity or real estate that is in violation of the law. All persons are hereby informed that all employment and dwellings advertised are available on an equal opportunity basis.

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PUBLIC MEETING NOTICE
The West Piedmont Multi-Jurisdictional Hazard Mitigation Plan is undergoing a 2021 update. A public meeting will be held on Thursday, August 5, 2021 from 6:00 – 7:00 p.m. via a virtual Microsoft Teams meeting (https://bit.ly/2UD4XoJ). A brief overview of the planning process will be given, along with a walkthrough of the updated plan. There will be time allotted for the public to ask questions and provide feedback. The draft plan will be posted on the Planning District Commission's Hazard Mitigation Planning webpage at https://westpiedmontpdc.org/hazard-mitigation-planning / prior to the meeting. Contact the West Piedmont Planning District Commission at (276) 638-3987 or by email at plan@wppdc.org with any questions or if you require reasonable accommodations.

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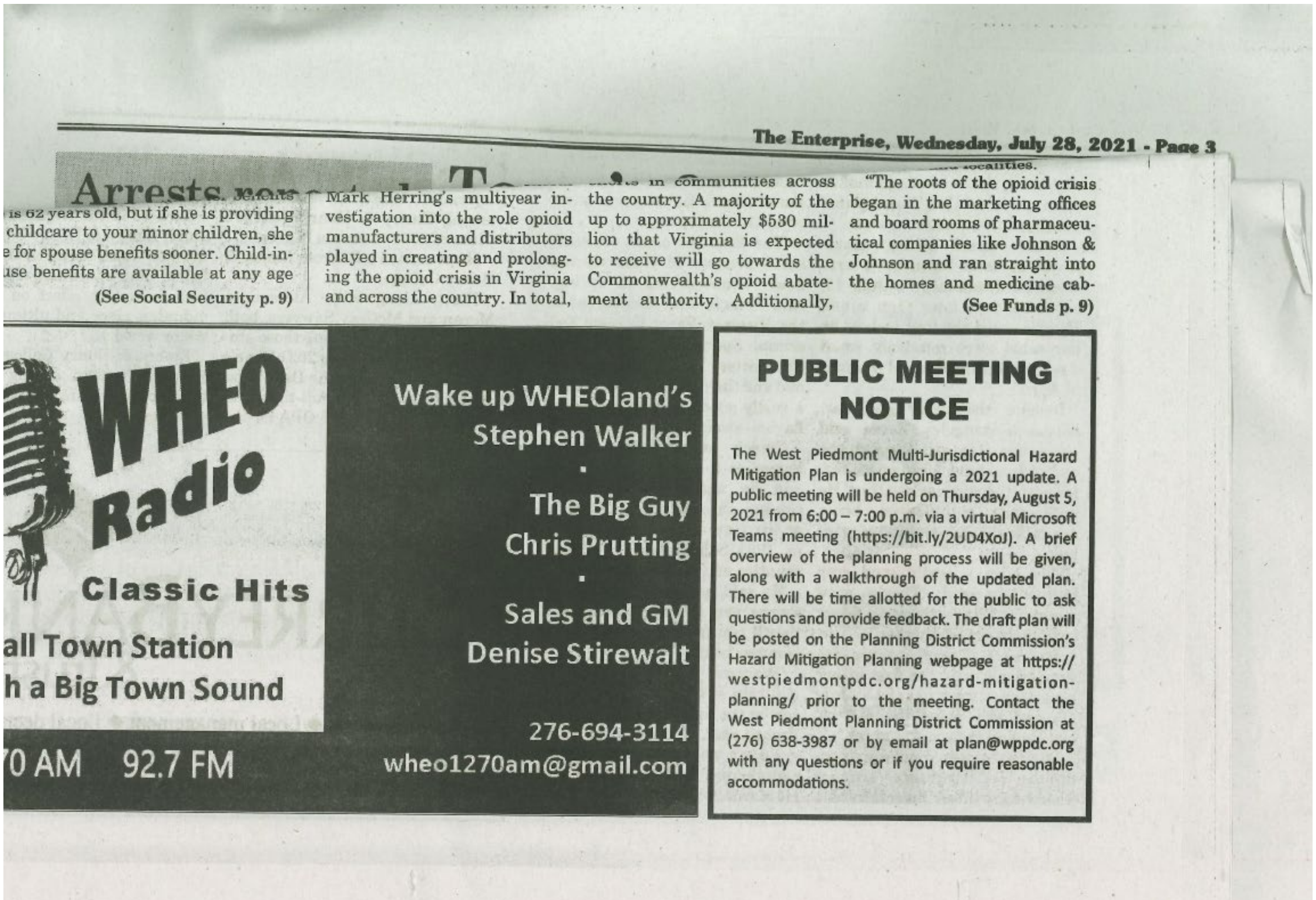
Transportation

HENRY COUNTY

MINORITY-OWNED and FEMALE-OWNED
BUSINESS NOTICE

Figure 14. Martinsville Bulleting Public Meeting #2 Notice



The Enterprise, Wednesday, July 28, 2021 - Page 3

is 62 years old, but if she is providing childcare to your minor children, she e for spouse benefits sooner. Child-in- use benefits are available at any age (See Social Security p. 9)

Mark Herring's multiyear investigation into the role opioid manufacturers and distributors played in creating and prolonging the opioid crisis in Virginia and across the country. In total, … in communities across the country. A majority of the up to approximately $530 million that Virginia is expected to receive will go towards the Commonwealth's opioid abatement authority. Additionally,

"The roots of the opioid crisis began in the marketing offices and board rooms of pharmaceutical companies like Johnson & Johnson and ran straight into the homes and medicine cab- (See Funds p. 9)

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wheo1270am@gmail.com

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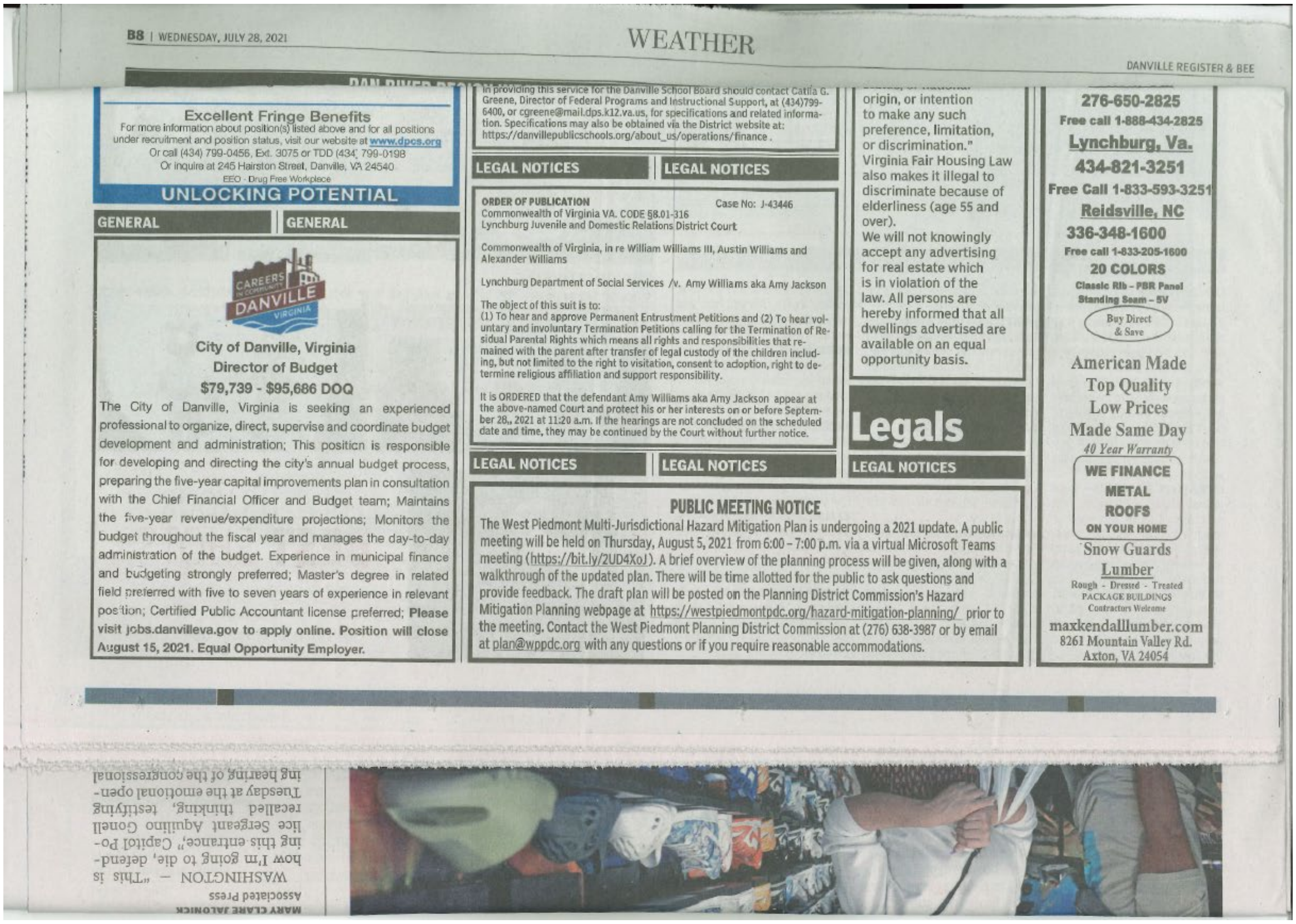
Figure 15. The Enterprise Public Meeting #2 Notice



B8 | WEDNESDAY, JULY 28, 2021

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Director of Budget
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in providing this service for the Danville School Board should contact Catlia G. Greene, Director of Federal Programs and Instructional Support, at (434)799-6400, or cgreene@mail.dps.k12.va.us, for specifications and related information. Specifications may also be obtained via the District website at: https://danvillepublicschools.org/about_us/operations/finance .

LEGAL NOTICES | LEGAL NOTICES

ORDER OF PUBLICATION Case No: J-43446
Commonwealth of Virginia VA. CODE §8.01-316
Lynchburg Juvenile and Domestic Relations District Court

Commonwealth of Virginia, in re William Williams III, Austin Williams and Alexander Williams

Lynchburg Department of Social Services /v. Amy Williams aka Amy Jackson

The object of this suit is to:
(1) To hear and approve Permanent Entrustment Petitions and (2) To hear voluntary and involuntary Termination Petitions calling for the Termination of Residual Parental Rights which means all rights and responsibilities that remained with the parent after transfer of legal custody of the children including, but not limited to the right to visitation, consent to adoption, right to determine religious affiliation and support responsibility.

It is ORDERED that the defendant Amy Williams aka Amy Jackson appear at the above-named Court and protect his or her interests on or before September 28,, 2021 at 11:20 a.m. If the hearings are not concluded on the scheduled date and time, they may be continued by the Court without further notice.

origin, or intention to make any such preference, limitation, or discrimination." Virginia Fair Housing Law also makes it illegal to discriminate because of elderliness (age 55 and over). We will not knowingly accept any advertising for real estate which is in violation of the law. All persons are hereby informed that all dwellings advertised are available on an equal opportunity basis.

Legals

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PUBLIC MEETING NOTICE

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Figure 16. Danville Register & Bee Public Meeting #2 Notice

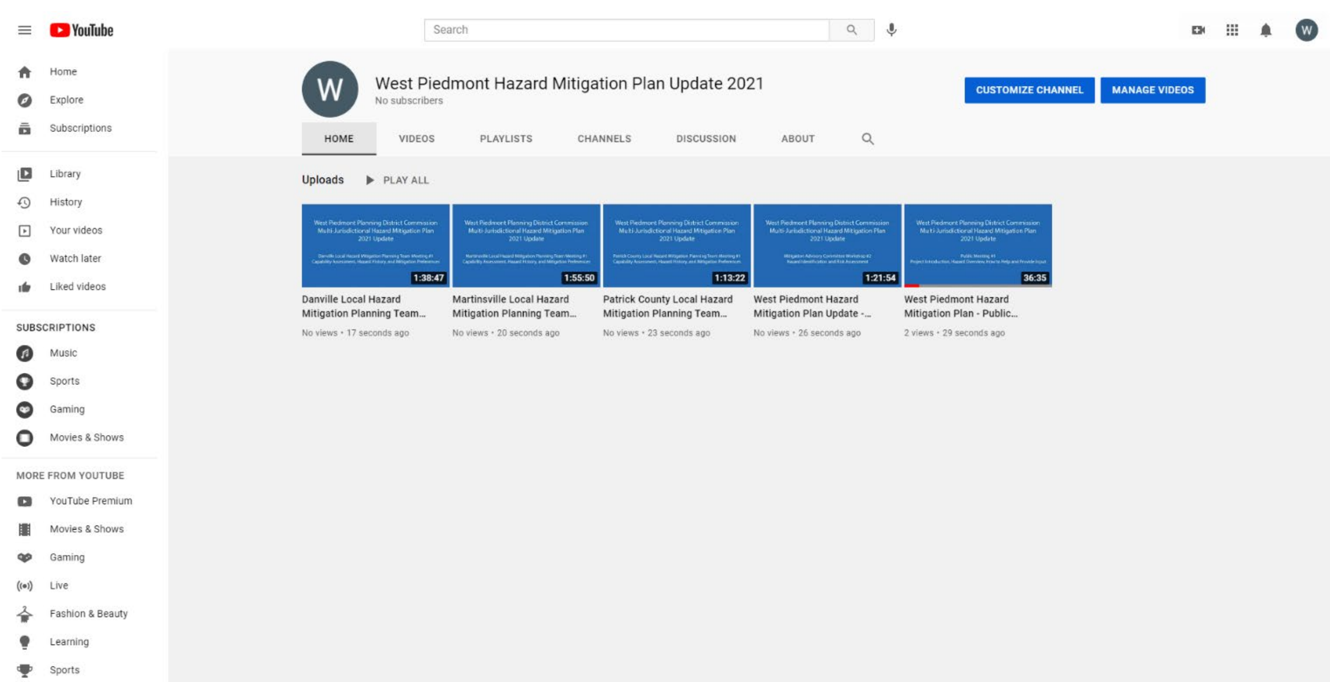

Figure 17. YouTube Profile Featuring Meetings for Public Viewing

276-638-3987 plan@wppdc.org

Home About Commissioners Programs & Services Data & Resources News Contact Danville MPO

Hazard Mitigation Planning

2021 5-Year Update

Every five years, the West Piedmont Planning District Commission updates its Multi-Jurisdictional Hazard Mitigation Plan. This process involves the PDC and each of its member jurisdictions collaboratively determining which hazards pose the biggest threat to the West Piedmont Region and which strategies can be performed to mitigate those risks. The plan was last updated in November 2016, so the update process is currently underway for 2021.

2016 Multi-Jurisdictional Hazard Mitigation Plan

2016 Multi-Jurisdictional Hazard Mitigation Plan Appendices.

Public Input Opportunities

Learn more about Hazard Mitigation and help us identify hazard problem areas in your community!

STORY MAP

We want to hear from you! Please take a few minutes to complete the Hazard Mitigation Plan Community Survey.

The survey has ended.

Public Meetings

Hazard mitigation is any sustained action taken to reduce or eliminate long term risk to life and property, community expenditures and response needs from a hazard event. The hazard mitigation planning process cannot be done without the valuable insights from the residents that live in the counties, cities, and towns of the West Piedmont Region. The public meetings will provide updates on the progress of the Hazard Mitigation Plan update process, as well as allow community members to provide input, voice concerns, and ask questions.

The next public meeting will be held virtually on **Tuesday, May 4, 2021, from 6:00 – 6:45 p.m**. Please **click here** for the link to the virtual meeting room.

Public Meeting Notice
Presentation
Recording

Previous Planning Meetings

Mitigation Advisory Committee Workshop 1 – December 16, 2020

This meeting was held to bring the Mitigation Advisory Committee – consisting of representatives from all the participating PDC members – together to kick-off the update process and set participation roles and expectations.

Agenda
Presentation

Local Planning Team Meetings

Each member locality has a Local Planning Team that is made up of local government officials that play an important role in hazard mitigation. These teams provide insight into any updates that the localities may have had during the previous five years, as well as what their mitigation priorities and capabilities are moving forward.

Franklin County Presentation – February 10, 2021
Pittsylvania County Presentation – February 10, 2021
Martinsville Presentation – February 11, 2021
Recording
Henry County Presentation – February 16, 2021
Patrick County Presentation – February 24, 2021
Recording
Danville Presentation – February 26, 2021
Recording
Martinsville Presentation – May 18, 2021
Pittsylvania County Presentation – May 24, 2021
Franklin County Presentation – May 24, 2021

Mitigation Advisory Committee Workshop 2 – April 20, 2021

The second Mitigation Advisory Committee workshop is held to review the hazard identification and risk assessment, which is the scientific basis that ultimately allows the PDC to develop and prioritize mitigation strategies and actions.

Agenda
Presentation
Recording

West Piedmont Planning District Commission

Serving the Counties of Franklin, Henry, Patrick, & Pittsylvania
Cities of Danville & Martinsville
Town of Rocky Mount

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plan@wppdc.org
www.wppdc.org
1-276-638-3987

Opportunity Tracker

Subscribe to receive the latest grant opportunities, webinars, and important information.

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Figure 18. WPPDC Hazard Mitigation Planning Webpage

Appendix A.2 Public Survey and Story Map Documentation

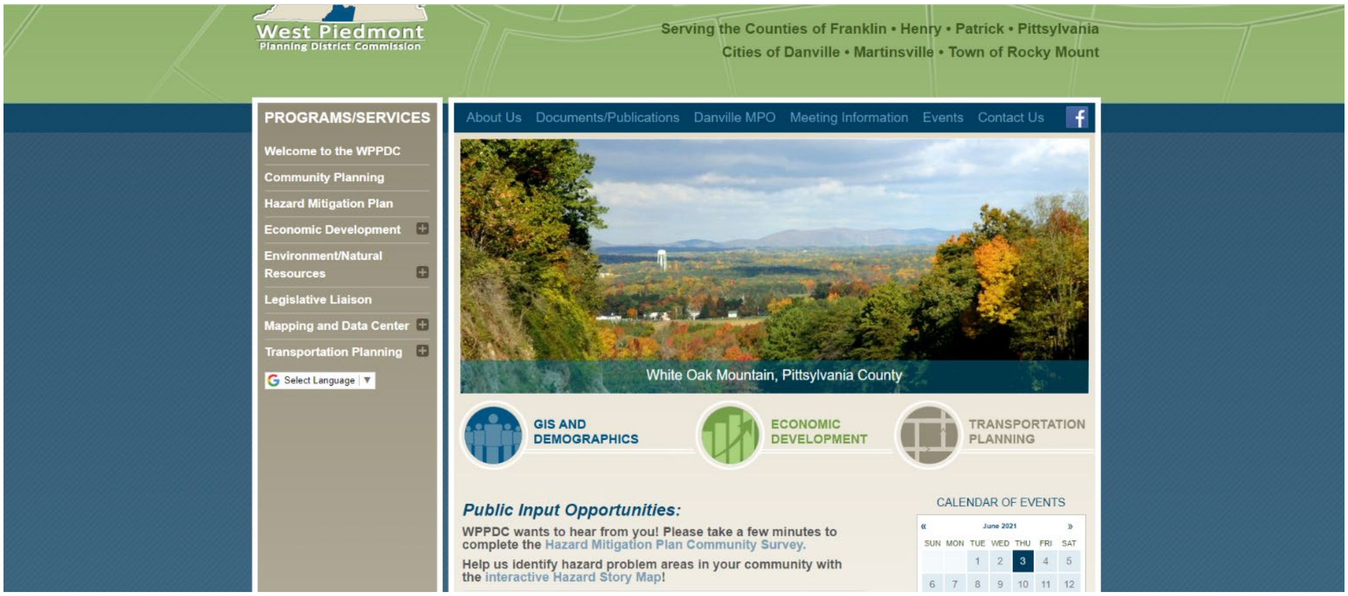


Figure 19. WPPDC Website Advertising Public Survey and Story Map Opportunity

Figure 20. Public Survey Advertisement

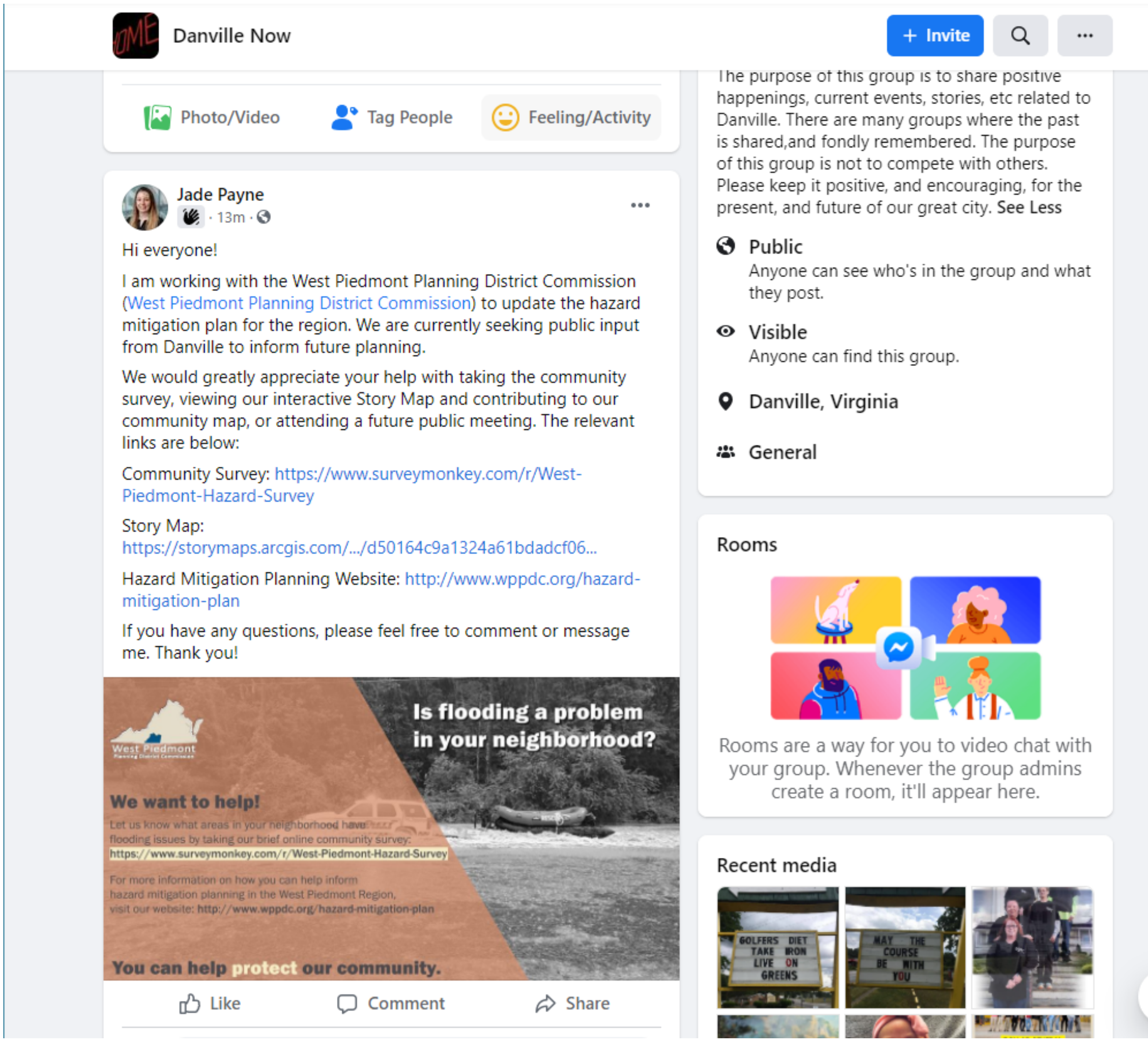


Figure 21. Danville Now Facebook Page Public Survey Post

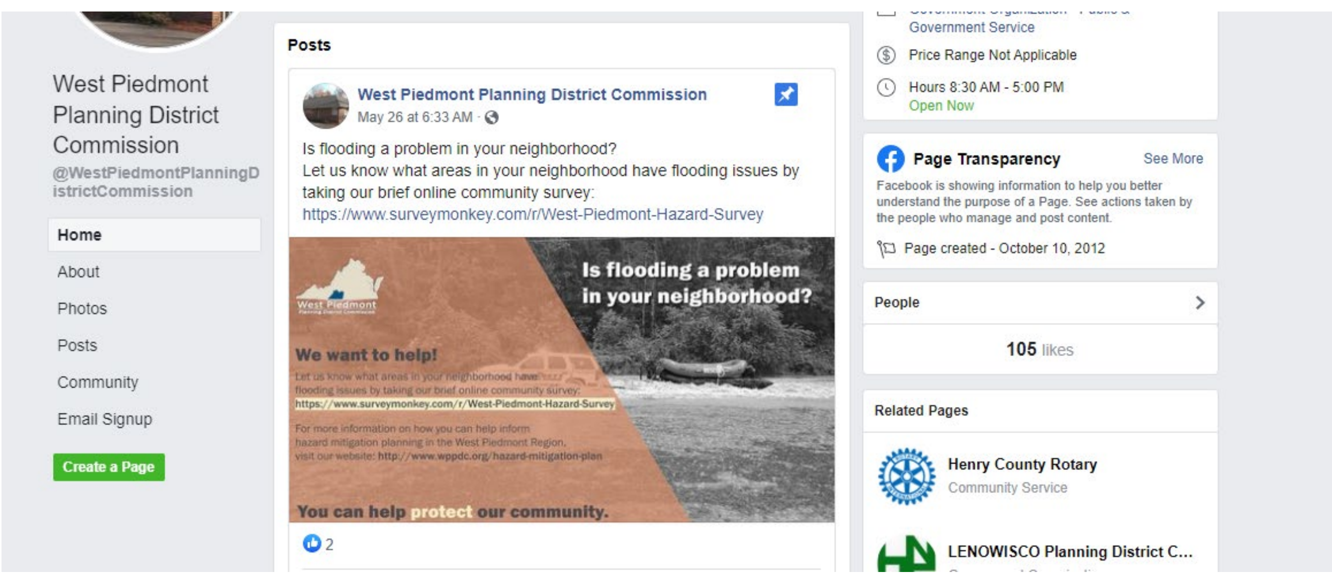
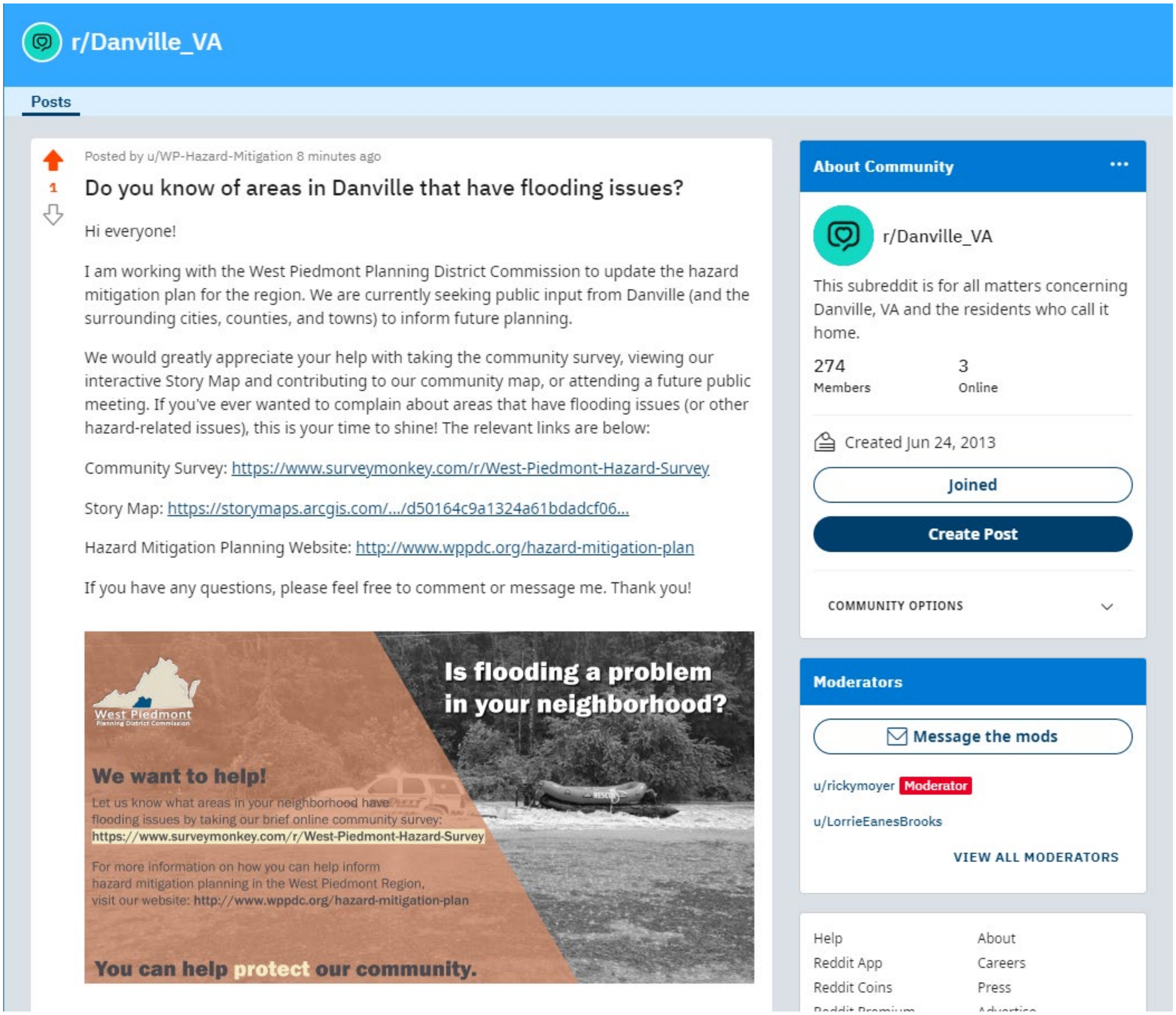


Figure 22. WPPDC Facebook Public Survey Post



r/Danville_VA

Posts

1

Posted by u/WP-Hazard-Mitigation 8 minutes ago

Do you know of areas in Danville that have flooding issues?

Hi everyone!

I am working with the West Piedmont Planning District Commission to update the hazard mitigation plan for the region. We are currently seeking public input from Danville (and the surrounding cities, counties, and towns) to inform future planning.

We would greatly appreciate your help with taking the community survey, viewing our interactive Story Map and contributing to our community map, or attending a future public meeting. If you've ever wanted to complain about areas that have flooding issues (or other hazard-related issues), this is your time to shine! The relevant links are below:

Community Survey: https://www.surveymonkey.com/r/West-Piedmont-Hazard-Survey

Story Map: https://storymaps.arcgis.com/.../d50164c9a1324a61bdadcf06...

Hazard Mitigation Planning Website: http://www.wppdc.org/hazard-mitigation-plan

If you have any questions, please feel free to comment or message me. Thank you!

About Community

r/Danville_VA

This subreddit is for all matters concerning Danville, VA and the residents who call it home.

274 Members

3 Online

Created Jun 24, 2013

Joined

Create Post

COMMUNITY OPTIONS

Moderators

Message the mods

u/rickymoyer Moderator

u/LorrieEanesBrooks

VIEW ALL MODERATORS

Help | About
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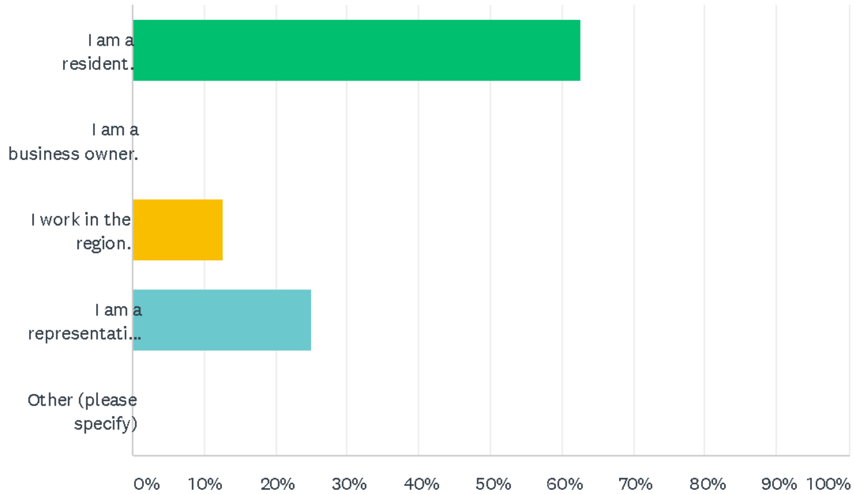
Figure 23. Danville Subreddit (on Reddit.com) Public Survey Post

Appendix A.3. Public Survey Results and Responses

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

Q1 Which best describes you? Note: You are encouraged to complete this survey more than once if you wish to respond both as a resident and another role.

Answered: 16 Skipped: 0



ANSWER CHOICES	RESPONSES	
I am a resident.	62.50%	10
I am a business owner.	0.00%	0
I work in the region.	12.50%	2
I am a representative of a state, agency, municipality, jurisdiction, or organization.	25.00%	4
Other (please specify)	0.00%	0
TOTAL		16

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

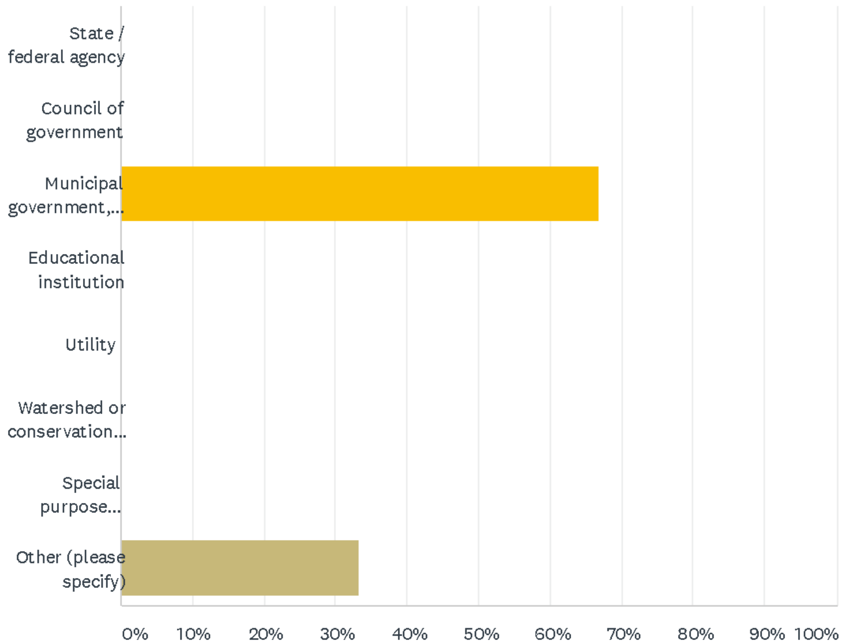
Q2 What is your zip code?

Answered: 9   Skipped: 7

#	RESPONSES	DATE
1	24541	6/21/2021 2:18 AM
2	24592	6/4/2021 12:16 PM
3	24078	6/1/2021 1:15 PM
4	24184	6/1/2021 8:59 AM
5	24065	5/1/2021 11:07 AM
6	24540	4/30/2021 4:25 PM
7	24151	4/29/2021 8:43 AM
8	24112	4/28/2021 4:04 PM
9	24121	4/28/2021 1:55 PM

Q3 Which of the following do you represent? (Select all that apply)

Answered: 3   Skipped: 13

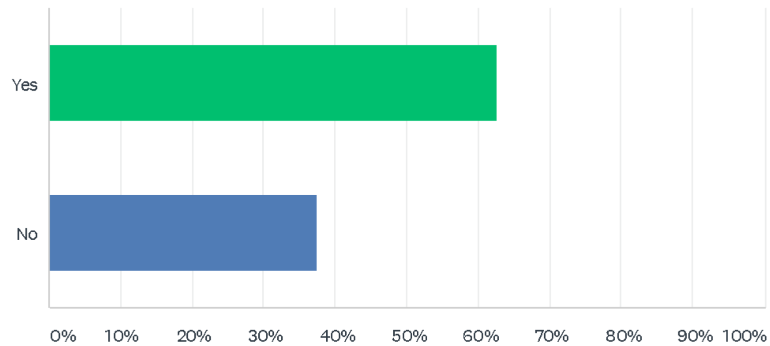


ANSWER CHOICES	RESPONSES	
State / federal agency	0.00%	0
Council of government	0.00%	0
Municipal government, board, or commission	66.67%	2
Educational institution	0.00%	0
Utility	0.00%	0
Watershed or conservation organization	0.00%	0
Special purpose district	0.00%	0
Other (please specify)	33.33%	1
TOTAL		3

#	OTHER (PLEASE SPECIFY)	DATE
1	Rescue Squad	4/28/2021 7:04 PM

Q4 Are you aware that the communities in the West Piedmont Planning District maintain a regional hazard mitigation plan?

Answered: 8 Skipped: 8



ANSWER CHOICES	RESPONSES	
Yes	62.50%	5
No	37.50%	3
TOTAL		8

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

Q5 Have any recent events made you more aware of the danger of hazards?

Answered: 4 Skipped: 12

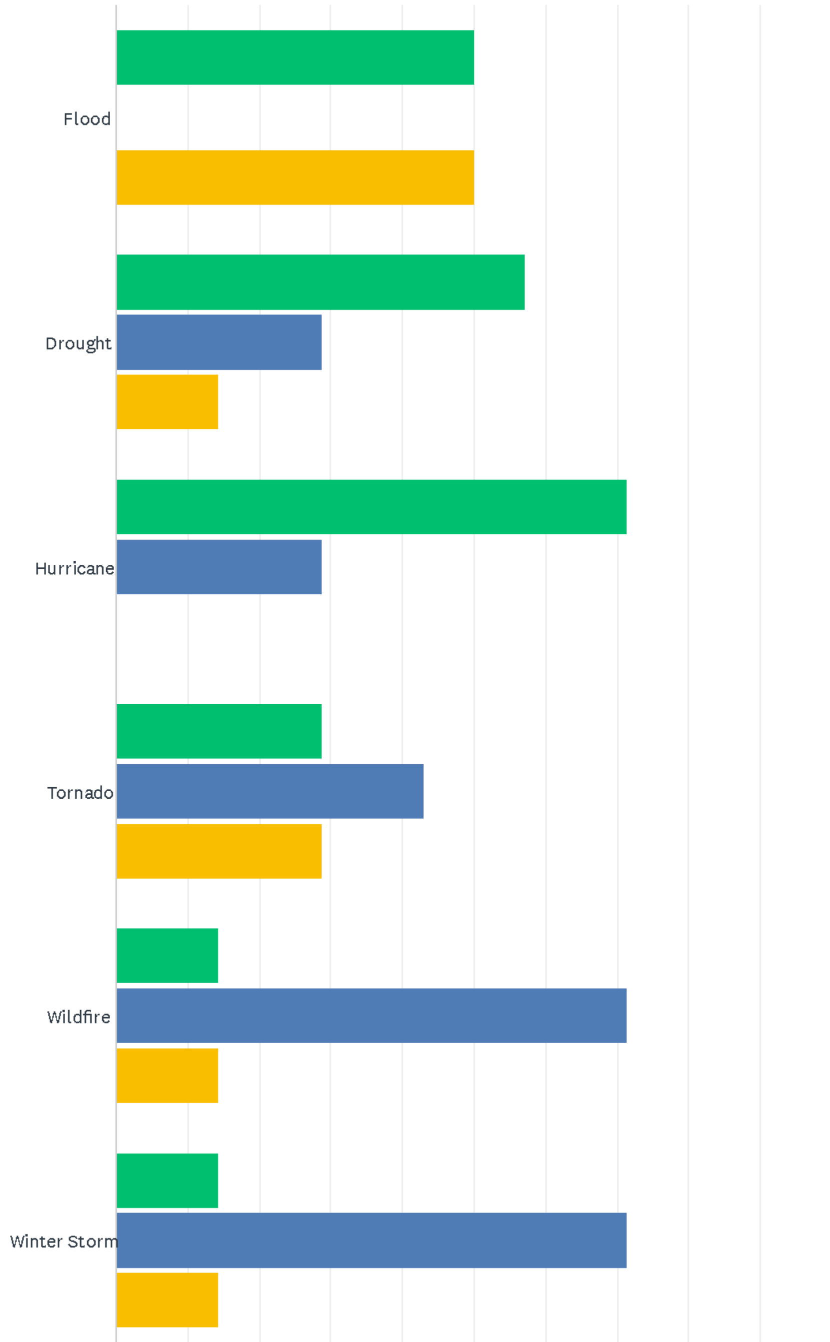
ANSWER CHOICES	RESPONSES	
Hazard Event 1	100.00%	4
Hazard Event 2	75.00%	3
Hazard Event 3	50.00%	2

#	HAZARD EVENT 1	DATE
1	Flood	6/1/2021 1:21 PM
2	Ice Storm	4/30/2021 6:46 PM
3	Learned about while working at the hospital	4/29/2021 8:45 AM
4	Tropical Storm Florence 2018	4/28/2021 1:58 PM
#	HAZARD EVENT 2	DATE
1	Wind	6/1/2021 1:21 PM
2	Tornado Warning	4/30/2021 6:46 PM
3	Tropical Storm Michael 2018	4/28/2021 1:58 PM
#	HAZARD EVENT 3	DATE
1	Drought	6/1/2021 1:21 PM
2	Covid 19	4/30/2021 6:46 PM

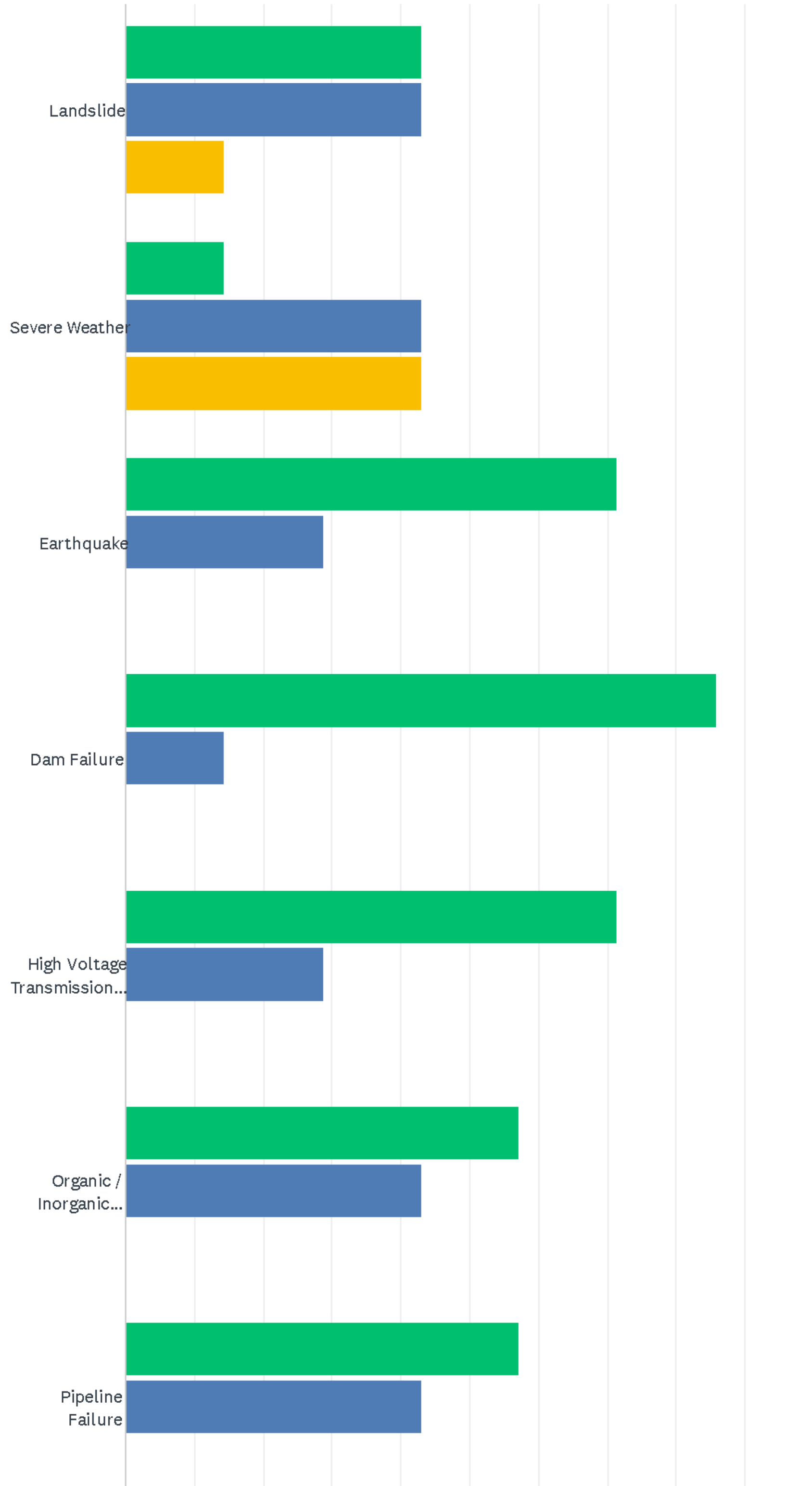
5 / 25

Q6 How concerned are you about each of the following hazards impacting your home, business, community, and/or organization?

Answered: 8 Skipped: 8

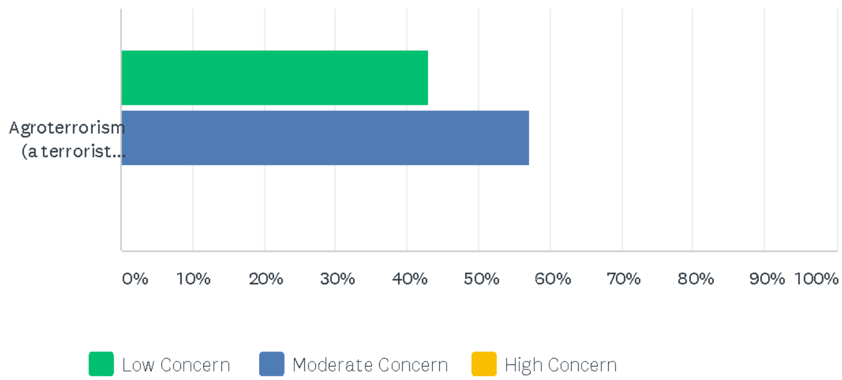


West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey



7 / 25

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

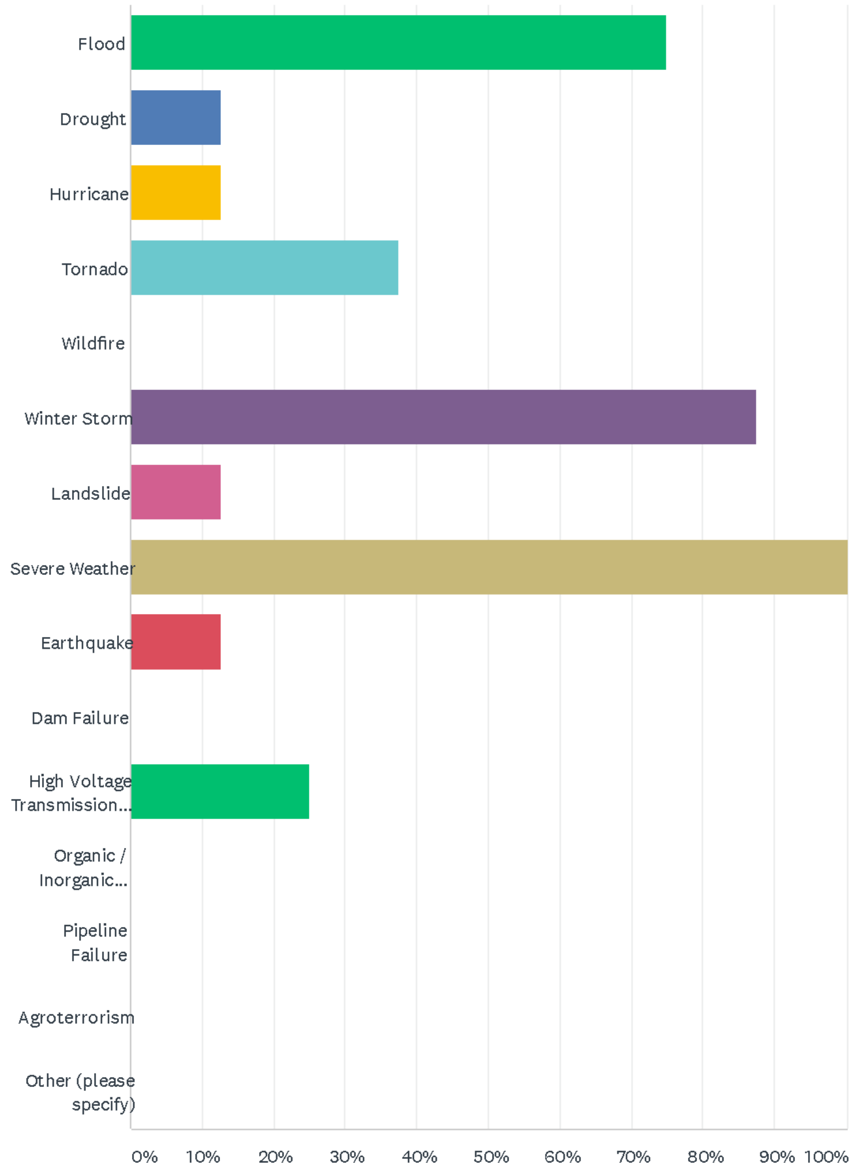


	LOW CONCERN	MODERATE CONCERN	HIGH CONCERN	TOTAL
Flood	50.00% 4	0.00% 0	50.00% 4	8
Drought	57.14% 4	28.57% 2	14.29% 1	7
Hurricane	71.43% 5	28.57% 2	0.00% 0	7
Tornado	28.57% 2	42.86% 3	28.57% 2	7
Wildfire	14.29% 1	71.43% 5	14.29% 1	7
Winter Storm	14.29% 1	71.43% 5	14.29% 1	7
Landslide	42.86% 3	42.86% 3	14.29% 1	7
Severe Weather	14.29% 1	42.86% 3	42.86% 3	7
Earthquake	71.43% 5	28.57% 2	0.00% 0	7
Dam Failure	85.71% 6	14.29% 1	0.00% 0	7
High Voltage Transmission Lines (Power Lines)	71.43% 5	28.57% 2	0.00% 0	7
Organic / Inorganic Spills	57.14% 4	42.86% 3	0.00% 0	7
Pipeline Failure	57.14% 4	42.86% 3	0.00% 0	7
Agroterrorism (a terrorist act intended to disrupt or damage crops or livestock)	42.86% 3	57.14% 4	0.00% 0	7

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

Q7 Which hazards have impacted your home, business, community, or organization?

Answered: 8 Skipped: 8



9 / 25

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

ANSWER CHOICES	RESPONSES	
Flood	75.00%	6
Drought	12.50%	1
Hurricane	12.50%	1
Tornado	37.50%	3
Wildfire	0.00%	0
Winter Storm	87.50%	7
Landslide	12.50%	1
Severe Weather	100.00%	8
Earthquake	12.50%	1
Dam Failure	0.00%	0
High Voltage Transmission Lines (Power Lines)	25.00%	2
Organic / Inorganic Spills	0.00%	0
Pipeline Failure	0.00%	0
Agroterrorism	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 8		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q8 Are aware of any specific areas in your community that have issues with stormwater flooding from extreme rainfall? Note: Please use addresses, street intersections, village or neighborhood names, or even landmarks to describe the location.

Answered: 5 Skipped: 11

ANSWER CHOICES	RESPONSES	
Location 1	100.00%	5
Location 2	40.00%	2
Location 3	20.00%	1

#	LOCATION 1	DATE
1	Entire riverwalk trail/Angler's Park	6/21/2021 2:21 AM
2	Bassett Forks	6/1/2021 1:21 PM
3	Easy st Boones Mill	5/1/2021 11:09 AM
4	Calloway	4/28/2021 5:42 PM
5	541 Boones Mill Road - flooding of Boones Mill Road during heavy rain events	4/28/2021 1:58 PM
#	LOCATION 2	DATE
1	Apartment complexes/downtown parking area	6/21/2021 2:21 AM
2	Ferrum	4/28/2021 5:42 PM
#	LOCATION 3	DATE
1	Windy gap	4/28/2021 5:42 PM

Q9 Are you aware of specific areas of your community vulnerable to the other hazards mentioned in this survey? If so, please list them by location. Note: Please use addresses, street intersections, village or neighborhood names, or even landmarks to describe the location.

Answered: 1 Skipped: 15

ANSWER CHOICES	RESPONSES	
Location 1	100.00%	1
Location 2	100.00%	1
Location 3	0.00%	0

#	LOCATION 1	DATE
1	Easy St	5/1/2021 11:09 AM

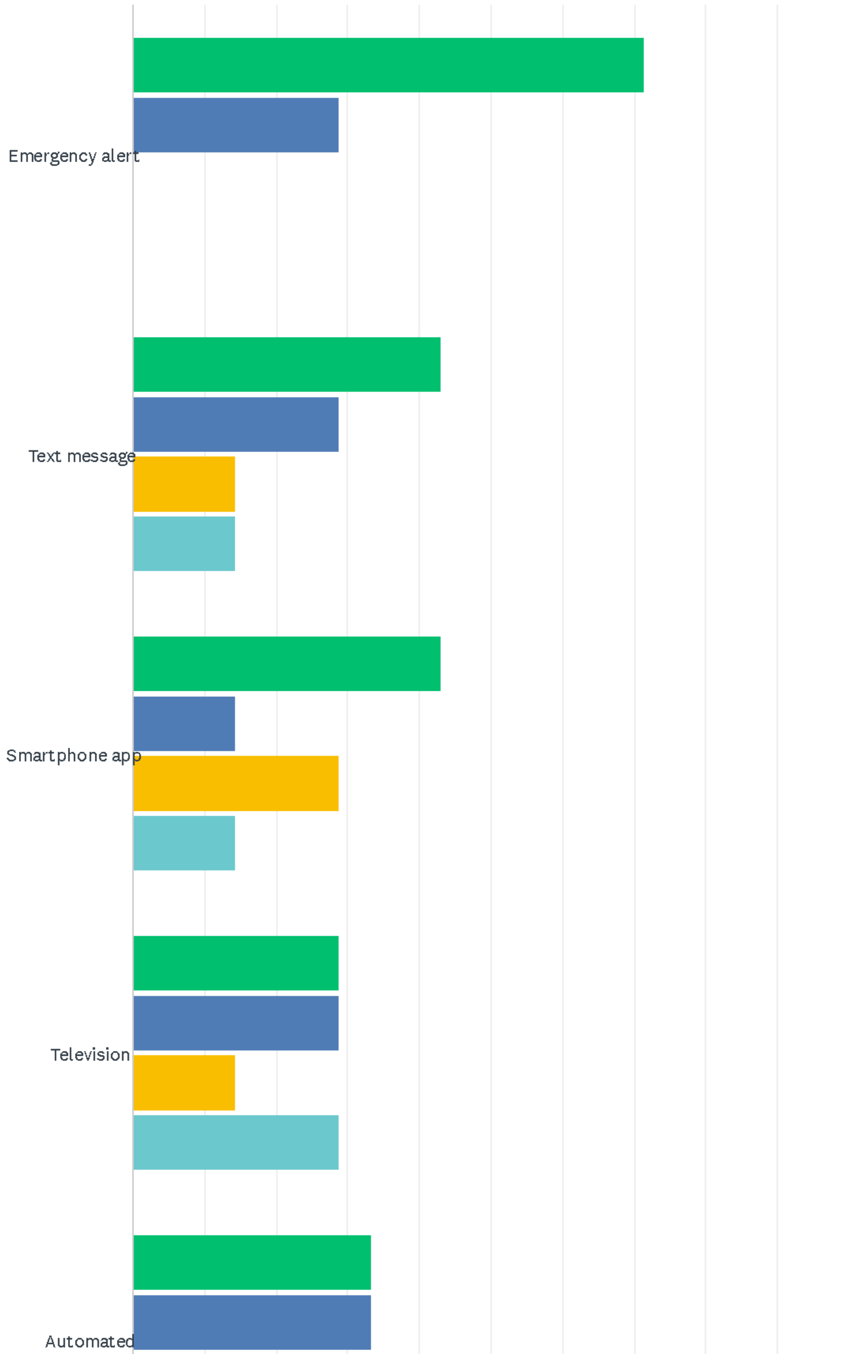
#	LOCATION 2	DATE
1	Boones Mill rd	5/1/2021 11:09 AM

#	LOCATION 3	DATE
	There are no responses.	

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

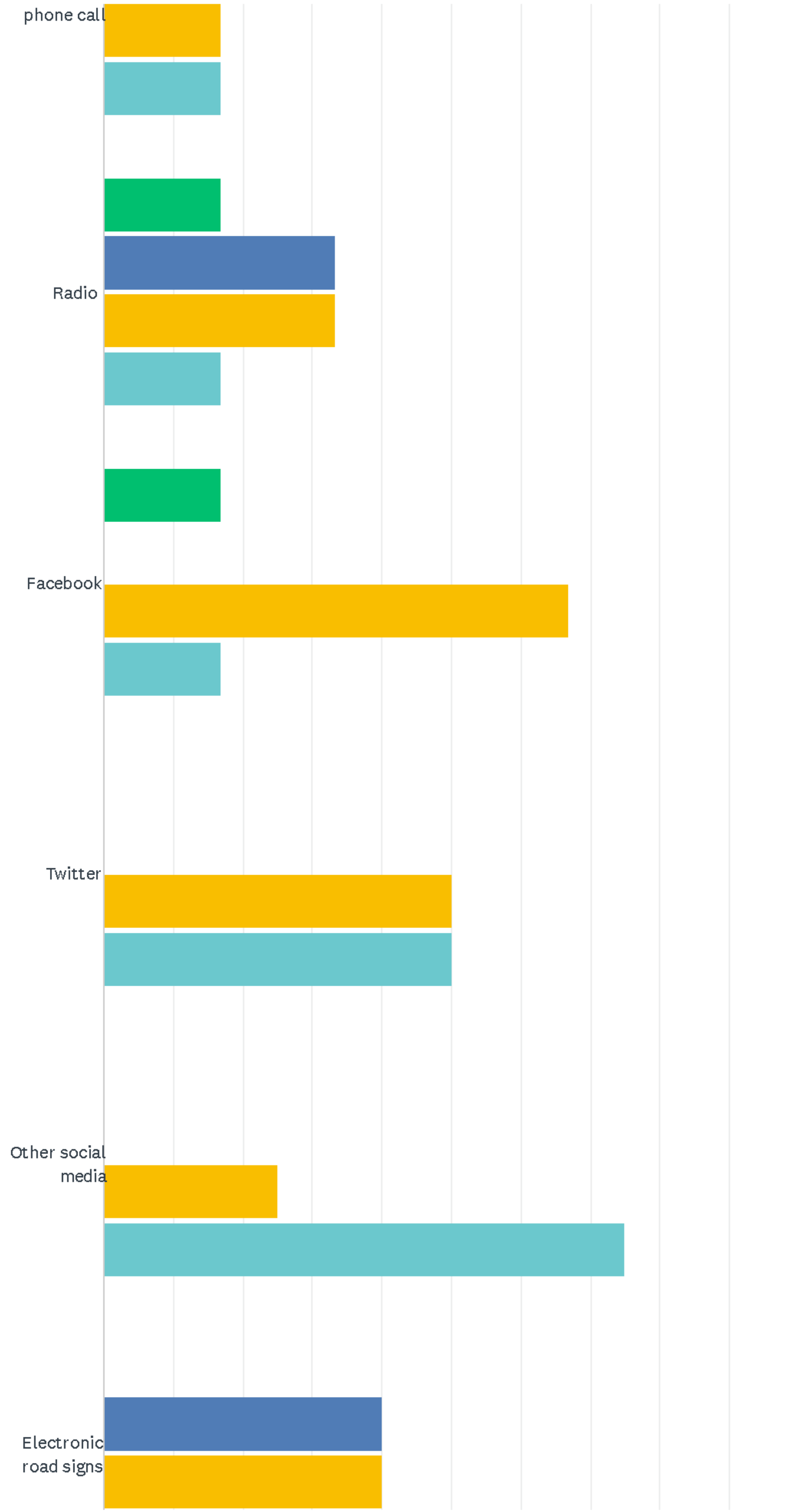
Q10 How often do you use the following methods to receive alerts and information about hazards?

Answered: 8   Skipped: 8



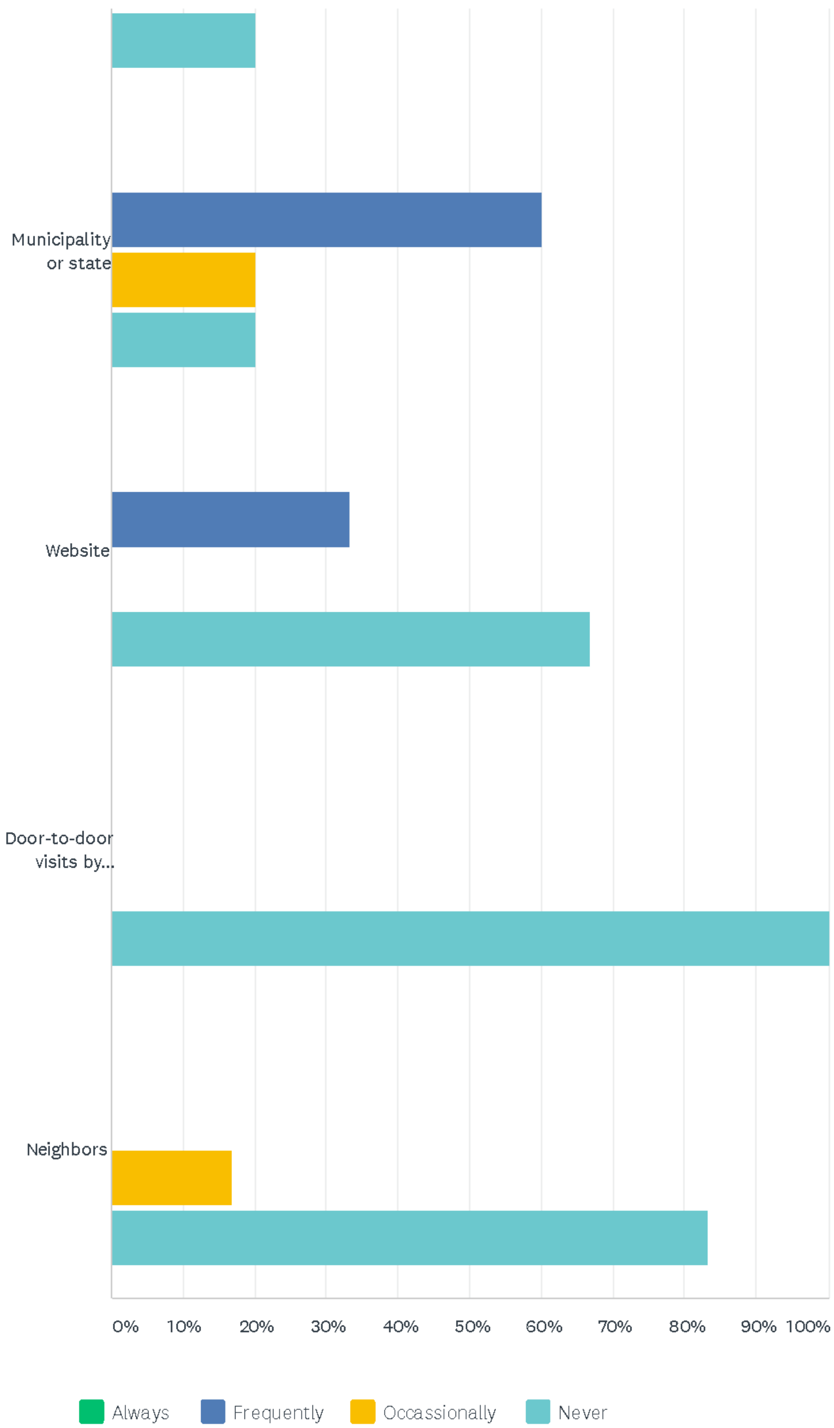
13 / 25

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey



14 / 25

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey



15 / 25

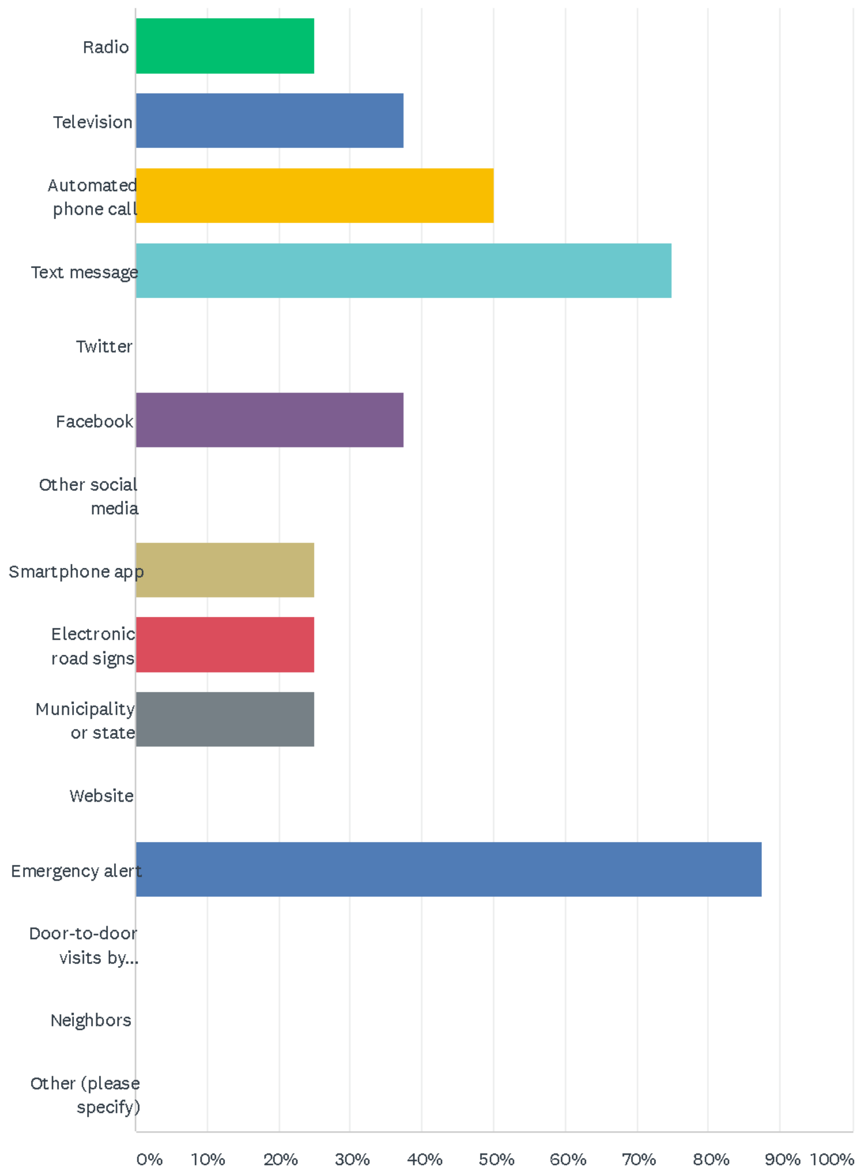
West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

	ALWAYS	FREQUENTLY	OCCASSIONALLY	NEVER	TOTAL
Emergency alert	71.43% 5	28.57% 2	0.00% 0	0.00% 0	7
Text message	42.86% 3	28.57% 2	14.29% 1	14.29% 1	7
Smartphone app	42.86% 3	14.29% 1	28.57% 2	14.29% 1	7
Television	28.57% 2	28.57% 2	14.29% 1	28.57% 2	7
Automated phone call	33.33% 2	33.33% 2	16.67% 1	16.67% 1	6
Radio	16.67% 1	33.33% 2	33.33% 2	16.67% 1	6
Facebook	16.67% 1	0.00% 0	66.67% 4	16.67% 1	6
Twitter	0.00% 0	0.00% 0	50.00% 2	50.00% 2	4
Other social media	0.00% 0	0.00% 0	25.00% 1	75.00% 3	4
Electronic road signs	0.00% 0	40.00% 2	40.00% 2	20.00% 1	5
Municipality or state	0.00% 0	60.00% 3	20.00% 1	20.00% 1	5
Website	0.00% 0	33.33% 2	0.00% 0	66.67% 4	6
Door-to-door visits by officials	0.00% 0	0.00% 0	0.00% 0	100.00% 6	6
Neighbors	0.00% 0	0.00% 0	16.67% 1	83.33% 5	6

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

Q11 Which of the below are your preferred methods of receiving information? Note: Your preferred method may not be the one you currently use frequently. Feel free to choose more than one option.

Answered: 8 Skipped: 8



West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

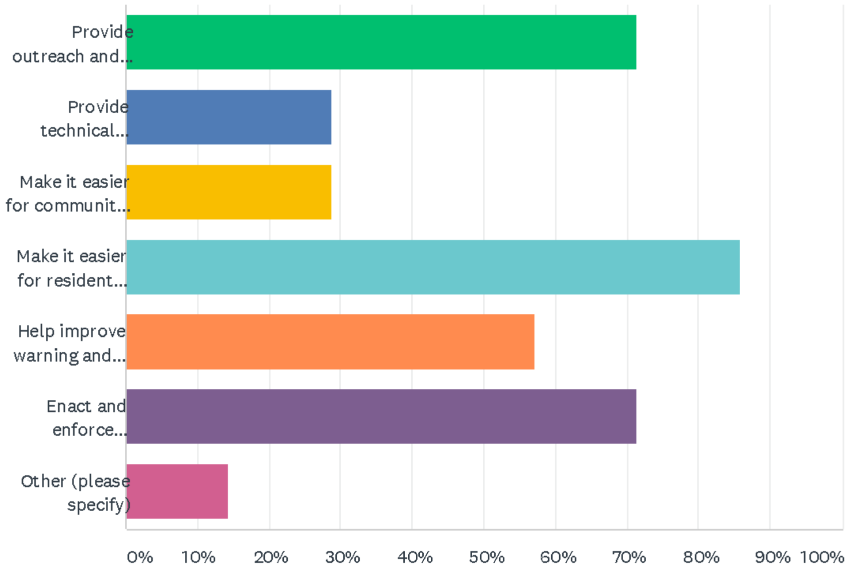
ANSWER CHOICES	RESPONSES	
Radio	25.00%	2
Television	37.50%	3
Automated phone call	50.00%	4
Text message	75.00%	6
Twitter	0.00%	0
Facebook	37.50%	3
Other social media	0.00%	0
Smartphone app	25.00%	2
Electronic road signs	25.00%	2
Municipality or state	25.00%	2
Website	0.00%	0
Emergency alert	87.50%	7
Door-to-door visits by officials	0.00%	0
Neighbors	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 8		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

Q12 What are the most important things that your community can do to help prepare for a disaster and become more resilient over time?

Answered: 7 Skipped: 9



ANSWER CHOICES	RESPONSES	
Provide outreach and education to residents, business, jurisdictions, and organizations to help them understand risks and be prepared	71.43%	5
Provide technical assistance to residents, businesses, jurisdictions, and organizations to help them reduce losses from hazards and disasters	28.57%	2
Make it easier for communities to provide education and technical assistance	28.57%	2
Make it easier for residents, businesses, jurisdictions, and organizations to take their own actions to become more resilient to disasters	85.71%	6
Help improve warning and response systems to improve disaster management	57.14%	4
Enact and enforce regulations, codes, and ordinances, such as zoning regulations and building codes	71.43%	5
Other (please specify)	14.29%	1
Total Respondents: 7		

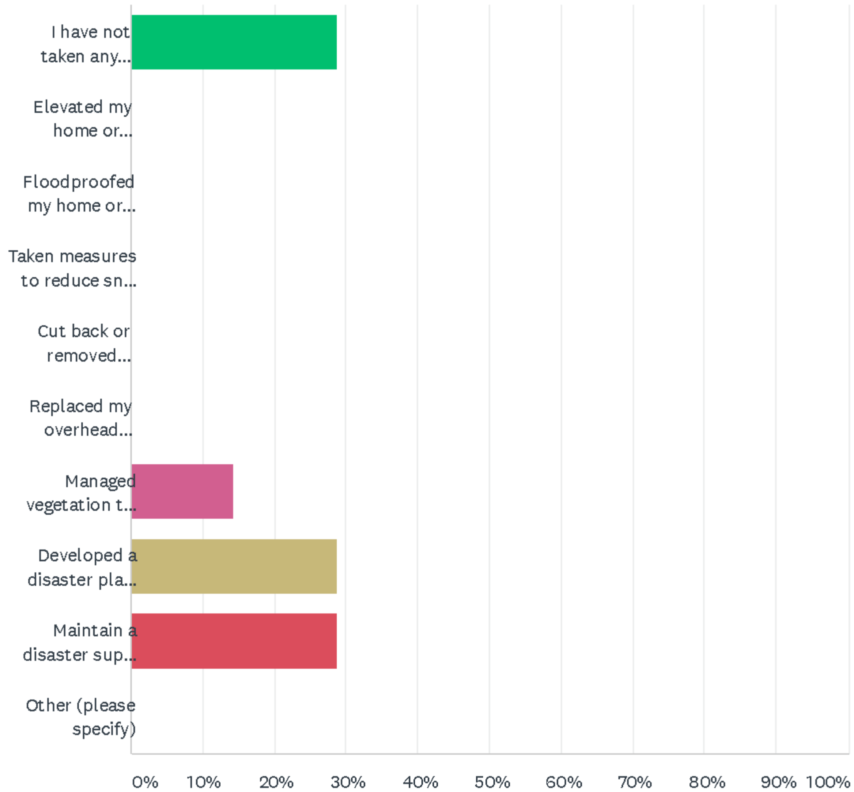
#	OTHER (PLEASE SPECIFY)	DATE
1	More efficient winter storm cleanup, and more reliable power restoration.	6/1/2021 1:24 PM

19 / 25

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

Q13 Have you taken any actions to reduce the risk or vulnerability from hazards of your family, home, business, or organization?

Answered: 7 Skipped: 9



West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

ANSWER CHOICES	RESPONSES	
I have not taken any actions.	28.57%	2
Elevated my home or business to reduce flood damage	0.00%	0
Floodproofed my home or business to reduce flood damage	0.00%	0
Taken measures to reduce snow build-up on my roof	0.00%	0
Cut back or removed vegetation from my overhead utility lines or roof	0.00%	0
Replaced my overhead utility lines with underground lines	0.00%	0
Managed vegetation to reduce risk of wildfire reaching my home or business	14.29%	1
Developed a disaster plan for my family, home, or business	28.57%	2
Maintain a disaster supply kit for my family, home, or business	28.57%	2
Other (please specify)	0.00%	0
TOTAL		7

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q14 If you could choose one action that could be taken in the region to reduce its vulnerability to hazards and the disasters associated with these hazards, what would it be?

Answered: 3 Skipped: 13

#	RESPONSES	DATE
1	Destroy the low head dams along the Dan River & mitigate water flow accordingly to reduce flooding.	6/21/2021 2:24 AM
2	Land use planning	6/1/2021 1:24 PM
3	Improve the trash blockage on the Magoddee Creek and made areas deeper in the channel	5/1/2021 11:12 AM

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

Q15 Please provide any additional comments or questions to be addressed as the West Piedmont Planning District Commission and your community updates its hazard mitigation plan.

Answered: 0 Skipped: 16

#	RESPONSES	DATE
	There are no responses.	

West Piedmont Multi-Jurisdictional Hazard Mitigation Plan - 2021 Update Community Survey

Q16 If you wish to be notified of hazard mitigation plan updates and meetings, please provide your name and email address.

Answered: 2 Skipped: 14

ANSWER CHOICES	RESPONSES	
Name	100.00%	2
Company	0.00%	0
Address	0.00%	0
Address 2	0.00%	0
City/Town	0.00%	0
State/Province	0.00%	0
ZIP/Postal Code	0.00%	0
Country	0.00%	0
Email Address	100.00%	2
Phone Number	0.00%	0

#	NAME	DATE
1	Michael Smith	5/1/2021 11:12 AM
2	B.T. Fitzpatrick	4/28/2021 2:00 PM
#	COMPANY	DATE
	There are no responses.	
#	ADDRESS	DATE
	There are no responses.	
#	ADDRESS 2	DATE
	There are no responses.	
#	CITY/TOWN	DATE
	There are no responses.	
#	STATE/PROVINCE	DATE
	There are no responses.	
#	ZIP/POSTAL CODE	DATE
	There are no responses.	
#	COUNTRY	DATE
	There are no responses.	
#	EMAIL ADDRESS	DATE
1	mike24065@gmail.com	5/1/2021 11:12 AM
2	fitzpatrick@townofboonesmill.org	4/28/2021 2:00 PM
#	PHONE NUMBER	DATE

24 / 25

Figure 24. Public Survey Questions and Responses

Appendix A.4. Stakeholder Feedback on Draft Plan

West Piedmont 2021 Multi-Jurisdictional Hazard Mitigation Plan Stakeholder Survey

#1

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, July 28, 2021 3:51:44 PM
Last Modified: Wednesday, July 28, 2021 4:04:10 PM
Time Spent: 00:12:26
IP Address: 96.84.234.129

Page 2: Respondent Information

Q1

Which best describes you?

Representative of a neighboring jurisdiction

Q2

What is the name of your business/organization?

Southside Planning District Commission

Q3

What is your title/role?

Senior Planner/GIS Specialist

Q4

What is your name?

Chad Neese

Page 3: Respondent Information

Q5

What is your area (or areas) of subject matter expertise?

Respondent skipped this question

Page 4: Known Hazard Issues

Q6

Does your jurisdiction have a hazard mitigation plan?

Yes

West Piedmont 2021 Multi-Jurisdictional Hazard Mitigation Plan Stakeholder Survey

Q7

Which hazard(s) pose the biggest threat to your community?

Severe wind, flooding, drought, winter weather

Q8

Are there any hazard-related issues that involve both your jurisdiction and the West Piedmont Region (e.g. downstream flooding)?

Issue 1	**flooding**

Page 5: Hazard Mitigation Collaboration Opportunities

Q9

Do you believe your jurisdiction may be interested in collaborating with the West Piedmont Region (or any of its member communities) on any hazard mitigation actions/projects?

Unsure / Do not know

Q10

What would your jurisdiction be interested in collaborating on?

Respondent skipped this question

Page 6: Concluding Questions

Q11

Do you have any best practices that you believe the West Piedmont Region would benefit from implementing?

Respondent skipped this question

Q12

Please provide any additional feedback, comments, or questions you have on the 2021 draft plan.

Overall the plan looks solid. We also struggled with low attendance numbers at public meetings. You may want to consider identifying the District on statewide maps (pp. 86, 151).

Q13

If you have your feedback in a separate document, please upload it here.

Respondent skipped this question

Page 7: 2021 Draft Hazard Mitigation Plan Feedback

West Piedmont 2021 Multi-Jurisdictional Hazard Mitigation Plan Stakeholder Survey

Q14 — Respondent skipped this question

Which part of the plan are you commenting on?

Q15 — Respondent skipped this question

What feedback/input would you like to provide?

Q16 — Respondent skipped this question

If you have your feedback in a separate document, please upload it here.

Q17 — Respondent skipped this question

How well do you feel the 2021 draft plan will encourage worthwhile hazard mitigation activities in the West Piedmont Region?

Page 8: Concluding Questions

Q18 — Respondent skipped this question

Please provide any additional comments or questions to be addressed as the West Piedmont Planning District updates its hazard mitigation plan.

West Piedmont 2021 Multi-Jurisdictional Hazard Mitigation Plan Stakeholder Survey

#2

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, July 29, 2021 9:01:53 AM
Last Modified: Thursday, July 29, 2021 9:05:19 AM
Time Spent: 00:03:26
IP Address: 98.191.4.131

Page 2: Respondent Information

Q1

Which best describes you?

Representative of a neighboring jurisdiction

Q2

What is the name of your business/organization?

Roanoke Valley-Alleghany Regional Commission

Q3

What is your title/role?

Director of Community Development

Q4

What is your name?

Eddie Wells

Page 3: Respondent Information

Q5

What is your area (or areas) of subject matter expertise?

Respondent skipped this question

Page 4: Known Hazard Issues

Q6

Does your jurisdiction have a hazard mitigation plan?

Yes

Q7

Which hazard(s) pose the biggest threat to your community?

flooding, high wind, wildfire

Q8

Are there any hazard-related issues that involve both your jurisdiction and the West Piedmont Region (e.g. downstream flooding)?

Issue 1	**flooding on Roanoke River**
Issue 2	**wildfire**
Issue 3	**emergency response and coordination (radio)**

Page 5: Hazard Mitigation Collaboration Opportunities

Q9

Do you believe your jurisdiction may be interested in collaborating with the West Piedmont Region (or any of its member communities) on any hazard mitigation actions/projects?

Potentially

Q10

What would your jurisdiction be interested in collaborating on?

flood prevention, Firewise community, coordination on radio network

Page 6: Concluding Questions

Q11

Do you have any best practices that you believe the West Piedmont Region would benefit from implementing?

Respondent skipped this question

Q12

Please provide any additional feedback, comments, or questions you have on the 2021 draft plan.

Respondent skipped this question

Q13

If you have your feedback in a separate document, please upload it here.

Respondent skipped this question

Page 7: 2021 Draft Hazard Mitigation Plan Feedback

West Piedmont 2021 Multi-Jurisdictional Hazard Mitigation Plan Stakeholder Survey

Q14 Respondent skipped this question

Which part of the plan are you commenting on?

Q15 Respondent skipped this question

What feedback/input would you like to provide?

Q16 Respondent skipped this question

If you have your feedback in a separate document, please upload it here.

Q17 Respondent skipped this question

How well do you feel the 2021 draft plan will encourage worthwhile hazard mitigation activities in the West Piedmont Region?

Page 8: Concluding Questions

Q18 Respondent skipped this question

Please provide any additional comments or questions to be addressed as the West Piedmont Planning District updates its hazard mitigation plan.

West Piedmont 2021 Multi-Jurisdictional Hazard Mitigation Plan Stakeholder Survey

#3

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Friday, August 06, 2021 12:48:23 PM
Last Modified: Friday, August 06, 2021 3:50:08 PM
Time Spent: 03:01:45
IP Address: 64.203.145.132

Page 2: Respondent Information

Q1

Which best describes you?

Member of a department/agency/organization with an interest in hazard mitigation in the region

Q2

What is the name of your business/organization?

The Health Collaborative

Q3

What is your title/role?

Regional Coordinator

Q4

What is your name?

Maggie Richardson

Page 3: Respondent Information

Q5

What is your area (or areas) of subject matter expertise?

Respondent skipped this question

Page 4: Known Hazard Issues

Q6

Does your jurisdiction have a hazard mitigation plan?

Respondent skipped this question

West Piedmont 2021 Multi-Jurisdictional Hazard Mitigation Plan Stakeholder Survey

Q7

Which hazard(s) pose the biggest threat to your community?

Respondent skipped this question

Q8

Are there any hazard-related issues that involve both your jurisdiction and the West Piedmont Region (e.g. downstream flooding)?

Respondent skipped this question

Page 5: Hazard Mitigation Collaboration Opportunities

Q9

Do you believe your jurisdiction may be interested in collaborating with the West Piedmont Region (or any of its member communities) on any hazard mitigation actions/projects?

Respondent skipped this question

Q10

What would your jurisdiction be interested in collaborating on?

Respondent skipped this question

Page 6: Concluding Questions

Q11

Do you have any best practices that you believe the West Piedmont Region would benefit from implementing?

Respondent skipped this question

Q12

Please provide any additional feedback, comments, or questions you have on the 2021 draft plan.

Respondent skipped this question

Q13

If you have your feedback in a separate document, please upload it here.

Respondent skipped this question

Page 7: 2021 Draft Hazard Mitigation Plan Feedback

Q14

Which part of the plan are you commenting on?

No specific part / the entire plan

West Piedmont 2021 Multi-Jurisdictional Hazard Mitigation Plan Stakeholder Survey

Q15

What feedback/input would you like to provide?

See attached file

Q16

If you have your feedback in a separate document, please upload it here.

Hazard Mitigation Draft Plan Feedback.docx (26.9KB)

Q17

How well do you feel the 2021 draft plan will encourage worthwhile hazard mitigation activities in the West Piedmont Region?

65

Page 8: Concluding Questions

Q18

Please provide any additional comments or questions to be addressed as the West Piedmont Planning District updates its hazard mitigation plan.

Respondent skipped this question

9 / 9

Figure 25. Stakeholder Survey Responses

Hazard Mitigation Draft Plan Feedback

The Health Collaborative

I was disappointed to see such low public participation in the development of the plan. However, in my experience, a broad invitation is usually not enough to bring people into the process. I would love to see the WPPDC partner with local organizations to offer more targeted and specific opportunities for public input. It would be great to have different sessions related to each of the key topics (i.e. housing, agriculture, environment, etc.), with specific invitations for trusted grassroots organizations who can more easily bring people to the table. (Obviously, COVID made this much more difficult, but The Health Collaborative would love to help with this in the future).

I was glad to see housing as a key section of the community profile and hope that the Regional Housing Plan will complement this plan by acknowledging housing as critical infrastructure for resilient communities. I was also pleased to see public health impacts assessed for each of the hazard types. I think it's important for decision makers to understand the additional indirect costs incurred by negative health effects.

I really appreciated the inclusion of a climate change impact section for each of the hazards. I personally feel that leaders in our region do not do enough to acknowledge climate change as a serious threat and as a result, leave our communities much more vulnerable to all types of hazards. I hope that climate action continues to be part of the discussion around hazard mitigation and community resilience.

Finally, I was pleased to see equity included in the section about considering mitigation alternatives. I think this is crucial for decision making around this issue and I hope that implementation of any mitigation strategy would be aligned with a strong and equitable public participation process. At the same time, I would really love to see more narrative around equity in the impact sections of the plan. We know that these hazards do not affect everyone in our communities equally and when they occur, they only widen the existing disparities. Inequity in our communities is costly too – both socially and economically. I'd love to see more leaders discuss hazards and resilience through an equity lens.

Figure 26. Draft Plan Feedback Document from The Health Collaborative that was Uploaded to the Stakeholder Survey

From: Michael Armbrister
To: Payne, Jade
Cc: Choquette, Scott
Subject: FW: West Piedmont PDC: Draft 2021 Multi-Jurisdictional Hazard Mitigation Plan
Date: Friday, August 6, 2021 9:19:32 AM

[CAUTION] External Email. DO NOT click links or open attachments unless expected. Please use the "Phish Alert" button to report all suspicious emails.

Jade –

Comment from Stokes County, NC.

Thanks,

Michael

From: Brandon Gentry <bgentry@co.stokes.nc.us>
Date: Friday, August 6, 2021 at 9:11 AM
To: Michael Armbrister <marmbrister@wppdc.org>
Subject: RE: West Piedmont PDC: Draft 2021 Multi-Jurisdictional Hazard Mitigation Plan

Sorry it has taken so long to respond, I think it looks great. I have nothing to add.

Thanks, Brandon

From: Michael Armbrister <marmbrister@wppdc.org>
Sent: Thursday, August 5, 2021 5:23 PM
To: Michael Armbrister <marmbrister@wppdc.org>
Subject: West Piedmont PDC: Draft 2021 Multi-Jurisdictional Hazard Mitigation Plan

CAUTION: This email originated from outside of the County Network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good evening,

Just following up on the email I sent previously regarding our draft Multi-Jurisdictional Hazard Mitigation Plan.

We would appreciate any comments or input you might have.

Thank you,
Michael

Figure 27. Stakeholder Plan Review Emailed Feedback

Appendix A.5. Jurisdiction Participation

The following pages contain the meeting agendas, meeting minutes, and attendance sheets from all Mitigation Advisory Committee and local planning team meetings during the 2021 hazard mitigation planning process.

Appendix B. Hazard Identification and Risk Assessment Data

Appendix B1. Hazard History

Hazard history data was provided by the NCEI Storm Events Database and/or the National Weather Service unless otherwise noted.

Severe Winter Storm

Event Date	Hazard Description
March 13-14, 1993	The 1993 winter storm became known as the Storm of the Century and affected nearly the entire East Coast, including most of the West Piedmont Region. The storm was notably severe in Southwest Virginia and resulted in a Presidential Disaster Declaration (FEMA-DR-3112).
January-March, 1994	Severe ice storms in in January to March 1994 lead to power outages in Henry and Pittsylvania Counties. The ice storms coated portions of the region with freezing rain and sleet. 5,000 customers were without power in Gretna area, 2,000 out in Danville, and nearly 26,000 in Martinsville. Trees and utility lines were damaged in some areas. The storm resulted in a Federal Disaster Declaration (FEMA-DR-1014 and FEMA-DR-1021).
January 13, 1996	The blizzard of 1996 brought severe snowfall to the region. now began on January 6 in Danville. Primary roads that were plowed first included US Rts. 29, 58 and SR 265, 41, 57, and 40. Secondary roads plowed early included Rt. 750, 844, 726. A total of 9 inches fell in the Pittsylvania/Danville area and there were very few power outages because the colder temperatures did not produce any ice. It took up to a week to get all roads cleared. Newspaper reports of largest snowstorm in area on Jan 28, 1922, when a 38-hour storm dumped more than 30 inches of snow on Danville area, collapsing roofs on tobacco warehouses and other businesses. Several weather-related accidents in the region. 17-20 inches of snowfall in the region. According to NCEI data, $400,000 in damages occurred across portions of Henry and Pittsylvania Counties as a result of this storm. During the 1995-1996 winter season, the southwest portion of Virginia and other areas of the state experienced historic levels of snowfall, resulting in more localities qualifying for major disaster declarations than any other hazard. (FEMA-DR-1086).
February 24-30, 2000	One to two inches of snow fell in the Dan River Region, causing several accidents (13 accidents in Pittsylvania County). A change in the jet stream caused a sudden burst of winter weather. In Danville and Stuart, the temperatures dipped into the teens. A second snowstorm followed a few days after the first one with two to four more inches of snow falling. Then a third snowstorm hit the region, dropping an additional eight inches in Danville and two inches in the Martinsville area. A storm on the night of February 24, dropped 1 to 2 inches in southern and eastern Henry County, less elsewhere. This was primarily an ice-snow mix, but there were no major traffic issues from this first storm. Later in the week, schools closed due to slick roads in Axton and Ridgeway. On the 30th, a second major storm blanketed the area in snow and sleet, with 3 to 4 inches of wintry mix. However, this led to few power outages because sleet did not accumulate on power lines. Up to 9 inches of snow was also recorded in Pittsylvania County. The governor of Virginia declared a state of emergency. (FEMA-DR-1318).

Event Date	Hazard Description
February 13-17, 2003	The most significant storm of the 2003-2004 winter season impacted most of the state. Severe snowfall was reported across the West Piedmont Region, as well as ice, heavy rain, flooding, and mudslides. The storm resulted in a Presidential Disaster Declaration (FEMA-DR-1458), and Henry County and the City of Danville received Public Assistance grants totaling almost $1 million for debris removal and repairs to public utility damages.
February 28, 2005	Heavy snow blanketed the area as a Nor'easter spun up the East Coast. Snowfall amounts up to a foot were recorded over Franklin County, with amounts of between 5 to 10 inches elsewhere across the region.
December 15, 2005	A powerful winter storm brought significant freezing rain to much of the West Piedmont region. Ice accretion of 0.25 to 0.75 inches brought down tree limbs, trees and power lines. Patrick and Henry Counties were especially hard hit. Damages were estimated at $108,000.
February 13, 2007	Freezing rain left an accumulation of ¼ to ½ inch of ice, particularly over Franklin County. Over an inch of ice accumulated closer to the Blue Ridge Parkway. Power was knocked out to nearly 4,000 customers of Appalachian Power Company. *(The Franklin News Post, 2/16/07)*
December 18, 2009	The first in a series of major winter storms to impact the area during the 2009/2010 winter season hit bringing 12 to 16 inches of snow to most of the area, and up to 20 inches in some spots. Travel across the area was brought to a stand-still.
December 25, 2009	A mix of sleet and mostly freezing rain impacted the region early in the morning. A glaze of ¼ to ½ inch accumulated before temperatures rose above freezing and precipitation changed to plain rain. The weight of the ice brought down tree limbs and power lines. Damage was estimated to have been at least $2,000.
February 4-5, 2010	A major winter nor'easter storm raked the area bringing a mix of freezing rain, sleet and snow to the region. Ice accumulation of up to a tenth of an inch and snowfall of 8 to 11 inches combined with strong winds were enough to knock power out to thousands. The Appalachian Power Company reported over 7,500 without power in Patrick County. The conditions were severe enough to prompt emergency management officials to open a shelter at Patrick Henry Community College. More than 25 people took shelter at that location during the storm. (Sources: The Enterprise, Stuart, VA and NCDC)
December 16, 2010	What began as snow changed over to a mix of freezing rain and sleet over the West Piedmont region on December 16. Snow accumulations generally ranged from 1 to 3 inches with a 0.10 to 0.40 inch glaze of freezing rain on top. The most significant icing was reported over portions of Patrick County.
January 17, 2013	A fast moving snowstorm dropped between one to four inches of snow over Franklin County. The heavy wet snow caused power outages and hazardous driving conditions. The Appalachian Power Co. reported 1,899 customers in Franklin and Henry County were without power the following day. The primary roads throughout Franklin County were in good condition by the next morning, however, secondary roads remained in poor condition. (The Franklin News-Post; Martinsville Bulletin)
February 26, 2013	An ice storm in the Meadows of Dan/Vesta areas of Patrick County, left 100 to 500 people without power and closed schools for two days. (Martinsville Bulletin)

Event Date	Hazard Description
February 12-13, 2014	A major snowstorm dropped approximately 16 inches of snow in Franklin County and 8 inches in Henry County-Martinsville area, making this event the largest snowfall the region had seen in several years. The snowstorm closed roads, stranding motorist. Primary roads were passible the following day, however secondary roads were still in poor, dangerous conditions. (The Franklin News-Post; Martinsville Bulletin)
February 16-17, 2015	An overnight snow event brought between 4 to 8 inches of snow to the region. The snow caused school cancellations and many businesses to close. VDOT road crews worked to clear roads and sidewalks. However, the roads still had areas of icy patches due to the temperatures remaining well below freezing during the day and the overnight lows dropping down into the single digits. (The Franklin News-Post; Martinsville Bulletin)
February 25, 2015	The second snow event of the year quickly followed the first by just over a week. Franklin County saw on average 4 inches of snow with slightly higher numbers in the southern portions of the county and Henry County, Martinsville, and Patrick County received up to 7 inches of snow. Schools and many businesses were closed, VDOT had a majority of the roads in good condition by the following day but advised on potential black ice situations with snow melt re-freezing overnight. Thousands of residents lost power in Danville and Pittsylvania County, where they received up to 7 inches of snow. Power lines were weighted down with the heavy snow or had trees and limbs fall across them from the weight of the snow. (The Franklin News-Post, Martinsville Bulletin, and Danville Register Bee)
January 22-23, 2016	Winter Storm Jonas dropped about 12 inches of snow over Franklin County. VDOT road crews worked to keep primary roads such as U.S. 220 in fair condition, however secondary roads were still hazardous and caused school closings for an additional two days. There were no reported weather related injuries or power outages. Martinsville, Henry and Patrick Counties saw up to 9 inches of snow with some localized higher accumulation. There was one death reported in Henry County that was due to hypothermia. In advance of the winter storm, Gov. McAuliffe declared a State of Emergency on January 21, 2016. This storm was ranked fourth on the list of historic storms on the NESIS scale. This storm resulted in a federal disaster declaration. (FEMA-DR-4262). (The Franklin News-Post; Martinsville Bulletin)
December 8-10, 2018	A significant snowstorm hit the southern U.S. from December 8th-10th, 2018.The resultant snowfall was record-breaking in the West Piedmont Region of Virginia with areas of accumulation over one foot, and in some cases around 2 feet. The National Weather Service reported that this was the second largest December snowfall on record for any event reported for the Danville Climate Station, and the fifth largest snowfall in the area since 1916. This storm also broke the record for the earliest seasonal snowfall amount. The Danville station also reported that this storm brought record snowfall with the most snow measured in an event in over 70 years in the region. Franklin County had snowfall totals of up to 18.5 inches, Pittsylvania County recorded up to 17.4 inches in some areas, Patrick County had a total of 17 inches, Henry County had a total of 16.8 inches, and the City of Martinsville at 15 inches.
January 12-13, 2019	The January 12-13 Winter Storm impacted a large area of the southeast U.S. However, reports of this storm in the West Piedmont region were less severe. The National Weather Service reported 2 inches or less of snowfall in the region and freezing rain throughout. NCEI data shows no weather-related injuries or deaths as a result of this storm.

Flooding

Event Date	Hazard Description
April 11, 1905	Franklin County: Large floods caused heavy damage to croplands and structures in the floodplains.
April 22, 1905	Franklin County: Large floods caused heavy damage to croplands and structures in the flood plains.
April 27, 1905	Franklin County: Large floods caused heavy damage to croplands and structures in the floodplains. Pittsylvania County: Maximum flood on record on the Banister River.
October 17, 1937	Henry County: Largest flood on record at Martinsville and Bassett. Martinsville: Damage from this flood was moderate to severe as hundreds of homes in the City were inundated. Patrick County: Newspaper accounts discuss damage to many businesses and industries in the area.
August 15, 1940	Danville: Record flooding on both Dan and Sandy Rivers. Franklin County: Maximum flood on record on the Roanoke, Pigg, and Blackwater Rivers and Snow Creek. Henry County: The community of Bassett has historically received the most damage from floods. The most common flood damage in the County has been to crops in the floodplains. Secondary roads and highways are frequently blocked. Pittsylvania County: Maximum flood on record on the Roanoke, Pigg, Dan, and Sandy Rivers.
June 23, 1972	Hurricane Agnes caused the Dan River to reach an all-time high of 21.3 feet at Bridge Street Power Station, topping previous mark of 20.47 on August 15, 1940. Roads were blocked throughout the City along the River, including Memorial Drive from Aiken Bridge to Robertson Bridge, lower end of Park Ave near Robertson, Mt. Cross Road at the City limits, and River Street near the railroad trestle. Bridge Street and Brantly Power stations were sandbagged to prevent flooding, and there was some damage at the sewage treatment plant. More than 6 inches of rain from Hurricane Agnes drenched the Martinsville-Henry-Patrick County area, mostly on June 20 and 21st. Final totals of 8.7 inches for area. Smith River overflowed in Fieldale, causing homeowner evacuations. In Henry and Patrick Counties, worse flooding along Town, Marrowbone, Blackberry, and Beaver Creeks. Portions of Route 57 near Bassett were closed due to Smith River flood and mud slides. There was pavement washout on Route 58 in Patrick County near Lover's Leap and, in Henry County, there were homes damaged in Shannon Hills near Ridgeway, Carver Road near Fieldale, and Daniel's Creek Road and John Redd Boulevard in Collinsville. In Martinsville, homes were damaged along Jones and Mulberry Creeks. Danville: Flooding occurred and caused an estimated $1.1 million of damage to the City. Franklin County: Damage to the County was primarily agricultural. The destruction of crops, livestock, equipment, and highways was estimated to be $679,000. Pittsylvania County: Damage primarily to farms. Destruction of crops, livestock, equipment and buildings, estimated to be $1.1 million.
September 29, 1979	7.5 inches of rain in Stuart caused flooding that washed away cars and lead to the evacuation of 35 people. Mayo River flooding caused 4 major businesses to flood, affecting over 850 jobs. The sewer system was also destroyed. 4.2 inches of rain in Danville lead to fast rising water. A rescue was needed for several motorists and many secondary roads were closed in Pittsylvania County. Closed roads in Danville included River Street, Whitmell Street, and Mt. Cross Road. There were few power outages.

Event Date	Hazard Description
	Patrick County: Largest flood on record at Stuart. Damage in the immediate area was estimated at $15 million, with approximately $11 million of the total in the unincorporated areas of Patrick County. (Danville Register & Bee)
April, 1980	Danville: Severe Thunderstorms and flooding caused some industrial damage, but of a low magnitude.
November 9, 1985	In Franklin County, one man was killed, and a woman seriously injured when their car hit a tree in the road on southbound lanes of US 220. The rain was part of a storm system that extended through the state into West Virginia and parts of Pennsylvania and New York. In Franklin County, flood waters covered US 220 at Boones Mill. Flood problems were reported along Big Island and along US 460 in Bedford County. (Danville Register and Bee, The Roanoke Times and World News)
September 7, 1987	Severe flooding primarily in the Bassett, Stanleytown, Collinsville, and Fieldale areas. The flooding was the worst experienced since construction of Philpott Dam. Approx. 500 residents were evacuated with over 150 housed in public shelters. The damage totaled $6.1 million with $4.6 million not covered by insurance. This estimate does not include damage to the 36 state roads in the County that suffered damage. (Dale Wagoner, Henry County Public Safety)
September 22, 1989	Henry County residents were evacuated from low lying areas, on Valley Drive, Blackberry Creek, and Carver Bottom; 4 – 5,000 people were left without power. (Martinsville Bulletin)
May 19, 1992	Heavy rain caused flooding in Pittsylvania, as the Dan River crested at 13.67 ft. There was no damage to homes in the area; most damage was to 6 roads from landslides and debris. Heavy debris was also reported in Smith Mountain and Leesville Lakes. (Danville Register and Bee)
July 1, 1995	Rains throughout the month of June caused flooding in Danville and Pittsylvania. 14.6 inches of rain were recorded in June, including 8.7 in the first half of the month. 15 roads were closed in the County, including SR 859 between SR 622 and NC border, SR 867 btw SR 869 and 703, SR 644 btw SR 799 and 750, SR 741 at SR 782. (Danville Register and Bee)
June 9, 1996	Flooding occurred after 11.2" of rain (in 48 hrs.) fell in the Blackberry Creek area. There was flooding along Blackberry Creek, Town Creek, and the Rangeley community. Approximately 15 houses were affected in the Blackberry area from Community Center up to the trailer park. Three houses were affected on Spring House Drive and numerous roads were damaged at a VDOT estimate of $30,000. Residential damage was estimated at $90,000. (Dale Wagoner, Henry County Public Safety)
September 6, 1996	Heavy rain on September 3, caused flash flooding in Danville and Pittsylvania Counties and evacuations on Fall Creek Road north of Danville City limits, Halifax Street along Fall Creek, and Brown Lane in Westover Hills community. There were mudslides reported on Route 58 and off West Main Street in Danville and a Plum Street house slid off the foundation. This event generated a total of 9 inches of rainfall in two days. Several hundred customers were left without electric, 5 homes were condemned, and homes were damaged on Altice and Berman Drives when water saturations caused their basements to collapse. There was also damage to Mount Carmel Baptist Church in Water Street area and some sewer line failures found. Over 100 roads closed in Pittsylvania County, including 3 bridge washouts. After a couple days to dry out, Hurricane Fran hit the area on Sept 6th, with steady winds at 20-30 mph and gusts up to 60 mph and up to 7 inches of additional rainfall. This led to many downed trees and widespread power outages and many secondary roads closed due to water. There were a couple inches of water in Gretna Town Hall and the water plant flooded. A water rescue had to be performed on Sandy Creek and crews called in from other states for electric repairs. President Clinton even toured Danville and Pittsylvania to survey damage on Water Street along Fall Creek. The Dan River crested 7 feet over flood stage at 18 feet, causing less damage than

Event Date	Hazard Description
	expected. 120 roads closed in Pittsylvania, there was one fatality due to flooding in the Town of Gretna, and crop losses were estimated at $6 million (mostly tobacco). Damage from storm put at $1 million. Henry County Public Service Authority Facilities ($257,000), Lower Smith River Treatment plant ($50,000), water main in the Axton area ($100,000) and sewer main at Koehler ($150,000) were among the hardest hit. (Danville Register and Bee, Martinsville Bulletin)
September 18, 1999	In Danville, Hurricane Floyd impacts were not great in the City, similar to the impacts of a good thunderstorm. The hurricane brought with it about 3 inches of rain; leading to several trees and limbs down and 3 - 4 houses without power. Pittsylvania County also was spared by the storm. Minor impacts were felt by this storm; mostly power outages to 1,500 from winds ranging 25 to 30 mph. (Danville Register and Bee, Martinsville Bulletin)
September 18, 2003	Power outages began to occur in Danville and Pittsylvania County, as trees and limbs were shredded, falling across power lines. 1,000 City residences were without power. Extreme winds of 50 mph were reported; with gusts beyond 60 mph. At least 4 inches of rain fell on the City as the category 1 hurricane passed through the area. Most of the damages in the area were a result of wind gusts. In Danville, most of the damage was off West Main St, River Oak Drive in Wedgewood Community, where two large sport utility vehicles were mangled by fallen trees. In Pittsylvania County, hundreds of trees fell, particularly along Route 41. About 6,500 Danville Power and Light customers were without power at some point during the storm. Most areas had power restored in a day or two. More than 1,500 customers in the City and thousands in Pittsylvania County were without power on Friday afternoon. In the City, at least 160 locations were noted with downed trees. In Pittsylvania County, 200+ locations of downed trees were noted. Only one person sought shelter at the Westwood Middle School. City damage estimates were at $327,500. Pittsylvania County estimates were at $825,000 for agriculture, $112,500 for private property, $30,000 businesses, and $21,000 debris cleanups; leading to a total of $988,500. The agricultural damage breakdown was: $300,000 fencing, $250,000 corn crop, $200,000 tobacco, and farm structure $75,000. About 24,000 homes were without power in Martinsville and Henry and Patrick Counties, (11,000 in Henry, 5,300 in Patrick, and 8,000 in Martinsville). Most power was back in a few days. Rainfall was 1 to 2 inches in the area. Wind was most prominent, with debris issues found throughout area. (Danville Register and Bee, Martinsville Bulletin)
June 20, 2004	Flash flooding from about 10 inches of rainfall resulted in a couple of fatalities. Stuart Creek was totally flooded. (Martinsville Bulletin)
September 10, 2004	Remnants of Hurricane Frances officially deposited 6.6 inches of rainfall in a three-day period. The western areas, Callaway and Ferrum, unofficially reported a rainfall of 8.2 inches. Many roads were flooded. Hurricane Frances dropped 5 to 6 inches of rainfall. The storm affected areas including Shannon Hills residential area and Shamrock Drive near its intersection with US 220 South in Ridgeway. (Franklin News Post, Martinsville Bulletin)
September 29, 2004	$143,000 damage in flooding by the remnants of Jeanne on 09/28/04, including private roads and bridges in Patrick County ($40,000), structure damage ($68,000), destroyed structures ($15,000) and other damages ($20,000). As much as 12 inches of rainfall were reported in the communities of Claudville, Dry Pond, Stuart, Meadows of Dan, Woolwine, and Charity. Damages to crops were also reported. Hurricane Jeanne caused flooding when as much as 4 inches of rainfall dropped in a short period of time. About 25 roads were closed in Franklin County, including Snow Creek Road (Rt. 890) and LaPrade's Mill Road (Rt. 629). Hardest hit areas in the short time period were northwest of US 220, north of Rt. 40, and north of Rt. 122. Flash flooding due to remnants of Hurricane Jeanne lead to flood waters at least 12 feet high. About 10 inches of rain fell in the Meadows of Dan area.

Event Date	Hazard Description
	Federal disaster aid was issued for Patrick County due to damages caused by Tropical Storm Jeanne. Up to 10 inches of rain fell in the County on 09/28/2004 due to remnants of Jeanne. Hazard mitigation assistance was approved. (The Enterprise, Franklin News Post, Martinsville Bulletin)
January 15, 2005	Wind gusts caused damage in Holbrook Street apartments. Some units were damaged and there were power outages. About 1 - 2 inches of rainfall were deposited during the event. (Danville Register and Bee)
November 16, 2006	Up to 4 inches of rain over a short period of time lead to flash flooding of Middle Creek Road and Jones Ridge Road near Axton. Damage to homes and buildings in the area was estimated at $45,000.
January 1, 2007	A significant flooding episode occurred over much of the region as between 2 and 4 inches of rain fell, much of it within a 3-hour period. Route 29, Sandy Creek Road, and Mountain View Roads near Danville were closed. Fall Creek topped its banks and flooded Halifax and Water Streets. At least 15 people on Water Street had to be rescued. Two homes and a church were flooded. Twenty-seven roads in total were closed in and around Danville. The Dan River rose above 26 feet downstream of Danville, well above its 19-foot flood stage as a result of the heavy rains. In Martinsville, buildings were flooded on Memorial Boulevard and the 800 block of Forest Street Extension. Six residences were relocated to a motel. In Ridgeway, many streets were closed due to the flood waters. Damage was estimated to be over $36,000.
May 8, 2008	A mudslide occurred along the cloverleaf ramp of U.S. Route 220 and U.S. Route 58; Stinking River flooded onto Johnson Mill Road; up to 5 inches of rain fell, particularly through Patrick, Henry, and Pittsylvania Counties. Damage from the event was estimated at approximately $26,000.
November 11, 2009	Flooding occurred along the Dan River and its tributaries as 4 to 6 inches of rain fell associated with the remnants of Tropical Storm Ida. Approximately $68,000 in damages resulted from the flooding in Pittsylvania County.
January 24, 2010	An area of low pressure riding along a stationary front produced widespread 2 to 5-inch rainfall totals across the area. The rain led to mudslides, river flooding and flash flooding. The Blackberry Trailer Park had to be evacuated after Blackberry Creek left its banks in Henry County. At least 29 homes and businesses were damaged. Over 20 roadways were closed due to high water in Franklin County. Just east of Stuart, portions of Commerce Street washed out. In Pittsylvania County, the Dan River rose several feet above flood stage flooding nearby low-lying areas. Total damage exceeded $500,000 through the West Piedmont region as a result of the flooding episode.
September 30, 2010	A first batch of rain produced 3 to 5 inches as a front moved through the area; remnants of Tropical Storm Nicole moved into the area after bringing more rainfall. Three-day rain totals of 10 inches or more were reported and resulted in major flooding. A Rocky Mount man had to be rescued from his truck after attempting to cross flood waters on Doe Run Road. Total damages due to the flooding were estimated at over $2 million.
May 22, 2012	An isolated thunderstorm with very heavy rain dropped 3.5 inches in one hour causing flash flooding of streets and small streams in Martinsville. Several streets had to be closed and seven homes had damage. Damages were estimated at $150,000.
July 11, 2013	Heavy rainfall caused several roads to close through Pittsylvania County. Two weeks following this rainfall White Fall Road, near Gretna, was still undergoing repairs to fix a 5 feet deep gully that cut through the road.
August 9, 2013	More than 5 inches of rain fell over the Patrick Springs area of Patrick County. This caused flooding on Pleasant View Drive and washed out culverts on Spring Road. Additional roads in the area were covered with as much as 2 to 3 feet of water. (Enterprise)

Event Date	Hazard Description
May 15, 2014	Local flooding of creek displaced residents from a Parker Road trailer park in Danville. The residents were evacuated as a precaution due to the potential of water levels continuing to raise. There were no reported water damages to any of the trailers. (Chatham Star Tribune: News)
July 12-13, 2015	Heavy rains overnight forced the closure of Dobyns Road in Patrick County. South Mayo River flooded the roadway and caused the galvanized culvert that carries the river under the road to break in two.
September 22-29, 2015	Over a 10-day stretch nearly 20 inches of rain fell over the region, causing many rivers and small creeks and streams to flood. The flooding along these waterways washed out road culverts, bridges, and damaged sewage lines and buildings. Damages in Patrick County were estimated around $4 million. In Patrick County, the historic Bob White Covered Bridge that spanned the Smith River was washed away. Residents of Cedar Square Apartments in Stuart were provided temporary housing when a mudslide damaged the buildings. Residents of Riverside Drive had to be evacuated when the South Mayo River overflowed its banks and the floodwaters rose as high as 3 feet inside of homes. The Sheriff's department aided the evacuation of these residents and their pets. One elderly man had to be rescued from the top level of his home. Route 58 was closed from Hall Propane to the intersection with Rt. 8 at Howell's Store. Route 58 was reopened to one-lane while VDOT worked to repair road surfaces, guardrails, and eroded roadway slopes. Repairs along Route 58 could continue into Spring 2016. A sewer line in the Town of Stuart was heavily damaged when the South Mayo River changed course during the flooding, causing the town to have to replace and relocate the line. Estimated cost for this project was $96,000, to be completed by Clark Brothers, Inc. In Pittsylvania County, the bridge along VA 713 (Birch Creek Road) that crosses Birch Creek, was closed for repairs that were sustained during the flooding in late September. (Enterprise; VDOT)
June 2017	For several days, high pressure to the east had pushed warm and humid air into the region. As an upper level storm system moved across the mountains from the Ohio Valley, scattered severe thunderstorms developed across the area. Radar estimated rainfall amounts ranged from 2 to 4 inches across parts Henry and Pittsylvania Counties, most of which fell in about a 1- to 3-hour period under the most intense thunderstorm cores. Several reports were received of flooding issues in the Bassett area north of Martinsville.
May 2018	A cluster of thunderstorms developed along a stationary front and produced torrential rains across parts of Patrick, Henry and Franklin counties. Rainfall was estimated at 2 to 3 inches in a few hours.
September 2018	On September 7, the governor of Virginia declared a state of emergency. On September 10 and 11, Virginia issued mandatory evacuation orders for some of their coastal communities, predicting that emergency personnel would be unable to reach people there once the storm arrived. Extensive tree damaged was reported, with several homes and outbuildings damaged by falling trees. Flash flooding was reported in several counties, worse in the western parts of the region.
October 2018	As Hurricane Michael moved inland from the Gulf of Mexico, the storm weakened and began to take a northeastward trajectory toward the Chesapeake Bay, downgrading to a tropical storm over Georgia, and transitioning into an extratropical cyclone over southern Virginia late on October 11. As Michael tracked across the Southeastern United States, strong winds caused extensive power outages across the region. In Virginia, four people including a firefighter were washed away by floodwaters, and another firefighter was killed in a vehicle accident on Interstate 295. A sixth fatality was discovered when the body of a woman was found on October 13. At least 1,200 roads in Virginia were closed, and hundreds of trees were downed. Up to 600,000 people were left without power at the height of the storm. Flash flooding

Event Date	Hazard Description
	was reported in several counties after rainfall of 3 to 6 inches occurred in several hours.
May 2020	Late afternoon thunderstorms developed along the southwest Virginia Blue Ridge and drifted southward into the foothills and piedmont producing intense rainfall over fairly saturated ground and causing some significant flash flooding and debris flows in parts of Franklin, Floyd and Henry counties. Rainfall of 2 to 4 inches with isolated higher amounts occurred in a few hours, with the heaviest over northern Henry County. A state of Emergency was declared in Henry County due to the flooding. Flood damage estimates exceeded $1.1 million with eight homes and one business receiving major damage. The storms also reached severe levels in terms of wind with considerable damage reported, mainly across Henry County.
November 2020	Tropical Storm Zeta passed quickly across the lower mid-Atlantic region, but still brought 2-3 inches of rainfall to the foothills of the Blue Ridge and the Piedmont region. Much of this rain fell within a 1-2-hour period, resulting in rapid flooding of several small streams. Residual moisture in the wake of Zeta allowed for redevelopment of bands of slow-moving storms producing additional heavy rain, which also resulted in localized flooding across the Piedmont of Virginia.

Tornado

Event Date	Community	Magnitude	Hazard Description
June 13, 1953	Pittsylvania County	F1	Tornado was 5 miles in length and 33 yards wide. Property damages estimated at $3,000.
July 12, 1964	Henry County and Pittsylvania County	F2	Tornado was 5 miles in length and 100 yards wide. Property damages estimated at $253,000.
September 29, 1972	Pittsylvania County	F1	Tornado was 5 miles in length and 50 yards in width. Property damages estimated at $25,000.
May 15, 1976	Pittsylvania County	F1	Tornado was 2 miles in length and 33 yards in width. Property damages estimated at $3,000.
October 10, 1976	Danville City	F	Tornado was 2 miles in length and 30 yards in width. Property damages estimated at $3,000.
June 25, 1977	Pittsylvania County	F2	Tornado was 4 miles in length and 40 yards in width. Property damages estimated at $25,000.
August 9, 1978	Franklin County	F	Tornado was less than a mile in length and 10 yards in width. Property damages estimated at $3,000.
April 2, 1990	Pittsylvania County	F0	Tornado was less than a mile in length and 10 yards in width. Property damages estimated at $300.
August 17, 1994	Henry County and Martinsville City	F2	A tornado touched down just north of Ridgeway and moved to one and a half miles south of Martinsville. The path length was 4.25 miles long and averaged about 200 yards wide. Ten people were injured, 100 homes and 30 businesses were damaged. Total damages came to $8.7 million. The thunderstorm that produced the tornado was part of the remnants of Tropical Storm Beryl.
June 9, 1996	Franklin County (Burnt Chimney)	F2	Tornado was less than a mile in length and 30 yards in width.
June 10, 1996	Pittsylvania County (Renan) and Henry County (Axton)	F1	Thunderstorms during the morning hours on the 10th produced two tornadoes, damaging winds and flash flooding. A tornado developed 3 miles south-southwest of Axton at 0722 EST and traveled 1.5 miles northeast before dissipating 2 miles south of Axton at 0728 EST. This F1 tornado damaged 3 houses, tore the roof off another house, destroyed 6 outbuildings, damaged a barn and a shed, uprooted and snapped off numerous trees and knocked down power lines and power poles. A second tornado developed 0.5 miles northwest of Renan at 0845 EST and traveled 1.1 miles northeast before dissipating 1 mile north-northeast of Renan at 0848 EST. This F1 tornado broke out windows and tore the roof off a house, damaged the roof of another house, severely damaged one vehicle, damaged two other vehicles, damaged an abandoned school, tore the roof off of two outbuildings, knocked down power lines and power poles, damaged antennas, and snapped off or uprooted numerous trees. Thunderstorm winds broke off tree limbs and uprooted trees in portions of Chatham. Tree limbs damaged gutters and shingles of a few homes. Property damages estimated at $80,000.
March 20, 1998	Henry County (Sandy Level) and Pittsylvania	F1	Thunderstorms during the late morning and afternoon hours produced a tornado, flash flooding, hail up to golf ball size, and damaging winds. From the same storm that produced two tornadoes in North Carolina, a tornado formed about 2 miles west of Sandy Level in extreme southeastern Henry County and traveled northeast about 11 miles before dissipating about 2 miles west of Whitmell in Pittsylvania County. This

Event Date	Community	Magnitude	Hazard Description
	County (Cascade)		tornado was generally from 100 to 200 yards wide, with damage in some areas up to 350 yards wide. This tornado damaged or destroyed several vehicles, barns, and outbuildings, and more than 60 residences, damaged two churches, and toppled trees and power lines. Some of the fallen trees blocked roads for a period. Just before the tornado formed, trees and power lines were knocked down and large branches of trees were snapped off from the North Carolina border 3 miles west southwest of Sandy Level to 2 miles west of Sandy Level. Damages estimated at $200,000.
May 7, 1998	Pittsylvania County (Blairs)	F1	Thunderstorms during the evening hours on the 7th produced a tornado, flash flooding, damaging lightning, and hail up to quarter size. A tornado touched down two and a half miles west of Blairs. The tornado ripped the roof off a house, damaged 25 other homes and a garage, broke off tree limbs, and toppled trees. Two people were slightly injured by the tornado. Flash flooding two miles north of Danville resulted in the closing of several roads and the evacuation of 50 people from a mobile home park. Fall Creek left its banks about four miles southwest of Axton. In the southern portion of Pittsylvania County, flash flooding resulted in several roads being closed and a bridge being washed out. A few of the flooded roads were damaged. A lightning strike slightly damaged a house in Bassett.
September 29, 1999	Patrick County (Ararat)	F1	Thunderstorms on the 29th produced damaging winds, flash flooding, and two tornadoes. Thunderstorm winds downed 10 trees at the intersection of State Route 653 and US Route 58, eleven miles southeast of Hillsville, downed several trees 2.5 miles south of Ararat, downed several trees and broke off large tree limbs from 4 miles east-northeast of Ararat to 4.5 miles east-northeast of Ararat, downed large trees in Halifax, including a tree that closed Route 501 southbound for two hours, and downed trees and damaged a mobile home 4 miles south of New Canton. Heavy rain flooded Route 707, five miles southeast of Chatham, 6 creeks in western Campbell County, closing several roads, flooded and closed Route 460 one mile north of Concord, stranding a motorist, numerous small streams and roads in Amherst County, several roads in the City of Lynchburg, forcing them to be closed, flooded Mill Stream Bridge in Gretna, and several streams in western Appomattox County, closing several roads. A thunderstorm spawned two tornadoes in Patrick County, during the early evening of the 29. The first tornado formed 2.2 miles south-southeast of Ararat at 1731 EST. It was on the ground for about a quarter of a mile before dissipating at 1732 EST. The path was 50 yards wide. This tornado tore off part of the roof of a tobacco curing shelter, uprooted several trees, and broke off large tree limbs. One large tree fell on and destroyed a mobile home. Maximum wind speeds were estimated at about 80 miles an hour. The second tornado formed 2.5 miles southeast of Ararat at 1734 EST and traveled northeast for nearly a mile, to 2.5 miles east-southeast of Ararat before dissipating at 1736 EST. This tornado damaged the roof of a house, tore shingles and a gutter off a church, damaged outbuildings and a barn, uprooted several trees, broke off large tree limbs, and damaged some tobacco crops. This tornado was 50 yards wide and maximum winds were also estimated at about 80 miles an hour.
August 14, 2004	Danville City	F1	A broken line of thunderstorms progressed out of NC into VA where it produced mainly straight-line wind damage across Pittsylvania Co. and parts of the City of Danville. Damage included downed trees. The storm did spawn one F1 tornado that touched down in western sections of Danville. The tornado severely damaged two commercial buildings and a greenhouse. Many trees were snapped or uprooted with several trees or

Event Date	Community	Magnitude	Hazard Description
			large limbs on houses. There was one minor injury. A portion of this broken line of storms produced very heavy rainfall over the central portion of Pittsylvania Co resulting in flooding. Several roads were closed by VDOT.
August 14, 2004	Danville City	F1	F1 tornado caused damages totaling $5 million in Danville. Wind speeds were estimated at 100 mph. Power outages were found in many areas, fallen trees and debris, and property damage were also reported in the article. More than 4 inches of rainfall fell due to remnants of Hurricane Bonnie and Charley. This (coupled with a tornado in Danville) caused damages that included downed trees, blown off roofs, structural damage, and tree damage. The streets of Chatham and Gretna were flooded.
September 17 -22, 2004	Henry County (Fieldale), Danville City, and Franklin County	F2	A tornado spawned by Hurricane Ivan in Fieldale area caused damages estimated at about $53.8 million. The F1 tornado crossed U.S. Highway 220 turning over 2 tractor-trailer trucks and 2 passenger vehicles. All 4 drivers suffered minor injuries. The tornado damage patch widened to a quarter mile and strengthened to F2 as it approached and struck a factory. The CP Films Plant 1 was damaged by the tornado, with wind speeds of 113 to 157 mph. At the building, about 40 cars were destroyed and 75 damaged. The factory experienced significant damage ($51 million). Damages at George Washington High School estimated at about $97,000 in structural damage. The tornado then proceeded north and entered a residential subdivision, but only minor roof and tree damage occurred here. The tornado path became intermittent as it continued north, and the damage was limited to trees. The remnants of the Henry County tornado briefly touched down at F0 strength as it crossed into Franklin County. Damage was restricted to several large trees, one of which landed on a residential garage. Over 4,500 customers of AEP lost power.
September 28, 2004	Pittsylvania County (Cascade)	F1	A tornado was spawned by the remnants of Hurricane Jeanne in Pittsylvania County. It was the only tornado in this event. Initial tornado touchdown occurred in the Oak Ridge area of southwest Pittsylvania County just before 4 am. Damage in this area was rated F0. The nature of the damage was a few downed trees. Given the extremely moist soil conditions, it would not have taken very strong winds to cause this damage. The tornado continued in a northerly direction leaving an intermittent F0 damage path of damaged and downed trees. Over the last 3 miles of the path, the damage continued, and the tornado briefly reached F1 status resulting in the destruction of a single wide trailer home on Hill Creek Road in the Dry Fork area. The owner was in his home at the time. He received minor cuts and bruises and did not require hospitalization. On Foxridge Road in Chatham, numerous large trees were uprooted, and some were snapped. One of these large trees landed on a newly constructed garage, destroying it. The path width of this storm varied from 75 to 150 yards. A short-lived F0 tornado touched down 1/2-mile WNW of Straightstone, in a hay field. About a quarter mile path was found. No damage occurred in Straightstone.
October 8, 2004	Pittsylvania County		A tornado in western Pittsylvania County lead to damages of about $200,000; including residential damage at 12 private properties ($152,000) and agricultural damage ($40,000). Damage was consistent with tornado wind speeds of 40-72 mph, with a small area having damage consistent with winds of 73-112 mph.
July 7, 2005	Franklin County	EF1	A tornado, rated EF-1, with winds 86 to 95 mph, moved out of Henry County at 8:01 pm EDT and continued another half-mile into Franklin County, before lifting at 8:03 pm EDT. The maximum width was 75

Event Date	Community	Magnitude	Hazard Description
			yards. Numerous trees were downed, with 2 homes damaged. The tornado lifted at State Routes 618 and 632.
February 4, 2006	Pittsylvania County	EF1	Fast moving thunderstorm spawned two weak tornadoes over western Pittsylvania County during the afternoon of the 4th. A tornado initially touched down 2 miles southeast of Callands and removed a well-built wood frame carport from the side of a house and carried this debris 50 feet. This tornado proceeded north-northeast through a wooded area, and then crossed Highway 57, 3 miles east of Callands. Damage here was on the western side of the tornado track, with damage to a church. The damage included vinyl siding being ripped off two sides of the church, shingles torn off, and the brick sign in front of the church toppled over. The east side of the damage path saw several outbuildings and storage sheds demolished, part of a roof of a home torn off, and a small brick chimney knocked over. Besides structural damage, this first tornado snapped or uprooted many trees. The damage here was consistent with an F1 tornado. One person suffered minor injuries while driving in the vicinity of the tornado. A second F0 tornado touched down briefly 3.5 miles northeast of Callands. This tornado blew out underpinnings on 2 mobile homes and tore off a large piece of aluminum siding from a barn. This event is an example that shows that tornadoes can happen at any time of year, even during the winter. Damage from the twisters was estimated at $97,000.
May 26, 2006	Pittsylvania County	EF0	In Pittsylvania County, an F0 tornado briefly touched down 4 miles southwest of Climax, uprooting numerous shallow rooted trees. Also, in Pittsylvania County, straight-line winds downed numerous large trees, damaged 25 homes and a church, and destroyed a wood stable, from 4 miles southwest of Climax, near Burnt Chimneys, to one mile southwest of Climax, near Green Pond. Damage from the tornado was estimated at $5,000.
May 8, 2008	Pittsylvania County	EF1	A tornado, rated EF-1, with winds of 86 to 95 mph, touched down around 9:00 PM EDT on Thursday, May 8th, approximately 3 miles east-southeast of the Town of Ajax. The touchdown point was just southwest of Oxford Road near Highway 40. The tornado remained on the ground for approximately 3 minutes, had a maximum path width of 60 yards, and traveled toward the northeast approximately 1 mile before lifting around 9:03 PM EDT, just northeast of the intersection of Darby Road and Highway 40. Numerous trees were downed along and near the path of the tornado, along with some damage to nearby homes. Additional damage to trees from straight-line winds were also noted approximately 1/4 mile north and east of the point where the tornado lifted. Damage from the tornado was estimated at $116,000.
May 8, 2008	Franklin County	EF1	A tornado, rated EF-1, with winds 86 to 95 mph, moved out of Henry County at 8:01 pm EDT and continued another half-mile into Franklin County, before lifting at 8:03 pm EDT. The maximum width was 75 yards. Numerous trees were downed, with 2 homes damaged. The tornado lifted at State Routes 618 and 632. Damage from the tornado was estimated at $9,000.
May 8, 2008	Henry County	EF1	A tornado, rated EF-1, with winds 86 to 95 mph, was on the ground in Henry County, along a path length of less than a half-mile, with a maximum width of 75 yards. Numerous trees were downed, with 2 homes damaged. More specifically, the tornado touched down near State Route 886 in Henry County at 8pm EDT and continued into Franklin County at 8:01 pm EDT. Damage from the tornado was estimated at $157,000.

Event Date	Community	Magnitude	Hazard Description
July 17, 2009	Pittsylvania County	EF1	The tornado caused damage to mainly trees. However, one tree fell on a house. Damage was estimated at $75,000.
July 17, 2009	Pittsylvania County	EF1	A tornado, rated EF-1, with winds of 86 to 110 mph touched down in Pittsylvania County 2 miles west of Hurt. The tornado caused many trees to be blown down. Eight structures were damaged by the fallen trees with two of these having trees fall through their roofs. Damage values are estimated to have been $570,000.
October 26, 2010	Henry County and Pittsylvania County	EF0	An EF0 tornado touched down on Irisburg Road in Henry County and was intermittently on the ground for over 5 miles as it traveled northeast, before lifting on Peach Orchard Road in Pittsylvania County. Several trees were damaged or snapped and 5 outbuildings were also damaged. Three homes also received minor damage. Damages are estimated to have been $25,000.
February 24, 2016	Western Patrick County	EF1	An EF1 tornado caused significant damage in the Ararat community in western Patrick County; touching down at the end of Epperson Lane, grew to a half-mile wide and crossed Ararat Highway traveling 1.74 miles before dissipating. At least 15 homes and a church were damaged, including two mobile homes, and many farm sheds. Appalachian Power noted more than 2,000 customers in Patrick County and at least 500 in Henry County were without electricity. (Martinsville Bulletin)
April 15, 2018	Pittsylvania County and the City of Danville	EF1	In April 2018, an EF1 magnitude tornado hit Pittsylvania County and the City of Danville, causing an estimated $3.6 million of reported property damage.
April 19, 2019	Franklin and Pittsylvania Counties	EF3	In April 2019, the first ever recorded EF3 tornado for the region was reported to have caused $650,000 of property damages in Franklin County. The storm was reported in Pittsylvania as a funnel cloud, but there was no reported touchdown or property damage in this county.

Hurricane

Event Date	Hazard Description
June 23, 1972	Hurricane Agnes caused the Dan River to reach an all-time high of 21.3 feet at Bridge Street Power Station, topping previous mark of 20.47 on August 15, 1940. Roads were blocked throughout the City along the River, including Memorial Drive from Aiken Bridge to Robertson Bridge, lower end of Park Ave near Robertson, Mt. Cross Road at the City limits, and River Street near the railroad trestle. Bridge Street and Brantly Power stations were sandbagged to prevent flooding, and there was some damage at the sewage treatment plant. More than 6 inches of rain from Hurricane Agnes drenched the Martinsville-Henry-Patrick County area, mostly on June 20 and 21st. Final totals of 8.7 inches for area. Smith River overflowed in Fieldale, causing homeowner evacuations. In Henry and Patrick Counties, worse flooding along Town, Marrowbone, Blackberry, and Beaver Creeks. Portions of Route 57 near Bassett were closed due to Smith River flood and mud slides. There was pavement washout on Route 58 in Patrick County near Lover's Leap and homes damaged in Shannon Hills near Ridgeway, Carver Rd near Fieldale, and Daniel's Creek Road and John Redd Blvd in Collinsville. In Martinsville, homes were damaged along Jones and Mulberry Creeks. Danville: Flooding occurred and caused an estimated $1.1 million of damage to the City. Franklin County: Damage to the County was primarily agricultural. The destruction of crops, livestock, equipment, and highways was estimated to be $679,000. Pittsylvania County: Damage primarily to farms. Destruction of crops, livestock, equipment, and buildings estimated to be $1.1 million.
September 18, 1999	In Danville, Hurricane Floyd impacts were not great in the City, like the impacts of a good thunderstorm. The hurricane brought with it about 3 inches of rain, leading to several trees and limbs down and 3 - 4 houses without power. Pittsylvania County also was spared by the storm. Minor impacts were felt by this storm; mostly power outages to 1,500 from winds ranging 25 to 30 mph. (Danville Register and Bee, Martinsville Bulletin)
September 18, 2003	Power outages began to occur in Danville and Pittsylvania County, as trees and limbs were shredded, falling across power lines. 1,000 City residences were without power. Extreme winds of 50 mph were reported; with gusts beyond 60 mph. At least 4 inches of rain fell on the City as the category 1 hurricane passed through the area. Most of the damages in the area were a result of wind gusts. In Danville, most of the damage was off West Main St, River Oak Drive in Wedgewood Community, where two large sport utility vehicles were mangled by fallen trees. In Pittsylvania County, hundreds of trees fell, particularly along Route 41. About 6,500 Danville Power and Light customers were without power at some point during the storm. Most areas had power restored in a day or two. More than 1,500 customers in the City and thousands in Pittsylvania County were without power on Friday afternoon. In the City, at least 160 locations were noted with downed trees. In Pittsylvania County, 200+ locations of downed trees were noted. Only one person sought shelter at the Westwood Middle School. City damage estimates were at $327,500. Pittsylvania County estimates were at $825,000 for agriculture, $112,500 for private property, $30,000 businesses, and $21,000 debris cleanups; leading to a total of $988,500. The agricultural damage breakdown was: $300,000 fencing, $250,000 corn crop, $200,000 tobacco, and farm structure $75,000. About 24,000 homes were without power in Martinsville and Henry and Patrick Counties, (11,000 in Henry, 5,300 in Patrick, and 8,000 in Martinsville). Most power was back in a few days. Rainfall was 1 to 2 inches in the area. Wind was most prominent, with debris issues found throughout area. (Danville Register and Bee, Martinsville Bulletin)
September 10, 2004	Remnants of Hurricane Frances officially deposited 6.6 inches of rainfall in a three-day period. The western areas, Callaway and Ferrum, unofficially reported a rainfall of 8.2 inches. Many roads were flooded.

Event Date	Hazard Description
	Hurricane Frances dropped 5 to 6 inches of rainfall. The storm affected areas including Shannon Hills residential area and Shamrock Drive near its intersection with US 220 South in Ridgeway. (Franklin News Post, Martinsville Bulletin)
September 29, 2004	$143,000 damage in flooding by the remnants of Jeanne on 09/28/04, including private roads and bridges in Patrick County ($40,000), structure damage ($68,000), destroyed structures ($15,000) and other damages ($20,000). As much as 12 inches of rainfall were reported in the communities of Claudville, Dry Pond, Stuart, Meadows of Dan, Woolwine, and Charity. Damages to crops were also reported. Hurricane Jeanne caused flooding when as much as 4 inches of rainfall dropped in a short period of time. About 25 roads were closed in Franklin County, including Snow Creek Road (Rt. 890) and LaPrade Mill Road (Rt. 629). Hardest hit areas in the short time period were northwest of US 220, north of Rt. 40, and north of Rt. 122. Flash flooding due to remnants of Hurricane Jeanne lead to flood waters at least 12-feet high. About 10 inches of rain fell in the Meadows of Dan area. Federal disaster aid was issued for Patrick County due to damages caused by Tropical Storm Jeanne. Up to 10 inches of rain fell in the County on 09/28/2004 due to remnants of Jeanne. Hazard mitigation assistance was approved. Smith Mountain Lake emergency declaration was issued to facilitate speedy cleanup of the debris accumulated in the aftermath of Hurricanes Ivan and Jeanne. (The Enterprise, Franklin News Post, Martinsville Bulletin)
July 9, 2005	The remnants of Tropical Storm Cindy (an extratropical storm by the time it reached the area) brought locally heavy rainfall and gusty winds to the West Piedmont region, but significant or widespread flooding or wind damage was not reported.
September 1-2, 2006	The remnants of Tropical Storm Ernesto passed well east of the West Piedmont region, but it impacted the area with locally heavy rainfall and gusty winds. The highest winds and heaviest rainfall to impact Virginia remained mostly to the east of I-95.
September 6, 2008	The remnants of Tropical Storm Hanna soaked the area in 2 to 6 inches of rain. Although somewhat gusty, damaging winds were not reported in the West Piedmont region.
September 30, 2010	The remnants of Tropical Storm Nicole impacted the region with primarily flooding rainfall. For a full description of this event, refer to the Major Flooding Events table above.
August 27, 2011	The center of Hurricane Irene made landfall along the Virginia coast, but strong winds extended well west into the Piedmont generating gusts to at least 40 mph and bringing down some trees and large tree branches. Lynchburg ASOS (KLYH) had a peak wind gust of 39 mph around noon and Danville ASOS (KDAN) measured a peak gust of 44 mph also around 12 pm. About ten trees were blown down across Pittsylvania County and the City of Danville starting around 9 AM local time.
September 2018	On September 7, the governor of Virginia declared a state of emergency for Hurricane Florence. On September 10 and 11, Virginia issued mandatory evacuation orders for some of their coastal communities, predicting that emergency personnel would be unable to reach people there once the storm arrived. Extensive tree damaged was reported, with several homes and outbuildings damaged by falling trees.
October 2018	As Hurricane Michael moved inland from the Gulf of Mexico, the storm weakened and began to take a northeastward trajectory toward the Chesapeake Bay, downgrading to a tropical storm over Georgia, and transitioning into an extratropical cyclone over southern Virginia late on October 11. As Michael tracked across the Southeastern United States, strong winds caused extensive power outages across the region. In Virginia, four people including a firefighter were washed away by floodwaters, and another firefighter was killed in a vehicle accident on Interstate 295. A sixth fatality was discovered when the body of a woman was found on October 13. At least 1,200 roads in Virginia were closed, and hundreds of trees were downed. Up

Event Date	Hazard Description
	to 600,000 people were left without power at the height of the storm. As the northern portion of the storm circulation moved across the Piedmont, bands of heavier rains/convection developed and mixed strong winds down to the surface. Many trees were blown down in the waterlogged soil especially across Pittsylvania County where rainfall was heaviest. Despite some initial reports of tornado sightings, damage surveys revealed no conclusive evidence of tornadic circulations and judged damage was caused by straight line winds.
October 29, 2020	Winds associated with Tropical Storm Zeta caused damage and power outages in southwestern Virginia, concentrated close to border with North Carolina. Wind gusts reached 30-40 knots during the peak of the storm. Numerous trees were blown down by Tropical Storm Zeta, with many falling on homes, power lines, and blocking roadways. A thunderstorm closely following Zeta contributed to some of the wind damage. Over 100 trees were blown down throughout Pittsylvania County and the city of Danville, with at least one tree falling on a house in Danville. In downtown Danville, a few trees brought down power lines and blocked large intersections. Over 20,000 customers were without power at the peak of the storm. In Chatham, a light pole was blown down onto a vehicle. Winds at the Danville Regional Airport gusted up to 40 miles per hour.

Severe Weather

Event Date	Hazard Description
March 3, 2004	70 mph wind gusts in the Dan River region (part of a short-lived cold front) resulted in fallen trees across roads and downed power lines. About 5,000 power outages were reported. Fallen power lines ignited fires in some areas.
January 15, 2005	Wind gusts caused damage at Holbrook Street apartments in Danville. Some units were damaged and there were power outages. About 1 - 2 inches of rainfall were deposited during the event.
April 15, 2007	Non-thunderstorm winds associated with a tight pressure gradient that resulted from high pressure building into the Mid-Atlantic and departing low pressure over New England produced widespread wind gusts of 50 to 60 mph across the region with isolated gusts to near 70 mph. The winds downed trees and power lines and sparked brush fires. In Stuart, a marquis sign fell on a car at a car dealership and a tractor trailer was blown off a bridge in Clarksville. Up to about 6,500 customers were without power as a result of the winds. Damage was estimated at over $500,000 for the entire West Piedmont region and the surrounding counties as a result of the event.
June 5, 2007	A home was demolished when damaging thunderstorm winds pushed a 4-foot diameter Oak tree onto the residence 10 miles south of Rocky Mount. The tree also damaged two parked vehicles but did not result in any injuries. Traffic on U.S. 220 was brought to a standstill as uprooted trees blocked passage. An estimate of damage was not available.
February 8, 2008	Thousands lost power as trees and power lines were downed by wind of 60 mph; one home in Martinsville and two homes in Henry County were damaged. The gusty winds also brought a tree down onto a car. The winds accompanied the passage of an Arctic cold front and fueled several wildfires. Damage was estimated at approximately $60,000. (Sources: Roanoke Times; NCDC)
February 10, 2010	Trees were downed by strong winds as low pressure began moving into the area. A tree fell on a trailer and injured one person. Approximately 900 were without power because of downed wires.
April 6, 2010	Thunderstorm wind gusts knocked down trees and power lines in Henry County causing an unknown amount of dollar damages scattered throughout the County.
April 5, 2011	A National Weather Service survey indicated that straight-line winds along the leading edge of powerful thunderstorms downed trees and power lines and damaged buildings during the early morning hours. Portions of Franklin, much of Henry and portions of Pittsylvania Counties were particularly hard-hit. Damage at Martin Stables alone in Henry County was estimated at over $1 million. Total damages in Henry County were estimated at approximately $1.8 million. (National Weather Service Blacksburg, VA; Martinsville Bulletin)
June 29, 2012	Straight-line winds with speeds between 60 to 80 mph passed through the region downing trees and power lines leaving thousands without power. The entire City of Martinsville was without power for 26 hours. Franklin county reported that a Firefighter died while responding to a storm related incident. The estimated damages were over $1 Million. (Martinsville Bulletin)
October 29, 2012	Winds from Hurricane Sandy caused power outages to 1142 customers in Franklin County. The wind gusts were reported in excess of 60 mph, with sustained winds between 25 to 40 mph for an additional 2 days.
April 19, 2013	A strong afternoon thunderstorm went through Henry County and City of Martinsville taking out trees and power lines, most electricity was restored by the late evening. The hardest impacted was the Bassett and Ridgeway areas. (Martinsville Bulletin)
June 13, 2013	The National Weather Service in Blacksburg, VA, issued a severe thunderstorm warning for the region. The severe storm produced strong winds that downed trees

Event Date	Hazard Description
	and power lines. The winds also ripped the roof off Blair Construction Inc., near Gretna, no injuries were reported. (Chatham Star Tribune)
August 4, 2015	A severe thunderstorm moved through Henry County, toppling trees and power lines causing approximately 1,700 Appalachian Power Customers to lose power. In the Bassett area, the Historic J.D. Bassett Event Center sustained damage to the roof, which allowed rainwater into the auditorium and pool in front of the stage 4 to 6 inches deep.
July 8, 2016	A strong upper level disturbance pushed across the central Appalachians, triggering an organized line of severe thunderstorms. Strong daytime heating ahead of an approaching cold front supported afternoon temperature in the upper 80s and the low 90s. CAPE values approached 2500 J/Kg, while mid-level winds were observed in the 30 to 40 knot range. Thunderstorm winds caused widespread wind damage across Henry County from the communities of Bassett through Axton. One tree fell onto a home on Friendly Church Road. Numerous trees were blown down across Franklin County, including in the communities of Boones Mill and Rocky Mount. Outside the community of Snydorsville, thunderstorm winds blew off the roof of a barn and toppled multiple sheds and outbuildings.
March 1, 2018	A cold front crossed the region on the evening of March 1st. Behind the front very strong winds a few thousand feet off the surface were brought downward due to good mixing within the lower levels. The long lasting, greater than 60 mph winds helped produce widespread damage that included hundreds of trees down and hundreds of power lines down, thousands of people left without power for a period, and damaged structures due to the falling trees. The damaging winds continued through mid-day March 3rd. Winds downed around 50 trees in Henry County and within the City of Martinsville with some of these trees caused damage to three homes. Also, one downed tree fell on a car. One large tree blocked a lane of U.S. 220 for a period in the City of Martinsville. A downed power line sparked a brush fire in Martinsville as well. Immediately after the damage, around 7,500 customers were without electrical power.
August 2, 2018	A complex, broken line of thunderstorms developed during the afternoon ahead of an approaching cold front producing very heavy rainfall and some embedded severe storms. Trees were blown trees onto power lines, which caused several power outages. Henry County and the city of Martinsville suffered the most tree damage and power outages. Rainfall was extremely intense within the very moist environment with precipitable water over 2 inches and several boundary collisions enhancing the rainfall. Over 2,000 residents lost power due to the trees falling on power lines. Additional locations in Henry County that suffered power outages included Axton, Chatmoss, Collinsville, Fieldale, Horsepasture, Leatherwood, and Stanleytown.
October 11, 2018	Strong wind gusts estimated to be in the 25 to 35 mph range were common during the passage of Tropical Storm Michael. The highest measured gust from Blue Ridge Airport (KMTV) was 31 mph, however the AWOS was not reporting for much of the day and may have missed stronger gusts. Hundreds of trees were reported down across the Region, with some landing on homes, trapping their occupants inside. In addition, numerous power lines were blown down, resulting in several power outages across Henry County. Trees fell on top of at least two homes and several automobiles in the City of Danville, causing extensive structural damage. At one point, at least 20,000 residents were without power due to the storm.
May 31, 2019	An approaching cold front combined with a hot and humid air mass triggered scattered severe thunderstorms across southwest Virginia. These storms produced hail up to the size of half dollar coins, damaging winds that blew down numerous trees and power lines, and lightning that struck a transformer and set it on fire. The winds also blew down tents and portable bathrooms at a large festival at English Park near Altavista that caused two minor injuries. Finally, a microburst struck the town of Hurt that caused damage to a dozen homes due to 75 MPH winds that spread out over a path length of 1.5 miles and reached up to 1,750 yards wide. The winds uprooted and

Event Date	Hazard Description
	snapped numerous trees and blew down several power lines from the south end of Lynn Street to near East Hurt Road in Pittsylvania County. Ten homes suffered minor damage due to the winds from the microburst and the fallen trees, but two more homes suffered major damage. In Henry County, thunderstorm winds blew down four trees and two power lines along the 4300 block of Fairystone Park Highway, blew down a few small trees on Trent Hill Drive, and blew down a power line on Lenoir Street.

Drought

Event Date	Hazard Description
1976 - 1977	10 months of below average precipitation. The drought began in November of 1976 when rainfall totaled to only 50 to 75% of normal precipitation. During the rest of the winter, the storms tracked across the gulf. During the spring and summer, the storms tracked across the Great Lakes. These weather patterns created significant drought throughout most of Virginia.
May 1980 – August 1980	Warm and dry conditions prevailed through the beginning of the summer. June precipitation data showed that much of Virginia received record low rainfall. No crop damage reported.
1985 - 1986	Very little rainfall began in December and the trend continued throughout the summer. Total precipitation January and February was 2 inches. Palmer Index values dropped below -2 by June. By August and September, 40% of the Tidewater and Eastern Piedmont had below normal precipitation totals. High temperatures along with scarce precipitation created a drought that lasted well into the fall.
June 1988 – July 1998 (Shouldn't this be July 1988)	A heat wave over the southeast produced warm and dry conditions over much of Virginia. Although the news reported stories of a drought in Virginia, the Drought Monitoring Team never stated in a report that these conditions were indicative of a drought. Palmer Drought Index values were above -2.
May 1993 – August 1993	Very warm temperatures and little rain were noted beginning June 5, 1993. Precipitation shortages were greater than five inches for southwestern and southeastern Virginia from May through July. Surface soil moisture levels were low enough to result in significant agricultural damage. However, groundwater remained at normal levels.
June 1999- September 1999	Northern Virginia and Shenandoah Valley in one of the worst droughts of the 20th Century. Record low stream flows on the Rappahannock. Crops, cattle and fisheries were all suffering. The drought was beginning to move into the Piedmont.
2001-2004	Beginning in the winter of 2001, the Mid-Atlantic began to show long-term drought conditions. The National Weather Service made reports of moisture starved cold fronts that would continue throughout the winter. Stream levels were below normal with record lows observed at gages for the York, James, and Roanoke River Basins. By November of 2002, the US Secretary of Agriculture had approved 45 counties for primary disaster designation, while 36 requests remained pending.
August 2007 – December 2008	A severe drought impacted the entire region through the late summer and into the early fall of 2007. A few precipitation events lessened drought somewhat into early 2008, but overall, much of the region continued to experience some degree of drought through much of 2008. Hay, grain, soy, and tobacco production was down forty to fifty percent in late 2007. Rainfall deficits of 8 to 10 inches were also realized. Damages to crops throughout the West Piedmont region and surrounding counties was estimated at roughly $8 million in 2007 and over $3.2 million in losses occurred in 2008. Sources: NCDC and The Enterprise (Stuart, VA)
2012-2013	La Nina conditions caused extreme drought conditions in the US. Over 80% of the country experienced abnormally dry conditions, including a large portion of Virginia which was classified as abnormally dry, or experiencing moderate to severe drought conditions. NCEI data shows one report of drought conditions in the form of a 'dust devil' in Henry County in September 2013. This event was reported to have caused $1,000 of property damages in Henry County.
2019	According to the US Drought Monitor, the state of Virginia experienced abnormally dry, moderate, and severe drought conditions in October 2019. NCEI Storm Events database reported severe drought activity in both Franklin and Patrick Counties in October 2019. No crop damage was reported.

Landslide

Event Date	Hazard Description
September 2015	A mudslide occurred in the Town of Stuart (Patrick County) due to heavy rain in September 2015; this event damaged an apartment building resulting in its evacuation.
October 2015	In the Meadows of Dan area (Patrick County), the shoulder along a three-mile segment of U.S. 58 became unstable due to heavy rains during the October 2015 flood event. VDOT had to take corrective action to stabilize the area near Lovers Leap.
May 2018	On May 18, 2018, there was a report of a mudslide in Franklin County as a result of heavy rains near the Mountain Valley Pipeline construction site. During this mudslide event, about 6-8 inches of mud blocked a nearby road.
May 2020	In May of 2020, Franklin County experienced severe mudslide and landslide activity due to a historic dam flooding event at Philpott Lake. The landslide damaged nearby switch house and transformers causing a temporary power outage at the dam.

Federally Declared Disasters

Year	Community	DR/EM/ FM #	Federal Description	Detailed Description
1912	Danville Pittsylvania	N/A	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1928	Franklin	N/A	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1937	Danville Henry Patrick Pittsylvania	N/A	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1939	Franklin	N/A	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1940	Danville Franklin Henry Patrick Pittsylvania	N/A	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1944	Franklin Pittsylvania	N/A	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1945	Danville Pittsylvania	N/A	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1972	Danville Franklin Henry Martinsville Pittsylvania	339	Tropical Storm Agnes	This event produced devastating flooding throughout the Mid-Atlantic States. Some areas of eastern Virginia received over 15 inches of rainfall as the storm moved through. The Potomac and James Rivers experienced major flooding, which created 5 to 8 feet flood waters in many locations along the rivers. Richmond was impacted the most by these high-water levels. Water supply and sewage treatment plants were inundated, as were electric and gas plants. Only one of the five bridges across the James River was open, while the Downtown area was closed for several days and businesses and industries in the area suffered immense damage. Sixteen people lost their lives in the state and damage was estimated at $222 million. These startling numbers resulted in 63 counties and 23 cities qualifying for disaster relief.
1976	Franklin Henry Patrick Pittsylvania	3018	Drought	??
1977	Franklin Pittsylvania	3046	Drought	??
1979	Patrick	606	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1980	Patrick	N/A	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1985	Franklin	755	Severe Storms & Flooding	Heavy rainfall from October 31 through November 6, 1985, caused record-breaking floods over a large

Year	Community	DR/EM/ FM #	Federal Description	Detailed Description
				region, including western and northern Virginia. Most of the rain fell on November 4 and 5 causing flash flooding. Heavy rainfall was indirectly related to Hurricane Juan. The Roanoke River rose seven feet in one hour and 18 feet in six hours, cresting at 23 feet on November 5. There were 22 deaths in Virginia as a result of the flooding. FEMA declared 50 jurisdictions disaster areas, and 1.7 million people were affected by the flooding. Flooding damages were
1992	Franklin Patrick Pittsylvania	944	Severe Storms & Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1993	Danville Franklin Henry Martinsville Patrick Pittsylvania	3112	Severe Winter Storm	??
1994	Pittsylvania	1014	Severe Ice Storms, Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1994	Franklin Henry Patrick Pittsylvania	1021	Severe Winter Ice Storm	This winter storm coated portions of Virginia with 1 to 3 inches of ice from freezing rain and sleet. This led to the loss of approximately 10 to 20 percent trees in some counties, which blocked roads and caused many people to be without power for a week. There were numerous automobile accidents and injuries from people falling on ice. Damages were estimated at $61 million.
1995	Franklin Pittsylvania	1059	Severe Storms and Flooding	Description not available, consult the hazard histories for each of the event types for more information.
1996	Danville Franklin Henry Martinsville Patrick Pittsylvania	1086	Blizzard Of 96 (Severe Snowstorm)	Also known as the "Great Furlough Storm" due to Congressional impasse over the federal budget, the blizzard paralyzed the Interstate 95 corridor, and reached westward into the Appalachians where snow depths of over 48 inches were recorded. Several local governments and schools were closed for more than a week. The blizzard was followed with another storm, which blanketed the entire state with at least one foot of snow. To compound things, heavy snowfall piled on top of this storm's accumulations in the next week, which kept snowpack on the ground for an extended period. This snow was eventually thawed by higher temperatures and heavy rain that fell after this thaw resulted in severe flooding. Total damage between the blizzard and subsequent flooding was over $30 million.
1996	Danville Franklin	1135	Hurricane Fran And Associated	This hurricane is notable not only for the $350 million in damages, but because of its widespread effects, including a record number of people without power

Year	Community	DR/EM/ FM #	Federal Description	Detailed Description
	Henry Martinsville Pittsylvania		Severe Storm Cond	and the closure of 78 primary and 853 secondary roads. Rainfall amounts between 8 and 20 inches fell over the mountains and Shenandoah Valley, leading to record-level flooding in many locations within this region. 100 people had to be rescued from the flood waters and hundreds of homes and buildings were damaged by the flood waters and high winds.
2000	Danville Franklin Henry Patrick Pittsylvania	1318	Severe Winter Storms	Description not available, consult the hazard histories for each of the event types for more information.
2002	Pittsylvania	1411	Severe Storms, Tornadoes, And Flooding	??
2003	Danville Henry Pittsylvania	1458	Severe Winter Storm, Record/Near Record Snowfall, Heavy Rain, Flooding, And Mudslide	??
2003	Danville Pittsylvania	1491	Hurricane Isabel	Hurricane Isabel entered Virginia September 18, after making landfall along the North Carolina Outer Banks. The Commonwealth sustained tropical storm winds for 29 hours with some maximum winds approaching 100 mph. The hurricane produced storm surge of 5 to 8 feet along the coast and in the Chesapeake Bay with rainfall totals between 2 to 11 inches along its track. Twenty-one inches of rainfall was measured near Waynesboro Virginia. Damages due to wind, rain, and storm surge resulted in flooding, electrical outages, debris, transportation interruption, and damaged homes and businesses. At the height of the incident approximately 6,000 residents were housed in 134 shelters and curfews were imposed in many jurisdictions. Further damages occurred when a series of thunderstorms and tornadoes came through many of the designated areas in the southeast portion of Virginia on September 23. There was a total of 36 confirmed deaths. More than 93,000 registrations were made for assistance. Residential destruction included 1,186 homes reported destroyed and 9,110 with major damage, 107,908 with minor damage, with losses estimated over $590 million. Of the 1,470 businesses involved, 77 are reported destroyed, 333 suffered major damage and 1,060 businesses suffered minor or casual damage, with losses exceeding $84 million. Public assistance exceeds $250 million and continues to increase. More than two-thirds of the households and businesses within the Commonwealth were without power.

Year	Community	DR/EM/ FM #	Federal Description	Detailed Description
				Remote locations did not have power restored for three weeks.
2004	Patrick	1570	Severe Storms and Flooding from the Remnants of Hurricane Jeanne	The remnants of what was once Hurricane Jeanne produced torrential rainfall that lead to flash flooding across the area. Flood waters knocked a mobile home and another building off their foundations and washed away vehicles. One fatality was reported due to the flooding 7 miles southwest of Stuart at Dry Pond.
2005	Danville Franklin Henry Martinsville Patrick Pittsylvania	3240	Hurricane Katrina Evacuation	??
2006	Patrick	Fire Management Assistance Declaration	Virginia Bull Mountain Fire	A wildfire ignited by lightning caused over $3 million in damages in the vicinity of Bull Mountain.
2006	Henry	1655	Severe Storms, Tornadoes, And Flooding	Flash flooding closed Route 58 and Route 688 as well as numerous other streets in the City of Martinsville on June 26, 2006. The flooding forced the evacuation of 136 animals from the Henry County Animal Clinic.
2006	Patrick	2637	Virginia Bull Mountain Fire	Fire Management Assistance Declaration. A wildfire ignited by lightning caused over $3 million in damages in the vicinity of Bull Mountain.
2012	Danville Franklin Henry Martinsville Patrick Pittsylvania	3359	Hurricane Sandy	??
2012	Danville Franklin Martinsville Pittsylvania	4072	Severe Storms and Straight-Line Winds	Trees and power lines were knocked down by the 60 to 80 mph winds that were produced as a result of the derecho. Thousands were left without power for up to a week.
2016	Patrick	4262	Severe Winter Storm and Snowstorm	
2018	Danville Franklin Henry Martinsville Patrick Pittsylvania	3403	Hurricane Florence	
2018	Danville Franklin Henry Martinsville	4401	Hurricane Florence	

Year	Community	DR/EM/ FM #	Federal Description	Detailed Description
	Patrick Pittsylvania			
2018	Danville Franklin Martinsville Pittsylvania	4411	Tropical Storm Michael	
2020	Danville Franklin Henry Martinsville Patrick Pittsylvania	3448	COVID-19	
2020	Danville Franklin Henry Martinsville Patrick Pittsylvania	4512	COVID-19 Pandemic	

Appendix B2. West Piedmont FEMA Repetitive and Severe Loss Structures

A repetitive loss (RL) property is a property that is insured under the NFIP and has filed two or more claims in excess of $1,000 each, within a 10-year period. Nationwide, RL properties constitute 2% of all NFIP insured properties, but are responsible for 40% of all NFIP claims. Mitigation for RL properties is a high priority for FEMA, and the areas in which these properties are located typically represent the most flood prone areas of a community.

Table B-1. West Piedmont FEMA Repetitive Loss Structures as of 7/20/2021.

Community Name	Number of Properties	Residential	Non-Residential	Number of Claims	Total Losses	Total Building Losses	Total Contents Losses	Average Claim	Building Values
City of Danville	17	12	5	47	$1,367,070	$1,227,832	$139,238	$27,842	$10,005,158,060
Franklin County	4	4	0	9	$176,604	$167,504	$9,000	$21,405	$739,997
Henry County	17	10	7	48	$1,251,424	$1,016,870	$234,554	$33,670	$7,971,695
City of Martinsville	4	2	2	14	$357,532	$272,337	$85,194	$25,538	$3,899,905
Patrick County	4	4	0	8	$122,998	$95,482	$27,516	$15,375	$237,659
Pittsylvania County	3	2	1	9	$223,067	$180,286	$42,781	$28,786	$509,980
TOTAL	**49**	**34**	**15**	**135**	**$3,498,695**	**$2,960,311**	**$538,283**	**$25,436**	**$10,018,517,296**

Table B-2. West Piedmont FEMA Severe Repetitive Loss Structures as of 7/20/2021.

Community Name	Number of Properties	Residential	Non-Residential	Number of Claims	Total Losses	Total Building Losses	Total Contents Losses	Average Claim	
City of Danville	4	1	3	39	$2,093,455	$1,904,652	$188,803	$89,998	$15,969,241
Henry County	1	1	0	6	$53,177	$34,042	$19,136	$8863	$108,361
TOTAL	**5**	**2**	**3**	**45**	**$2,146,632**	**$1,938,693**	**$207,939**	**$49,431**	**$16,077,602**

Appendix B3. West Piedmont NFIP Statistics (as of 4/30/2021)

All jurisdictions in West Piedmont participate in the NFIP, except for the Town of Gretna in Pittsylvania County. The participation and the current effective map dates of the different counties and towns are listed in Table B-3~~Table B-3~~**Error! Reference source not found.**. Table B-4 shows the insurance and claim statistics for West Piedmont. These losses include all flooding events. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP. It is likely that there are additional instances of flood losses in the counties and towns that were uninsured, denied claims payment, or not reported.

Table B-3. FEMA NFIP Participation Dates

Jurisdiction	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Regular Entry Date
City of Danville	05/31/1974	03/16/1981	09/29/2010	03/16/1981
Franklin County	04/25/1975	05/19/1981	01/06/2010	05/19/1981
Town of Boones Mill	08/16/1974	09/01/1978	12/16/2008	09/01/1978
Town of Rocky Mount	01/17/1975	05/01/1980	12/16/2008	05/01/1980
Henry County	05/01/1980	05/01/1980	05/01/1980	05/01/1980
Town of Ridgeway	06/28/1974	11/06/1981	09/26/2008	11/06/1981
City of Martinsville	05/31/1974	04/01/1981	09/26/2008	04/01/1981
Patrick County	01/24/1975	05/15/1984	08/19/2008	05/15/1984
Town of Stuart	05/31/1974	05/03/1990	08/19/2008	09/01/1978
Pittsylvania County	10/06/1978	11/04/1980	09/29/2010	11/04/1981
Town of Chatham	05/31/1974	02/01/1979	09/29/2010	02/01/1979
Town of Gretna	N/A	09/29/2010	09/29/2010	N/A
Town of Hurt	11/01/1974	04/02/1979	09/29/2010	04/02/1979

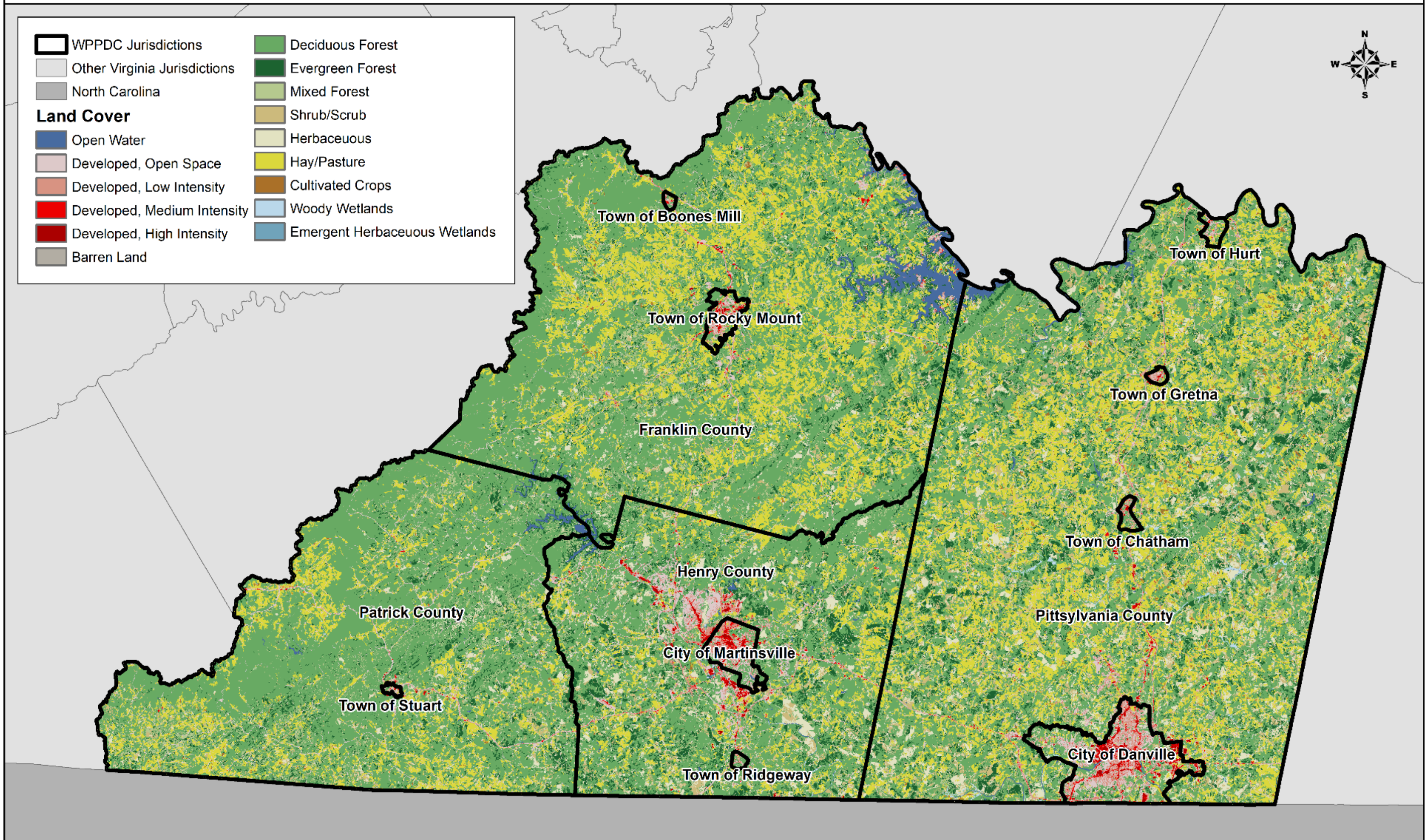
Table B-4. NFIP Policies in Force.

County	Policies-In-Force	Insurance-In-Force	No. Paid Losses	Total Losses Paid
City of Danville	113	$36,605,000.00	151	$4,826,553.74
Franklin County	109	$28,704,100.00	33	$673,792.67
Town of Boones Mill	6	$1,199,900.00	3	$10,732.93
Town of Rocky Mount	1	$280,000.00	1	$0.00
Henry County	84	$18,627,100.00	189	$2,982,439.77
Town of Ridgeway	1	$235,000.00	2	$4,163.69
City of Martinsville	7	$3,507,000.00	26	$373,023.34
Patrick County	17	$3,712,000.00	34	$295,007.73
Town of Stuart	N/A	N/A	15	$786,800.51
Pittsylvania County	27	$6,522,500.00	39	$459,152.65
Town of Chatham	1	$350,000.00	N/A	N/A
Town of Gretna	N/A	N/A	N/A	N/A
Town of Hurt	N/A	N/A	1	$275,000.00

County	Policies-In-Force	Insurance-In-Force	No. Paid Losses	Total Losses Paid
WPPDC	366	$99,742,600.00	494	$10,686,667.03

Appendix B4. Land Use Maps

West Piedmont Region: National Land Cover Database (NLCD)

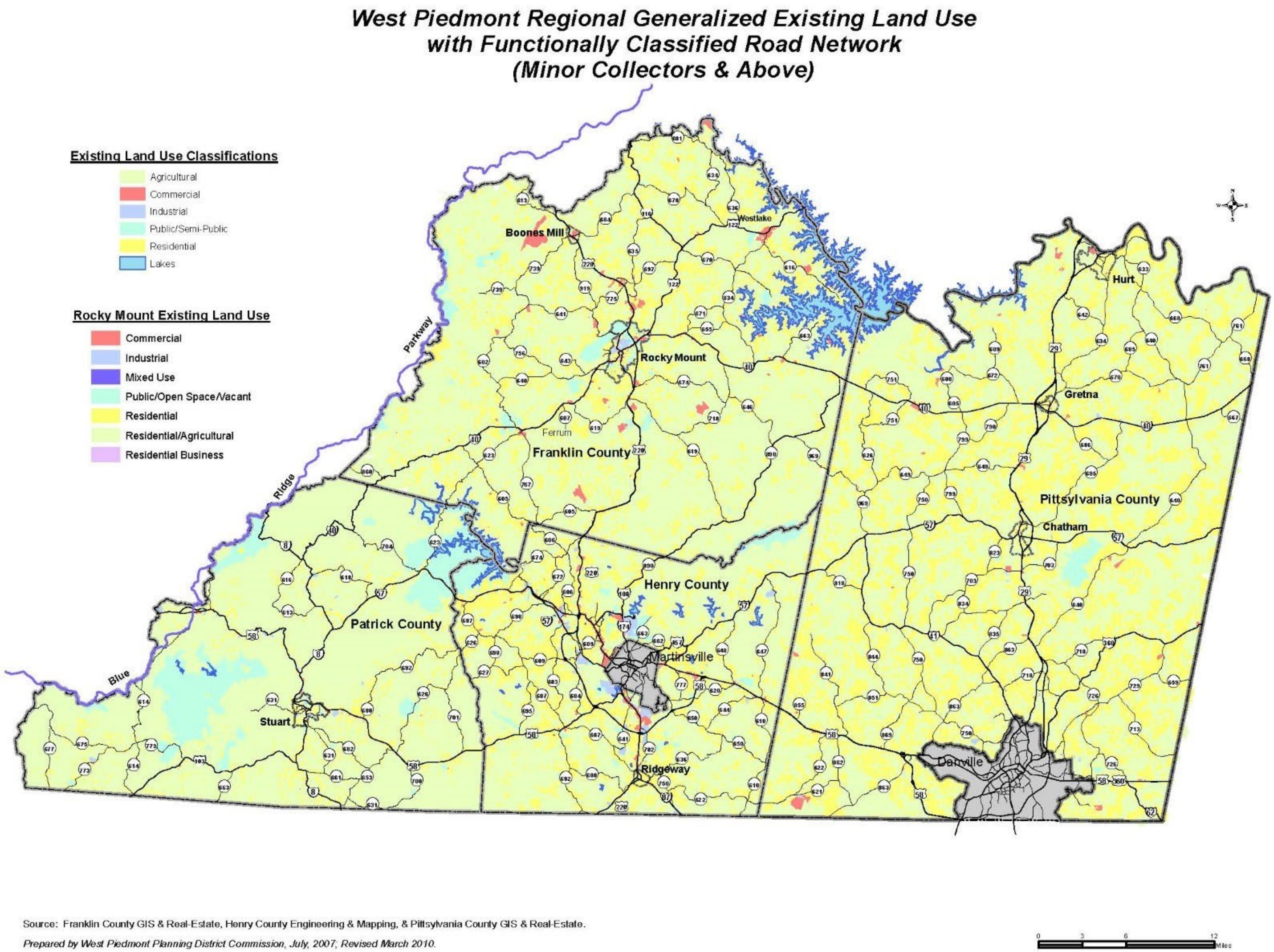


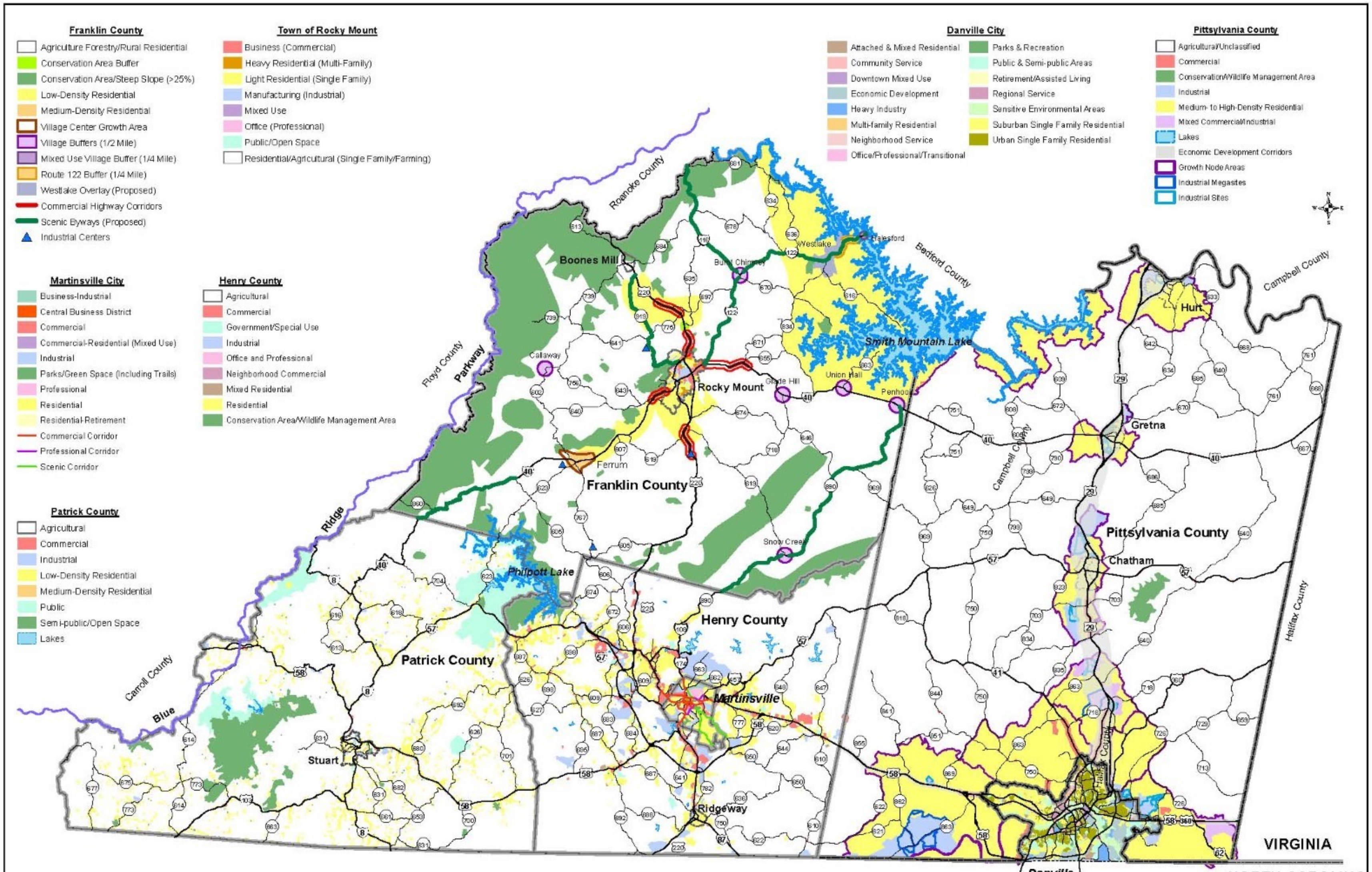
Source: USDA NLCD, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region National Land Cover Database (NLCD) areas. These areas consist of the NLCD classifications of Developed Land, Forests, Wetlands, Hay/Pasture, Cultivated Crops, Barren Lands, and Open Water.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles


West Piedmont Regional Generalized Existing Land Use
with Functionally Classified Road Network
(Minor Collectors & Above)
Existing Land Use Classifications
Agricultural
Commercial
Industrial
Public/Semi-Public
Residential
Lakes
Rocky Mount Existing Land Use
Commercial
Industrial
Mixed Use
Public/Open Space/Vacant
Residential
Residential/Agricultural
Residential Business
Boones Mill
Westlake
Rocky Mount
Ferrum
Franklin County
Hurt
Gretna
Pittsylvania County
Chatham
Henry County
Patrick County
Martinsville
Stuart
Ridgeway
Danville
Parkway
Ridge
Blue
Source: Franklin County GIS & Real-Estate, Henry County Engineering & Mapping, & Pittsylvania County GIS & Real-Estate.
Prepared by West Piedmont Planning District Commission, July, 2007; Revised March 2010.



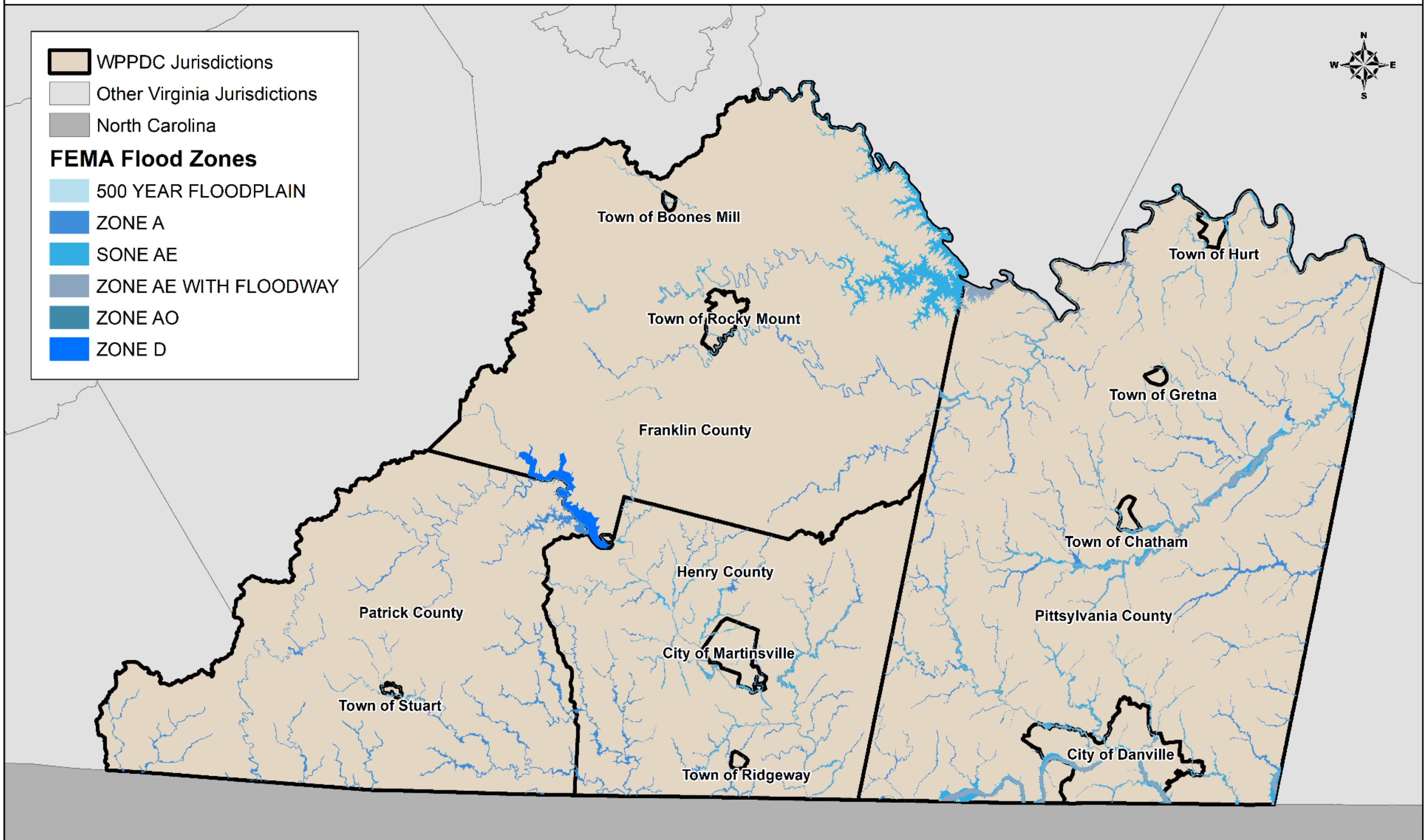
Sources: Franklin County GIS, Town of Rocky Mount, Henry County Engineering & Mapping, Danville City IT/GIS Division, & Pittsylvania County GIS.

Prepared by West Piedmont Planning District Commission, June 2010; Revised October 2010.

West Piedmont Regional Future Land Use

Appendix B5. FEMA Flood Zone Maps

West Piedmont Region: FEMA Mapped Floodplains



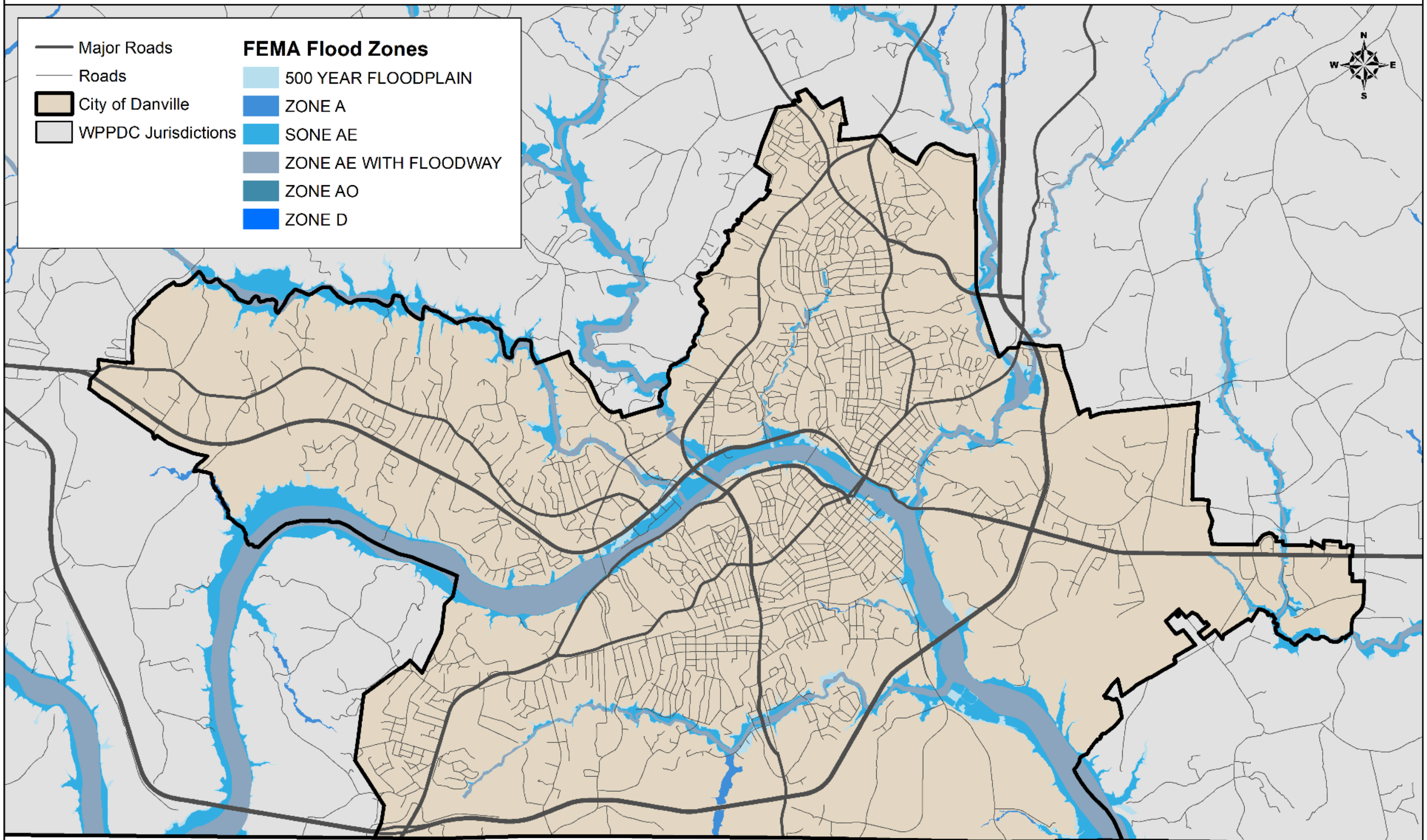
Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region jurisdictions with their associated FEMA mapped floodplains.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles

City of Danville: FEMA Mapped Floodplains



Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: City of Danville with its associated FEMA mapped floodplains.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 0.5 1 2 3 4 Miles

Franklin County: FEMA Mapped Floodplains

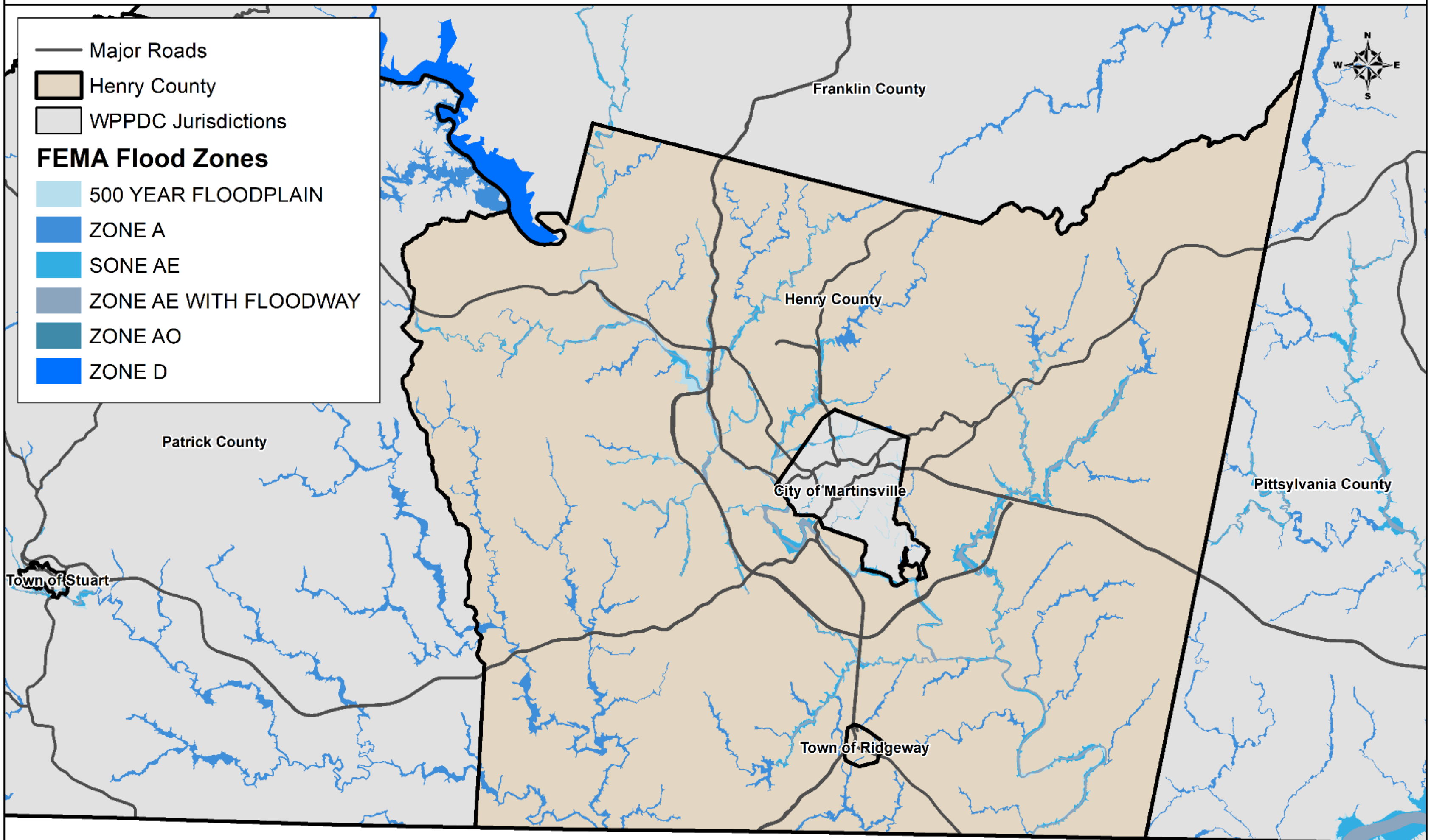
Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: Franklin County with its associated FEMA mapped floodplains.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles

Henry County: FEMA Mapped Floodplains



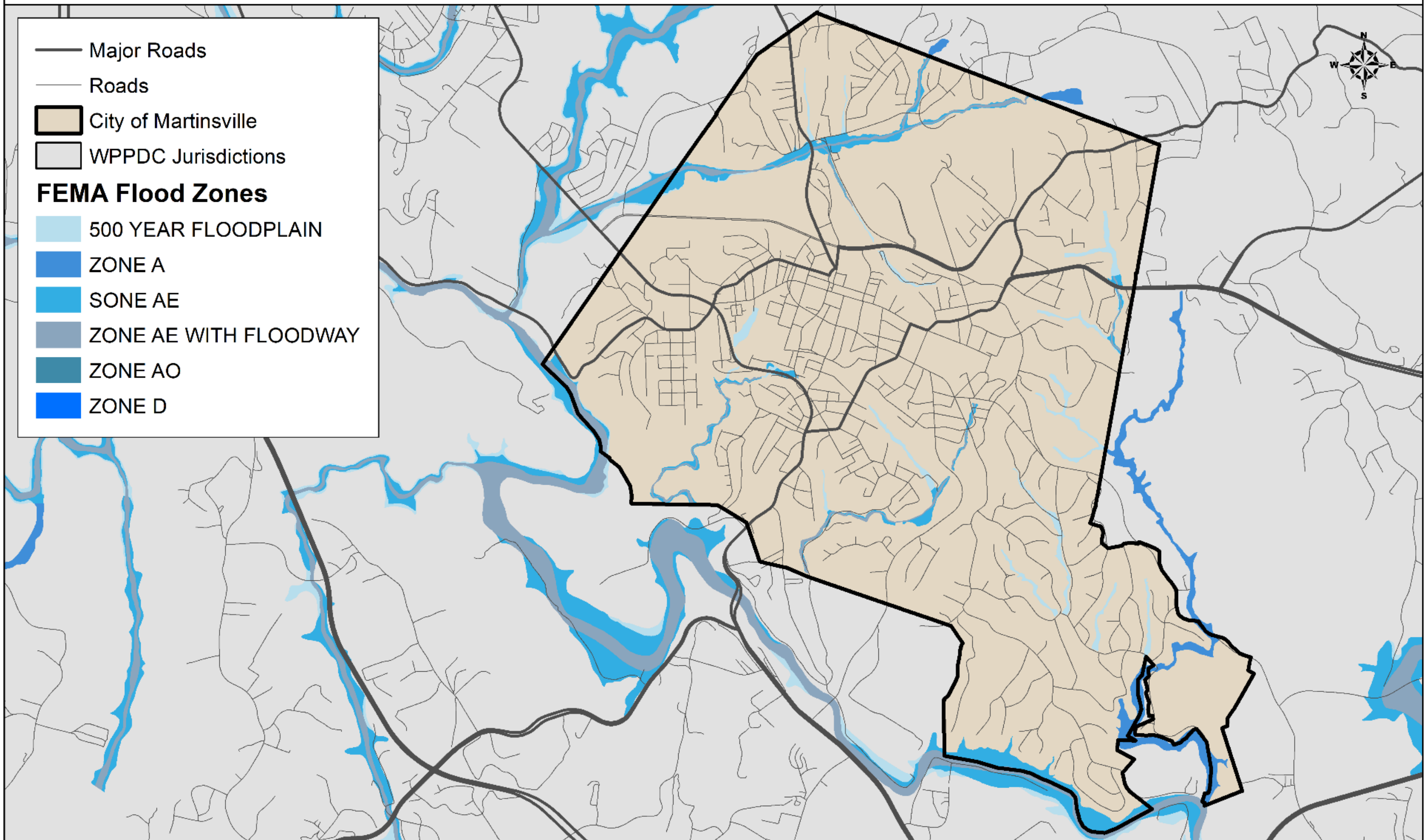
Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: Henry County with its associated FEMA mapped floodplains.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 1 2 4 6 8 Miles

City of Martinsville: FEMA Mapped Floodplains

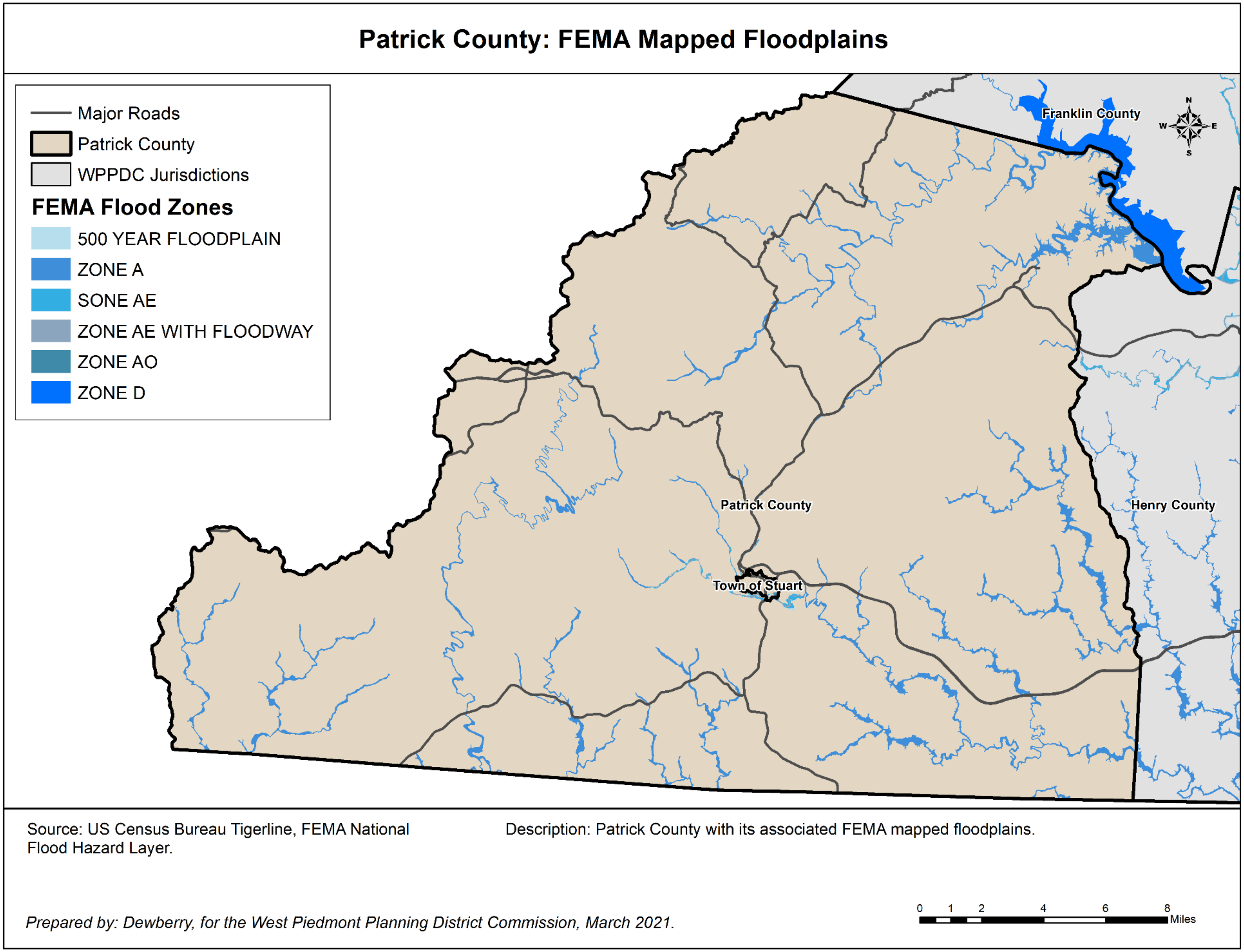


Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

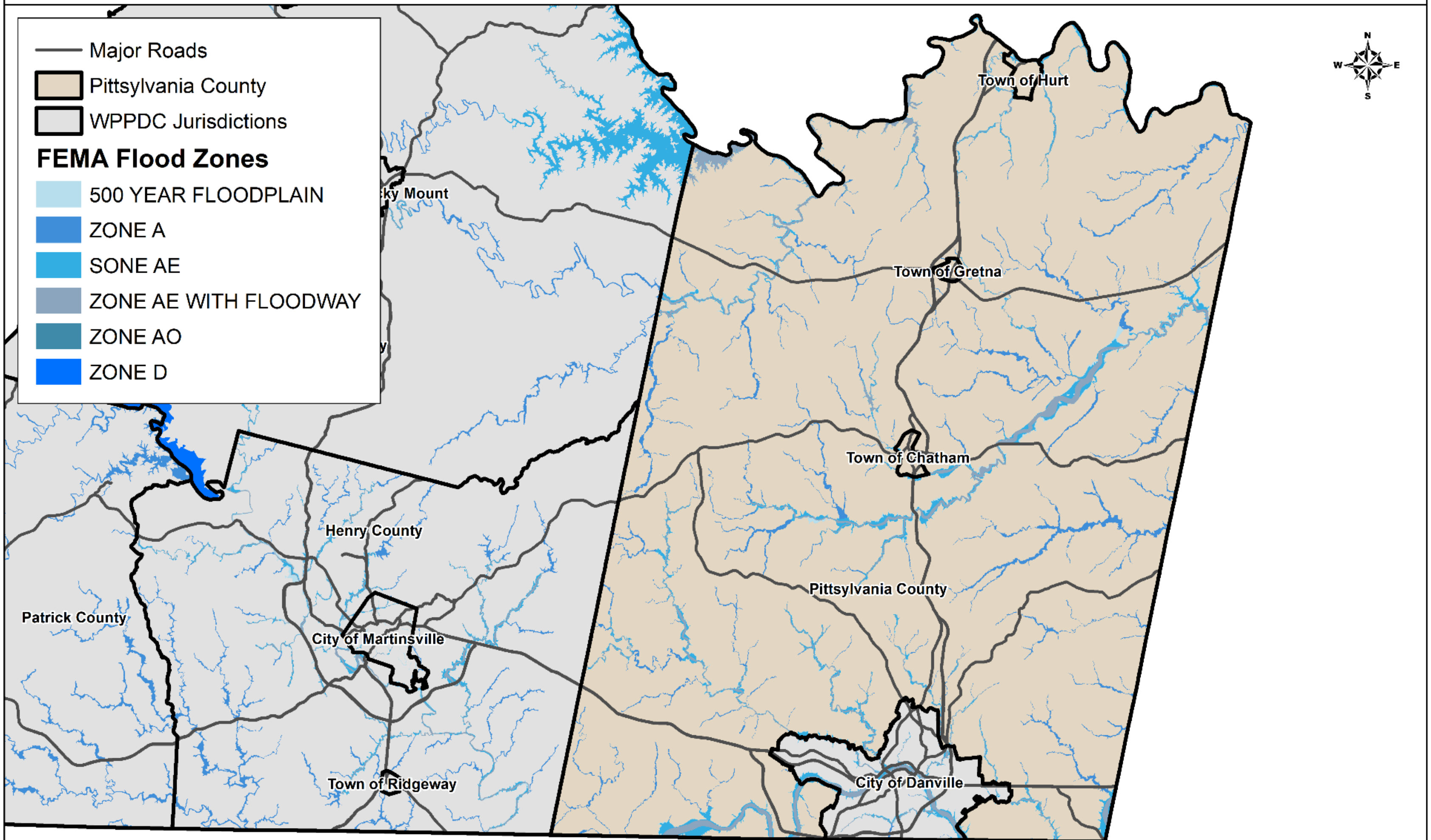
Description: City of Martinsville with its associated FEMA mapped floodplains.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 0.25 0.5 1 1.5 2 Miles


Patrick County: FEMA Mapped Floodplains
Major Roads
Patrick County
WPPDC Jurisdictions
FEMA Flood Zones
500 YEAR FLOODPLAIN
ZONE A
SONE AE
ZONE AE WITH FLOODWAY
ZONE AO
ZONE D
Franklin County
Patrick County
Henry County
Town of Stuart
N
W
E
S
Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.
Description: Patrick County with its associated FEMA mapped floodplains.
Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.
0 1 2 4 6 8 Miles

Pittsylvania County: FEMA Mapped Floodplains



Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: Pittsylvania County with its associated FEMA mapped floodplains.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles

Appendix B6. Community-Identified Flood Problem Areas

The Franklin County Public Safety Department has identified additional problem areas in the form of repetitive damage areas. Figure 28 depicts these as well as the other areas in the county that were identified via the community input mediums mentioned in the plan. Repetitive damages sites provided by Franklin County also included tree damages, pipe overflows, and landslides, in addition to flooding. Additional jurisdiction-specific flood problem areas maps are shown in Figure 29, Figure 30, and Figure 31.

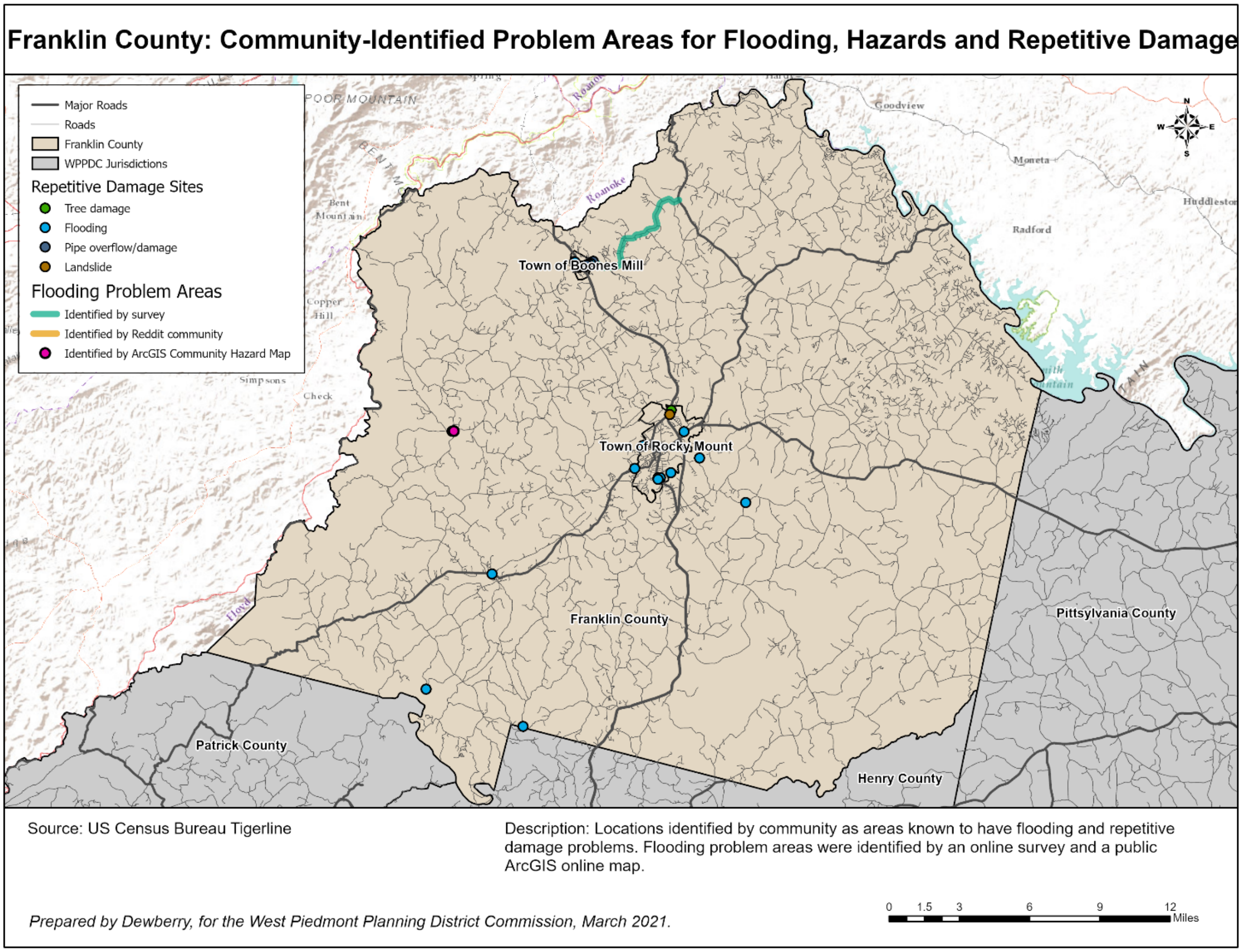


Figure 28. Franklin County Community-Identified Problem Areas

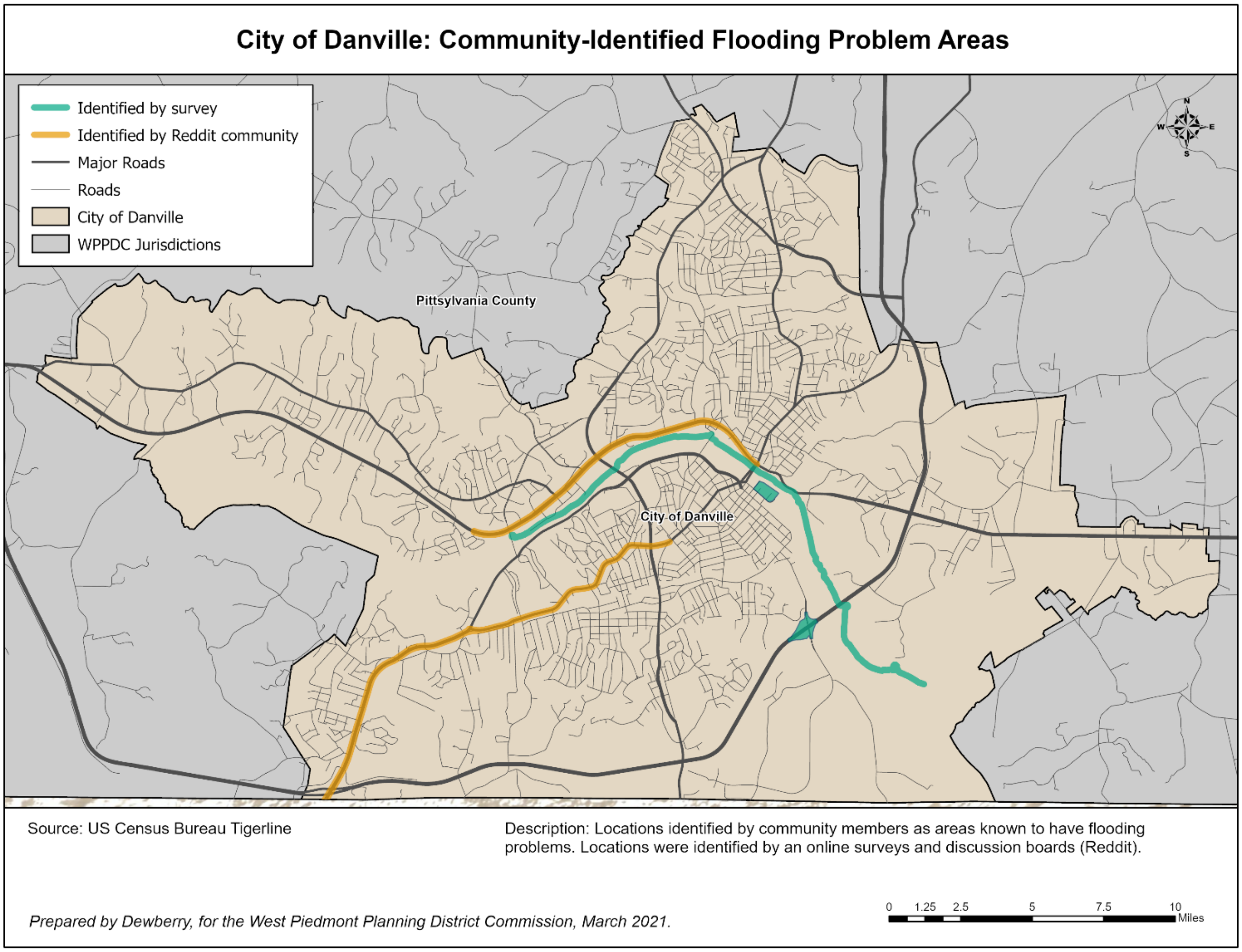


Figure 29. Danville Community-Identified Problem Areas

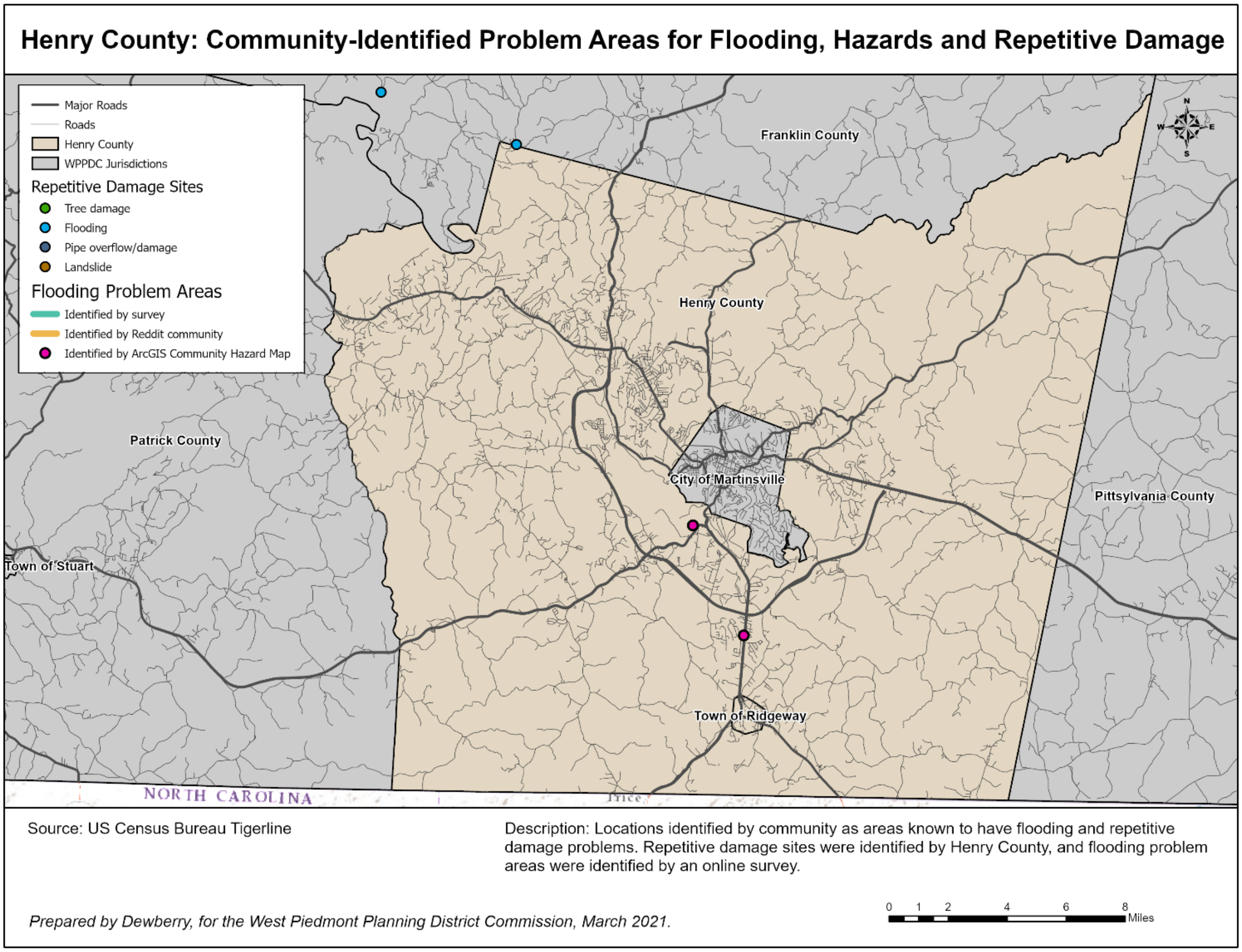


Figure 30. Henry County Community-Identified Problem Areas

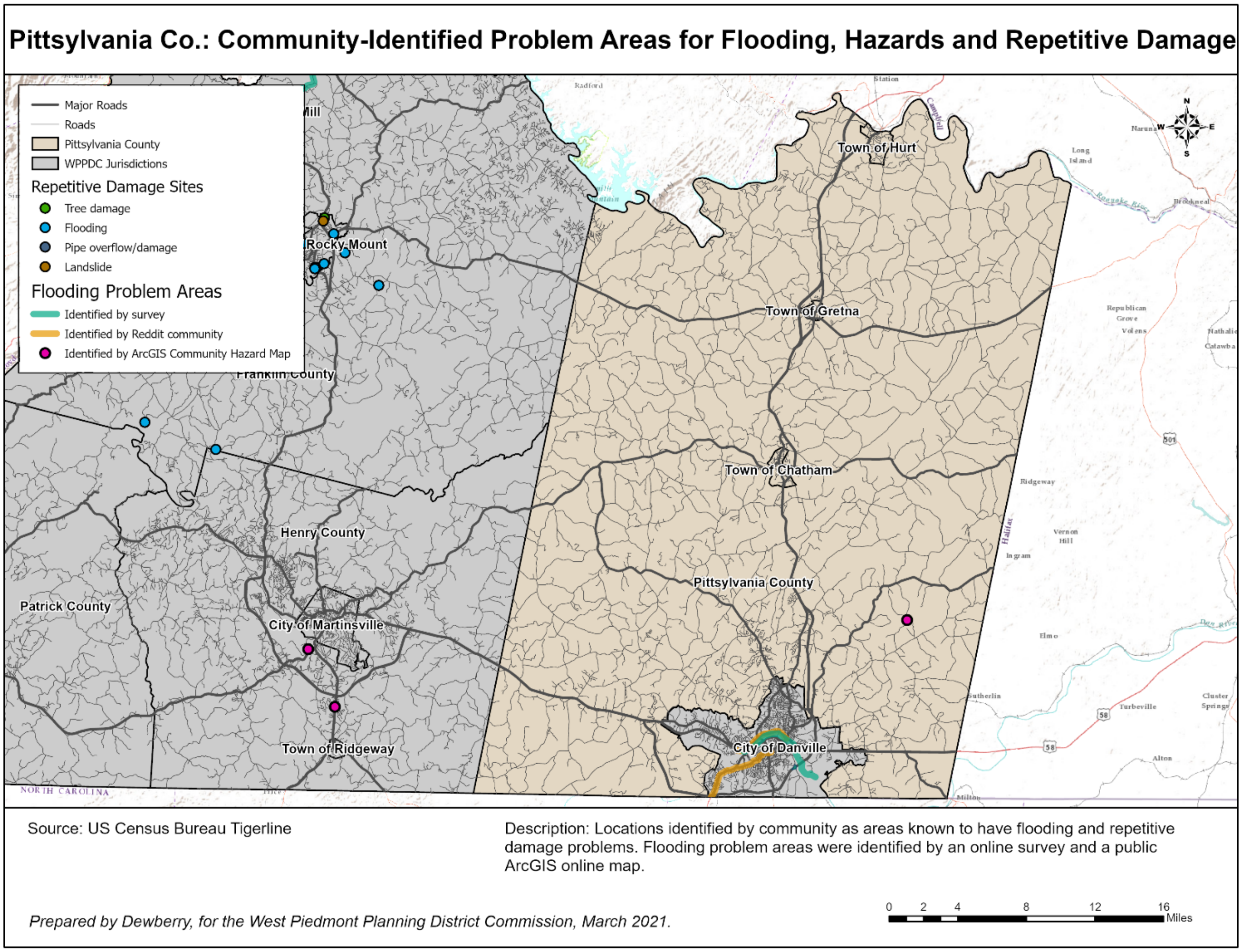


Figure 31. Pittsylvania County Community-Identified Problem Areas

Appendix B7. Comparison of Loss Calculations

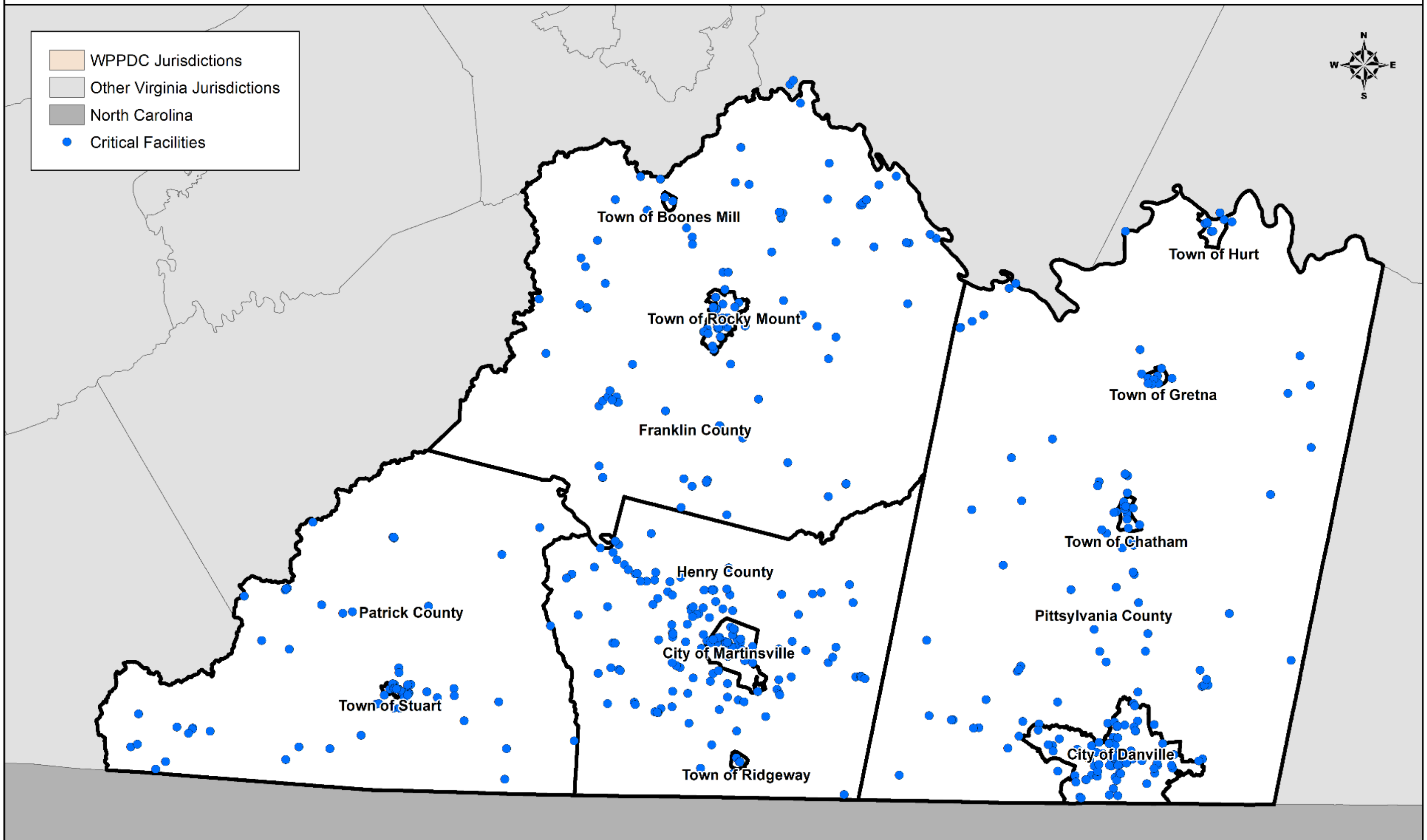
Table B-5. Comparison of Potential Annual Flood Loss*

Jurisdiction**	2006 Plan Potential Annual Damages	2011 Plan Potential Annual Damages (using building footprints and tax parcels)	2011 Plan Potential Annual Damages (using DFIRMs and Census Tracts)	2021 Plan Potential 100-Year Damages (using Hazus Analysis)
Franklin County	$354,065	$172,584	$259,728	$231,447,000
Town of Boones Mill	$11,949	*$11,964*	*$8,251*	$7,139,000
Town of Rocky Mount	$16,328	*$20,238*	*$37,287*	$18,951,000
Henry County	$790,182	$342,645	$485,522	$551,697,000
Town of Ridgeway	$5,052	*$770*	*$930*	<$1,000
Patrick County	$83,197	$55,922	$80,836	$86,432,000
Town of Stuart	$883	*$5,138*	*$42,337*	$5,002,000
Pittsylvania County	$3,187,783	$224,154	$276,088	$91,196,000
Town of Chatham	$22,564	*$1,894*	*$3,751*	$1,598,000
Town of Gretna	*N/A*	*$1,664*	*$42*	$331,000
Town of Hurt	$20,200	*$6,469*	*$4,285*	$4,988,000
City of Danville	$180,256	$7,792,029	$439,718	$436,849,000
City of Martinsville	$40,445	$40,700	$61,314	$19,905,000
Grand Total	**$4,635,928**	**$8,628,034**	**$1,603,205**	**$1,455,535,000**

**Due to minimal changes in development, a flood analysis was not re-conducted in 2016 by WPPDC.*
***County totals include town damages.*

Appendix B8. Critical Facilities

West Piedmont Region: Critical Facilities



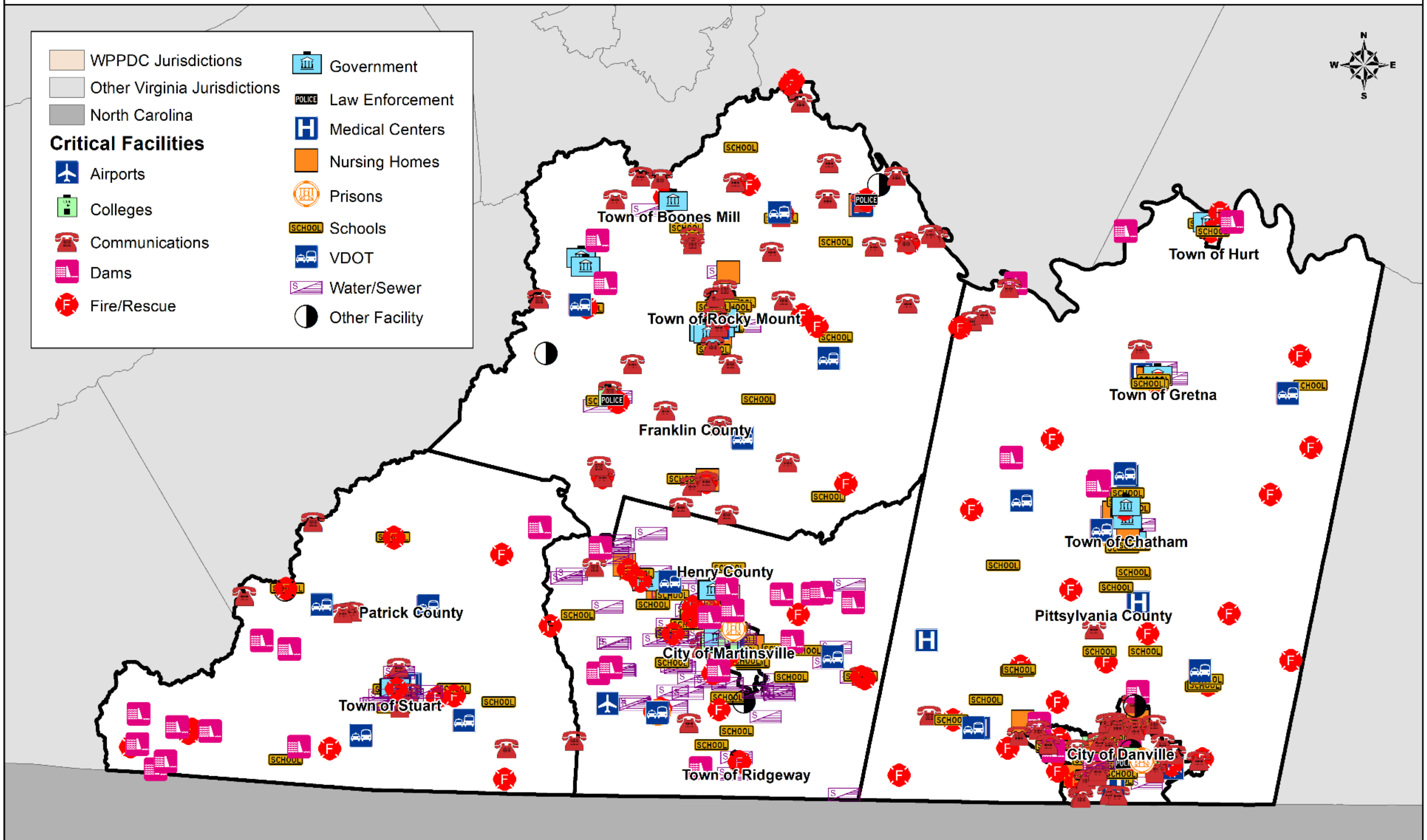
Source: WPPDC, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region's Critical Facilities. These include: Airports, Colleges, Communications, Dams, Fire/Rescue Stations, Government Buildings, Law Enforcement, Medical Centers, Nursing Homes, Prison, School, VDOT, Water/Sewer, and other important facilities identified by the Region.

0 2 4 8 12 16 Miles

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

West Piedmont Region: Critical Facilities



Source: WPPDC, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region's Critical Facilities. These include: Airports, Colleges, Communications, Dams, Fire/Rescue Stations, Government Buildings, Law Enforcement, Medical Centers, Nursing Homes, Prison, School, VDOT, Water/Sewer, and other important facilities identified by the Region.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

Appendix B9. Expanded Flood Loss Data and 100-Year Flood Loss Maps

LIST OF FIGURES

West Piedmont Hazus Based Losses by General Building Type for the 100-Year Return Period (values in thousands of dollars).

Building Type	Total	Building	Contents	Inventory	Relocation	Income	Rental	Wage
Concrete	$98,000	$16,200	$43,400	$2,500	$1,900	$6,200	$1,500	$26,300
Manufactured Housing	$25,953	$16,946	$6,555	$0	$2,210	$0	$242	$0
Masonry	$387,887	$102,002	$146,708	$7,215	$19,197	$32,964	$9,288	$70,513
Steel	$513,272	$89,451	$219,179	$16,723	$18,102	$48,798	$11,096	$109,923
Wood	$430,423	$178,914	$138,674	$2,868	$32,890	$24,648	$13,086	$39,343
Grand Total	**$1,455,535**	**$403,513**	**$554,516**	**$29,306**	**$74,299**	**$112,610**	**$35,212**	**$246,079**

West Piedmont Hazus Based Losses by General Occupancy Type for the 100-Year Return Period (values in thousands of dollars).

Occupancy Type	Total	Building	Contents	Inventory	Relocation	Income	Rental	Wage
Residential	$409,066	$228,371	$119,867	$0	$38,211	$2,348	$14,680	$5,589
Commercial	$551,408	$81,831	$189,702	$7,918	$27,902	$99,149	$19,765	$125,141
Industrial	$342,576	$87,631	$218,835	$21,981	$5,558	$2,941	$1,013	$4,617
Religious/ NGO	$40,062	$4,470	$11,727	$0	$1,454	$6,512	$133	$15,766
Agricultural	$7,215	$1,046	$4,771	$354	$125	$696	$2	$221
Education	$25,073	$1,822	$7,522	$0	$1,314	$4,264	$60	$10,091
Government	$98,263	$1,548	$6,336	$0	$763	$455	$180	$88,981
Grand Total	**$1,473,663**	**$406,719**	**$558,760**	**$30,253**	**$75,327**	**$116,365**	**$35,833**	**$250,406**

100-Year Flood Loss Maps

Figure B-32. West Piedmont Region 100-Year Flood Loss by Census Block.

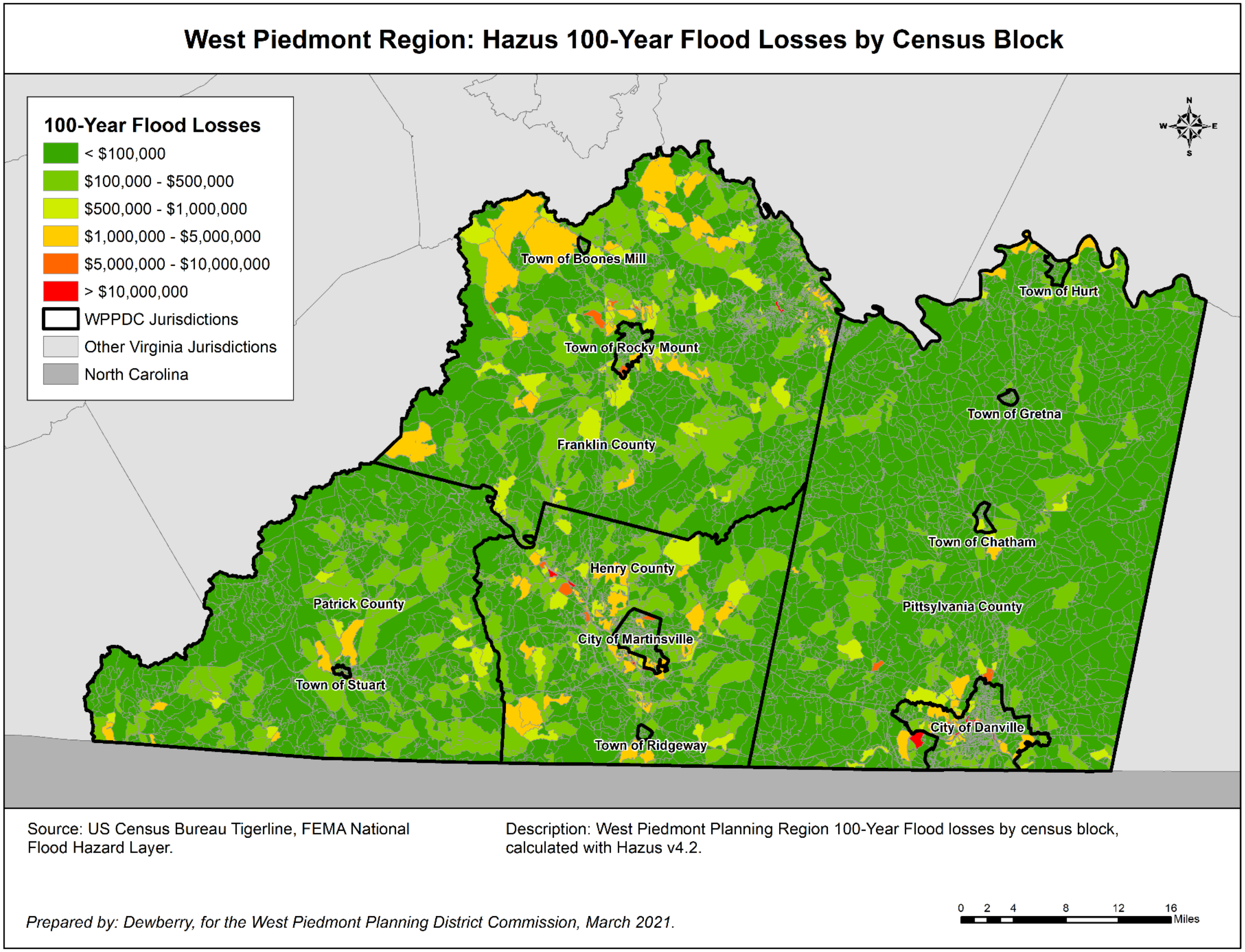


Figure B-33. City of Danville 100-Year Flood Loss by Census Block.

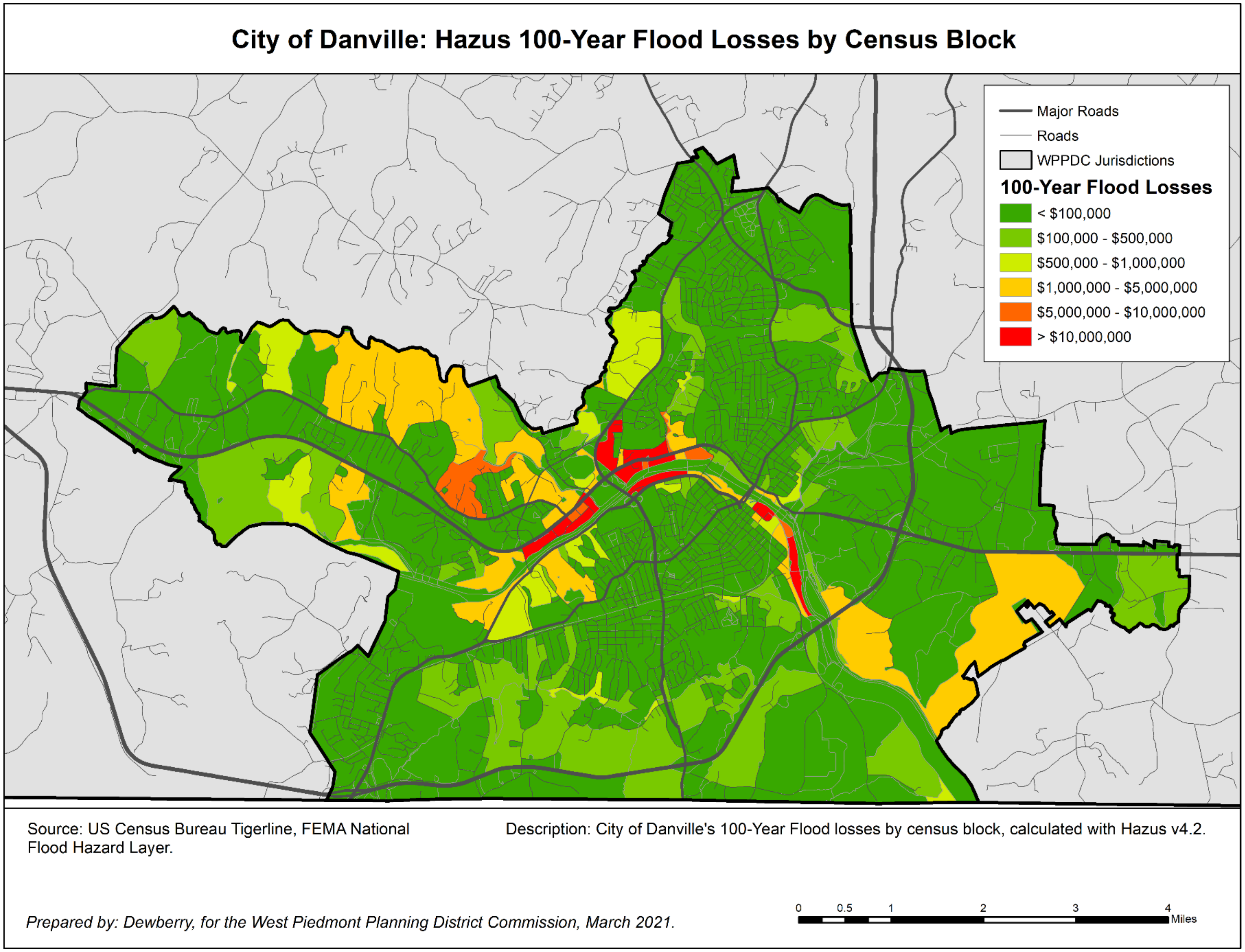
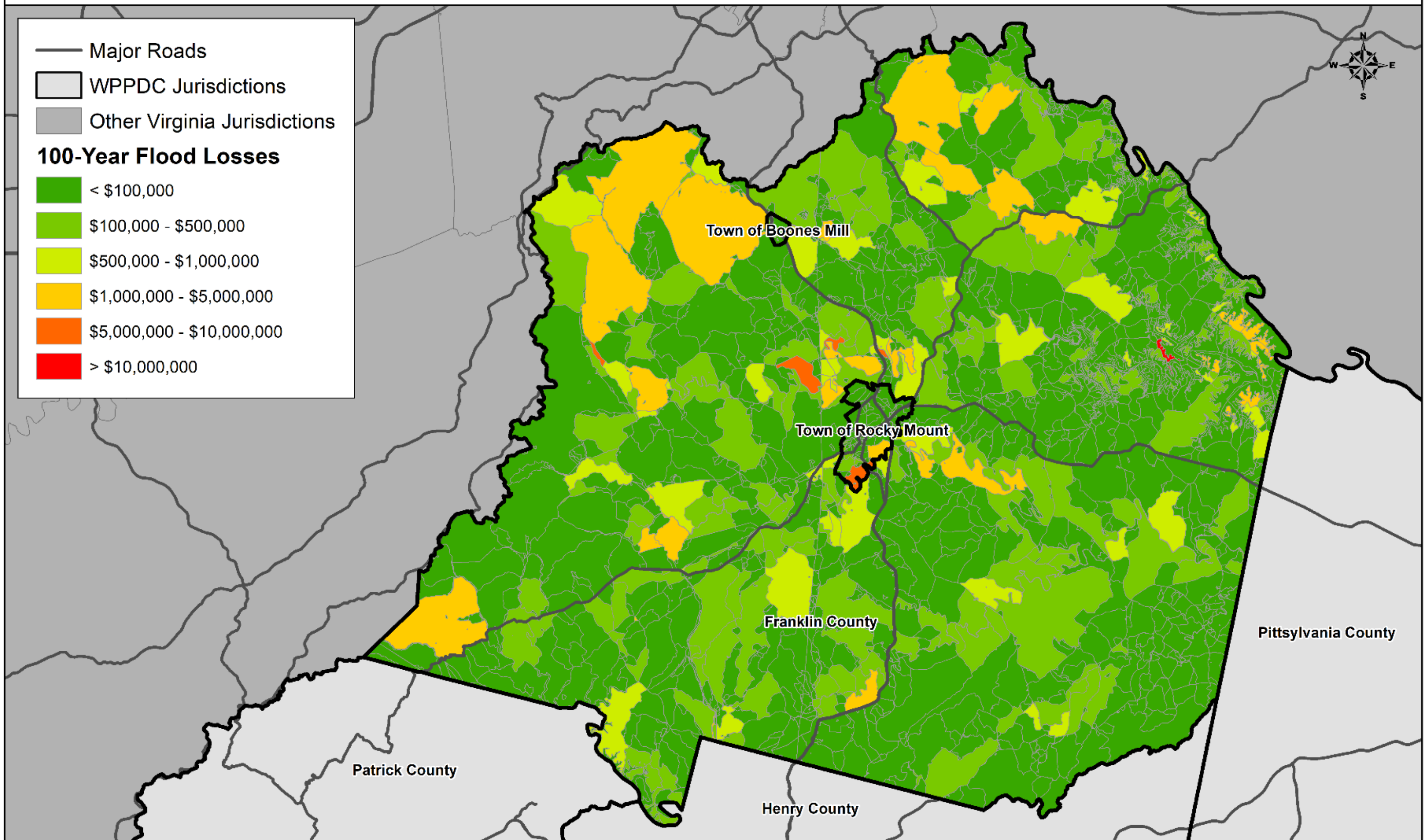


Figure B-34. Franklin County 100-Year Flood Loss by Census Block.

Franklin County: Hazus 100-Year Flood Losses by Census Block



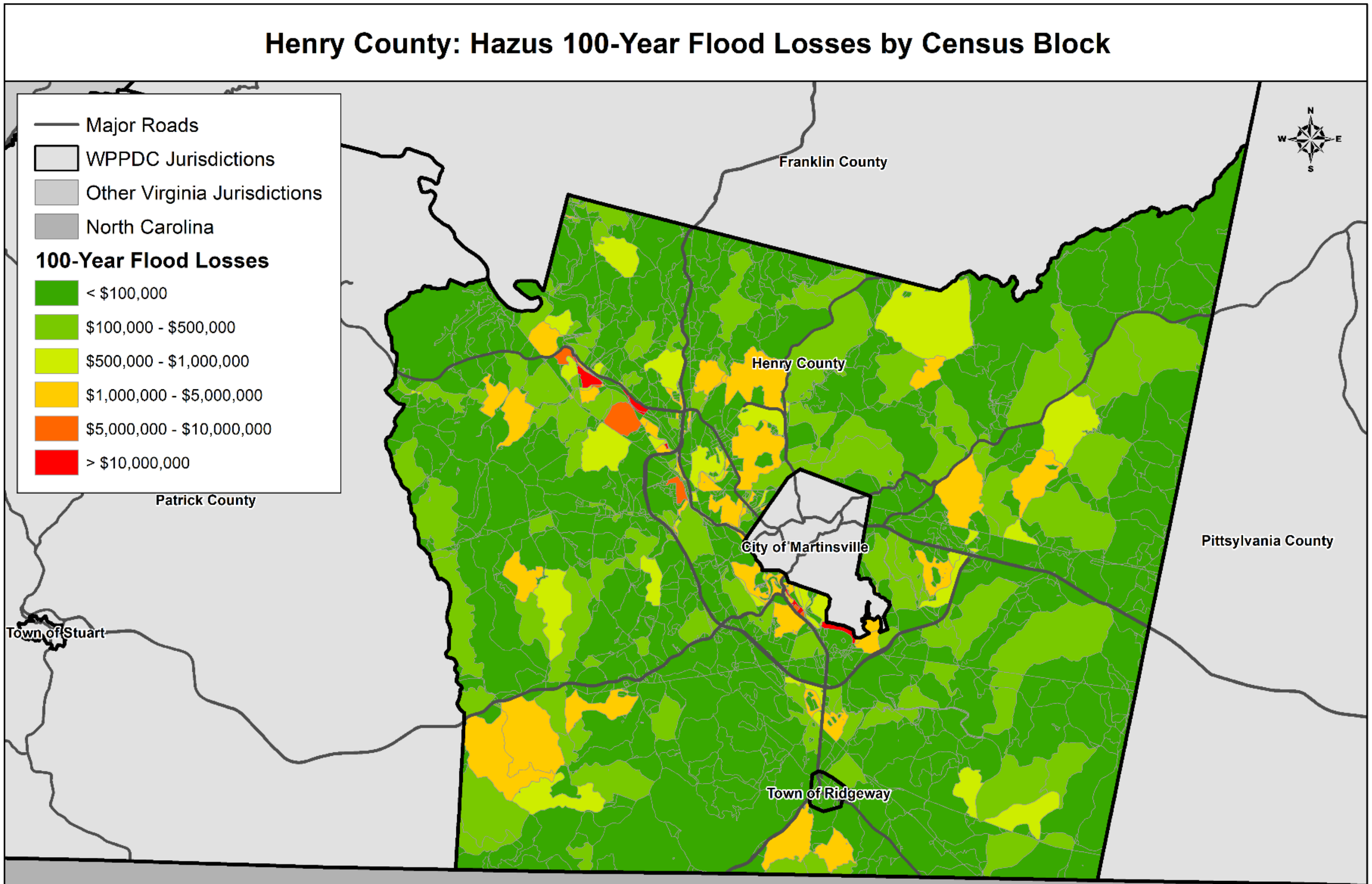
Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: Franklin County's 100-Year Flood losses by census block, calculated with Hazus v4.2.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles

Figure B-35. Henry County 100-Year Flood Loss by Census Block.



Source: US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: Henry County's 100-Year Flood losses by census block, calculated with Hazus v4.2.

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

Figure B-36. City of Martinsville 100-Year Flood Loss by Census Block.

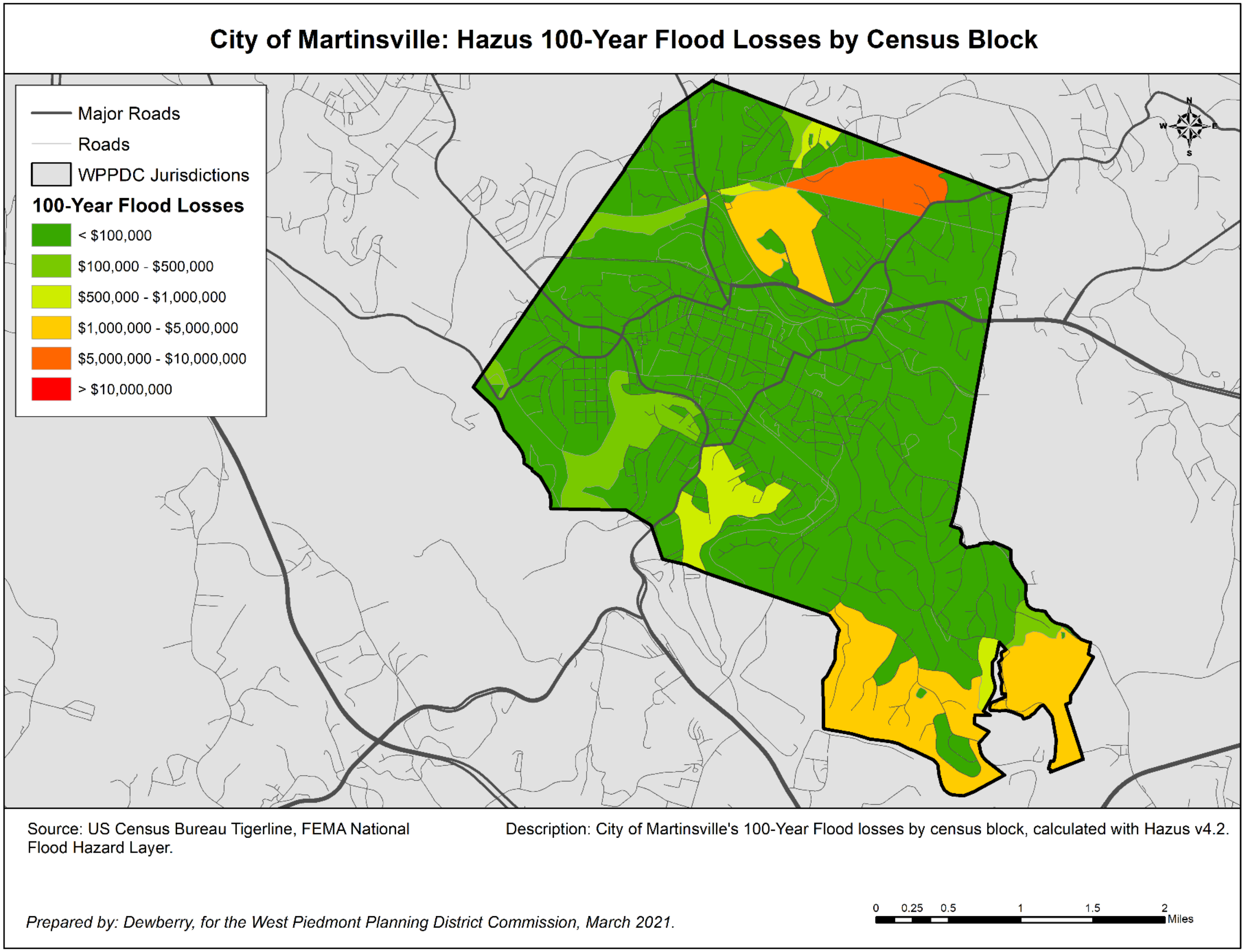


Figure B-37. Patrick County 100-Year Flood Loss by Census Block.

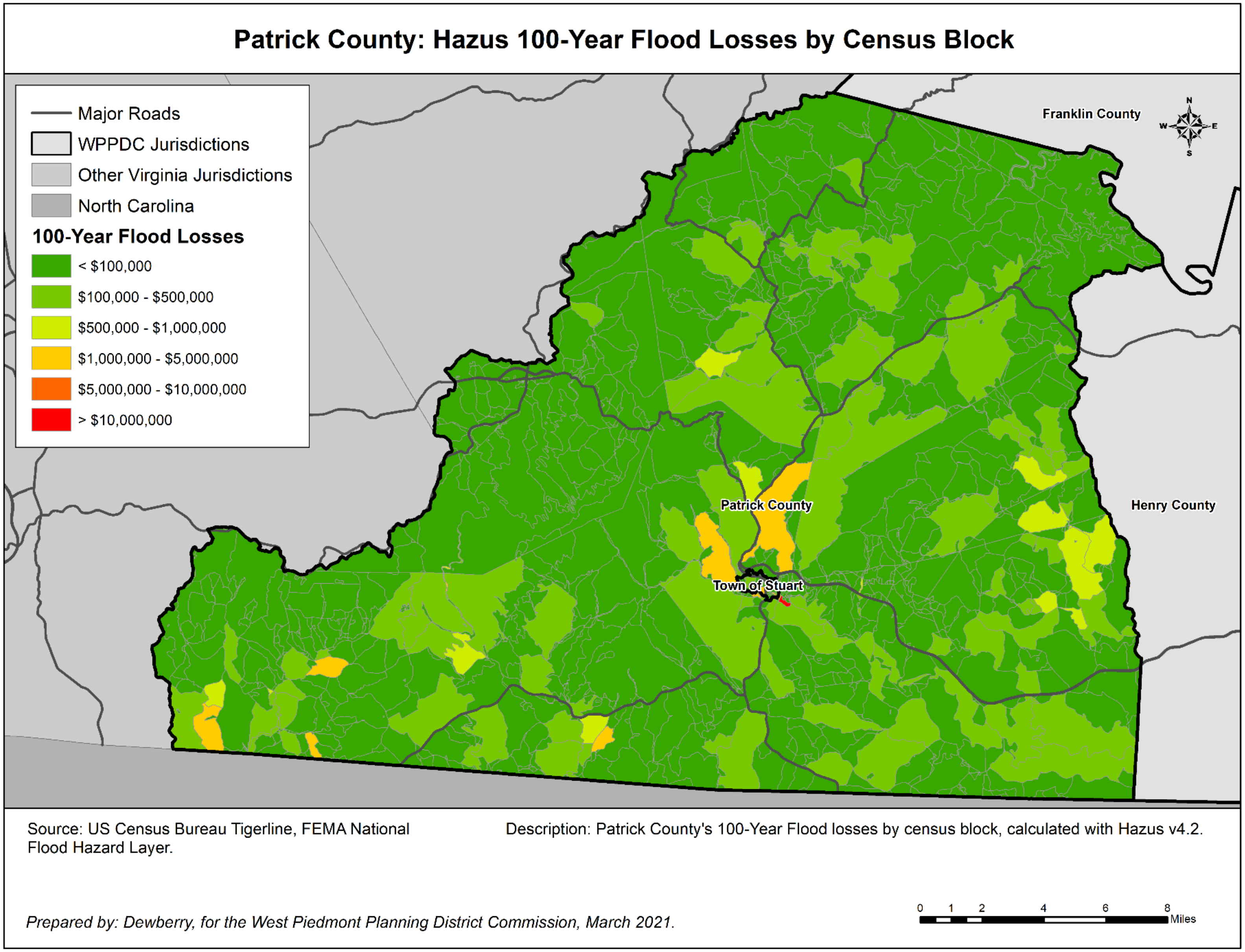
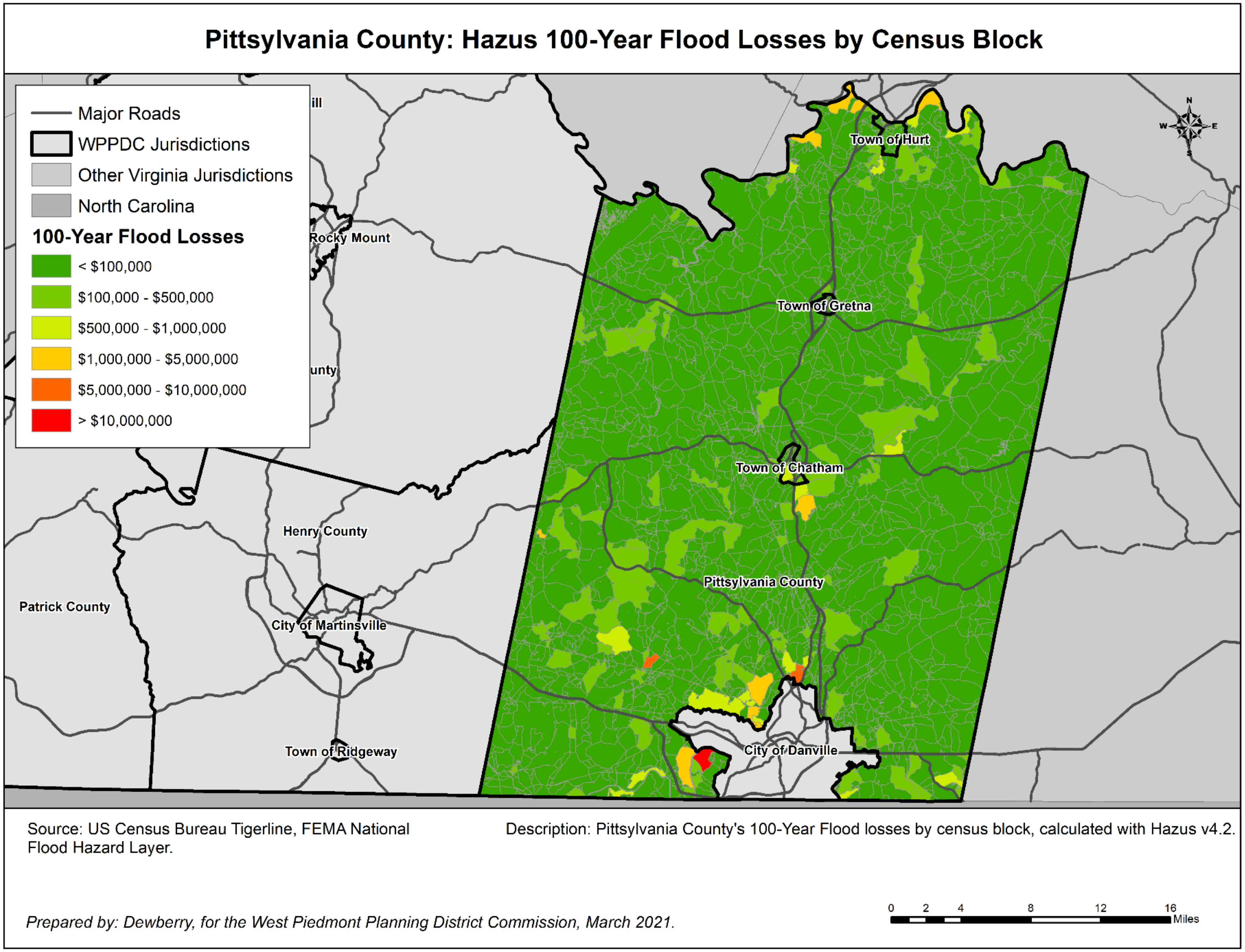
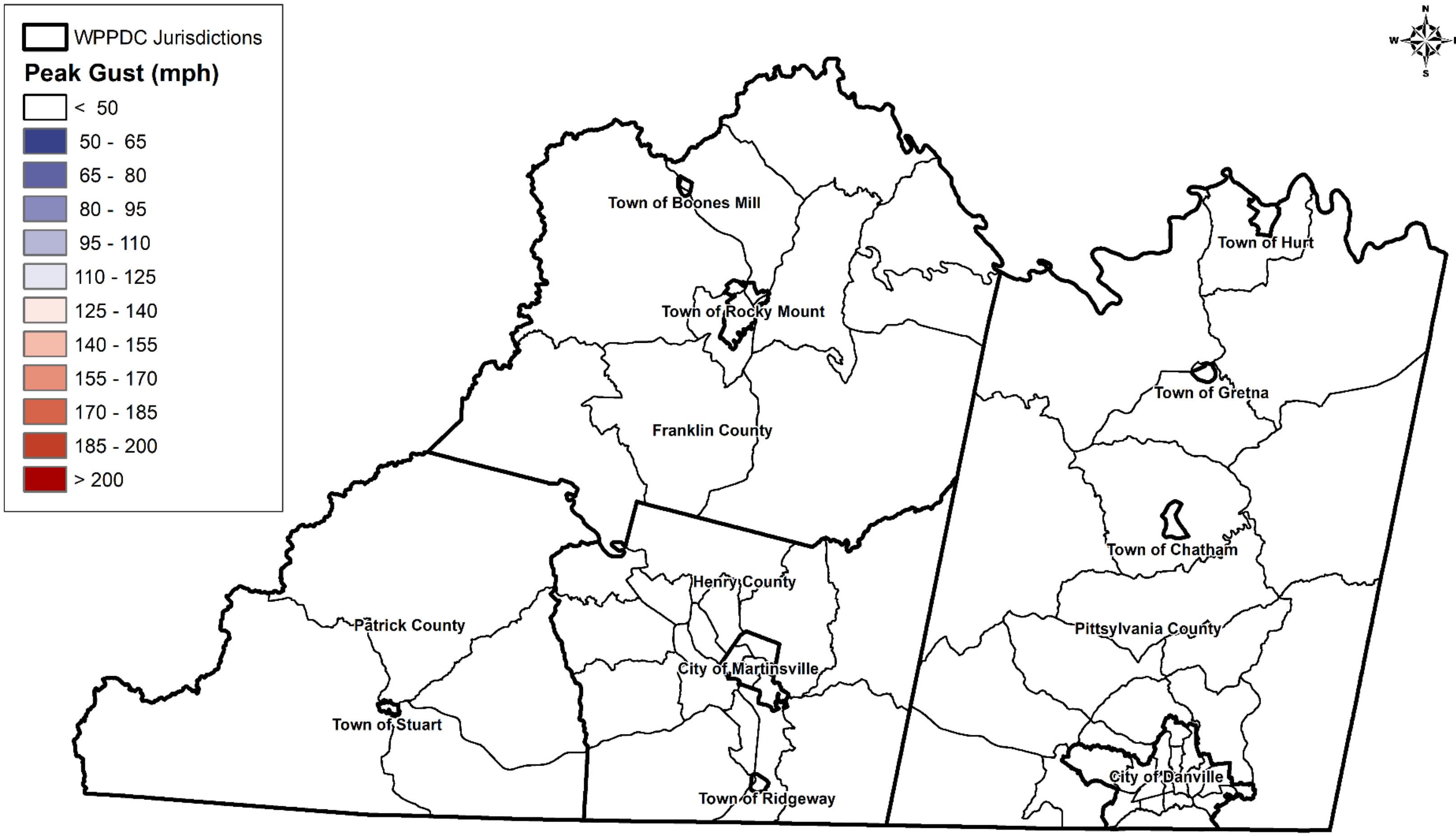


Figure B-38. Pittsylvania County 100-Year Flood Loss by Census Block.



Appendix B10. Hazus-MH Wind Maps

West Piedmont Region: Probabalistic 10-Year Wind Event

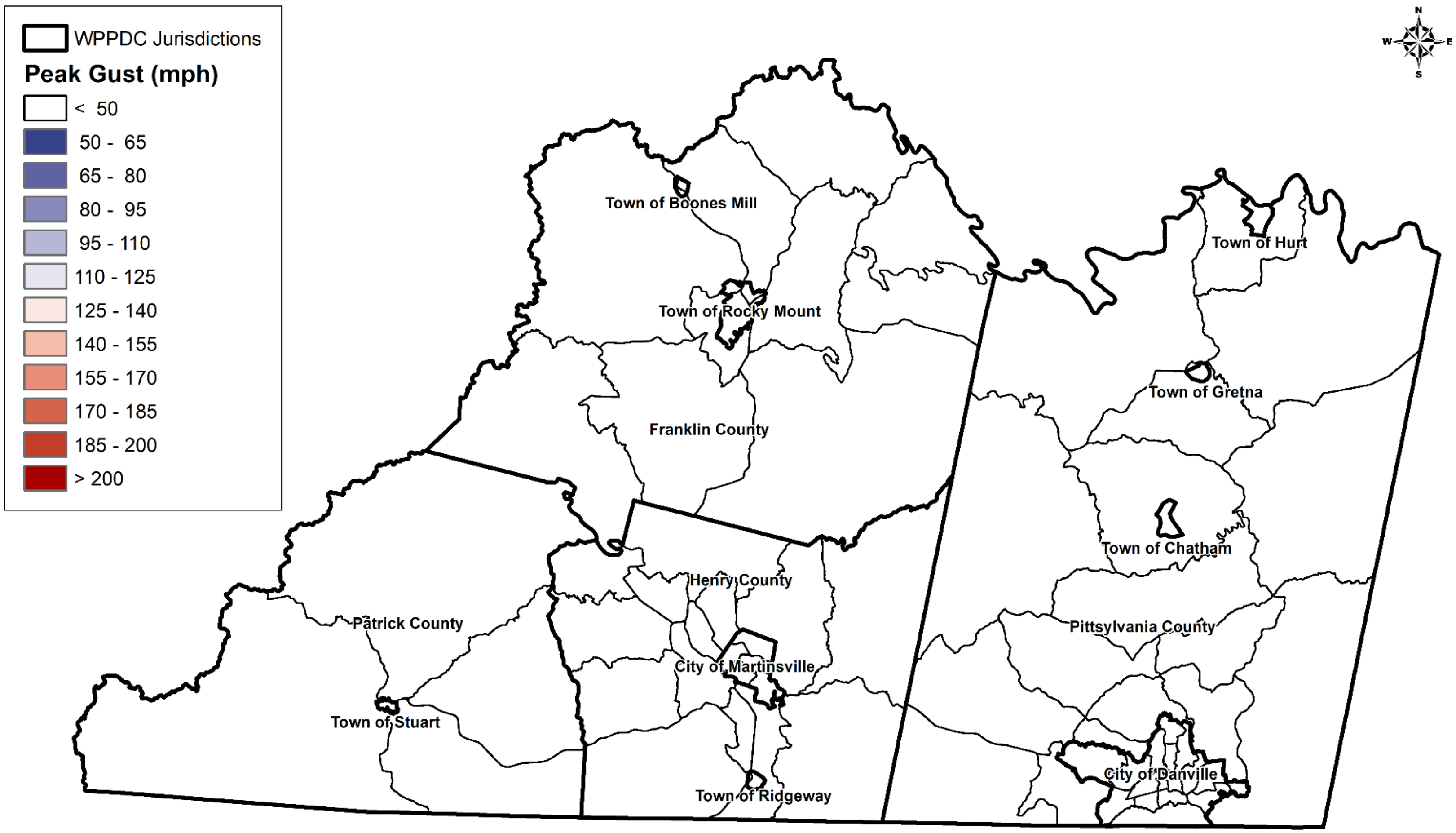


Source: FEMA Hazus v4.2, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region jurisdiction Census Tracts by Wind Speed as measured by Peak Gust (mph).

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

West Piedmont Region: Probabalistic 20-Year Wind Event



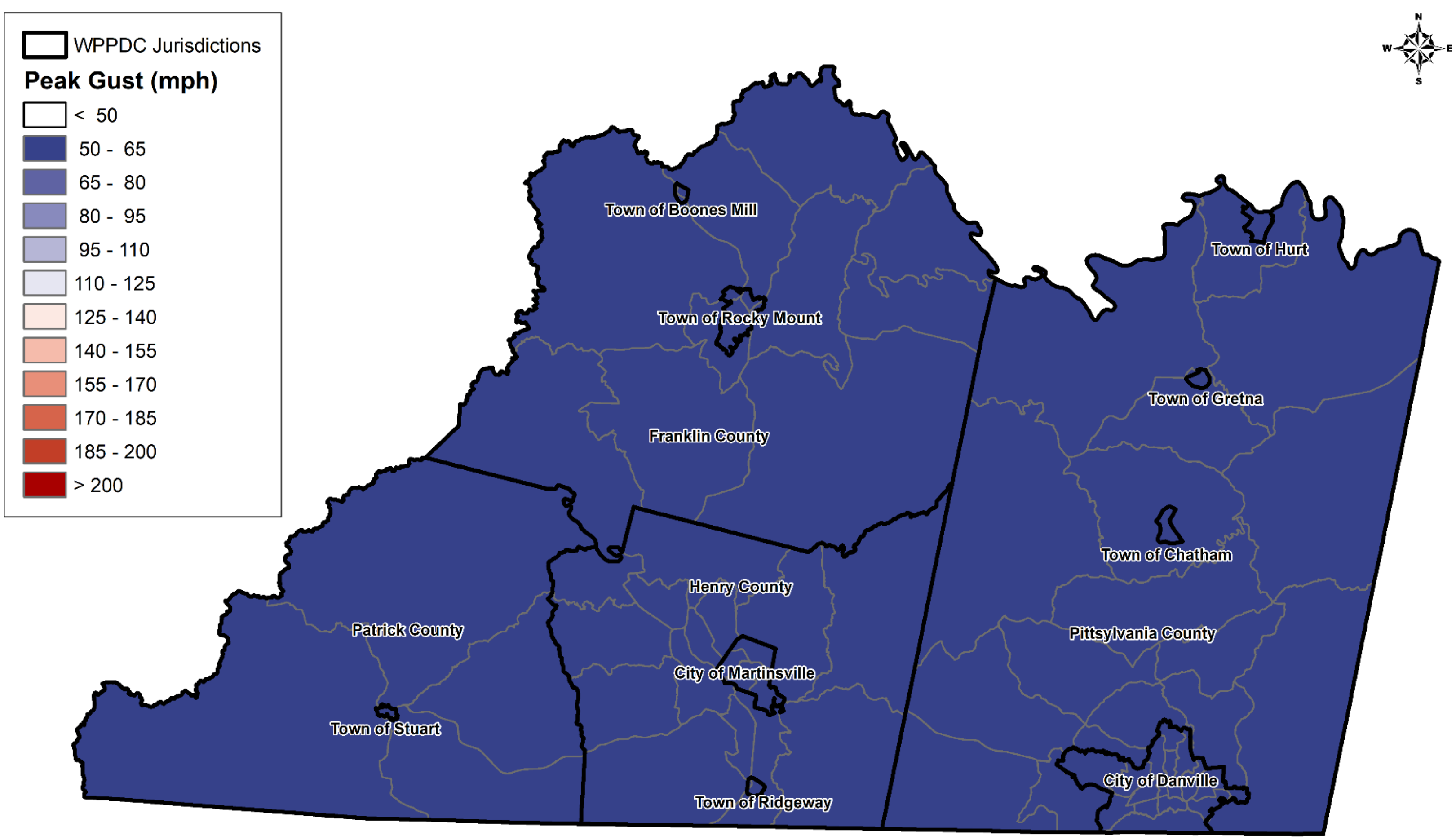
Source: FEMA Hazus v4.2, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region jurisdiction Census Tracts by Wind Speed as measured by Peak Gust (mph).

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles

West Piedmont Region: Probabalistic 50-Year Wind Event



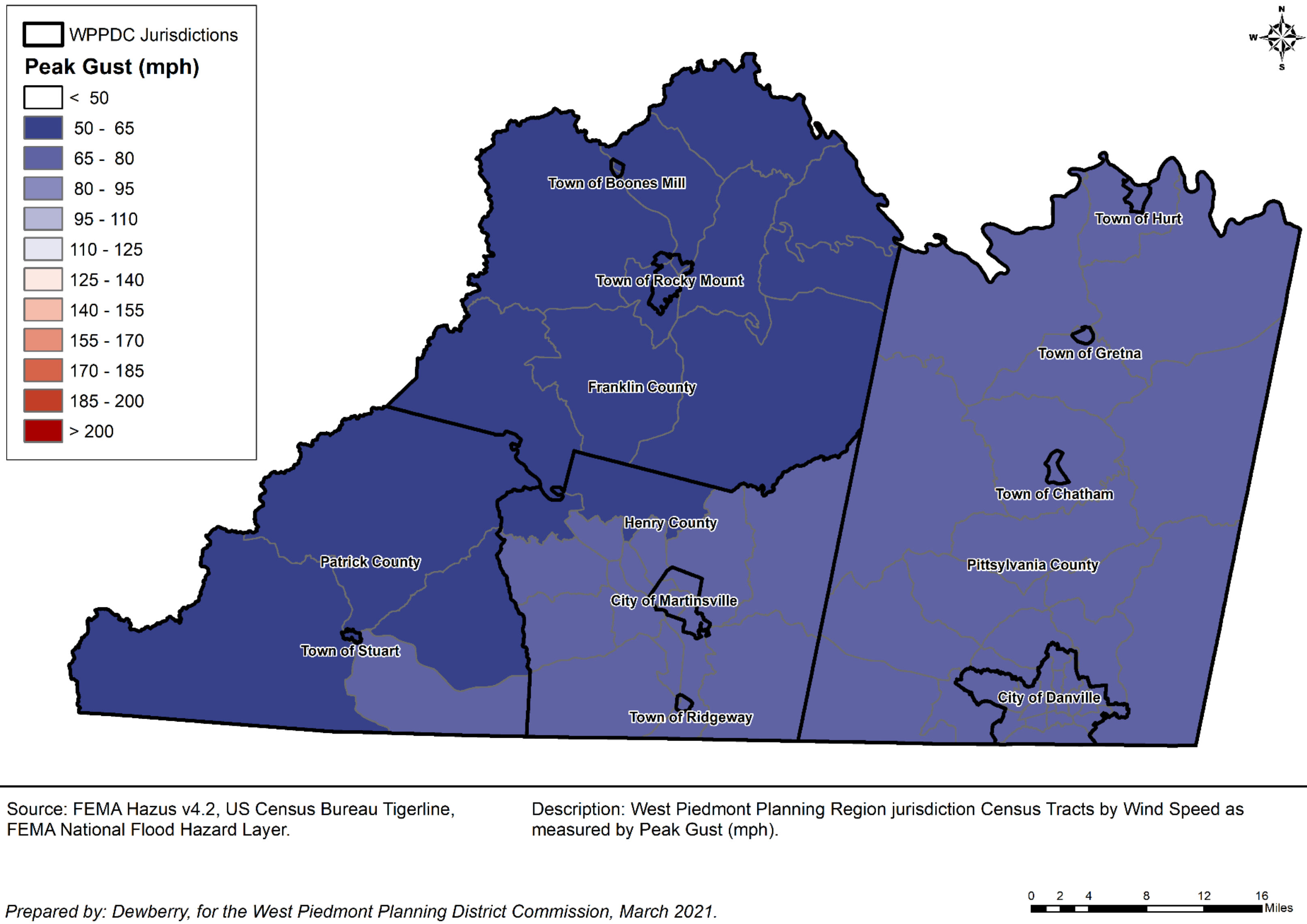
Source: FEMA Hazus v4.2, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region jurisdiction Census Tracts by Wind Speed as measured by Peak Gust (mph).

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles

West Piedmont Region: Probabalistic 100-Year Wind Event

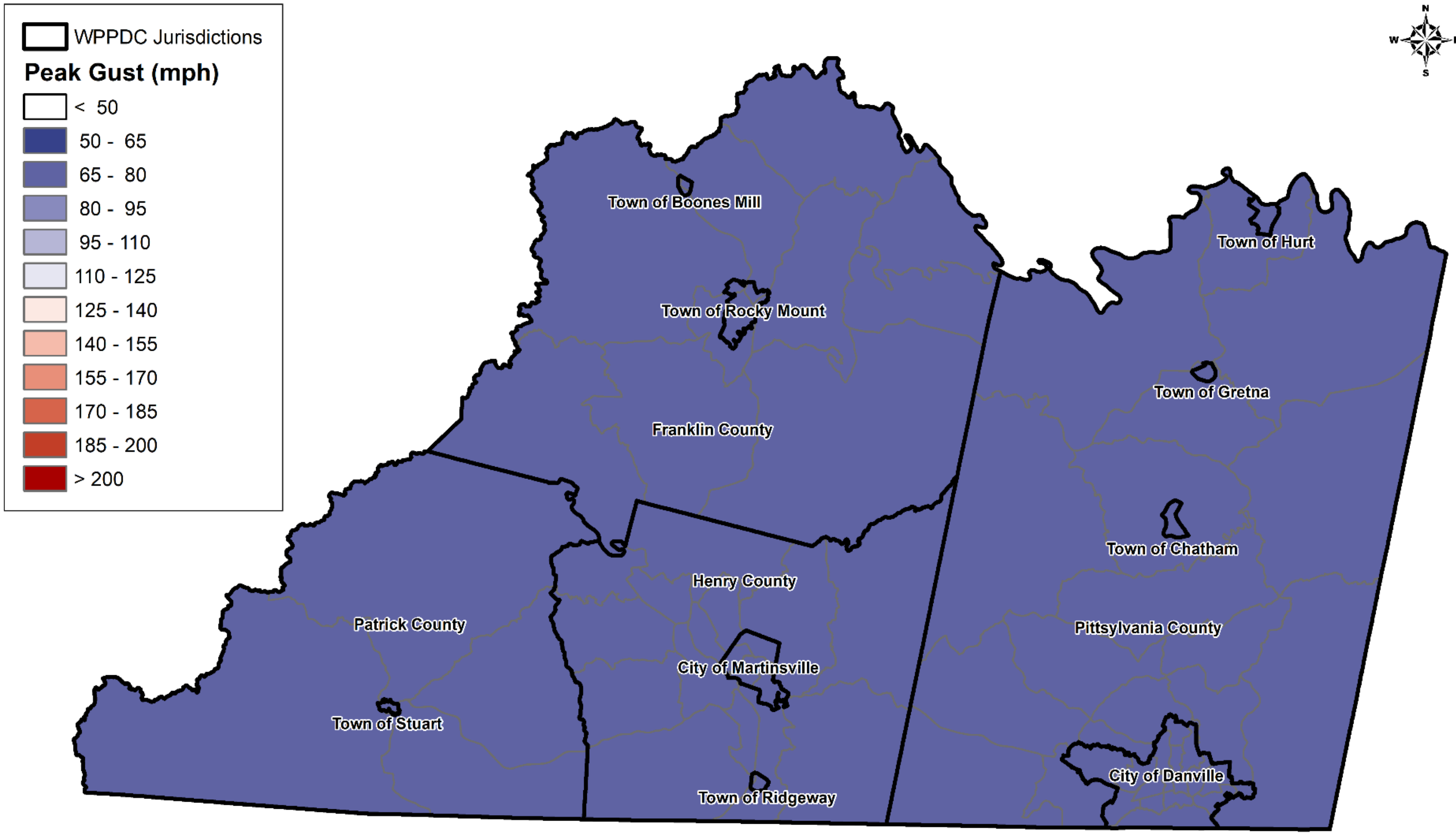


Source: FEMA Hazus v4.2, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region jurisdiction Census Tracts by Wind Speed as measured by Peak Gust (mph).

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

West Piedmont Region: Probabalistic 200-Year Wind Event



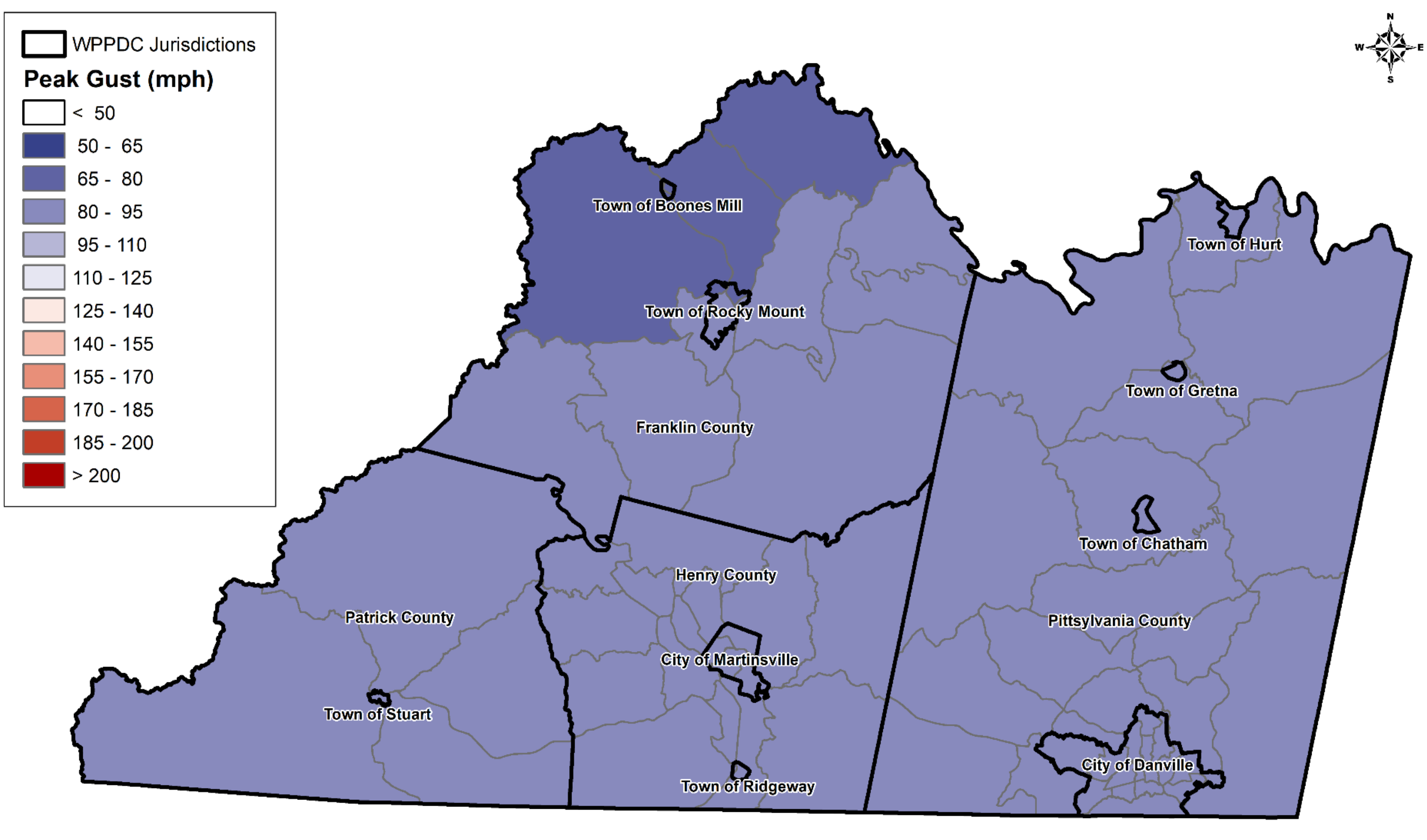
Source: FEMA Hazus v4.2, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region jurisdiction Census Tracts by Wind Speed as measured by Peak Gust (mph).

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles

West Piedmont Region: Probabalistic 500-Year Wind Event



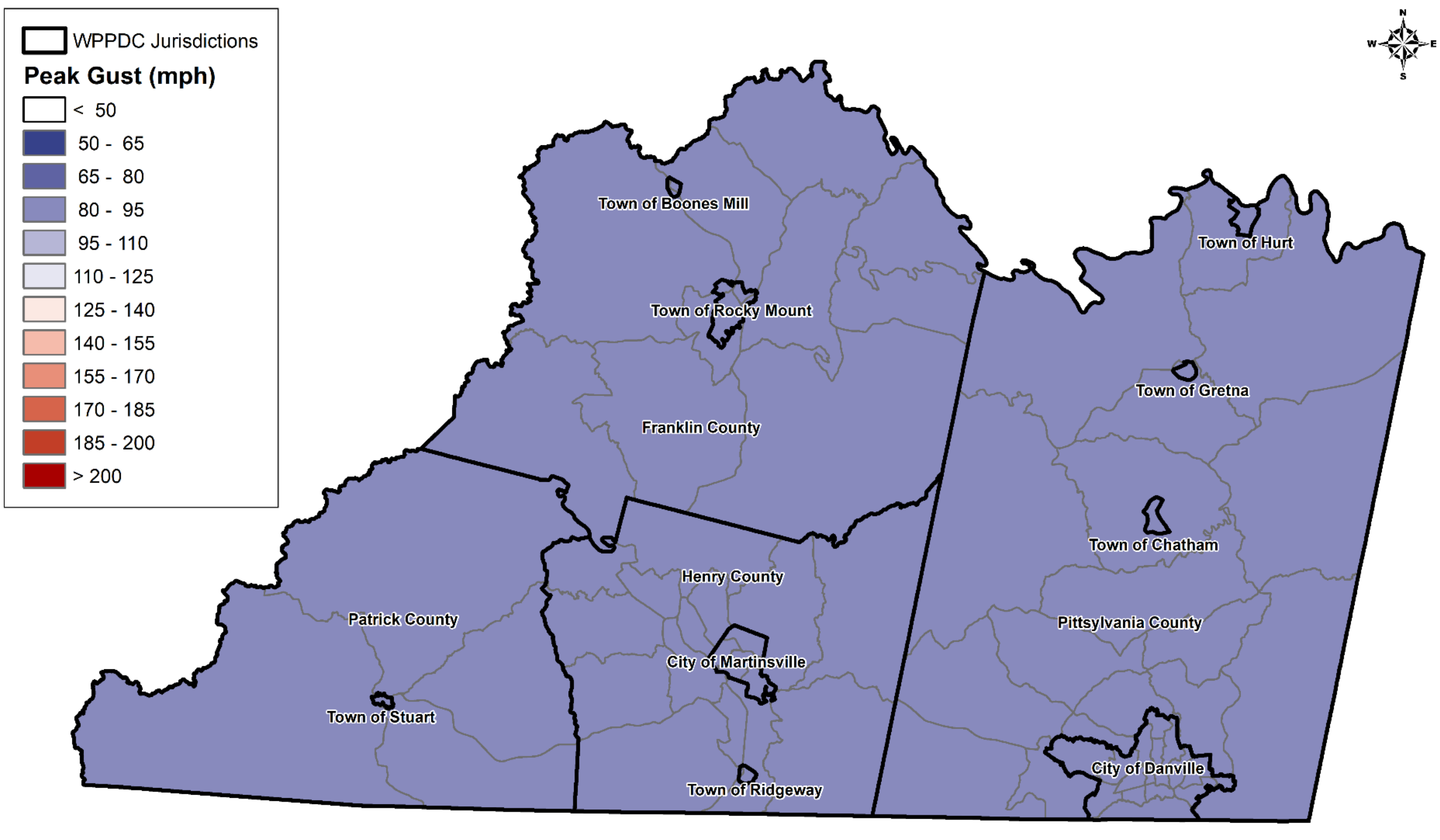
Source: FEMA Hazus v4.2, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region jurisdiction Census Tracts by Wind Speed as measured by Peak Gust (mph).

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

0 2 4 8 12 16 Miles

West Piedmont Region: Probabalistic 1,000-Year Wind Event



Source: FEMA Hazus v4.2, US Census Bureau Tigerline, FEMA National Flood Hazard Layer.

Description: West Piedmont Planning Region jurisdiction Census Tracts by Wind Speed as measured by Peak Gust (mph).

Prepared by: Dewberry, for the West Piedmont Planning District Commission, March 2021.

Appendix B11. 2006 Drought Vulnerability Analysis

For the previous plan updates, detailed information about water source per census block group contained in the 1990 Census data was analyzed. *(NOTE: the 2000 and 2010 Census data and more recent American Community Survey Data do not contain this information and an update to this analysis was not possible)*. For purposes of this analysis, it was assumed that areas with populations having less than 25% of public/private water systems had a high vulnerability ranking. When a drought occurs, these areas would likely feel a larger impact since most homes receive their water from wells, which may dry up during a drought.

In general, the region has observed a trend toward increased reliance on public water systems for water supply as opposed to well or private systems. Most public utility systems in the region have expanded since that time as well. For instance, the Henry County Public Service Authority (PSA) has expanded throughout a large portion of the County. With more than 800 miles of utility lines, Henry County is one of the largest water and sewer authorities in Virginia. Also, Franklin County has agreements in place with the Bedford County Public Service Authority and joined the Western Virginia Water Authority in 2009, serving populations in the northern county such as Wirtz and the Smith Mountain Lake area.

With this being the case, the analysis presented in the following table likely conveys a grimmer picture of drought risk than currently exists.

Figure V-19. West Piedmont Region Drought Vulnerability Based on Water Source

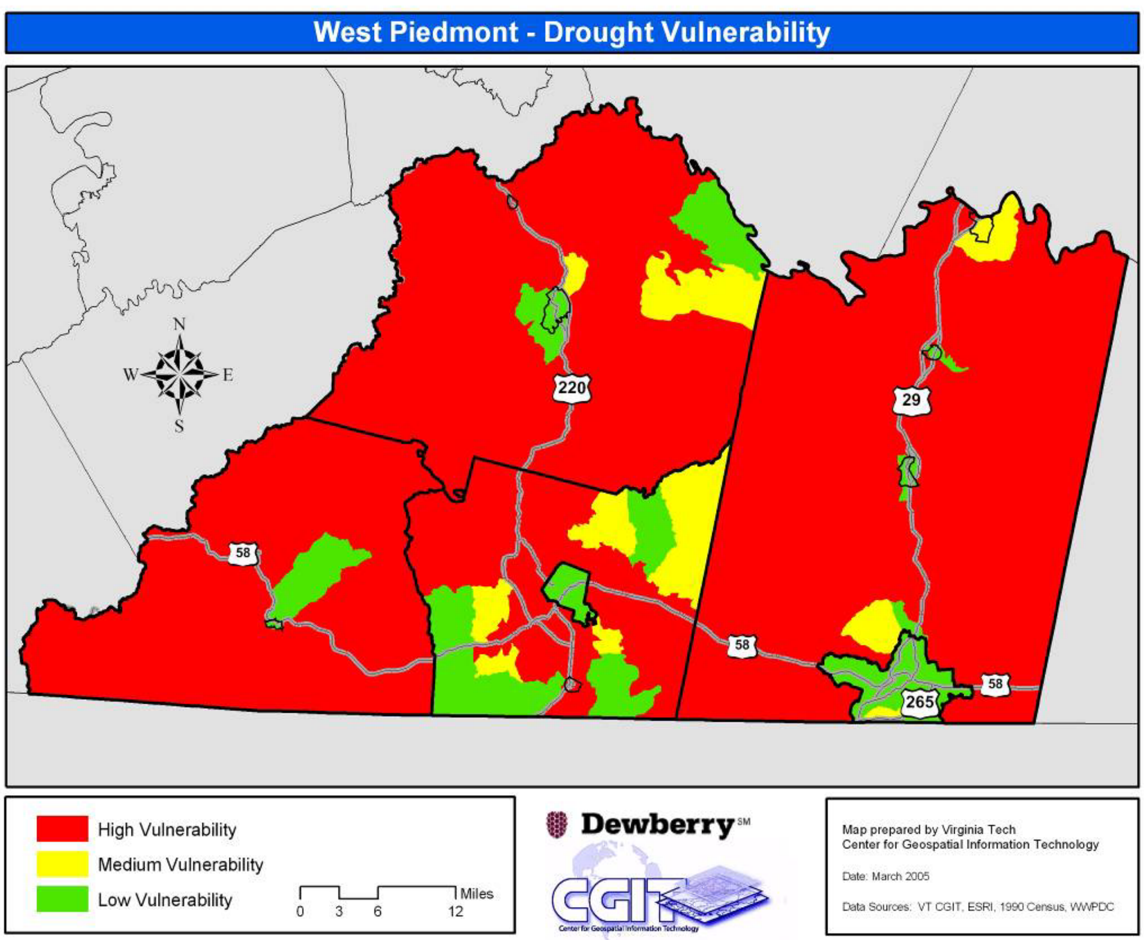
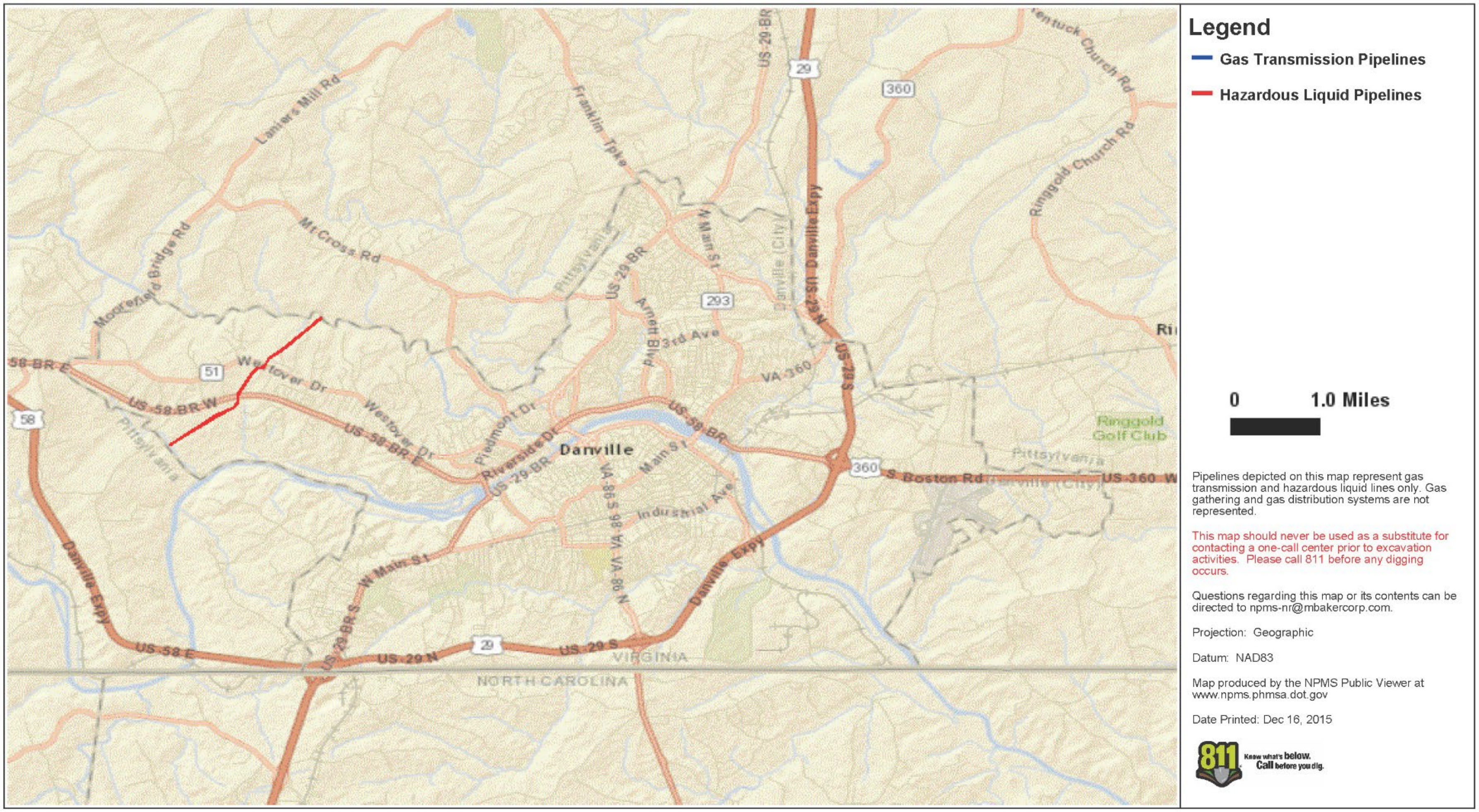


Table V-31. West Piedmont Region Population Drought Risk (from 1990 Census)				
% Population with Public/Private Water Systems	**< 25%**	**25% - 50%**	**> 50%**	**Total**
Franklin County	29,073	1,631	8,845	39,549
Henry County	21,564	2,420	32,958	56,942
Patrick County	16,028	0	1,445	17,473
Pittsylvania County	45,109	3,593	6,953	55,655
City of Danville	0	0	53,056	53,056
City of Martinsville	0	0	16,162	16,162
Total	**111,774**	**7,644**	**119,419**	**238,837**

Appendix B12. Pipeline Maps

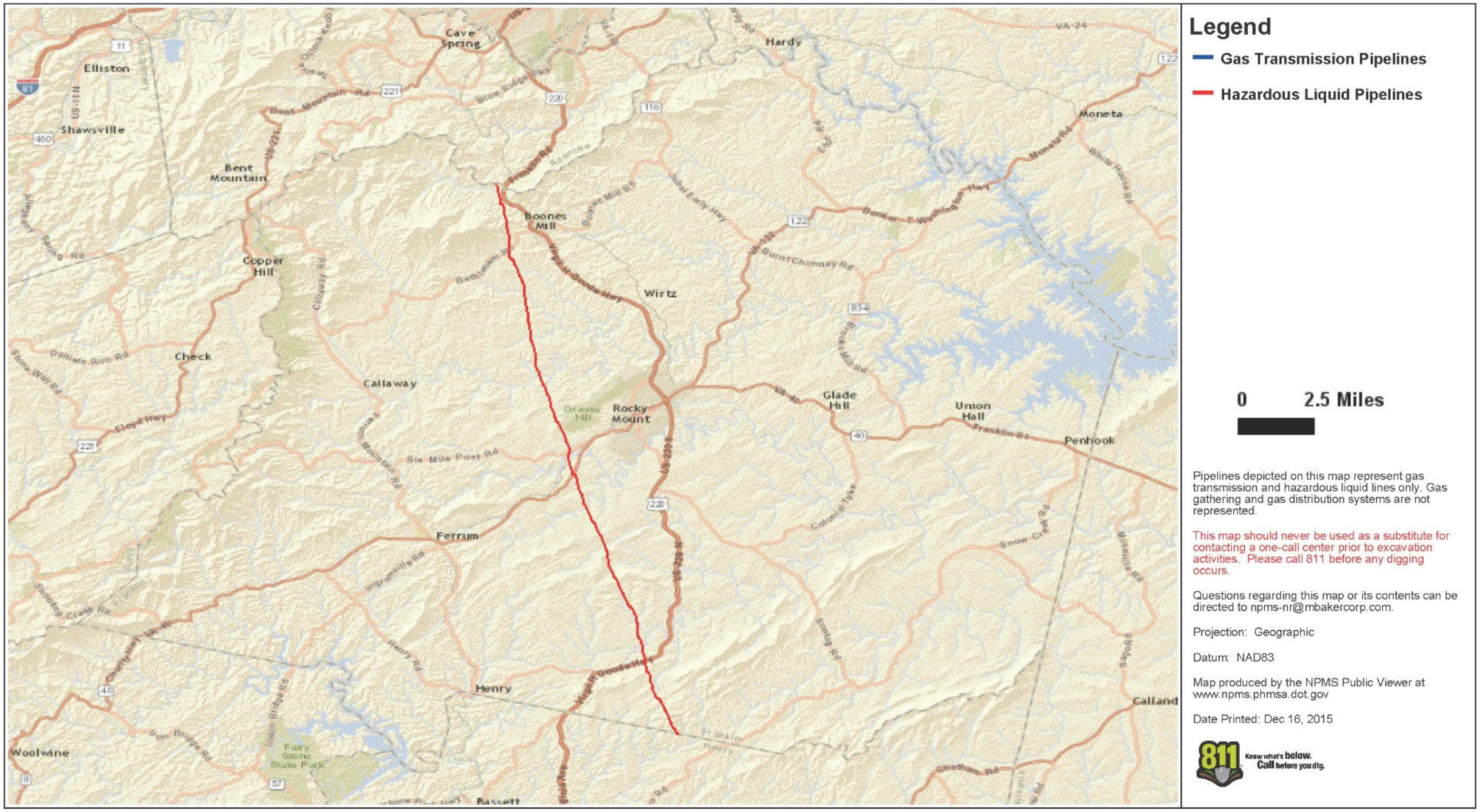
Pipeline and Hazardous Materials Safety Administration

NATIONAL PIPELINE MAPPING SYSTEM



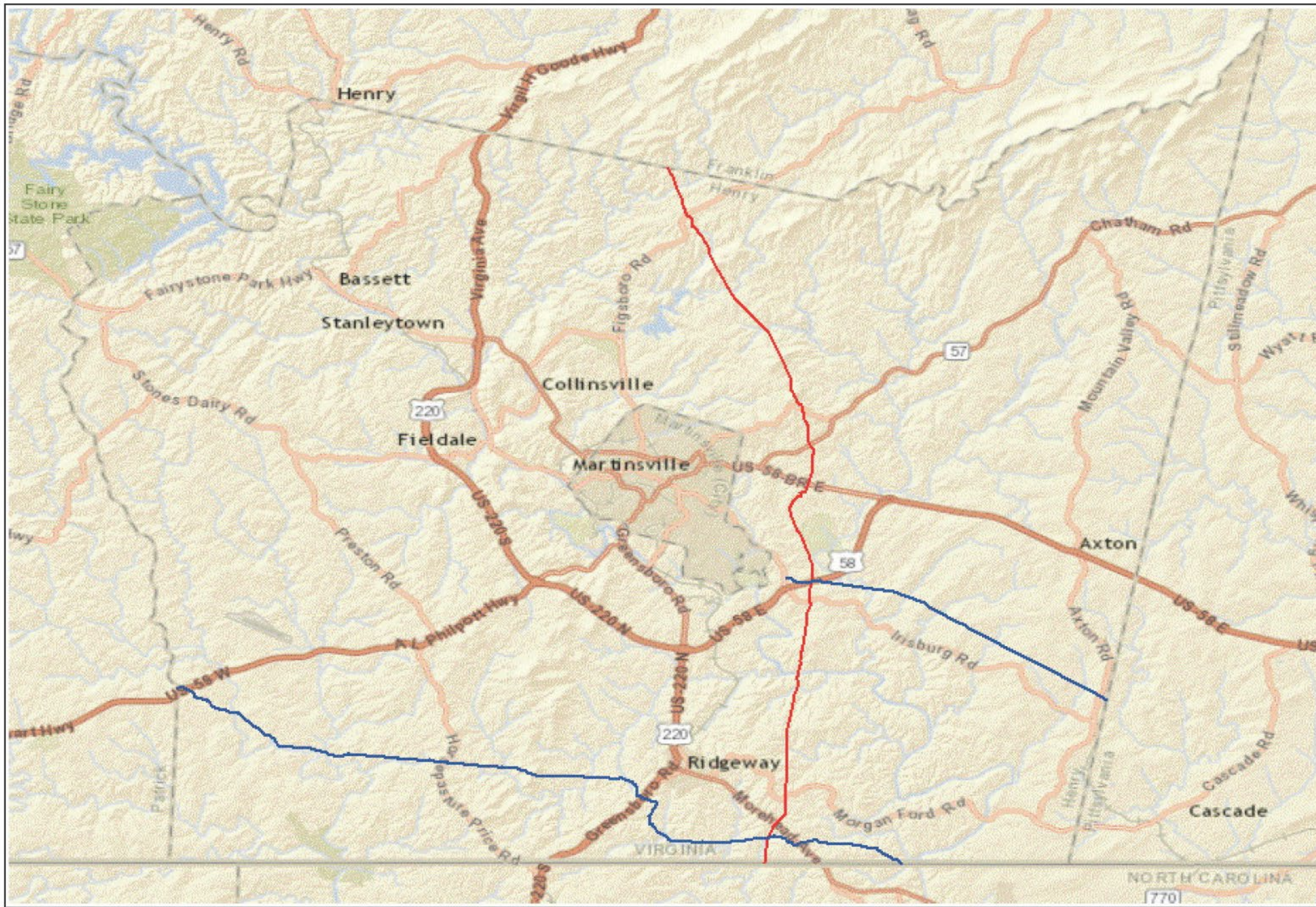
Pipeline and Hazardous Materials Safety Administration

NATIONAL PIPELINE MAPPING SYSTEM



Pipeline and Hazardous Materials Safety Administration

NATIONAL PIPELINE MAPPING SYSTEM



Legend

Gas Transmission Pipelines

Hazardous Liquid Pipelines

0 2.0 Miles

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms-nr@mbakercorp.com.

Projection: Geographic

Datum: NAD83

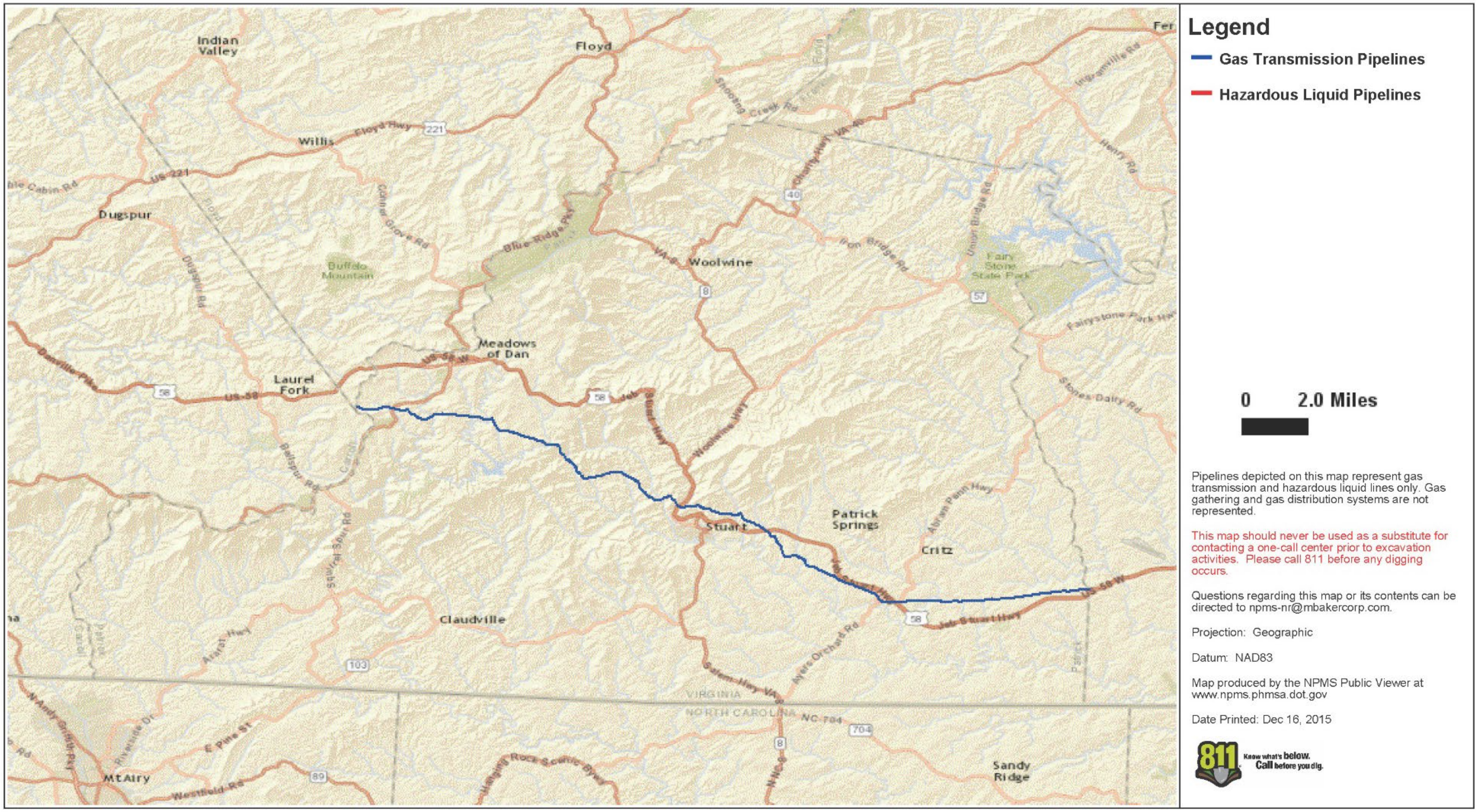
Map produced by the NPMS Public Viewer at www.npms.phmsa.dot.gov

Date Printed: Dec 16, 2015

811 Know what's below. Call before you dig.

Pipeline and Hazardous Materials Safety Administration

NATIONAL PIPELINE MAPPING SYSTEM



Pipeline and Hazardous Materials Safety Administration

NATIONAL PIPELINE MAPPING SYSTEM

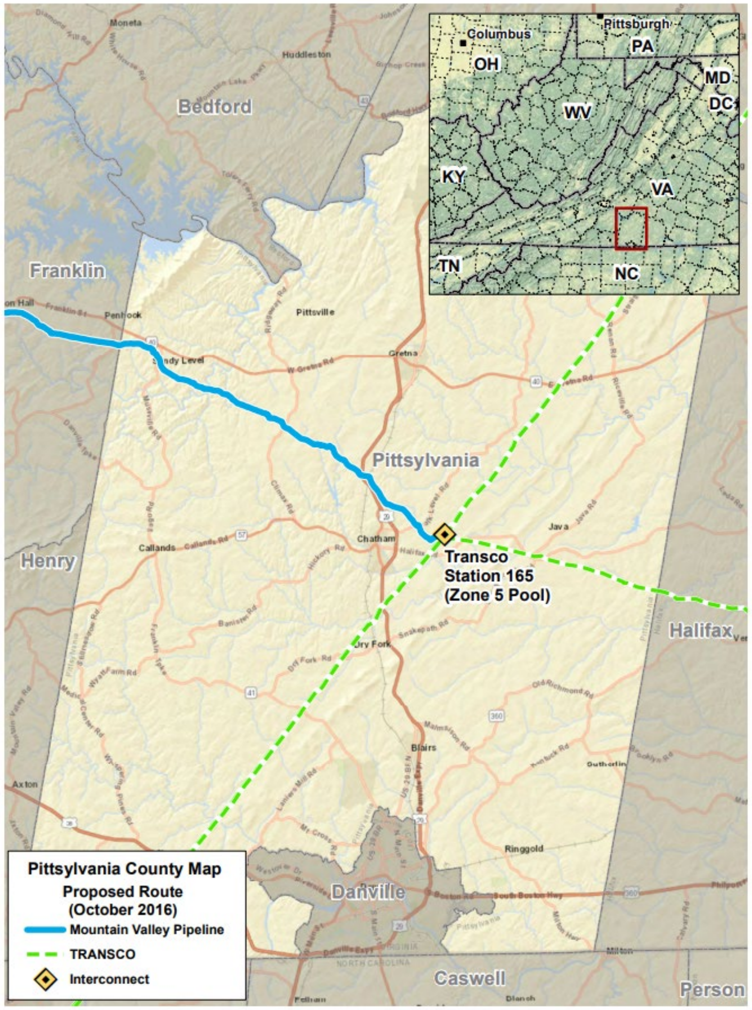


Figure 39. Pittsylvania County Proposed Route for Mountain Valley Pipeline[1]

[1] Mountain Valley Pipeline Project. "Pittsylvania County." Retrieved from https://www.mountainvalleypipeline.info/pittsylvania-county/.

Figure 40. Franklin County Proposed Route for Mountain Valley Pipeline[2]

[2] Mountain Valley Pipeline Project. "Franklin County." Retrieved from https://www.mountainvalleypipeline.info/franklin-county/.

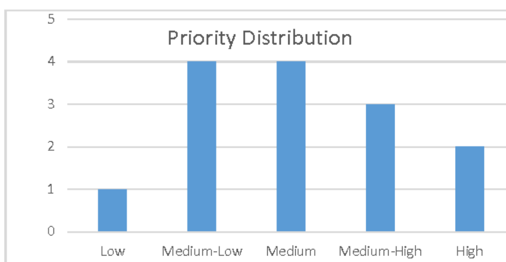
Appendix B13. Hazus-MH Global Summary Report~~s.~~

This includes Flood, Hurricane, and Earthquake.

Hazards Type	Probability/ History	Vulnerability	Maximum Threat (Geographic Area Affected)	Warning Time	2021 Committee Ranking		Probability/History	Vulnerability	Maximum Threat (Geographic Area Affected)	Warning Time	2021 Committee Ranking	Priority Level	Priority Level - Adjusted	2021 Ranking
						Weighting factors	0.25	0.2	0.1	0.1	0.35	-	-	-
Winter Storm	Highly Likely	Critical	Large	Limited	High		1.25	0.8	0.5	0.3	0.5	3.35	High	High
Flooding (with Shoreline Erosion)	Highly Likely	Critical	Small	No Notice	High		1.25	0.8	0.3	0.5	0.5	3.35	High	High
Wind (including Hurricanes and Thundestorms)	Highly Likely	Critical	Small	Minimal	Medium-High		1.25	0.8	0.3	0.4	0.4	3.15	Medium-High	Medium-High
Drought	Likely	Limited	Medium	Extended	Medium-Low		1	0.6	0.4	0.1	0.2	2.3	Medium-Low	Medium-Low
Wildfire	Highly Likely	Negligible	Small	No Notice	Medium		1.25	0.2	0.3	0.5	0.3	2.55	Medium	Medium
Tornado	Likely	Critical	Medium	No Notice	Medium-High		1	0.8	0.4	0.5	0.4	3.1	Medium-High	Medium-High
Earthquake	Somewhat Unlikely	Limited	Small	No Notice	Medium-Low		0.5	0.6	0.3	0.5	0.2	2.1	Medium-Low	Medium-Low
Landslide	Unlikely	Limited	Small	No Notice	Low		0.25	0.6	0.3	0.5	0.1	1.75	Low	Low
Dams	Unlikely	Limited	Small	No Notice	Medium-Low		0.25	0.6	0.3	0.5	0.2	1.85	Medium-Low	Medium-Low
HVT Lines	Likely	Limited	Medium	No Notice	Medium		1	0.6	0.4	0.5	0.3	2.8	Medium	Medium
Organic/Inorganic Spills	Highly Likely	Limited	Small	No Notice	Medium-High		1.25	0.6	0.3	0.5	0.4	3.05	Medium-High	Medium-High
Pipelines	Likely	Limited	Medium	No Notice	Medium		1	0.6	0.4	0.5	0.3	2.8	Medium	Medium
Agroterrorism	Unlikely	Limited	Large	No Notice	Medium-Low		0.25	0.6	0.5	0.5	0.2	2.05	Medium-Low	Medium-Low

Negligible	1
Unlikely	1
Extended	1
Isolated	1
Somewhat Unlikely	2
Slight	2
Minor	2
Limited	3
Small	3
Somewhat Likely	3
Medium	4
Likely	4
Critical	4
Minimal	4
Highly Likely	5
No Notice	5
Large	5
Catastrophic	5
High	5
Medium-High	4
Medium	3
Medium-Low	2
Low	1

Distribution		Not a normal distribution	
0	1.75	Low	1
1.76	2.5	Medium-Low	4
2.51	3	Medium	4
3.01	3.15	Medium-High	3
3.16	4	High	2
Median	2.8		
Std Dev	0.546153846		
Mean	2.630769231		



Probability/History	Vulnerability	Maximum Threat (Geographic Area Affected)	Warning Time
Unlikely No documented occurrence with annual probability <0.01	**Negligible** 1 to 10% of people or property	**Isolated** < 5% of community impacted	**Extended** Three days or more
Somewhat Unlikely Infrequent occurrence with at least one documented event and annual probability between 0.5 and 0.01	**Slight** 10% to 20% of people or property	**Minor** 5 to 15% of community impacted	**Slight** 3 days
Somewhat Likely Infrequent occurrence with at least one documented event with annual probability between 0.5 and 0.01	**Limited** 10 to 25% of people or property	**Small** 5 to 25% of community impacted	**Limited** 2 days
Likely Frequent occurrence with at least 2 documented events with annual probability between 1 and 0.5	**Critical** 25 to 50% of people or property	**Medium** 25 to 50% of community impacted	**Minimal** 1 day
Highly Likely Common events with annual probability >1	**Catastrophic** >50% of people or property	**Large** >50% of community impacted	**No Notice** < 24 hours

Appendix C. Previous Mitigation Efforts

The following tables provide detailed updates to the actions committed to by the participating jurisdictions in the 2016 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan. The updates are provided by jurisdiction in alphabetical order.

Strategies from the 2016 Plan were reviewed during the 2021 Update, and were assigned one of the following five statuses:

- **Completed** – Actions finished by the time of the 2021 Update and removed from the net iteration of strategies.
- **In Progress** – Actions that are continuous and those being completed in phases.
- **Not Started** – Actions that have not been initiated by jurisdictions.
- **Not Pursuing** – Actions dropped by jurisdictions for various reasons, which are summarized in parentheses.
- **No Update Provided** – Actions that jurisdictions did not provide information about for the 2021 Update.

2016 Mitigation Strategy	2021 Status
City of Danville	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	In Progress
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for man-made hazards based on FEMA and VDEM guidance.	Completed
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	In Progress
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	In Progress
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	In Progress

2016 Mitigation Strategy	2021 Status
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	In Progress
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	In Progress
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	In Progress
Strategy 6.4.2. Work with the Roanoke office of the National Weather Service to promote the "Turn Around, Don't Drown" public education campaign.	Completed
Strategy 1.2.14. Review locality's compliance with the National Flood Insurance Program (NFIP) with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	In Progress
Strategy 3.3.6 Evaluate need for replacement of culverts that run beneath buildings in the downtown area. Culverts are antiquated and are in danger of collapse, which could lead to both the collapse of the buildings above them and increased flood risk.	In Progress
Strategy 4.3.2. Work with VDOT, private utilities, and/or private homeowners to trim or remove trees that could down power lines and block roads.	In Progress
Strategy 3.4.1 Evaluate roadways and storm water management systems to determine risk from natural hazards and implement mitigation planning and actions. *	In Progress
Strategy 4.1.4. Purchase a backup generator and install for critical locations, such as shelters and emergency services. *	In Progress
Strategy 8.2.4. Explore and purchase a software program that will allow for a rapid assessment of public damage. *	Completed
Franklin County	

2016 Mitigation Strategy	2021 Status
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	Not Started
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	In Progress
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	Completed
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	In Progress
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	In Progress
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	Not Started
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	Not Started
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	In Progress
Strategy 6.4.2. Work with the Roanoke office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	In Progress
Strategies 1.1.1. and 6.1.7. Increase flood warning capabilities, particularly as they relate to dam failure. Improve signage and warning systems near dams.	In Progress
Strategy 4.1.1. Identify need for backup generators, communications, and/or vehicles at critical public facilities. Develop means to address shortfall identified.	Completed

2016 Mitigation Strategy	2021 Status
Strategy 4.2.5. Secure water tanks and other components of water system from outside influences.	Completed
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	Completed
Strategy 5.2.6. Improve response strategy for pipeline emergencies.	In Progress
Strategy 6.1.5. Develop public education campaign about risks of living near a pipeline	Not Started
Strategy 6.1.6. Identify contingency plans for potential hazardous material incident at train tracks.	In Progress
Strategy 6.1.8. Study low-head dams for removal.	In Progress
Strategy 6.2.2. Encourage purchase of and training on the use of NOAA radios. Provide NOAA weather radios to public facilities.	Completed
Strategy 6.2.12. Identify tornado preparedness strategies for hospitals and nursing homes.	In Progress
Strategy 7.1.2. Consider participating in the StormReady program sponsored by the National Weather Service.	Completed
Strategy 8.2.2. Pre-identify dam inundation areas in EMS system and form evacuation messaging for Blackwater watershed.	In Progress
Strategy 8.3.2. Expand 911 capabilities to include text messaging, email, and other technologies.	In Progress
Strategy 8.3.3. Expand broadband capabilities to improve emergency communications to rural areas and increase Internet access.	In Progress
Strategy 9.1.2. Replace two-way radio system to improve local communication/regional with Roanoke County/City.	Completed

2016 Mitigation Strategy	2021 Status
Henry County	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	Completed
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	Completed
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	In Progress
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	Completed
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	In Progress
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	In Progress
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	In Progress
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	In Progress
Strategy 6.4.2. Work with the Roanoke office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	In Progress
Strategy 1.2.11. Continue to enforce zoning and building codes to prevent/control construction within the floodplain	Completed

2016 Mitigation Strategy	2021 Status
Strategy 1.2.12. Ensure that building codes reflect historic snow loads.	Completed
Strategy 1.2.3. Incorporate (or continue to incorporate) mitigation principles into local emergency management and recovery plans.	In Progress
Strategy 3.1.1. Incorporate hazard mitigation techniques into new community facilities to minimize damages.	In Progress
Strategy 3.1.2. Investigate all primary and secondary schools to evaluate their resistance to all-natural hazards. Prioritize the schools that are used as community shelters.	In Progress
Strategy 3.3.4. Investigate, develop and/or implement a channel maintenance program consisting of routine inspections and subsequent debris removal to ensure free flow of water in local streams and watercourses. Identify funding opportunities including partnering with local non-governmental or volunteer organization.	Not Started
Strategy 3.4.2. Identify funding opportunities to replace vulnerable or undersized culvert stream crossings with bridges or larger culverts to reduce flood hazards.	In Progress
Strategy 4.1.1. Identify need for backup generators, communications, and/or vehicles at critical public facilities. Develop means to address shortfall identified. Purchase and Install building generators at all of fire departments and rescue squads.	Not Started
Strategy 4.1.2. Consider providing necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities.	Not Started
Strategy 4.2.6. Install dual-source electrical power for two wastewater treatment plants.	Completed
Strategy 4.3.3. Replace culverts and/or raise roadway at Shamrock Road and Greensboro Road to prevent flooding that blocks the only means of ingress and egress to the Shannon Hills subdivision.	Not Started

2016 Mitigation Strategy	2021 Status
Strategy 5.1.1. Develop Continuity of Operations plan.	Completed
Strategy 5.1.3. Enhance the local emergency operations plan to better address emergency response to hazardous material spills.	Completed
Strategy 5.2.3. Staff Emergency Management Office, Public Works, Building Inspections Office and Zoning Office at adequate levels.	Completed
Strategy 6.1.2 Conduct emergency preparedness education campaign targeted at residents and business within dam inundation zones.	Not Started
Strategy 6.1.3. Conduct public education on the principles of "sheltering in place."	In Progress
Strategy 6.2.2. Encourage purchase of NOAA radios. Provide NOAA weather radios to public facilities.	In Progress
Strategy 6.3.4. Work on ways to reduce vulnerability of people with access and functional needs.	In Progress
Strategy 8.2.3. Work with PSA Treatment Division to create a Code Red notification layer and messaging for chlorine leaks in Philpott (North Bassett).	Completed
City of Martinsville	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	In Progress
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	In Progress
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	Completed

2016 Mitigation Strategy	2021 Status
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	Completed
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	Completed
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	Not Started
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	In Progress
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	In Progress
Strategy 6.4.2. Work with the Blacksburg office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	In Progress
Strategy 1.1.5. Extend and improve the tornado siren warning system.	Completed
Strategies 3.1.2., 3.1.3., 4.1.1. & 4.1.2. Protect City's facilities to ensure continued functionality after disaster.	In Progress
Strategies 3.3.3. & 3.3.4. Address stormwater drainage issues. Consider increasing capacity of drainage pipes at Bridge Street. Continue to maintain existing stormwater system and provide adequate capacity to handle stormwater.	Completed
Strategy 4.1.3: Develop contingency plans for utility providers.	In Progress
Strategy 5.1.2. Develop debris management plan.	In Progress
Strategies 6.2.1. & 6.1.3. Educate the public about “sheltering in place” and other preparedness issues.	In Progress

2016 Mitigation Strategy	2021 Status
Strategy 4.1.4. Obtain backup generator for designated emergency services location at Martinsville Middle School.	In Progress
Strategy 1.1.2. Investigate, develop, or enhance the reverse 911 system or other public notification systems. Investigate possible funding sources.	In Progress
Strategy 1.1.1. Increase flood warning capabilities, particularly as they relate to dam failure.	In Progress
Strategy 1.3.1. Support mitigation of priority disaster-prone structures through promotion of acquisition/demolition, elevation and flood proofing projects where feasible using FEMA HMA programs where appropriate. *	In Progress
Strategy 1.4.1. Mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include, but are not limited to: Acquisition of hazard prone properties; elevation of flood prone structures; minor structural flood control projects; relocation of structures from hazard prone areas; retrofitting of existing buildings and facilities; retrofitting of existing buildings and facilities for shelters; infrastructure protection measures; storm water management improvements; advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows); targeted hazard education; wastewater and storm water management improvements. *	In Progress
Strategy 4.1.4. Purchase a backup generator and/or install necessary components for Martinsville Middle School shelter and Beaver Creek Reservoir pump station. *	In Progress
Strategy 8.1.1. Conduct annual review of repetitive loss and severe repetitive loss property list to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination if that property has been mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501. List should be requested from VDEM and/or DCR. *	In Progress
Patrick County	

2016 Mitigation Strategy	2021 Status
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	In Progress
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	Not Started
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	Completed
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	In Progress
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	In Progress
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	In Progress
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	Not Pursuing (No stores nearby)
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	Completed
Strategy 6.4.2. Work with the Blacksburg office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	In Progress
Strategies 1.2.10. and 1.2.11. Continue to enforce zoning and building codes and to incorporate hazard mitigation principles into capital improvement plans to prevent/control construction within the floodplain.	In Progress

2016 Mitigation Strategy	2021 Status
Strategy 4.1.2. Consider providing necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities.	In Progress
Strategy 6.2.2. Encourage purchase of NOAA radios. Provide NOAA weather radios to public facilities.	Completed
Strategies 1.1.1 & 6.1.7. Increase flood warning capabilities, particularly as they relate to dam failure. Improve signage and warning systems near dams. *	In Progress
Strategy 4.1.1. Identify need for backup generators, communications, and/or vehicles at critical public facilities. Develop means to address shortfall identified. *	In Progress
Strategy 4.1.5. Purchase and install building generators and install connections at all of fire departments and rescue squads. *	In Progress
Pittsylvania County	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	Not Pursuing (Modified strategy to focus on using social media to share resources)
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	Not Started
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	In Progress
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	Not Started

2016 Mitigation Strategy	2021 Status
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	In Progress
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	Not Started
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	Not Pursuing
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	In Progress
Strategy 6.4.2. Work with the Blacksburg office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	Not Started
Strategy 1.2.3. Incorporate (or continue to incorporate) mitigation principles into local emergency management and recovery plans.	In Progress
Strategy 1.2.11. Continue to enforce zoning and building codes to prevent/control construction within the floodplain.	In Progress
Strategy 1.2.14. Review locality’s compliance with the National Flood Insurance Program with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	In Progress
Strategy 1.3.1. Support mitigation of priority disaster-prone structures through promotion of acquisition/demolition, elevation and flood proofing projects where feasible using FEMA HMA programs where appropriate.	In Progress
Strategy 2.1.6. Harden Pittsylvania County 911 Center or construct a new community safe room as part of a new 911 Center.	Not Started

2016 Mitigation Strategy	2021 Status
Strategy 4.1.1. Identify need for backup generators, communications, and/or vehicles at critical public facilities. Develop means to address shortfall identified. Purchase and Install building generators at all of fire departments and rescue squads.	In Progress
Strategy 4.1.2. Consider providing necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities.	In Progress
Strategy 4.1.5. Purchase and install building generators and install connections at all of fire departments and rescue squads.	In Progress
Strategy 4.2.1. Pursue upgrading of water systems to bring additional water sources online, to link community systems to provide redundancy, and to provide additional areas with non-well water.	Not Started
Strategy 4.3.5. Identify "typical problem areas"—neighborhoods whose roads are regularly flooded and closed.	In Progress
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	In Progress
Strategy 5.3.1. Identify means to coordinate, collect and store damage assessment data in GIS format for each natural hazard event that causes death, injury and or property damage.	Completed
Strategy 6.2.2. Encourage purchase of NOAA radios. Provide NOAA weather radios to public facilities.	Completed
Strategy 6.3.5. Work with the Chamber of Commerce to educate and prepare local business owners for natural disasters.	In Progress
Strategy 7.1.1. Obtain official recognition of the mitigation working group/Mitigation Advisory Committee (MAC) from the jurisdictions in the Planning District in order to help institutionalize and develop an Ongoing mitigation program. Use the MAC to review mitigation projects and coordinate multi-jurisdictional grant applications.	In Progress

2016 Mitigation Strategy	2021 Status
Strategy 7.1.2. Consider participating in the StormReady program sponsored by the National Weather Service.	Not Started
Strategy 8.3.4. Refine reverse - 911 system evacuation messages for targeted evacuation warnings to those in the Cherrystone Lake, Roaring Fork, Smith Mountain Lake and Leesville dam break inundation zones.	In Progress
Strategy 9.1.1. Develop Mutual Aid agreements for water source planning for wildfire.	Not Pursuing (Agreements already cover this)
Strategy: Refurbishment of Cherrystone Dam 1&2 with the Town of Chatham. *	In Progress
Town of Boones Mill	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	In Progress
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	In Progress
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	In Progress
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	Not Pursuing (Boones Mill does not have zoning ordinance)
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	In Progress
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	Not Started

2016 Mitigation Strategy	2021 Status
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	Not Started
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	Not Started
Strategy 6.4.2. Work with the Roanoke office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	In Progress
Strategy 1.1.3. Establish flood level markers along bridges and other structures to indicate the rise of water levels along creeks and rivers in potential flood-prone areas. Work with VDOT and other jurisdictions as needed.	Not Started
Strategy 3.1.1. Incorporate hazard mitigation techniques into new community facilities to minimize damages.	In Progress
Strategy 3.2.1. Investigate all public utility lines to evaluate their resistance to flood, wind, and winter storm hazards.	In Progress
Strategy 4.1.1. Identify need for backup generators, communications, and/or vehicles at critical public facilities. Develop means to address shortfall identified.	Completed
Strategy 4.1.2. Consider providing necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities.	In Progress
Strategy 4.2.1. Pursue upgrading of water systems to bring additional water sources online, to link community systems to provide redundancy, and to provide additional areas with non-well water.	In Progress
Strategy 4.3.2. Work with VDOT, private utilities, and/or private homeowners to trim or remove trees that could down power lines and block roads.	In Progress
Strategy 5.1.1. Develop Continuity of Operations plan.	Not Started

2016 Mitigation Strategy	2021 Status
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and to provide disaster preparedness information.	Not Started
Strategy 6.2.9. Inform the public of and/or encourage the purchase of flood and/or sewer back-up insurance.	Not Started
Strategy 6.2.10. Educate homeowners about flood insurance and ICC (Increased Cost of Compliance) coverage.	Not Started
Strategy 6.2.11. Educate elected officials and residents on the importance of the NFIP.	Not Started
Strategy 6.4.2. Work with the National Weather Service to promote the Turn Around, Don't Drown public education campaign.	Not Started
Strategy 7.1.5. Hold annual coordination sessions with the local NFIP coordinator and the local building official to ensure full NFIP building code compliance.	Not Started
Town of Chatham	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	Not Started
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	Not Started
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	Not Pursuing (Falls under the County's Crisis Track program)
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	In Progress

2016 Mitigation Strategy	2021 Status
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	Not Started
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	Not Started
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	In Progress
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	Not Started
Strategy 6.4.2. Work with the Blacksburg office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	Not Started
Strategy 1.2.11. Continue to enforce zoning and building codes to prevent/control construction within the floodplain.	Not Started
Strategy 8.1.3. Use new flood maps to evaluate candidates for residential elevations and acquisitions.	Not Started
Add the Cherrystone Dam 1&2 restoration project (Chatham/Pittsylvania)	In Progress
Town of Gretna	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	Not Started
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	Not Started
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	Not Pursuing (Falls under the County’s

2016 Mitigation Strategy	2021 Status
	Crisis Track program)
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	Not Started
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	In Progress
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	Not Started
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	Completed
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	Completed
Strategy 6.4.2. Work with the Blacksburg office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	Not Started
Strategy 1.1.2. Investigate, develop, or enhance Reverse 911 system or other public notification system. Investigate possible funding sources.	In Progress
Strategy 1.2.11. Continue to enforce zoning and building codes to prevent/control construction within the floodplain.	Completed
Strategy 1.2.2. Include an assessment and associated mapping of the jurisdiction’s vulnerability to location-specific hazards and make appropriate recommendations for the use of these hazard areas in a future Comprehensive Plan.	Not Started

2016 Mitigation Strategy	2021 Status
Strategy 3.2.3. Implement a program to seal and vent or raise sewer system components (i.e., manhole covers that are located in the 100-year flood plain or other areas identified as highly probable for flooding).	Not Started
Strategy 4.2.1. Pursue upgrading of water systems to bring additional water sources online, to link community systems to provide redundancy, and to provide additional areas with non-well water.	Completed
Strategy 4.2.2. Identify and protect critical recharge zones in high risk areas.	Not Started
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and to provide disaster preparedness information.	In Progress
Strategy 6.2.8. Encourage public and private water conservation plans, including consideration of rainwater catchment systems.	In Progress
Town of Hurt	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	In Progress
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	Not Started
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	Not Pursuing (Falls under the County's Crisis Track program)
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	Not Pursuing (Lack of staffing)

2016 Mitigation Strategy	2021 Status
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	Not Pursuing (Lack of staffing)
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	Not Started
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	Not Started
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	Not Started
Strategy 6.4.2. Work with the Blacksburg office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	In Progress
Strategy 1.1.2. Investigate, develop, or enhance Reverse 911 system or other public notification system. Investigate possible funding sources.	Modified (Part of County initiative)
Strategy 1.1.3. Establish flood level markers along bridges and other structures to indicate the rise of water levels along creeks and rivers in potential flood-prone areas. Work with VDOT and other jurisdictions as needed.	In Progress
Strategy 1.2.11. Continue to enforce zoning and building codes to prevent/control construction within the floodplain.	Not Started
Strategy 1.2.2. Include an assessment and associated mapping of the jurisdiction’s vulnerability to location-specific hazards and make appropriate recommendations for the use of these hazard areas in a future Comprehensive Plan.	Not Started
Strategies 4.1.1. & 4.1.2. Consider providing backup power and necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities.	Completed

2016 Mitigation Strategy	2021 Status
Strategy 7.1.2. Consider participating in the StormReady program sponsored by the National Weather Service.	In Progress
Town of Ridgeway	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	Not Started
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	Not Started
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	In Progress
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	Completed
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	Not Started
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	In Progress
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	In Progress
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	In Progress
Strategy 6.4.2. Work with the Blacksburg office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	Not Started

2016 Mitigation Strategy	2021 Status
Strategy 1.1.4. Investigate public warning systems for hazard occurrences.	In Progress
Strategy: Investigate purchasing a generator and or electrical back up for Ridgeway District Volunteer Fire Department. *	No Update Provided
Town of Stuart	
Strategy 2.1.1. Investigate providing technical assistance for property owners to implement mitigation measures (i.e., strengthening building frame connections; elevating appliances, constructing a wind shelter).	No Update Provided
Strategy 5.1.4. In the next update of hazard mitigation plan, include more detailed vulnerability assessments for manmade hazards based on FEMA and VDEM guidance.	No Update Provided
Strategy 5.2.1. Identify training opportunities for staff to enhance their ability to use GIS for emergency management needs.	No Update Provided
Strategy 5.2.2. Provide training opportunities to local zoning and building code enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	No Update Provided
Strategy 5.3.3. Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	No Update Provided
Strategy 6.2.1. Distribute information packets to raise awareness regarding the risks present in the West Piedmont region and provide disaster preparedness information.	No Update Provided
Strategy 6.2.3. Work with local home improvement stores to provide workshops to residents on mitigation techniques.	No Update Provided
Strategy 6.4.1. Work with local media outlets to increase awareness of natural hazards. Implement seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	No Update Provided

2016 Mitigation Strategy	2021 Status
Strategy 6.4.2. Work with the Blacksburg office of the National Weather Service to promote the “Turn Around, Don’t Drown” public education campaign.	No Update Provided
Strategy 2.1.2. Identify existing disaster-prone structures that may benefit from mitigation measures such as, but not limited to, elevation or floodproofing techniques.	No Update Provided
Strategy 3.2.3. Implement a program to seal and vent or raise sewer system components (i.e., manhole covers that are located in the 100-year flood plain or other areas identified as highly probable for flooding).	In Progress
Strategy 4.1.1. Identify need for backup generators, communications, and/or vehicles at critical public facilities. Develop means to address shortfall identified.	In Progress
Strategy 4.1.2. Consider providing necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities.	In Progress

Appendix D. Potential Mitigation Strategies

In pursuit of the Plan's identified goals and objectives, more than 100 related actions were developed and reviewed as potential mitigation strategies. The following section summarizes these actions, majority of which were ultimately included in the Plan Strategy. All activities considered can be classified under at least one of the following categories of mitigation techniques:

- Prevention;
- Property protection;
- Natural resource protection;
- Structural projects;
- Emergency services;
- Capability- and capacity-building; and/or
- Public information and awareness.

Actions are categorized by their proposed strategy number, which does not align with the final strategy matrix; alignment with the Plan's goal and objective; description of the activity; the hazard addressed any the activity; and whether WPPDC or at least one participating jurisdiction accepted the action as part of its mitigation strategy. Some actions were not accepted because they are already ongoing and an existing capability for jurisdictions.

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
1	1.1	WPPDC: Engage with member jurisdictions through annual updates to the regional natural hazard mitigation plan by tracking activities, cataloguing updated hazard information, and seeking additional grant funding.	All Hazards	Yes
2	1.1	WPPDC: Maintain and update a Regional Hazard Mitigation webpage at least annually.	All Hazards	Yes
3	1.1	WPPDC: Notify jurisdictions about mitigation funding opportunities under the BRIC, FMA and HMGP programs as applicable. Provide technical assistance and letters of support when appropriate.	All Hazards	Yes
4	1.1	Encourage whole community preparedness by identifying and reaching out to vulnerable populations, such as the elderly or lower-income households, to identify how they may need help with hazard preparedness. Identify potential post-disaster needs for vulnerable populations, such as transitional or temporary shelter, utility assistance or other needs.	All Hazards	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
5	1.1	Conduct at least one site inspection of a school every year to identify tornado safe rooms and other areas that could be used for temporary shelter. Coordinate with existing routine inspections.	Tornado	Yes
6	1.1	Implement at least one nature-based resiliency project, such as bioswales, ecosystem restoration or land conservation / protected area management. Prioritize projects that minimize hazard risk, like conserving open space in perpetuity and reducing stormwater runoff. Leverage existing programs to facilitate nature-based resilience, like supporting landowners' certification of nutrient credits to secure conservation easements.	Flooding, Landslide	Yes
7	1.1	Review annually all facilities housing higher-risk populations, like independent living and nursing institutions, and identify new facilities. Determine if facilities have natural hazard or emergency response plans. For those that don't, work with them to get them developed within the next year.	All Hazards	Yes
8	1.1	Install generator for new 911 center in Chatham.	All Hazards	Not accepted
9	1.1	Coordinate with Western Virginia Water Authority and Bedford Water Authority to create a regional drought plan that identifies actions to mitigate threats to local crops and agriculture. This may include locating potential sources of water, water collection/harvesting, reducing water use, converting to efficient irrigation methods, soil water conservation practices, no-till, reduced-tillage systems, and crop insurance. Update the plan on a set schedule.	Drought	Yes
10	1.1	Coordinate with VDOT to complete at least one flood mitigation action per year on a roadway that, if obstructed, would prevent vulnerable populations from evacuating and/or reaching safety. Prioritize actions addressing known problem areas and based on previous study findings.	Flooding	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
11	1.1	Participate in a regional study by 2023 to inspect and assess stormwater drainage and sewer system capacity for major rain events and identify potential mitigation actions. Coordinate with VDOT to assess needs in unincorporated areas. Assist in development of a stormwater committee that meets regularly to discuss issues and recommend projects.	Flooding	Yes
12	1.1	Identify mitigation measures for known RL, SRL and other vulnerable structures, including relocation, acquisition, floodproofing and mitigation reconstruction projects. Conduct targeted outreach to the owners to discuss the findings; present options for technical assistance and funding from municipal, state, and federal sources; and raise awareness of NFIP compliance.	Flooding	Yes
13	1.1	Identify roads with the highest risk to landslides by 2024 by conducting a study or updating existing data. Collect relevant data to monitor risk over time. Identify site-specific mitigation actions (i.e. piles and retaining walls, diverted debris pathways, rerouting surface underwater drainage).	Landslide	Yes
14	1.1	Install cost-effective wildfire risk reduction tools for use in rural settings, such as dry hydrants, drafting, equipment and tankers.	Wildfire	Yes
15	1.1	Refurbish Cherrystone Dams 1 and 2 with the Town of Chatham.	Human-Caused Event (Dam Failure)	Yes
16	1.1	Support mitigation of priority RL and disaster-prone properties by annually posting on social media and other online sources to advertise successful acquisition/demolition, elevation, and flood-proofing projects to promote public awareness.	Flooding	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
17	1.1	Mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include, but are not limited to: -Acquisition of hazard prone properties -Elevation of flood prone structures -Minor structural flood control projects -Relocation of structures from hazard prone areas -Retrofitting of existing buildings and facilities -Retrofitting of existing buildings and facilities for shelters -Infrastructure protection measures -Storm water management improvements -Advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) -Targeted hazard education -Wastewater and storm water management improvements	All Hazards	Yes
18	1.1	Identify existing disaster-prone structures that may benefit from mitigation measures such as, but not limited to, elevation or floodproofing techniques.	Flooding	Yes
19	1.1	Perform a mitigation review of all primary and secondary schools by 2023 to evaluate their resistance to all natural hazards. Prioritize the schools that are used as community shelters.	All Hazards	Yes
20	1.1	Investigate all public utility lines to evaluate their resistance to flood, hurricane wind, and winter storm hazards. 50% completion by 2022 and 100% completion by 2023.	Winter Storm, Hurricane Wind, Flooding, Severe Weather	Yes
21	1.1	Implement a program to identify older sewer system components (i.e., manhole covers that are located in the 100-year floodplain or other areas identified as highly probable for flooding) and complete sealing and venting to reduce flood risk.	Flooding	Yes
22	1.1	Implement a channel maintenance program consisting of routine inspections and subsequent debris and sediment removal to ensure free flow of water in local streams and watercourses by 2023. Include detections and prevention of discharges into stormwater and sewer systems from home footing frains, downspouts, or sewer pumps. Identify funding opportunities including	Flooding	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
		partnering with local non-governmental or volunteer organization.		
23	1.1	Evaluate need for replacement of culverts that run beneath buildings in the downtown Danville area by 2023. Culverts are antiquated and are in danger of collapse, which could lead to both the collapse of the buildings above them and increased flood risk. Create a plan for getting the necessary culverts replaced.	Flooding	Yes
24	1.1	Evaluate at-risk roads by 2024 and implement at least one mitigation measures (e.g., elevation, re-design) by 2025. Work with VDOT as needed.	Flooding	Yes
25	1.1	Work with VDOT to identify funding opportunities by 2024 to replace vulnerable or undersized culvert stream crossings in Henry county with bridges or larger culverts to reduce flood hazards.	Flooding	Yes
26	1.1	Upgrade water systems to bring additional water sources on-line, to link community systems to provide redundancy, and to provide additional areas with non-well water.	Drought	Yes
27	1.1	Identify and protect at least one critical aquifer recharge zones in a high-risk area per year.	Drought	Yes
28	1.1	Work with VDOT, private utilities, and/or private homeowners to trim or remove trees that could down power lines and block roads.	Winter Storm, Hurricane Wind, Tornado, Severe Weather, Wildfire	Yes
29	1.1	Identify “typical problem areas”—neighborhoods whose roads are regularly flooded and closed.	Flooding	Yes
30	1.1	Coordinate with the state to update and digitize community Flood Insurance Rate Maps (FIRMs).	Flooding	Yes
31	1.1	By 2024, study low-head dams for removal and, if determined necessary, create a plan for removal(s).	Human-Caused Event (Dam Failure)	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
32	1.1	Identify lowest cost, highest value mitigation techniques by 2024 for West Piedmont's hazards and work with local home improvement stores to provide workshops to residents on those mitigation techniques.	All Hazards	Yes
33	1.1	Obtain official recognition of the Mitigation Advisory Committee (MAC) from the jurisdictions in the Planning District to institutionalize and develop an on-going mitigation program. Include official recognition of MAC in HMP adoption resolution. Use the MAC to review mitigation projects and coordinate multi-jurisdictional and regional grant applications.	All Hazards	Yes
34	1.1	Conduct annual review of repetitive loss and severe repetitive loss property list to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination if that property has been mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501. List should be requested from VDEM and/or DCR.	Flooding	Yes
35	1.1	Use new flood maps to evaluate candidates for residential elevations and acquisitions. Reach out to a group of homeowners for inclusion in grant subapplications.	Flooding	Yes
36	2.1	Institute a program to incentivize landlords and developers to invest in risk-reduction measures that will protect commercial or residential tenants, such as waiving permit fees for mitigation actions.	All Hazards	Yes
37	2.1	WPPDC: Assist jurisdictions in adopting and maintaining Post-Disaster Reconstruction and Redevelopment Ordinances and developing Post-Disaster Redevelopment Plans by 2026.	All Hazards	Not accepted
38	2.1	Adopt and maintain Post-Disaster Reconstruction, Redevelopment Ordinances, and Post-Disaster Redevelopment Plans by 2026.	All Hazards	Not accepted
39	1.1	WPPDC: Review jurisdictions' compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain. Maintain a record of approved changes to the local Floodplain.	Flooding	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
40	2.1	Fund at least one staff member per year to attend a training opportunity provided by the Virginia Floodplain Management Association to become a Certified Floodplain Manager.	Flooding	Yes
41	2.1	Develop a strategy by 2023 to encourage more municipalities to participate in the FireWise Communities program to reduce wildfire risk.		Yes
42	2.1	WPPDC: Support remaining jurisdictions to become NWS “StormReady” certified communities by ensuring staff requirements are met, assisting with the designation process, and helping to research and incorporate necessary bylaws, guidelines, and procedures. Help all jurisdictions maintain StormReady certification by verifying requirements every five years.	Winter Storm, Hurricane Wind, Tornado, Severe Weather	Yes
43	2.1	Include an assessment and associated mapping of the jurisdiction’s vulnerability to location-specific hazards and make appropriate recommendations for the use of these hazard areas in a future Comprehensive Plan.	All Hazards	Yes
44	2.1	Incorporate mitigation principles into local emergency management and recovery plans.	All Hazards	Yes
45	2.1	Incorporate hazard mitigation principles, hazard data, vulnerability assessments and resilience concepts into Capital Improvement Plans, the Comprehensive Plan, a Redevelopment Plan, and an Open Space Plan to prevent/control construction within the floodplain and support other mitigation concepts.	Flooding	Yes
46	2.1	Enforce and enhance zoning and building codes to prevent/control construction within the floodplain.	Flooding	Yes
47	2.1	Review locality’s compliance with the National Flood Insurance Program with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	Flooding	Yes
48	2.1	Incorporate hazard mitigation techniques into new community facilities to minimize damages.	All Hazards	Yes
49	2.1	Complete purchase agreement with new solar farm.	All Hazards	Yes
50	2.1	Develop Continuity of Operations plan and ensure there is specific coverage for long-term remote work needs by 2024.	All Hazards	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
51	2.1	Provide annual training opportunities to local zoning and building code enforcement staff. Educate staff on damage assessment, mitigation techniques, and other related topics.	All Hazards	Yes
52	2.1	Improve response strategy for pipeline emergencies.	Human-Caused Event (Pipeline Failure)	Yes
53	2.1	Develop contingency plans for potential hazardous material incident at train tracks at Diamond Avenue.	Human-Caused Event (Inorganic/Organic Spills)	Yes
54	2.1	Implement tornado preparedness strategies for hospitals and nursing homes.	Tornado	Not accepted
55	2.1	Hold annual coordination sessions with the local NFIP coordinator and the local building official to ensure full NFIP & building code compliance.	Flooding	Yes
56	2.2	Establish protocol for collecting damage assessment data in GIS format and visually, including building off of Crisis Tracker, expanding drone usage and building up data capabilities. Data can be used in future Benefit-Cost Analyses and to track Public and Individual Assistance expenditures.	All Hazards	Yes
57	2.2	Continue assessing existing radio coverage and identifying any gaps in coverage. Determine if additional equipment is needed in certain jurisdictions and make a plan with a timeframe for acquiring. For example, some areas in Boones Mill lack radio coverage and police must use cell phones.	All Hazards	Yes
58	2.2	Coordinate with other counties in West Piedmont Planning District Commission to make parcel and hazard GIS data available online and mobile-device friendly via the hazard mitigation website.	All Hazards	Yes
59	2.2	Continue replacing traffic lights hung from wires with traffic lights hung from mast arms. Install all new traffic lights on mast arms. Ensure traffic light mechanisms are weather-proof.	Winter Storm, Hurricane Wind, Tornado, Severe Weather	Not accepted
60	2.2	Increase flood warning capabilities, including through Reverse 911 messaging and particularly as they relate to dam failure. Improve signage and warning systems near dams.	Flooding, Human-Caused Event (Dam Failure)	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
61	2.2	Investigate, develop, or enhance Reverse 911 system or other public notification system. Determine possible funding sources.	All Hazards	Yes
62	2.2	Implement a public warning system for hazard occurrences.	All Hazards	Yes
63	2.2	Harden Pittsylvania County 911 Center or construct a new community safe room as part of a new 911 Center	All Hazards	Yes
64	2.2	Continue providing critical public facilities with (1) necessary electrical hook-up, wiring, and switches to allow readily accessible connections and (2) backup generators, communications, and/or vehicles to ensure continued functionality after disaster. Apply for additional funding for schools, fire stations, EMS and other critical facilities.	All Hazards	Yes
65	2.2	Ensure proper maintenance of backup generators and install necessary components for Martinsville Middle School shelter and Beaver Creek Reservoir Pump Station.	Drought	Yes
66	2.2	Provide annual training opportunities for staff to enhance their ability to use GIS for emergency management needs.	All Hazards	Yes
67	2.2	Encourage the purchase of and training on the use of NOAA radios. Provide NOAA weather radios to public facilities.	All Hazards	Yes
68	2.2	Pre-identify dam inundation areas in EMS system and form evacuation messaging for Blackwater watershed.	Flooding	Yes
69	2.2	Expand 911 capabilities to include text messaging, email, and other technologies.	All Hazards	Not accepted
70	2.2	Expand broadband capabilities to improve emergency communications to rural areas and increase Internet access.	All Hazards	Yes
71	2.2	Implement the Code Red system and refine evacuation messages for targeted evacuation warnings to those in the [require input on towns].	All Hazards	Yes
72	3.1	Encourage public and private water conservation plans, including consideration of rainwater catchment systems by posting relevant information on jurisdiction websites and social media pages, or reaching out in another format.	Drought	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
73	3.1	Inform the public of and/or encourage the purchase of flood and/or sewer back-up insurance at least twice per year. Educate homeowners about flood insurance and ICC (Increased Cost of Compliance) coverage by posting on social media and in local papers during Flood Safety Awareness Week. Use FEMA's FloodSmart social media library for potential posts and resources.	Flooding	Yes
74	3.2	Develop annual schedule to regularly distribute information and resources on relevant hazards to increase public participation, education and outreach. Use hazard mitigation website, social media platforms, mailers, in-person events, community organizations and public schools to educate public on preparedness and mitigation. Work with local media outlets to promote annual preparedness days for hazards, including floods, winter storms, and hurricanes, and severe weather.	All Hazards	Yes
75	3.2	Coordinate with VDOT to establish flood level markers along bridges and other structures to indicate the rise of water levels along creeks and rivers in potential flood-prone areas. Incorporate the procedures for tracking high water marks following a flood into emergency response plans.	Flooding	Yes
76	3.2	Conduct public education at least annually on the principles of "sheltering in place," specifically focusing on the "Get Through 72" campaign.	Earthquakes	Yes
77	3.2	Develop and implement a public education campaign by 2023 about risks of living near a pipeline.	Human-Caused Event (Pipeline Failure)	Yes
78	3.2	Educate elected officials and residents at least annually on the importance of the NFIP.	Flooding	Not accepted
79	3.2	Work with the Chamber of Commerce to educate and prepare local business owners for natural disasters through an annual campaign online or a single-day seminar/event. Identify and recommend cost-effective mitigation actions to reduce the risk of business disruption or losses during hazard events.	All Hazards	Yes
80	3.2	Work with local media outlets to increase awareness of natural hazards by implementing seasonal hazard awareness weeks or days (e.g., hurricane preparedness week, winter weather awareness day).	All Hazards	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
81	3.2	Qualify for and participate in the StormReady program sponsored by the National Weather Service.	Winter Storm, Hurricane Wind, Tornado, Severe Weather	Yes
82	2.2	WPPDC: Conduct a regional study by 2025 to inspect and assess stormwater and sewer system capacity for major rain events and identify potential mitigation actions.	Flooding	Yes
83	1.1	Submit an FMA, HMGP, or BRIC application to address the flooding from high intensity rainfall events in downtown Boones Mill.	Flooding	Yes
84	2.2	Create a plan by 2024 to use continuous ground surveying, digital mapping, or another relevant method to identify potential sinkholes.	Landslides, Erosion, Flooding	Not accepted
85	2.1	Develop a stormwater committee that meets regularly to discuss issues and recommend projects.	Flooding	Not accepted
86	2.1	Continue developing and maintaining a database to track community exposure to flood risk, then use it to create and maintain a GIS layer for stormwater flooding problem areas. Coordinate with other jurisdictions in West Piedmont Planning District Commission to identify regional problem areas.	Flooding	Yes
87	2.1	Continue increasing drainage or absorption capacities of the biggest stormwater flooding problem areas with detention and retention basins, relief drains, spillways, drain widening/dredging or rerouting, logjam and debris removal, extra culverts, bridge modification, dike setbacks, flood gates and pumps, or channel redirection.	Flooding	Yes
88	2.1	Develop a remote work strategy for all essential county and town employees that would ensure they have the infrastructure and resources to continue work if a hazard prevented in-person business-as-usual.	All Hazards	Yes
89	2.1	Implement an inspection, maintenance, and enforcement program to help ensure continued structural integrity of non-private dams and levees.	Flooding	Yes
90	1.1	Implement at least one mitigation action at a road or site known to have a high risk of landslides. Actions may include piles and retaining walls,	Landslide	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
		diverting debris pathways, or rerouting surface underwater drainage.		
91	3.1	Inform residents about all perils insurance policies for homeowners and renters by posting on social media and working with local media outlets.	All Hazards	Yes
92	2.1	Include resilience concepts and strategies in long-term hospital improvement plan.	All Hazards	Yes
93	2.1	Assess needs for full study or immediate actions to address aging stormwater systems on private property to reduce risk of property damage.	Flooding	Yes
94	1.1	Implement at least one flood/erosion mitigation strategy for the intersection of Indian Trail, Cherokee Court, and Sam Lions Trail.	Flooding	Yes
95	2.1	Develop an overflow monitoring plan for Mulberry Creek, prioritizing intersection of Spruce Street and Dick and Wille Trailhead. Assess potential for road closures due to flooding.	Flooding	Yes
96	1.1	Complete a flood mitigation action for Riverside Drive based on study findings.	Flooding	Yes
97	1.1	Complete a flood mitigation action for Rocky Mountain.	Flooding	Yes
98	1.1	Assess landslide risk at Fayette Street and identify potential mitigation actions (i.e. piles and retaining walls, diverted debris pathways, rerouting surface underwater drainage).	Landslide	Yes
99	1.1	Develop plan for Norfolk Southern Bridge railroad to routinely monitor underlying creek for debris and sediment removal to reduce risk for overflows.	Flooding	Yes
100	2.1	Work with DCR to coordinate on inspection and maintenance to help ensure continued structural integrity of dams and levees.	Flooding	Yes
101	1.1	Complete at least one flood mitigation action on a Riverside Drive.	Flooding	Yes
102	2.2	WPPDC: Develop a dam inundation GIS layer and/or mapping product for entire planning district. Coordinate with jurisdictions to ensure data consistency and accuracy across data.	Human-Caused Event (Dam Failure)	Yes

Proposed Strategy #	Goal / Objective	Strategy Description	Hazard(s) Addressed	Accepted by WPPDC or participating jurisdiction?
103	2.2	Develop an enhanced dam inundation GIS layer and/or mapping product. Coordinate with WPPDC so data is standardized across jurisdictions. Enhance existing data and fill gaps for jurisdictions that lack any information.	Human-Caused Event (Dam Failure)	Yes

Appendix E. Record of Changes

2016 Plan Section	Changes Made
Section I. Executive Summary	• Updated to reflect changes in hazard priority, changes in risk assessment, changes in capability assessment, new goals, and modified plan maintenance procedures
Section II. Introduction	• Minimal text edits
Section III. Planning Process	• Membership in Mitigation Advisory Committee was updated. • Text edits to describe 2021 planning process. • Updated meeting dates to reflect 2021 planning process. • Added table of local planning team participants. • Added table of local planning team meetings. • Added more public participation contextual information. • Added a public survey section with survey results and insights. • Added a list of stakeholder participants and information regarding stakeholder survey. • Updated list of plans and studies incorporated into plan update.
Section IV. Community Profile	• Updated to reflect new Census data (2015 - 2019 American Community Survey was used primarily). • Updated critical facility data. • Updated all subsections with minor updated provided by local planning teams.
Section V. Hazard Identification and Risk Assessment (HIRA)	• Updated hazard ranking and weighting • Refreshed the hazard profiles • Hazus-MH used for flood risk assessment • Addition of dam inundation, pluvial flooding, and severe weather hazard sections • Updated NCEI storm events data and previous occurrences data • Assessed risk based on an updated critical facility listing • Updated Hazus-MH hurricane and earthquake analysis • New maps based on updated data • Addition of climate change impacts discussion for each relevant hazard

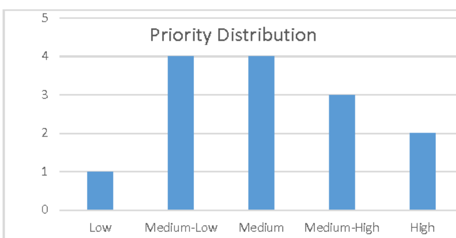
2016 Plan Section	Changes Made
	• Addition of a HIRA summary that includes overall relative risk and critical facility risk comparison by hazard.
Section VI. Capability Assessment	• Updated relevant departments and organizational information • Updated technical capability matrix • Updated fiscal capability matrix • Added mitigation grants table • Updated policy and program capabilities • Updated current mitigation efforts section with efforts since 2016 • Updated plan matrix
Section VII. Mitigation Strategy	• Consolidated 2016 goals into 3 new goals • Updated objectives to reflect new goals • Added new actions and actions carried over from 2016 plan (including new STAPLE/E rankings) • Updated mitigation action plans
Section VIII. Plan Maintenance Procedures	• Updated title to include monitoring • Minimal text edits
Section IX. References	• Updated to reflect references used in 2021 plan
Appendix A. Public Outreach Documentation	• Includes documentation of public meeting (1st public opportunity for input), public survey and Story Map (2nd opportunity for input), public draft plan review meeting (3rd opportunity for input), and stakeholder survey and draft plan review (4th opportunity for input)
Appendix B. Additional HIRA Information	• Updated to reflect supporting data used in this plan
Appendix C. Previous Mitigation Efforts	• Updated to reflect status of actions included in 2016 plan
Appendix D. Potential Mitigation Strategies	• Updated to reflect mitigation strategies considered by Mitigation Advisory Committee
Appendix E. Detailed Update on 2011 Mitigation Actions	• Removed and content moved to Appendix C
Appendix F. Record of Changes	• Updated to reflect changes made to each section of the plan between the 2016 and 2021 versions.
Appendix G. Sample Resolution	• No change

Appendix F. Hazard Ranking Calculations

Hazards Type	Probability/ History	Vulnerability	Maximum Threat (Geographic Area Affected)	Warning Time	2016 Ranking		Probability/History	Vulnerability	Maximum Threat (Geographic Area Affected)	Warning Time	2016 Ranking	Priority Level	Priority Level - Adjusted	2021 Ranking
						Weighting factors	0.25	0.2	0.1	0.1	0.35	-	-	-
Winter Storm	Highly Likely	Critical	Large	Limited	High		1.25	0.8	0.5	0.3	0.5	3.35	High	High
Flooding (with Shoreline Erosion)	Highly Likely	Critical	Small	No Notice	High		1.25	0.8	0.3	0.5	0.5	3.35	High	High
Wind (including Hurricanes and Thundestorms)	Highly Likely	Critical	Small	Minimal	Medium-High		1.25	0.8	0.3	0.4	0.4	3.15	Medium-High	Medium-High
Drought	Likely	Limited	Medium	Extended	Medium-Low		1	0.6	0.4	0.1	0.2	2.3	Medium-Low	Medium-Low
Wildfire	Highly Likely	Negligible	Small	No Notice	Medium		1.25	0.2	0.3	0.5	0.3	2.55	Medium	Medium
Tornado	Likely	Critical	Medium	No Notice	Medium		1	0.8	0.4	0.5	0.3	3	Medium-High	Medium-High
Earthquake	Somewhat Unlikely	Limited	Small	No Notice	Low		0.5	0.6	0.3	0.5	0.1	2	Medium-Low	Medium-Low
Landslide	Unlikely	Limited	Small	No Notice	Low		0.25	0.6	0.3	0.5	0.1	1.75	Low	Low
Dams	Unlikely	Limited	Small	No Notice	Medium-Low		0.25	0.6	0.3	0.5	0.2	1.85	Medium-Low	Medium-Low
HVT Lines	Likely	Limited	Medium	No Notice	Medium		1	0.6	0.4	0.5	0.3	2.8	Medium	Medium
Organic/Inorganic Spills	Highly Likely	Limited	Small	No Notice	Medium-High		1.25	0.6	0.3	0.5	0.4	3.05	Medium-High	Medium-High
Pipelines	Likely	Limited	Medium	No Notice	Medium		1	0.6	0.4	0.5	0.3	2.8	Medium	Medium
Agroterrorism	Unlikely	Limited	Large	No Notice	Medium-Low		0.25	0.6	0.5	0.5	0.2	2.05	Medium-Low	Medium-Low

Negligible	1
Unlikely	1
Extended	1
Isolated	1
Somewhat Unlikely	2
Slight	2
Minor	2
Limited	3
Small	3
Somewhat Likely	3
Medium	4
Likely	4
Critical	4
Minimal	4
Highly Likely	5
No Notice	5
Large	5
Catastrophic	5
High	5
Medium-High	4
Medium	3
Medium-Low	2
Low	1

Distribution		Not a normal distribution	
0	1.75	Low	1
1.76	2.5	Medium-Low	4
2.51	2.95	Medium	4
2.96	3.15	Medium-High	3
3.16	4	High	2
Median	2.8		
Std Dev	0.548208486		
Mean	2.615384615		



Probability/History	Vulnerability	Maximum Threat (Geographic Area Affected)	Warning Time
Unlikely No documented occurrence with annual probability <0.01	**Negligible** 1 to 10% of people or property	**Isolated** < 5% of community impacted	**Extended** Three days or more
Somewhat Unlikely Infrequent occurrence with at least one documented event and annual probability between 0.5 and 0.01	**Slight** 10% to 20% of people or property	**Minor** 5 to 15% of community impacted	**Slight** 3 days
Somewhat Likely Infrequent occurrence with at least one documented event with annual probability between 0.5 and 0.01	**Limited** 10 to 25% of people or property	**Small** 5 to 25% of community impacted	**Limited** 2 days
Likely Frequent occurrence with at least 2 documented events with annual probability between 1 and 0.5	**Critical** 25 to 50% of people or property	**Medium** 25 to 50% of community impacted	**Minimal** 1 day
Highly Likely Common events with annual probability >1	**Catastrophic** >50% of people or property	**Large** >50% of community impacted	**No Notice** < 24 hours

Appendix G. Adoptions and FEMA Approval

Appendix G.1. Sample Resolution

The following resolution can be used by local jurisdictions to adopt the regional hazard mitigation plan per FEMA requirements.

MODEL RESOLUTION FOR ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Disaster Mitigation Act of 2000, as amended, requires that local governments, develop, adopt, and update natural hazard mitigation plans in order to receive certain federal assistance, and

WHEREAS, a Mitigation Advisory Committee (“MAC”) comprised of representatives from the counties of Franklin, Henry, Patrick and Pittsylvania; the cities of Danville and Martinsville; and the towns of Chatham, Boones Mill, Gretna, Hurt, Ridgeway, Rocky Mount and Stuart was convened in order to study the West Piedmont Region’s risks from and vulnerabilities to natural hazards, and to make recommendations on mitigating the effects of such hazards on the West Piedmont Region; and

WHEREAS, a request for proposals was issued to hire an experienced consulting firm to work with the MAC to update a comprehensive hazard mitigation plan for the West Piedmont Planning District; and

WHEREAS, the efforts of the MAC members and the consulting firm of Dewberry, in consultation with members of the public, private and non-profit sectors, have resulted in an update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan including (COUNTY NAME).

NOW THEREFORE, BE IT RESOLVED by the (governing body name) that the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan dated (DATE) is hereby approved and adopted for the (JURISIDCTION NAME). A copy of the plan is attached to this resolution.

ADOPTED by the (jurisdiction) this ___ day of ___________________, 2022.

APPROVED:

____

(Jurisdiction head of governing body)

ATTEST:

____

(Jurisdiction representative)

Appendix G.2. FEMA Approval Pending Adoption Letter

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

FEMA

February 23, 2022

Debbie Messmer
State Hazard Mitigation Officer
Virginia Department of Emergency Management
9711 Farrar Court
North Chesterfield, Virginia 23236

Dear Ms. Messmer:

The Federal Emergency Management Agency (FEMA) has completed our review of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan, based on the standards contained in 44 Code of Federal Regulations (CFR), Part 201, as authorized by the Disaster Mitigation Act of 2000 (DMA2K). These criteria address the planning process, hazard identification and risk assessment, mitigation strategies and plan maintenance requirements.

The plan received a "satisfactory" rating for all required criteria and is approvable pending adoption. However, prior to formal approval, each participating jurisdiction covered under the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan is required to provide FEMA with a resolution of adoption.

We commend you for your dedication demonstrated in supporting the DMA2K and your commitment to reduce future disaster losses. If you have questions, please contact me at (215) 931-5532.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

Enclosure:

cc: Michael Armbrister, Executive Director, West Piedmont Planning District Commission
Cole Taggart, All Hazards Planner, Region 6, VDEM
Mike Guzo, Chief Regional Coordinator, Region 6, VDEM
Jonathan Simmons, Disaster Response and Recovery Officer, Region 6, VDEM

www.fema.gov

Appendix G.3. Jurisdiction Adoption Resolutions and FEMA Approval Letters

The following pages contain the adoption resolutions and Hazard Mitigation Plan Approval Letters from FEMA for the participating jurisdictions. The adoptions occurred at individual jurisdiction meetings over the course of 2022.

West Piedmont Planning District Commission

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including staff from the PDC, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the West Piedmont Planning District Board of Commissioners that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby adopted.

BE IT FURTHER RESOLVED that the PDC staff identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Executive Director (1) is designated to coordinate with other PDC officials and the coordinators from the member localities, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 24 day of March, 2022 by the West Piedmont Planning District Board of Commissioners.

APPROVED:

Jim Adams, Commission Chair

ATTEST:

Armbrister, Executive Director

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

FEMA

June 15, 2022

The Honorable Ronnie Thompson Chair, Board of Supervisors Franklin County 1255 Franklin Street, Suite 112 Rocky Mount, Virginia 24151	Community:	Franklin County, Virginia
	PDC:	West Piedmont
	Plan Adoption Date:	05/17/2022
	Plan Approval Date:	04/11/2022
	Plan Expiration Date:	04/10/2027

Dear Ronnie Thompson:

I am pleased to tell you FEMA has approved your Hazard Mitigation Plan (HMP). The plan meets the requirements of Title 44, Chapter 1, Section 201.6, of the Code of Federal Regulations (44 CFR 201.6). It addresses these required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are now eligible for Hazard Mitigation Assistance (HMA) grant programs. These programs can fund mitigation planning and projects that reduce disaster losses and protect life and property from future disasters. Approved HMPs can also earn points under the Community Rating System.

Within 5 years, your community must revise its plan and obtain approval to remain eligible for HMA funding. You should review the plan annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during its next update.

I commend you and the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

Franklin County
A Natural Setting for Opportunity

(RESOLUTION #05-05-2022)

A RESOLUTION OF THE FRANKLIN COUNTY BOARD OF SUPERVISORS ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS, the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS, the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS, the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including Franklin County, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS, the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS, a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW, THEREFORE BE IT RESOLVED by the Franklin County Board of Supervisors that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Department of Public Safety (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 17th day of May 2022 by the Franklin County Board of Supervisors.

Vote:

YES: Smith, R. Mitchell, Thompson, Tatum, Cundiff, Carter

NO:

ABSENT: L. Mitchell

ATTEST: ______________________

Clerk to the Board of Supervisors

County of Henry

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the County of Henry, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the Board of Supervisors that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Department of Public Safety (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 26th day of April, 2022 by the Board of Supervisors.

APPROVED:

Jim Adams, Chairman

ATTEST:

Tim Hall, County Administrator

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

FEMA

May 20, 2022

The Honorable Jim Adams
Chair, Board of Supervisors
Henry County
P.O. Box 7
Collinsville, Virginia 24078

Community:	Henry County, Virginia
PDC:	West Piedmont
Plan Adoption Date:	04/26/2022
Plan Approval Date:	04/11/2022
Plan Expiration Date:	04/10/2027

Dear Mr. Adams:

I am pleased to announce that your Hazard Mitigation Plan has been approved. The plan meets the requirements set forth in Title 44, Chapter 1, Section 201.6, of Code of Federal Regulations (44 CFR 201.6), as authorized by the Disaster Mitigation Act of 2000, by adequately addressing the following required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are hereby eligible for Hazard Mitigation Assistance grant programs. Funding from these grant programs can be used for qualified mitigation planning and projects that work to reduce disaster losses and protect life and property from future disaster damages. Approved mitigation plans may also be eligible for points under the National Flood Insurance Program Community Rating System.

Your community must revise its plan and obtain approval within 5 years to continue to be eligible for mitigation grant funding. This plan should be reviewed at least annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during the next plan update.

I commend you and other members of the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

FEMA

July 28, 2022

The Honorable Clyde DeLoach Chair, Board of Supervisors Patrick County P.O. Box 466 Stuart, Virginia 24171		Community:	Patrick County, Virginia
		PDC:	West Piedmont
		Plan Adoption Date:	06/13/2022
		Plan Approval Date:	04/11/2022
		Plan Expiration Date:	04/10/2027

Dear Chair DeLoach:

I am pleased to tell you FEMA has approved your Hazard Mitigation Plan (HMP). The plan meets the requirements of Title 44, Chapter 1, Section 201.6, of the Code of Federal Regulations (44 CFR 201.6). It addresses these required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are now eligible for Hazard Mitigation Assistance (HMA) grant programs. These programs can fund mitigation planning and projects that reduce disaster losses and protect life and property from future disasters. Approved HMPs can also earn points under the Community Rating System.

Within 5 years, your community must revise its plan and obtain approval to remain eligible for HMA funding. You should review the plan annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during its next update.

I commend you and the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

Resolution 06132022

County of Patrick

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the County of Patrick, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the County of Patrick that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Department of Emergency Management (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 13 day of June, 2022 by the County of Patrick.

APPROVED:

Clyde M. DeLoach

Dr. Clyde DeLoach, Chairman

ATTEST:

Amy Walker

Amy Walker, Clerk

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

FEMA

June 16, 2022

The Honorable William V. Ingram
Chair, Board of Supervisors
Pittsylvania County
P.O. Box 426
Chatham, Virginia 24531

Community:	Pittsylvania County, Virginia
PDC:	West Piedmont
Plan Adoption Date:	05/17/2022
Plan Approval Date:	04/11/2022
Plan Expiration Date:	04/10/2027

Dear William Ingram:

I am pleased to announce that your Hazard Mitigation Plan has been approved. The plan meets the requirements set forth in Title 44, Chapter 1, Section 201.6, of Code of Federal Regulations (44 CFR 201.6), as authorized by the Disaster Mitigation Act of 2000, by adequately addressing the following required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are hereby eligible for Hazard Mitigation Assistance grant programs. Funding from these grant programs can be used for qualified mitigation planning and projects that work to reduce disaster losses and protect life and property from future disaster damages. Approved mitigation plans may also be eligible for points under the National Flood Insurance Program Community Rating System.

Your community must revise its plan and obtain approval within 5 years to continue to be eligible for mitigation grant funding. This plan should be reviewed at least annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during the next plan update.

I commend you and other members of the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

PITTSYLVANIA COUNTY BOARD OF SUPERVISORS
RESOLUTION # 2022-05-06

RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

VIRGINIA: At the Pittsylvania County Board of Supervisors' ("Board") Meeting on May 17, 2022, the following Resolution was presented and adopted:

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a Mitigation Plan to be eligible for grants to implement certain mitigation projects; and

WHEREAS, the West Piedmont Planning District Commission ("WPPDC") communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, that may cause serious property damage, and a require a Plan to address the results of these events: and

WHEREAS, the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS, the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance Program Funds to support the development of the Mitigation Plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including Pittsylvania County, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 Update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS, the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS, a Public Meeting was held on August 5, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED, by the Board that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted; and

BE IT FURTHER RESOLVED, that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies; and

BE IT ALSO RESOLVED, that any action proposed in the Plan shall be subject to and contingent upon County Budget approval, if funding is required, and this Resolution may not be interpreted so as to mandate any such appropriations; and

BE IT FINALLY RESOLVED, that the County's Public Safety Department (1) is designated to coordinate with other offices and entities, including the WPPDC, (2) shall periodically report on the Plan's activities, accomplishments, and progress, and (3) shall prepare a Plan Progress Report as required by the Federal Emergency Management Agency and outlined in the Plan.

Given under my hand this 17th day of May, 2022.

William V. ("Vic") Ingram (Chairman)
Pittsylvania County Board of Supervisors

Clarence C. Monday (Clerk)
Pittsylvania County Board of Supervisors

Approved as to Form:

J. Vaden Hunt, Esq.
Pittsylvania County Attorney

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

July 28, 2022

The Honorable Alonzo Jones Mayor City of Danville P.O. Box 3300 Danville, Virginia 24543	Community:	City of Danville, Virginia
	PDC:	West Piedmont
	Plan Adoption Date:	05/03/2022
	Plan Approval Date:	04/11/2022
	Plan Expiration Date:	04/10/2027

Dear Mayor Jones:

I am pleased to tell you FEMA has approved your Hazard Mitigation Plan (HMP). The plan meets the requirements of Title 44, Chapter 1, Section 201.6, of the Code of Federal Regulations (44 CFR 201.6). It addresses these required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are now eligible for Hazard Mitigation Assistance (HMA) grant programs. These programs can fund mitigation planning and projects that reduce disaster losses and protect life and property from future disasters. Approved HMPs can also earn points under the Community Rating System.

Within 5 years, your community must revise its plan and obtain approval to remain eligible for HMA funding. You should review the plan annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during its next update.

I commend you and the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

PRESENTED: May 3, 2022

ADOPTED: May 3, 2022

RESOLUTION NO. 2022 – 05 . 02

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES.

WHEREAS, the Disaster Mitigation Act of 2000, as amended, requires that local governments develop, adopt, and update natural hazard mitigation plans in order to receive certain federal assistance; and

WHEREAS, a Mitigation Advisory Committee ("MAC") comprised of representatives from the counties of Franklin, Henry, Patrick, and Pittsylvania; the cities of Danville and Martinsville; and the towns of Boones Mill, Chatham, Gretna, Hurt, Ridgeway, Rocky Mount, and Stuart was convened in order to study the West Piedmont Region's risks from and vulnerabilities to natural hazards, and to make recommendations on mitigating the effects of such hazards on the West Piedmont Region; and

WHEREAS, a request for proposals was issued to hire an experienced consulting firm to work with the MAC to update a comprehensive hazard mitigation plan for the West Piedmont Planning District; and

WHEREAS, the efforts of the MAC members and the consulting firm of Dewberry, in consultation with members of the public, private, and non-profit sectors, have resulted in an update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan including the City of Danville.

NOW THEREFORE, BE IT RESOLVED, by the Council of the City of Danville, Virginia, that the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan dated February 2022 is hereby approved and adopted for the City of Danville. A copy of the plan is attached to this resolution.

OFFICE OF THE
CITY ATTORNEY

CITY OF
DANVILLE, VIRGINIA

APPROVED:

Mayor

ATTEST:

City Clerk

Approved as to
Form and Legal Sufficiency:

Deputy City Attorney

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

FEMA

July 28, 2022

The Honorable Kathy Lawson		Community:	City of Martinsville, Virginia
Mayor		PDC:	West Piedmont
City of Martinsville		Plan Adoption Date:	06/28/2022
P.O. Box 1112		Plan Approval Date:	04/11/2022
Martinsville, Virginia 24114		Plan Expiration Date:	04/10/2027

Dear Mayor Lawson:

I am pleased to tell you FEMA has approved your Hazard Mitigation Plan (HMP). The plan meets the requirements of Title 44, Chapter 1, Section 201.6, of the Code of Federal Regulations (44 CFR 201.6). It addresses these required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are now eligible for Hazard Mitigation Assistance (HMA) grant programs. These programs can fund mitigation planning and projects that reduce disaster losses and protect life and property from future disasters. Approved HMPs can also earn points under the Community Rating System.

Within 5 years, your community must revise its plan and obtain approval to remain eligible for HMA funding. You should review the plan annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during its next update.

I commend you and the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

RESOLUTION

ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the City of Martinsville, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments,

NOW THEREFORE BE IT RESOLVED by the Council of the City of Martinsville that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted, and

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies, and

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations, and

BE IT FURTHER RESOLVED that Martinsville Fire/EMS & Safety (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 28th day of June, 2022 by Martinsville City Council.

APPROVED: ATTEST:

Kathy Lawson

Kathy Lawson, Mayor

Karen Roberts

Karen Roberts, Clerk of Council

Resolution 2022.08.08

TOWN OF CHATHAM

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the TOWN OF CHATHAM, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan: and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the TOWN COUNCIL that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Town Manager's Office (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 8 day of August 2022 by the TOWN COUNCIL.

Will Pace

Will Pace, Mayor

ATTEST:

Kelly D. Hawker

Kelly Hawker, Clerk/Treasurer

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

FEMA

June 16, 2022

The Honorable Victor E. Conner
Mayor
Town of Boones Mill
P.O. Box 66
Boones Mill, Virginia 24065

Community:	Town of Boones Mill, Franklin County, Virginia
PDC:	West Piedmont
Plan Adoption Date:	05/10/2022
Plan Approval Date:	04/11/2022
Plan Expiration Date:	04/10/2027

Dear Mayor Conner:

I am pleased to announce that your Hazard Mitigation Plan has been approved. The plan meets the requirements set forth in Title 44, Chapter 1, Section 201.6, of Code of Federal Regulations (44 CFR 201.6), as authorized by the Disaster Mitigation Act of 2000, by adequately addressing the following required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are hereby eligible for Hazard Mitigation Assistance grant programs. Funding from these grant programs can be used for qualified mitigation planning and projects that work to reduce disaster losses and protect life and property from future disaster damages. Approved mitigation plans may also be eligible for points under the National Flood Insurance Program Community Rating System.

Your community must revise its plan and obtain approval within 5 years to continue to be eligible for mitigation grant funding. This plan should be reviewed at least annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during the next plan update.

I commend you and other members of the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

TOWN OF BOONES MILL

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the Town of Boones Mill, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the Town of Boones Mill that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Town Manager (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 10th day of May, 2022 by the Boones Mill Town Council.

APPROVED:

Victor E. Conner

Victor E. Conner, Mayor

ATTEST:

Jean P. Rucker

Jean P Rucker, Clerk

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

FEMA

June 16, 2022

The Honorable R. Keith Motley Mayor Town of Gretna P.O. Box 472 Gretna, Virginia 24557	Community:	Town of Gretna, Pittsylvania County, Virginia
	PDC:	West Piedmont
	Plan Adoption Date:	05/09/2022
	Plan Approval Date:	04/11/2022
	Plan Expiration Date:	04/10/2027

Dear Mayor Motley:

I am pleased to announce that your Hazard Mitigation Plan has been approved. The plan meets the requirements set forth in Title 44, Chapter 1, Section 201.6, of Code of Federal Regulations (44 CFR 201.6), as authorized by the Disaster Mitigation Act of 2000, by adequately addressing the following required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are hereby eligible for Hazard Mitigation Assistance grant programs. Funding from these grant programs can be used for qualified mitigation planning and projects that work to reduce disaster losses and protect life and property from future disaster damages. Approved mitigation plans may also be eligible for points under the National Flood Insurance Program Community Rating System.

Your community must revise its plan and obtain approval within 5 years to continue to be eligible for mitigation grant funding. This plan should be reviewed at least annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during the next plan update.

I commend you and other members of the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

Town of Gretna

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the Town of Gretna, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the Town of Gretna that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Town of Gretna (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 9th day of May, 2022 by the Town of Gretna.

APPROVED:

R. Keith Motley

R. Keith Motley, Mayor

ATTEST:

Stacy Hedrick

Stacy Hedrick, Assistant Clerk/Treasurer

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

June 16, 2022

The Honorable Gary K. Hodnett Mayor Town of Hurt P.O. Box 760 Hurt, Virginia 24563	Community:	Town of Hurt Pittsylvania County, Virginia
	PDC:	West Piedmont
	Plan Adoption Date:	05/04/2022
	Plan Approval Date:	04/11/2022
	Plan Expiration Date:	04/10/2027

Dear Mayor Hodnett:

I am pleased to announce that your Hazard Mitigation Plan has been approved. The plan meets the requirements set forth in Title 44, Chapter 1, Section 201.6, of Code of Federal Regulations (44 CFR 201.6), as authorized by the Disaster Mitigation Act of 2000, by adequately addressing the following required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are hereby eligible for Hazard Mitigation Assistance grant programs. Funding from these grant programs can be used for qualified mitigation planning and projects that work to reduce disaster losses and protect life and property from future disaster damages. Approved mitigation plans may also be eligible for points under the National Flood Insurance Program Community Rating System.

Your community must revise its plan and obtain approval within 5 years to continue to be eligible for mitigation grant funding. This plan should be reviewed at least annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during the next plan update.

I commend you and other members of the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

Mayor, Gary K Hodnett

Vice Mayor, Shirley Barksdale-Hill

Town Council 2022
E. Collin Adams, Jr.
Donney Johnson
Kathy Keesee
Gary Poindexter
C. Luke Perdieu

RESOLUTION

A RESOLUTION OF THE COUNCIL FOR THE TOWN OF HURT UPDATING THE TOWN'S HAZARD MITIGATION PLAN TO ACCEPTANCE OF THE WEST PIEDMONT MULTI-JURISDICATIONAL HAZARD MITIGATION PLAN

WHEREAS, the Town of Hurt has updated its existing Hazard Mitigation Plan as required by Disaster Mitigation Act of 2000; and

WHEREAS, the Federal Emergency Management Agency (FEMA) has reviewed and commented on the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and the plan has received a "satisfactory" rating for all required criteria and is approval pending adoption.

WHEREAS, The Town of Hurt Council has requested local plan adoption this day May 3, 2022

NOW THEREFORE, THE TOWN OF HURT, VIRIGINA, DOES RESOLVE AS FOLLOWS:

Section 1. Plan Approval. The Town of Hurt Council hereby accepts and approves the 2020-2025 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan, which are attached hereto as Exhibits A to the resolution and are incorporated herein by reference.

Approved by the Mayor this 4th day of May 2022

Gary K. Hodnett (Mayor)

Attest:

Kelsie L. Sligh (Clerk)

Kelsie L Sligh
Commonwealth of Virginia
Notary Public
Commission No. 7935360
My Commission Expires 4/30/2025

Resolution 2022-01

Town of Ridgeway

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the Town of Ridgeway and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the Town Council Of Ridgeway that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that Town of Ridgeway Mayor's Office is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 2nd day of August, 2022 by the Town Council of Ridgeway.

APPROVED:	ATTEST:
Craig A O'R[signature]	Michael T Ball[signature]
Mayor, Town of Ridgeway	Vice-Mayor, Town of Ridgeway

TOWN OF ROCKY MOUNT VIRGINIA

RESOLUTION NO.: 2022.008

TOWN OF ROCKY MOUNT
A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS, the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS, the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS, the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the Town of Rocky Mount, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS, the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS, a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the Rocky Mount Town Council that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Department of Community Development (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal **Emergency Management Agency and outlined in the Plan.**

Adopted this 11th day of April, 2022 by the Rocky Mount Town Council.

Steven C. Angle

Steven C. Angle, Mayor

ATTESTED:

Rebecca Dillon

Rebecca Dillon, Town Clerk

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

May 20, 2022

The Honorable Steven C. Angle	Community:	Town of Rocky Mount, Franklin County, Virginia
Mayor		
Rocky Mount Town		
345 Donald Avenue	PDC:	West Piedmont
Rocky Mount, Virginia 24151	Plan Adoption Date:	04/11/2022
	Plan Approval Date:	04/11/2022
	Plan Expiration Date:	04/10/2027

Dear Mayor Angle:

I am pleased to announce that your Hazard Mitigation Plan has been approved. The plan meets the requirements set forth in Title 44, Chapter 1, Section 201.6, of Code of Federal Regulations (44 CFR 201.6), as authorized by the Disaster Mitigation Act of 2000, by adequately addressing the following required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are hereby eligible for Hazard Mitigation Assistance grant programs. Funding from these grant programs can be used for qualified mitigation planning and projects that work to reduce disaster losses and protect life and property from future disaster damages. Approved mitigation plans may also be eligible for points under the National Flood Insurance Program Community Rating System.

Your community must revise its plan and obtain approval within 5 years to continue to be eligible for mitigation grant funding. This plan should be reviewed at least annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during the next plan update.

I commend you and other members of the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

Town of Stuart, Virginia

A RESOLUTION ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR WEST PIEDMONT PLANNING DISTRICT COMMUNITIES

WHEREAS, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, at 42 U.S.C. § 5165, and 44 CFR Part 201.6 of the Federal Disaster Mitigation Act of 2000, require municipalities to adopt a mitigation plan in order to be eligible for grants to implement certain mitigation projects; and

WHEREAS the West Piedmont Planning District Commission (PDC) communities have experienced past flooding and other natural hazard events that pose risks to public health and safety, may cause serious property damage, and a require a plan to address the results of these events: and

WHEREAS the planning process fostered by the Virginia Department of Emergency Management, and set forth by the Federal Emergency Management Agency, offers the opportunity to consider natural hazards and risks and identify mitigation actions to reduce future impacts of such hazards; and

WHEREAS the Commonwealth of Virginia has provided federal Hazard Mitigation Assistance program funds to support the development of the mitigation plan; and

WHEREAS, the efforts of a Mitigation Advisory Committee, including the Town of Stuart, Virginia, and the consulting firm of Dewberry, in consultation with members of the public and stakeholders, have resulted in a 2021 update of the West Piedmont Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS the Plan recommends several mitigation actions that will help minimize and reduce safety threats and damage to private and public property; and

WHEREAS a public meeting was held on August 5th, 2021, to present the Plan and proposed mitigation actions and to solicit questions and comments.

NOW THEREFORE BE IT RESOLVED by the Town of Stuart, Virginia that the 2021 West Piedmont Multi-Jurisdictional Hazard Mitigation Plan and its Appendices are hereby approved and adopted.

BE IT FURTHER RESOLVED that the municipal offices identified in the Plan are hereby directed to pursue implementation of the recommended priority actions that are assigned to their agencies.

BE IT FURTHER RESOLVED that any action proposed in the Plan shall be subject to and contingent upon budget approval, if funding is required, and this resolution may not be interpreted so as to mandate any such appropriations.

BE IT FURTHER RESOLVED that the Town Manager (1) is designated to coordinate with other offices and entities, including the PDC, (2) shall periodically report on the activities, accomplishments, and progress, and (3) shall prepare a progress report as required by the Federal Emergency Management Agency and outlined in the Plan.

Adopted this 15th day of June, 2022 by the Town of Stuart, Virginia.

APPROVED:	ATTEST:
Bryce M. Simmons	Susan Slate
Bryce M. Simmons, PE Town Manger	Susan Slate Town Clerk

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 3

One Independence Mall
615 Chestnut Street, 6th floor
Philadelphia, PA 19106-4404

July 28, 2022

The Honorable Bryce M. Simmons Town Manger Town of Stuart 100 Patrick Avenue Stuart, Virginia 24171	Community:	Town of Stuart, Patrick County, Virginia
	PDC:	West Piedmont
	Plan Adoption Date:	06/15/2022
	Plan Approval Date:	04/11/2022
	Plan Expiration Date:	04/10/2027

Dear Bryce Simmons:

I am pleased to tell you FEMA has approved your Hazard Mitigation Plan (HMP). The plan meets the requirements of Title 44, Chapter 1, Section 201.6, of the Code of Federal Regulations (44 CFR 201.6). It addresses these required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Participating communities are now eligible for Hazard Mitigation Assistance (HMA) grant programs. These programs can fund mitigation planning and projects that reduce disaster losses and protect life and property from future disasters. Approved HMPs can also earn points under the Community Rating System.

Within 5 years, your community must revise its plan and obtain approval to remain eligible for HMA funding. You should review the plan annually to keep it relevant to mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during its next update.

I commend you and the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Debbie Messmer, State Hazard Mitigation Officer, at (804) 897-9975.

Sincerely,

Sarah Wolfe, Branch Chief
Floodplain Management and Insurance Branch
FEMA Region 3

Appendix H. Hazus Reports

Hazus: Flood Global Risk Report

Region Name: WestPiedmontFLD

Flood Scenario: YR100

Print Date: Tuesday, July 6, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Flood. These results can be improved by using enhanced inventory data and flood hazard information.

Table of Contents

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 6 county(ies) from the following state(s):

- Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is approximately 2,615 square miles and contains 14,885 census blocks. The region contains over 105 thousand households and has a total population of 249,182 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 125,170 buildings in the region with a total building replacement value (excluding contents) of 27,088 million dollars. Approximately 92.76% of the buildings (and 76.25% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 125,170 buildings in the region which have an aggregate total replacement value of 27,088 million dollars. Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure ($1000)	Percent of Total
Residential	20,654,225	76.2%
Commercial	3,719,339	13.7%
Industrial	1,584,333	5.8%
Agricultural	127,082	0.5%
Religion	587,941	2.2%
Government	147,770	0.5%
Education	266,923	1.0%
Total	**27,087,613**	**100%**

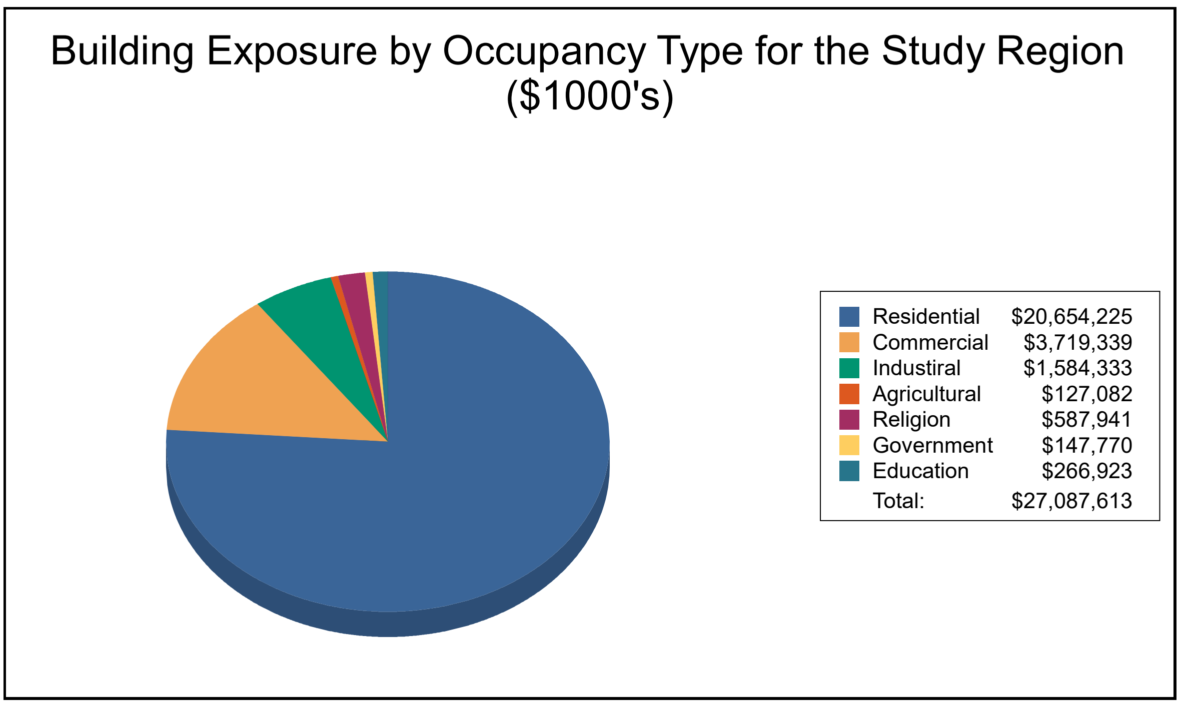
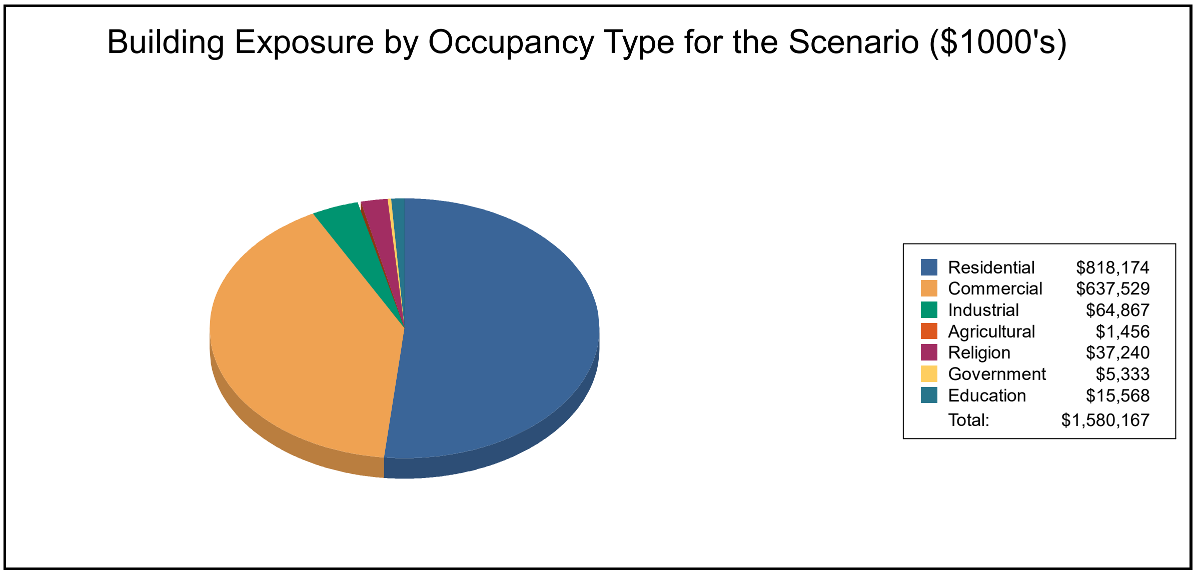


Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure ($1000)	Percent of Total
Residential	10,878,034	77.1%
Commercial	1,853,645	13.1%
Industrial	856,171	6.1%
Agricultural	80,488	0.6%
Religion	250,630	1.8%
Government	65,478	0.5%
Education	119,609	0.8%
Total	**14,104,055**	**100%**



Essential Facility Inventory

For essential facilities, there are 5 hospitals in the region with a total bed capacity of 546 beds. There are 99 schools, 46 fire stations, 13 police stations and 1 emergency operation center.

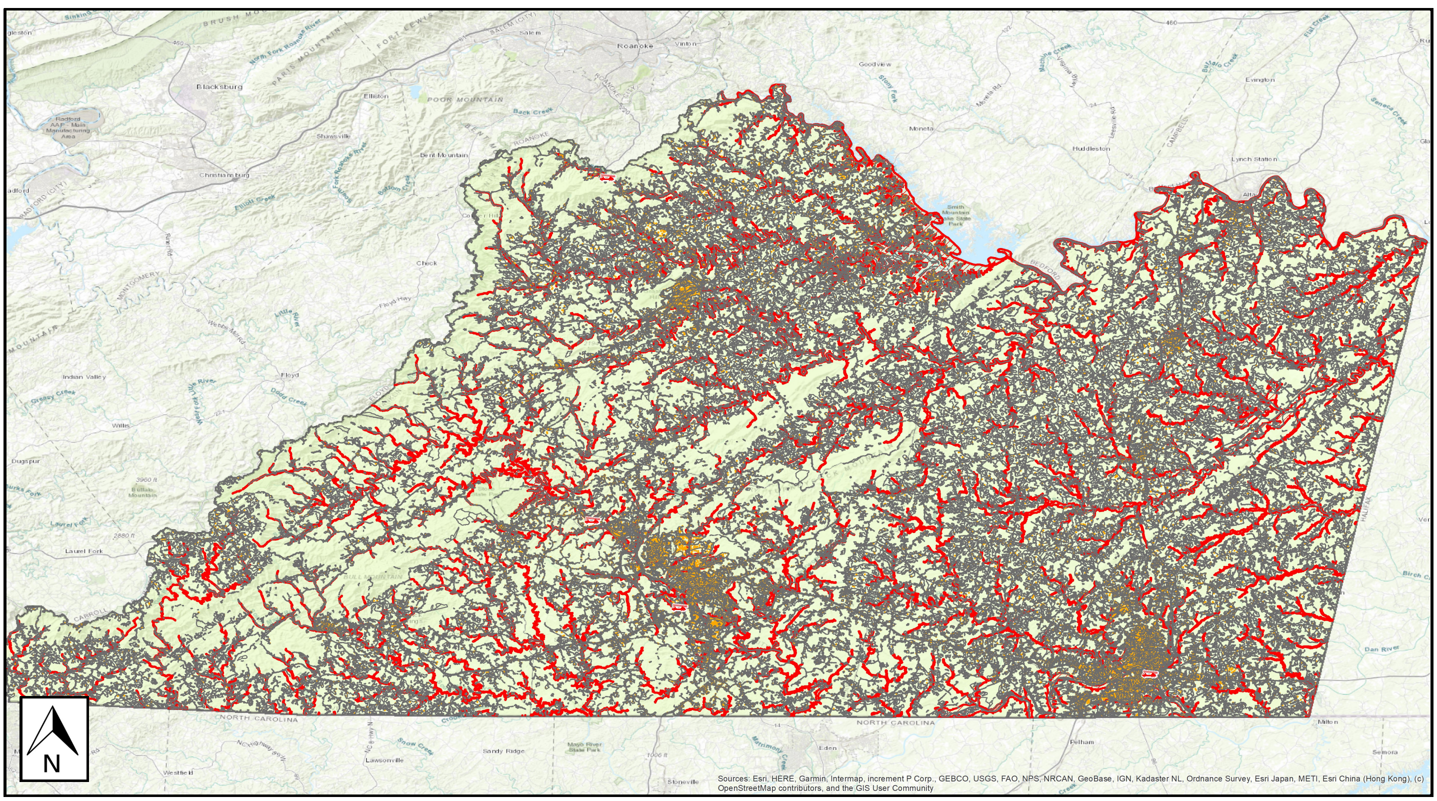
Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	WestPiedmontFLD
Scenario Name:	YR100
Return Period Analyzed:	100
Analysis Options Analyzed:	No What-Ifs

Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure



Building Damage

General Building Stock Damage

Hazus estimates that about 420 buildings will be at least moderately damaged. This is over 40% of the total number of buildings in the scenario. There are an estimated 160 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Total Economic Loss (1 dot = $300K) Overview Map

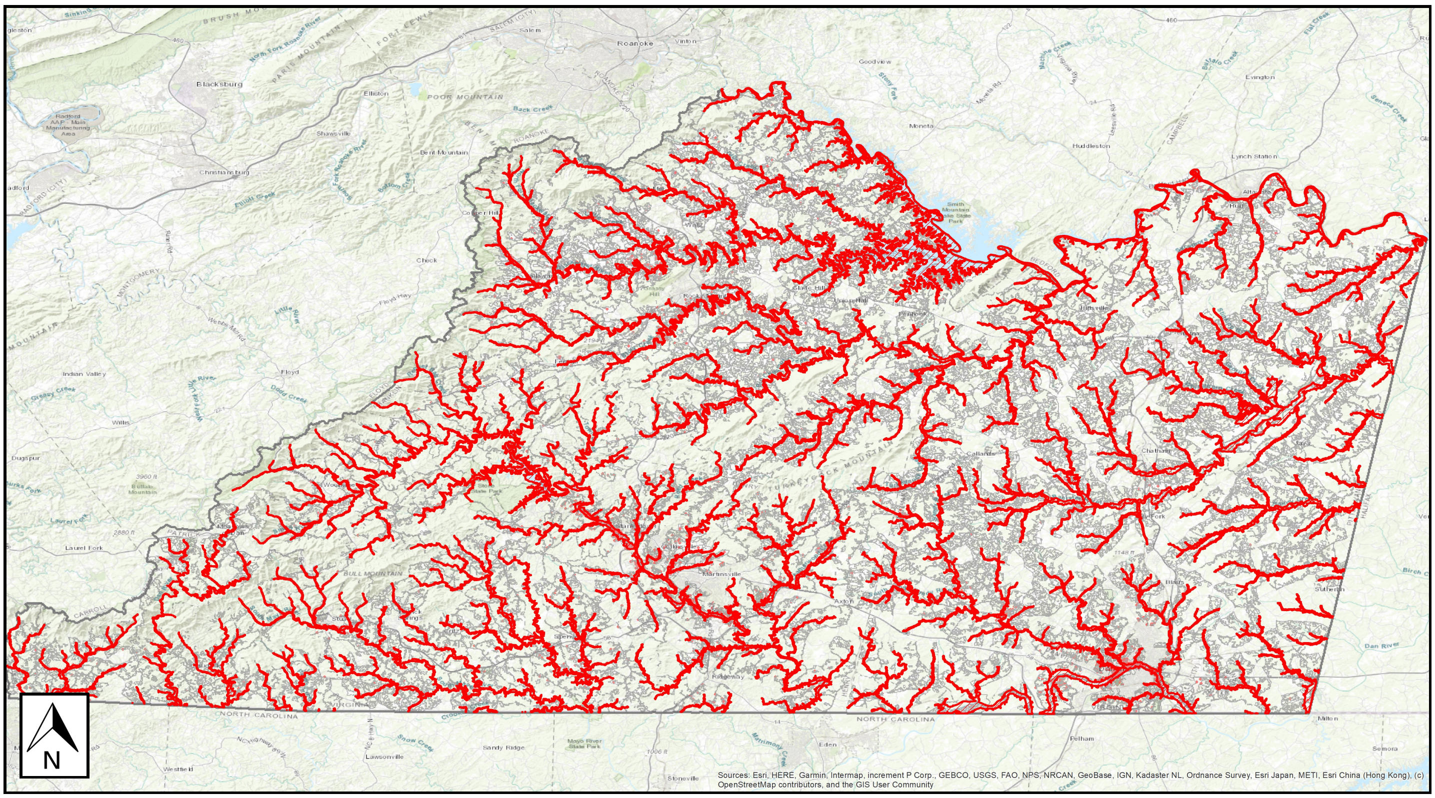


Table 3: Expected Building Damage by Occupancy

Occupancy	1-10 Count	1-10 (%)	11-20 Count	11-20 (%)	21-30 Count	21-30 (%)	31-40 Count	31-40 (%)	41-50 Count	41-50 (%)	>50 Count	>50 (%)
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	1	4	10	43	5	22	2	9	1	4	4	17
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	4	7	18	32	16	28	10	18	9	16
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	13	4	81	23	46	13	42	12	25	7	147	42
Total	**14**		**95**		**69**		**60**		**36**		**160**	

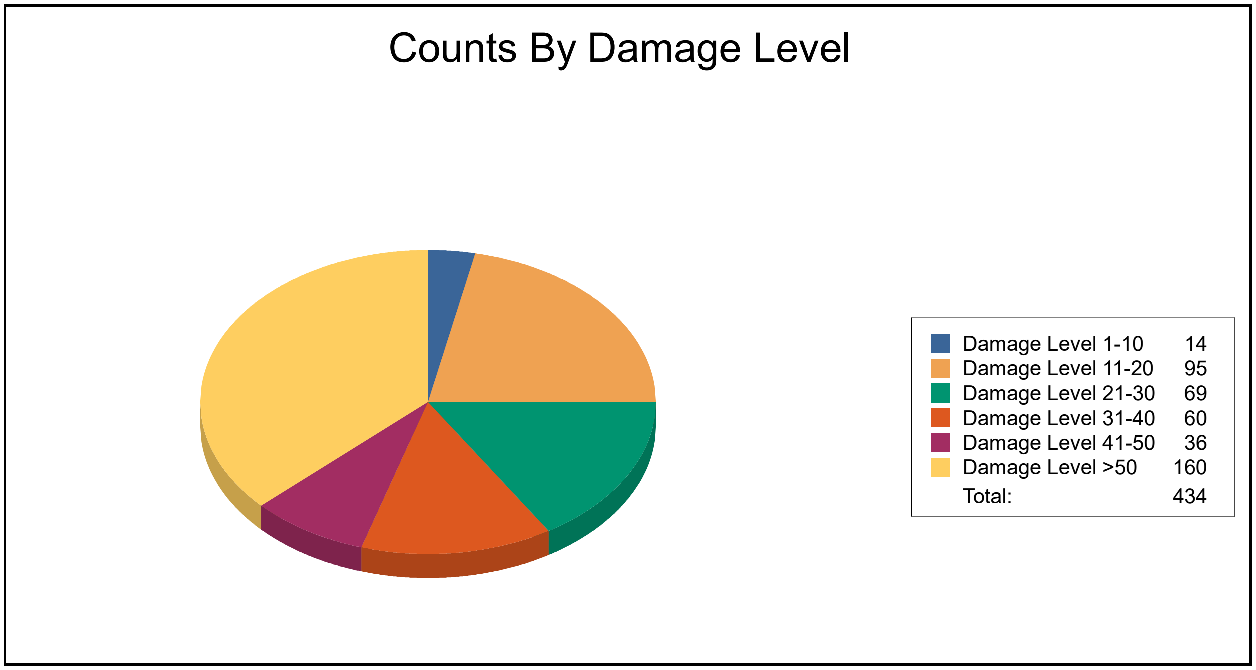


Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0	0	0	3	50	1	17	1	17	1	17
ManufHousing	0	0	0	0	0	0	0	0	0	0	21	100
Masonry	1	1	16	23	11	15	11	15	6	8	26	37
Steel	1	2	10	20	14	28	10	20	6	12	9	18
Wood	13	4	78	24	48	15	42	13	24	8	115	36

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 546 hospital beds available for use. On the day of the scenario flood event, the model estimates that 546 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

		# Facilities		
Classification	Total	At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	1	0	0	0
Fire Stations	46	4	0	4
Hospitals	5	0	0	0
Police Stations	13	0	0	0
Schools	99	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

(1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.

(2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

Analysis has not been performed for this Scenario.

Social Impact

Shelter Requirements

Analysis has not been performed for this Scenario.

Economic Loss

The total economic loss estimated for the flood is 1,473.66 million dollars, which represents 10.45 % of the total replacement value of the scenario buildings.

Building-Related Losses

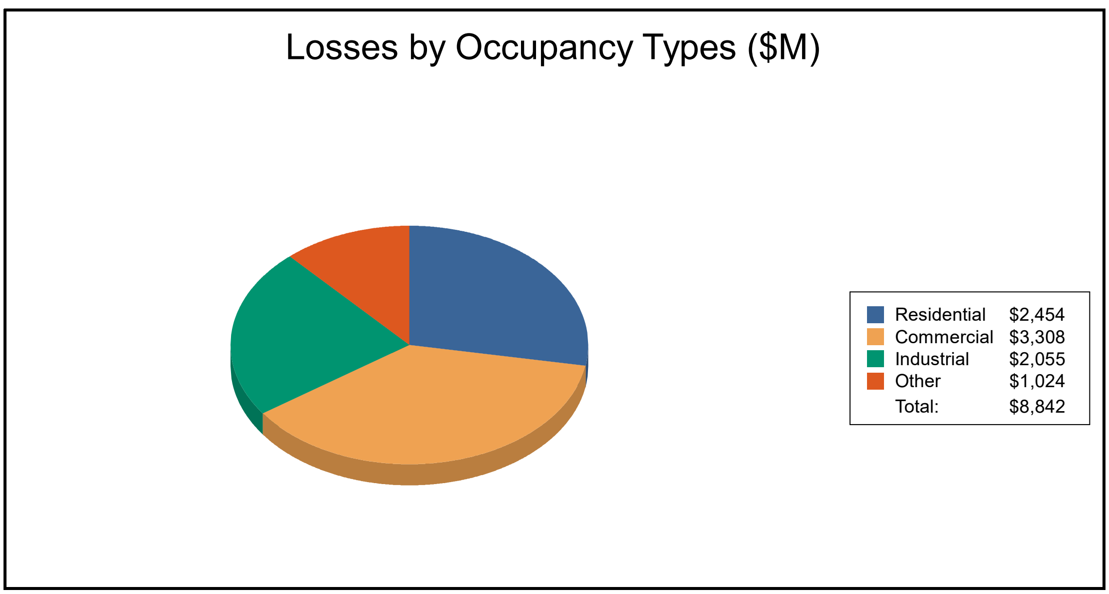
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 995.73 million dollars. 32% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 27.76% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	1,370.23	490.99	525.79	53.32	2,440.31
	Content	719.20	1,138.21	1,313.01	182.14	3,352.56
	Inventory	0.00	47.51	131.89	2.12	181.52
	Subtotal	**2,089.43**	**1,676.71**	**1,970.68**	**237.58**	**5,974.39**
Business Interruption						
	Income	14.09	594.89	17.65	71.56	698.19
	Relocation	229.27	167.41	33.35	21.94	451.96
	Rental Income	88.08	118.59	6.08	2.25	215.00
	Wage	33.53	750.85	27.70	690.35	1,502.44
	Subtotal	**364.97**	**1,631.74**	**84.77**	**786.10**	**2,867.59**
ALL	**Total**	**2,454.40**	**3,308.45**	**2,055.46**	**1,023.68**	**8,841.98**



Appendix A: County Listing for the Region

Virginia

- Franklin
- Henry
- Patrick
- Pittsylvania
- Danville
- Martinsville

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Virginia				
Franklin	56,159	5,643,610	1,179,138	6,822,748
Pittsylvania	63,506	4,829,432	879,569	5,709,001
Danville	43,055	3,623,357	1,606,098	5,229,455
Martinsville	13,821	1,229,502	768,077	1,997,579
Henry	54,151	3,888,270	1,650,196	5,538,466
Patrick	18,490	1,440,054	350,310	1,790,364
Total	**249,182**	**20,654,225**	**6,433,388**	**27,087,613**
Total Study Region	**249,182**	**20,654,225**	**6,433,388**	**27,087,613**

HAZUS EARTHQUAKE • WIND • FLOOD • TSUNAMI

FEMA

RiskMAP
Increasing Resilience Together

Quick Assessment Report

March 22, 2021

Study Region : WPPDC_HURR_Prob

Scenario : Probabilistic

Regional Statistics

Area (Square Miles)	2,615
Number of Census Tracts	65
Number of People in the Region	249,182

General Building Stock

Occupancy	*Building Count*	*Dollar Exposure ($ K)*
Residential	116,109	22,459,560
Commercial	5,466	4,015,923
Other	3,595	2,992,694
Total	125,170	29,468,177

Scenario Results

Number of Residential Buildings Damaged

Return Period	*Minor*	*Moderate*	*Severe*	*Destruction*	*Total*
10	0	0	0	0	0
20	5	0	0	0	5
50	28	1	0	0	29
100	161	5	0	0	166
200	479	13	0	0	492
500	2,834	189	1	6	3,029
1000	5,779	554	10	25	6,369

Number of Buildings Damaged

Return Period	*Minor*	*Moderate*	*Severe*	*Destruction*	*Total*
10	0	0	0	0	0
20	8	0	0	0	8
50	43	1	0	0	44
100	195	5	0	0	200
200	536	14	0	0	550
500	2,995	206	4	6	3,210
1000	6,099	603	19	25	6,747

Shelter Requirements

Return Period	*Displaced Households (#Households)*	*Short Term Shelter (#People)*
10	0	0
20	0	0
50	0	0
100	0	0
200	0	0
500	9	5
1000	25	17

Economic Loss (x 1000)

	Property Damage (Capital Stock) Losses		***Business Interruption (Income) Losses***
ReturnPeriod	***Residential***	***Total***	
10	0	0	0
20	1	1	0
50	3,176	3,377	1
100	13,787	14,351	71
200	32,664	33,500	239
500	78,459	82,753	3,404
1000	125,825	135,717	9,701
Annualized	828	903	67

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

Hazus: Hurricane Global Risk Report

Region Name: WPPDC_HURR_Prob

Hurricane Scenario: Probabilistic 10-year Return Period

Print Date: Monday, March 22, 2021

Table of Contents

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 6 county(ies) from the following state(s):

- Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 2,614.91 square miles and contains 65 census tracts. There are over 105 thousand households in the region and a total population of 249,182 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 125 thousand buildings in the region with a total building replacement value (excluding contents) of 29,468 million dollars (2014 dollars). Approximately 93% of the buildings (and 76% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 125,170 buildings in the region which have an aggregate total replacement value of 29,468 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

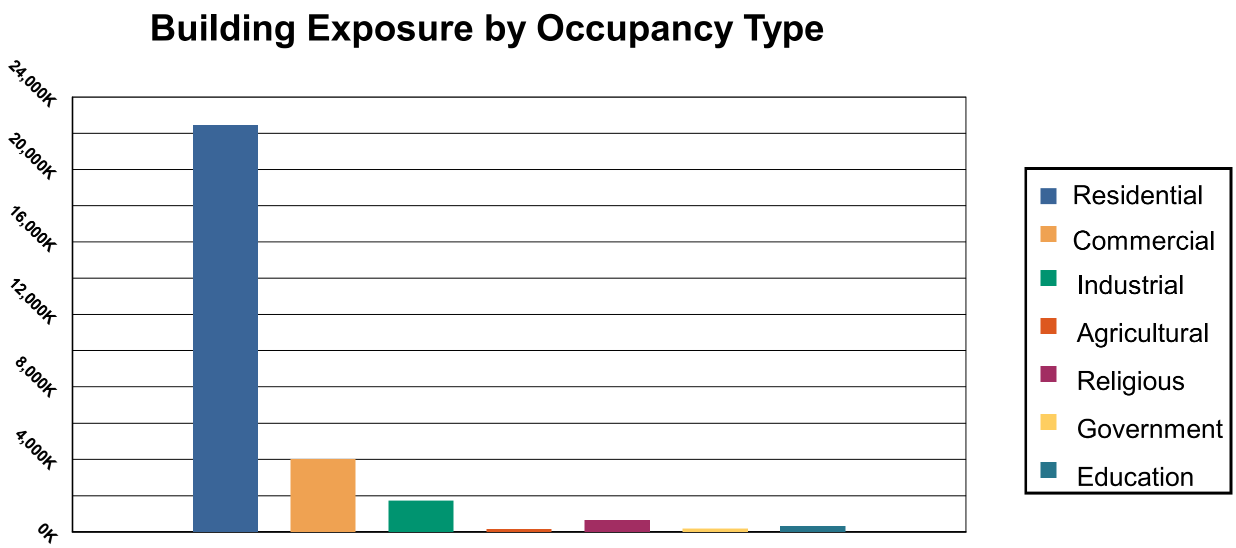


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	22,459,560	76.22 %
Commercial	4,015,923	13.63%
Industrial	1,710,413	5.80%
Agricultural	149,048	0.51%
Religious	650,001	2.21%
Government	167,366	0.57%
Education	315,866	1.07%
Total	**29,468,177**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 6 hospitals in the region with a total bed capacity of 510 beds. There are 114 schools, 66 fire stations, 19 police stations and 6 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 0 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

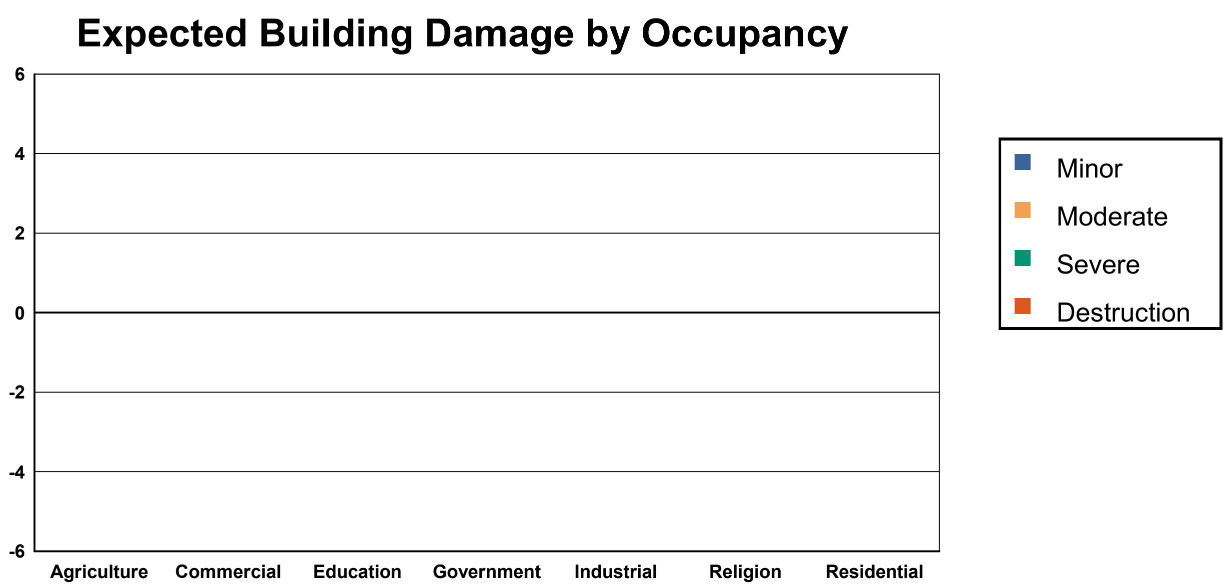


Table 2: Expected Building Damage by Occupancy : 10 - year Event

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	475.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial	5,466.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Education	205.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government	195.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	1,748.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Religion	972.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Residential	116,109.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**125,170.00**		**0.00**		**0.00**		**0.00**		**0.00**	

Table 3: Expected Building Damage by Building Type : 10 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	930	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Masonry	26,241	100.00	0	0.00	0	0.00	0	0.00	0	0.00
MH	21,993	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	4,024	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	71,956	100.00	0	0.00	0	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 510 hospital beds (0%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, none of the beds will be in service. By 30 days, none will be operational.

Thematic Map of Essential Facilities with greater than 50% moderate

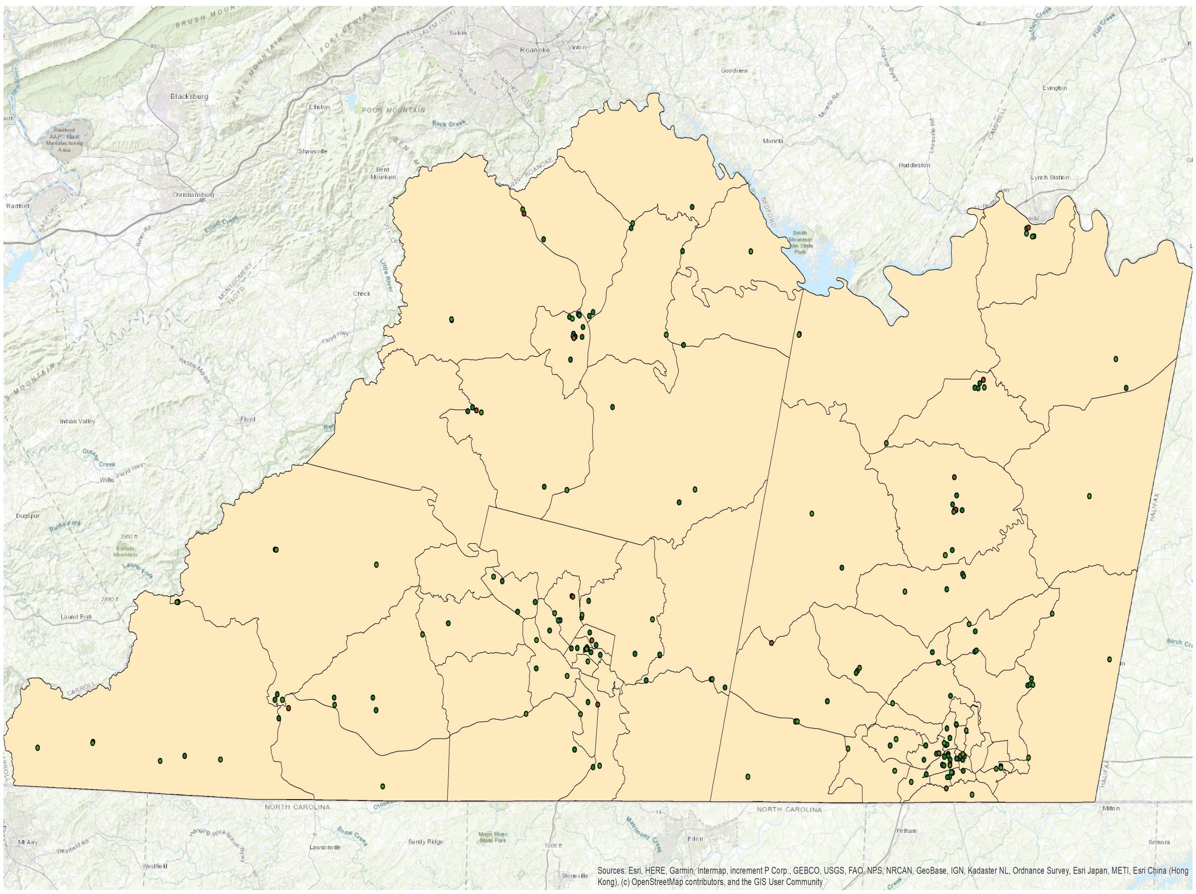


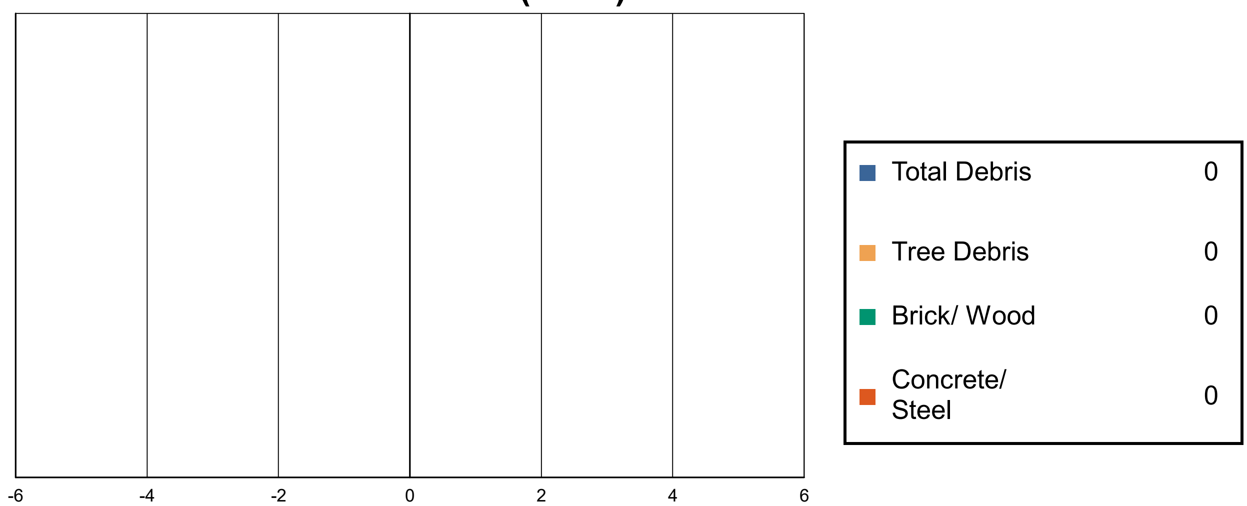
Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate Damage > 50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
EOCs	6	0	0	6
Fire Stations	66	0	0	66
Hospitals	6	0	0	6
Police Stations	19	0	0	19
Schools	114	0	0	114

Induced Hurricane Damage

Debris Generation

Estimated Debris (Tons)



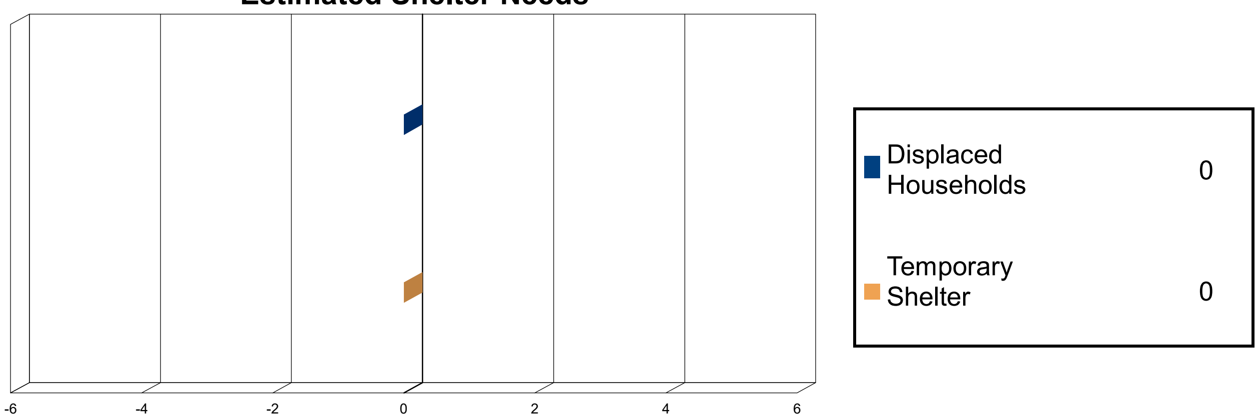
Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0 tons of debris will be generated. Of the total amount, 0 tons (0%) is Other Tree Debris. Of the remaining 0 tons, Brick/Wood comprises 0% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 0 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Estimated Shelter Needs



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 249,182) will seek temporary shelter in public shelters.

Economic Loss

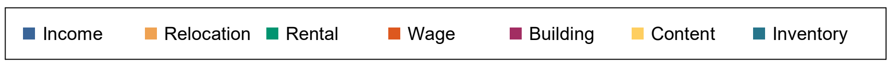
The total economic loss estimated for the hurricane is 0.0 million dollars, which represents 0.00 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 0 million dollars. 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 0% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left)
and Building Damage Type (right)



Loss Type by General Occupancy

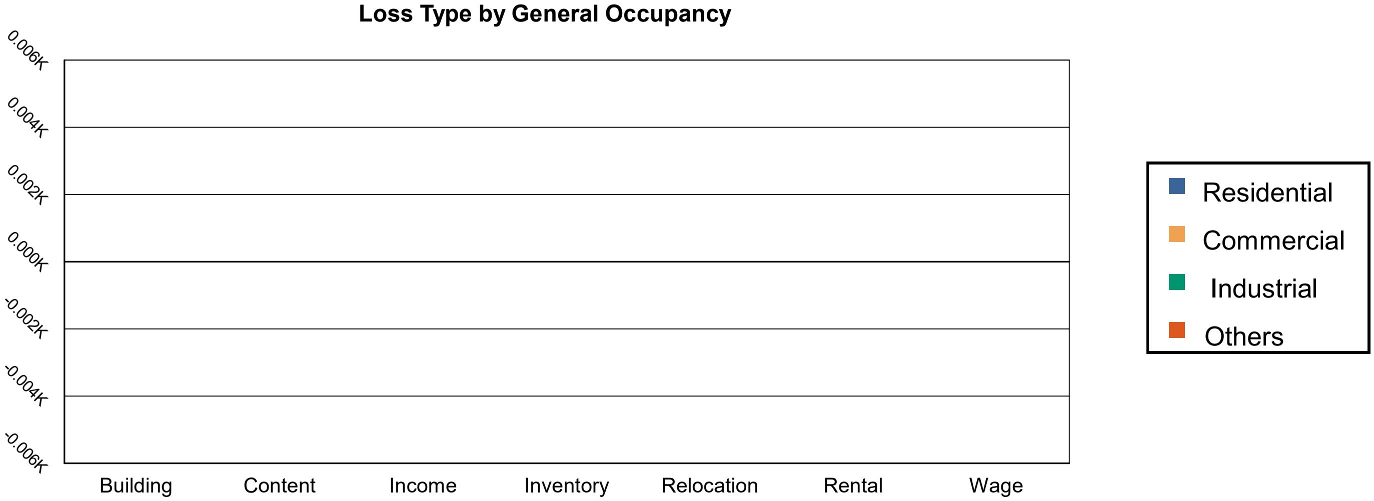


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	0.00	0.00	0.00	0.00	0.00
	Content	0.00	0.00	0.00	0.00	0.00
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Business Interruption Loss						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	0.00	0.00	0.00	0.00	0.00
	Rental	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Total

Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Appendix A: County Listing for the Region

Virginia
- Franklin
- Henry
- Patrick
- Pittsylvania
- Danville
- Martinsville

Appendix B: Regional Population and Building Value Data

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
Virginia				
Danville	43,055	3,910,725	1,756,360	5,667,085
Franklin	56,159	6,160,537	1,274,476	7,435,013
Henry	54,151	4,273,395	1,804,696	6,078,091
Martinsville	13,821	1,341,692	816,490	2,158,182
Patrick	18,490	1,588,733	379,015	1,967,748
Pittsylvania	63,506	5,184,478	977,580	6,162,058
Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**
Study Region Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**

Hazus: Hurricane Global Risk Report

Region Name: WPPDC_HURR_Prob

Hurricane Scenario: Probabilistic 20-year Return Period

Print Date: Monday, March 22, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

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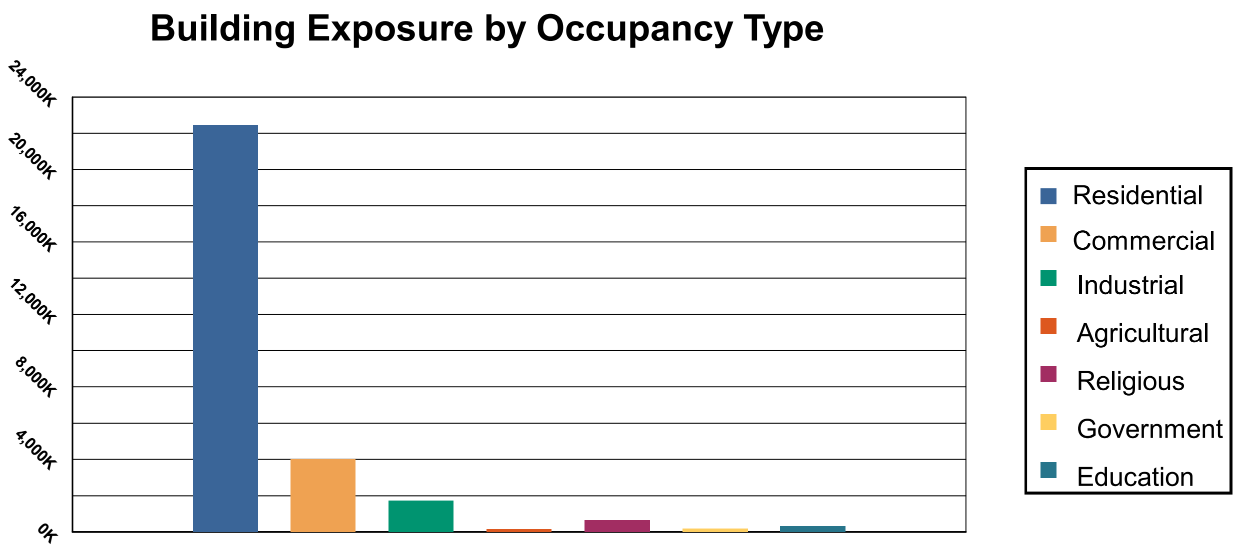

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Essential Facility Inventory

For essential facilities, there are 6 hospitals in the region with a total bed capacity of 510 beds. There are 114 schools, 66 fire stations, 19 police stations and 6 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 0 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

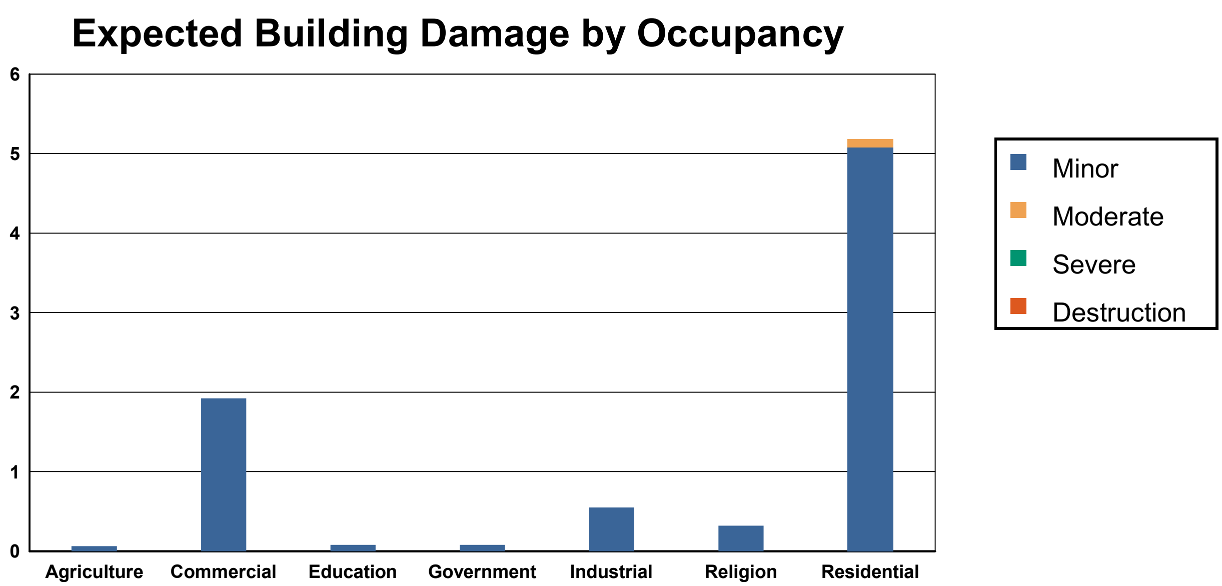


Table 2: Expected Building Damage by Occupancy : 20 - year Event

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	474.94	99.99	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Commercial	5,464.08	99.96	1.92	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Education	204.92	99.96	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Government	194.92	99.96	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	1,747.45	99.97	0.55	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Religion	971.68	99.97	0.32	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Residential	116,103.82	100.00	5.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00
Total	**125,161.81**		**8.10**		**0.09**		**0.00**		**0.00**	

Table 3: Expected Building Damage by Building Type : 20 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	929	99.95	1	0.05	0	0.00	0	0.00	0	0.00
Masonry	26,235	99.98	5	0.02	0	0.00	0	0.00	0	0.00
MH	21,993	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	4,022	99.96	2	0.04	0	0.00	0	0.00	0	0.00
Wood	71,956	100.00	0	0.00	0	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 510 hospital beds (0%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, none of the beds will be in service. By 30 days, none will be operational.

Thematic Map of Essential Facilities with greater than 50% moderate

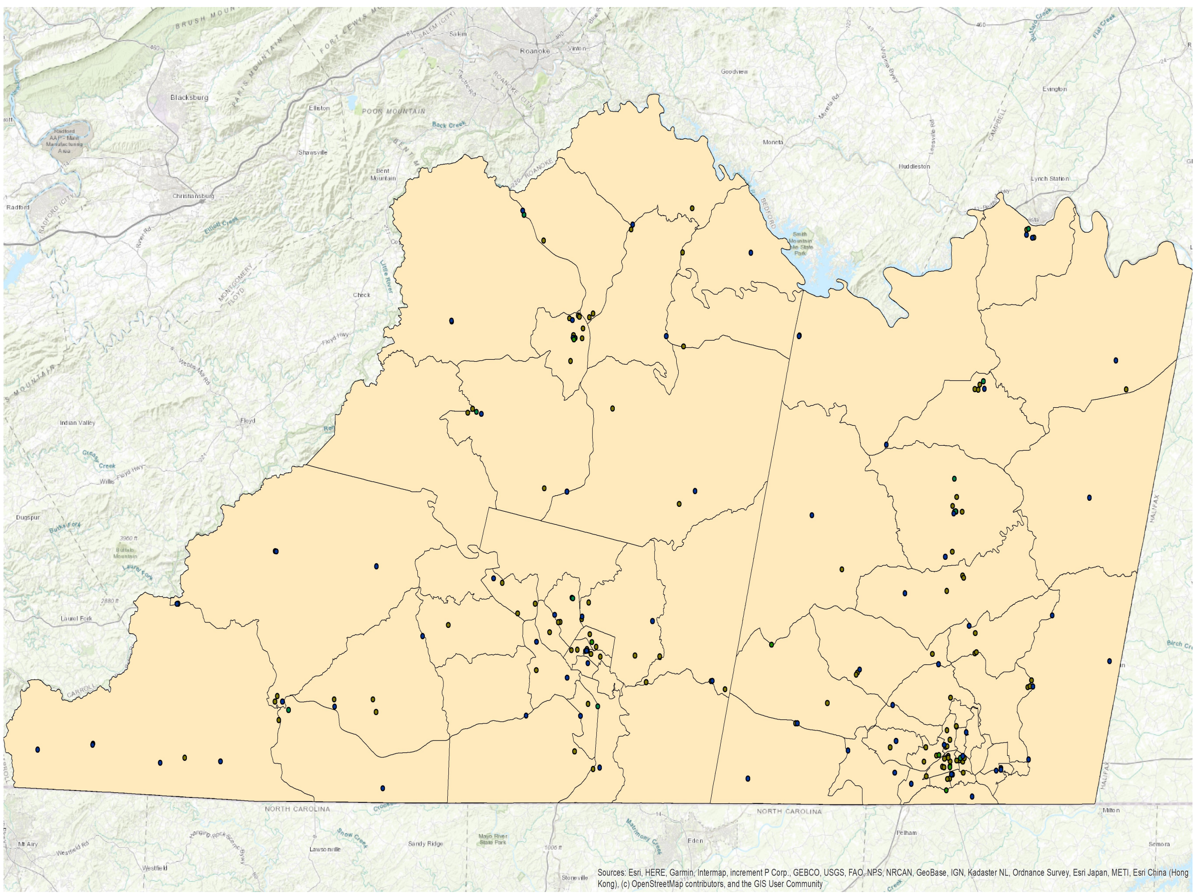


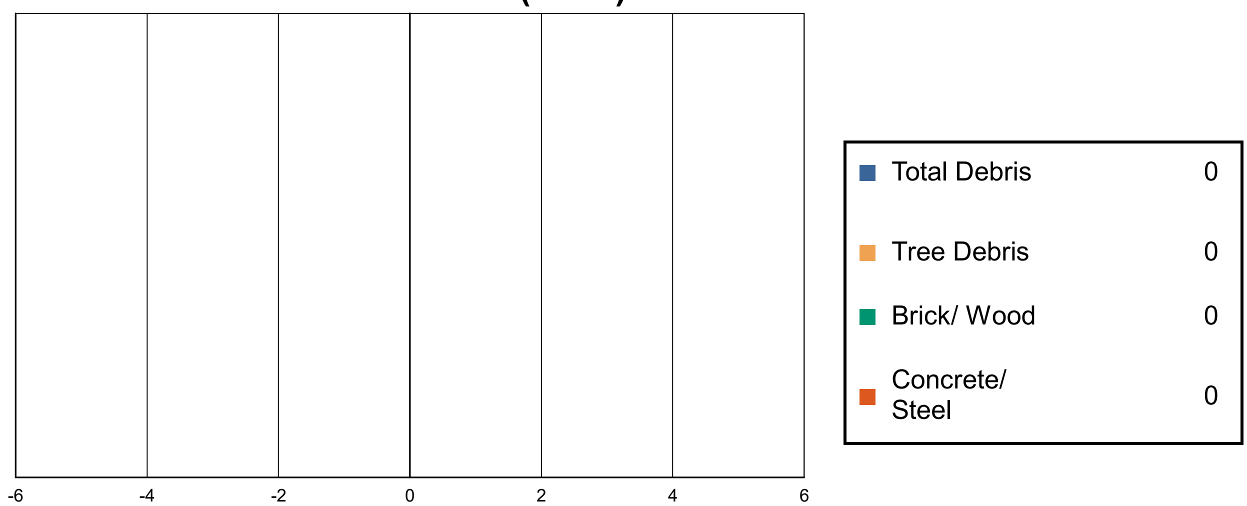
Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate Damage > 50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
EOCs	6	0	0	6
Fire Stations	66	0	0	66
Hospitals	6	0	0	6
Police Stations	19	0	0	19
Schools	114	0	0	114

Induced Hurricane Damage

Debris Generation

Estimated Debris (Tons)



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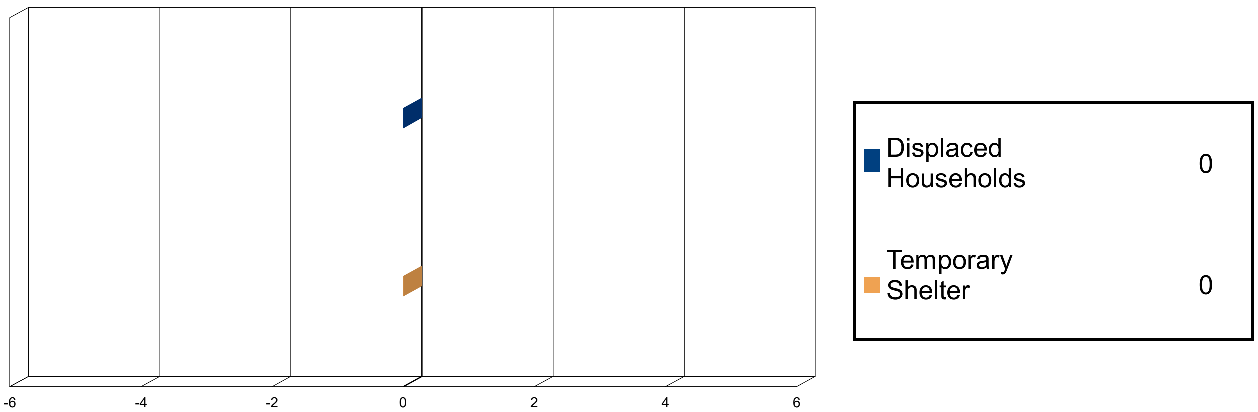
The model estimates that a total of 0 tons of debris will be generated. Of the total amount, 0 tons (0%) is Other Tree Debris. Of the remaining 0 tons, Brick/Wood comprises 0% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 0 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Estimated Shelter Needs



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 249,182) will seek temporary shelter in public shelters.

Economic Loss

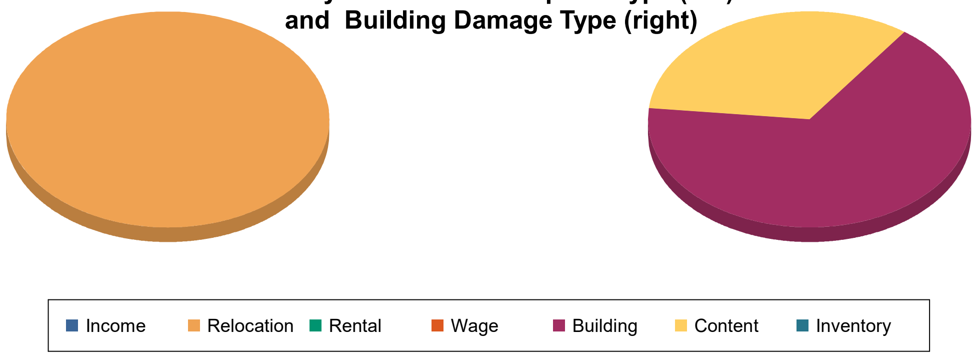
The total economic loss estimated for the hurricane is 0.0 million dollars, which represents 0.00 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 0 million dollars. 17% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 100% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left)
and Building Damage Type (right)



Loss Type by General Occupancy

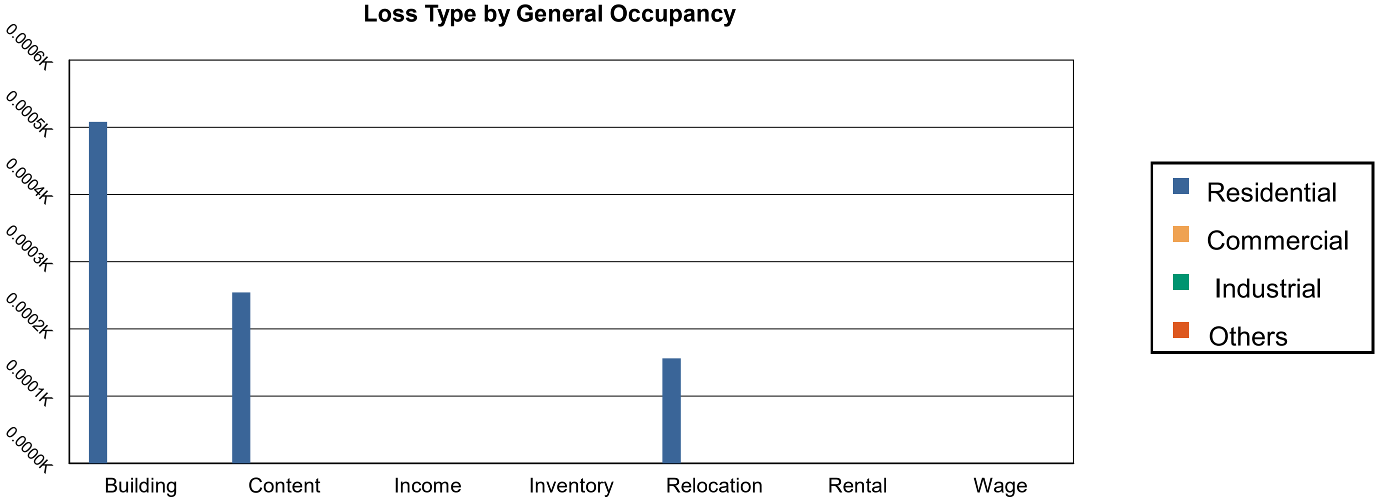


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	0.51	0.00	0.00	0.00	0.51
	Content	0.25	0.00	0.00	0.00	0.25
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	**0.76**	**0.00**	**0.00**	**0.00**	**0.76**
Business Interruption Loss						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	0.16	0.00	0.00	0.00	0.16
	Rental	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	**0.16**	**0.00**	**0.00**	**0.00**	**0.16**

Total

Total	**0.92**	**0.00**	**0.00**	**0.00**	**0.92**

Appendix A: County Listing for the Region

Virginia
- Franklin
- Henry
- Patrick
- Pittsylvania
- Danville
- Martinsville

Appendix B: Regional Population and Building Value Data

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
Virginia				
Danville	43,055	3,910,725	1,756,360	5,667,085
Franklin	56,159	6,160,537	1,274,476	7,435,013
Henry	54,151	4,273,395	1,804,696	6,078,091
Martinsville	13,821	1,341,692	816,490	2,158,182
Patrick	18,490	1,588,733	379,015	1,967,748
Pittsylvania	63,506	5,184,478	977,580	6,162,058
Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**
Study Region Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**

Hazus: Hurricane Global Risk Report

Region Name: WPPDC_HURR_Prob

Hurricane Scenario: Probabilistic 50-year Return Period

Print Date: Monday, March 22, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

Table of Contents

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 6 county(ies) from the following state(s):

- Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 2,614.91 square miles and contains 65 census tracts. There are over 105 thousand households in the region and a total population of 249,182 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 125 thousand buildings in the region with a total building replacement value (excluding contents) of 29,468 million dollars (2014 dollars). Approximately 93% of the buildings (and 76% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 125,170 buildings in the region which have an aggregate total replacement value of 29,468 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Building Exposure by Occupancy Type

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	22,459,560	76.22 %
Commercial	4,015,923	13.63%
Industrial	1,710,413	5.80%
Agricultural	149,048	0.51%
Religious	650,001	2.21%
Government	167,366	0.57%
Education	315,866	1.07%
Total	**29,468,177**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 6 hospitals in the region with a total bed capacity of 510 beds. There are 114 schools, 66 fire stations, 19 police stations and 6 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 1 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

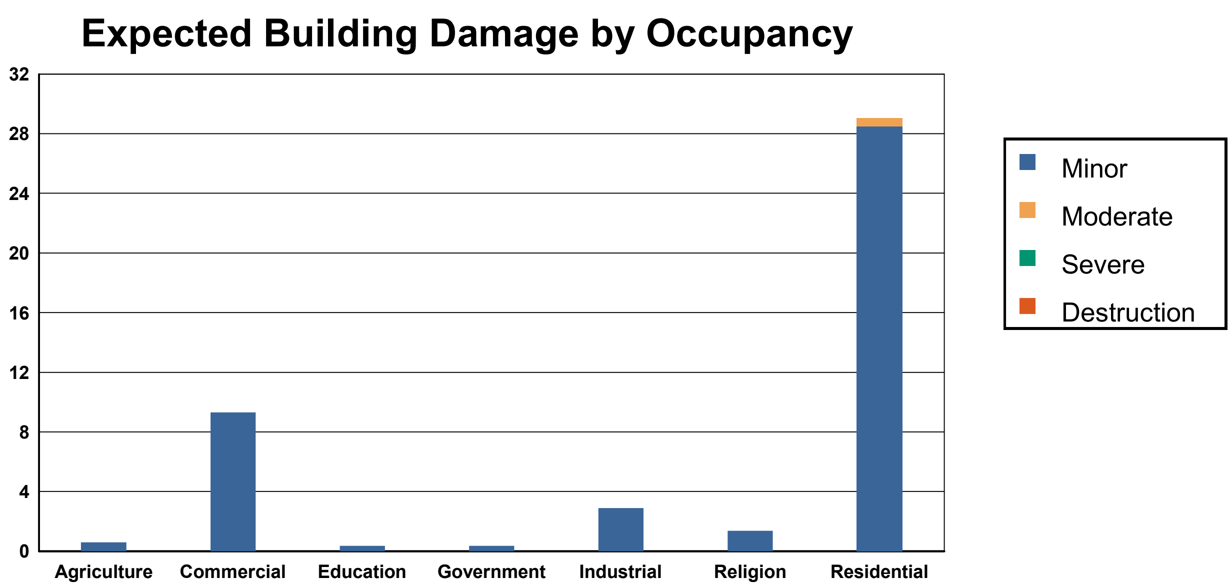


Table 2: Expected Building Damage by Occupancy : 50 - year Event

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	474.41	99.88	0.59	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Commercial	5,456.69	99.83	9.31	0.17	0.00	0.00	0.00	0.00	0.00	0.00
Education	204.64	99.82	0.36	0.18	0.00	0.00	0.00	0.00	0.00	0.00
Government	194.63	99.81	0.37	0.19	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	1,745.11	99.83	2.89	0.17	0.00	0.00	0.00	0.00	0.00	0.00
Religion	970.64	99.86	1.36	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Residential	116,079.95	99.97	28.49	0.02	0.56	0.00	0.00	0.00	0.00	0.00
Total	**125,126.07**		**43.38**		**0.56**		**0.00**		**0.00**	

Table 3: Expected Building Damage by Building Type : 50 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	928	99.76	2	0.24	0	0.00	0	0.00	0	0.00
Masonry	26,214	99.90	27	0.10	0	0.00	0	0.00	0	0.00
MH	21,993	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	4,016	99.81	8	0.19	0	0.00	0	0.00	0	0.00
Wood	71,951	99.99	5	0.01	0	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 510 hospital beds (0%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, none of the beds will be in service. By 30 days, none will be operational.

Thematic Map of Essential Facilities with greater than 50% moderate

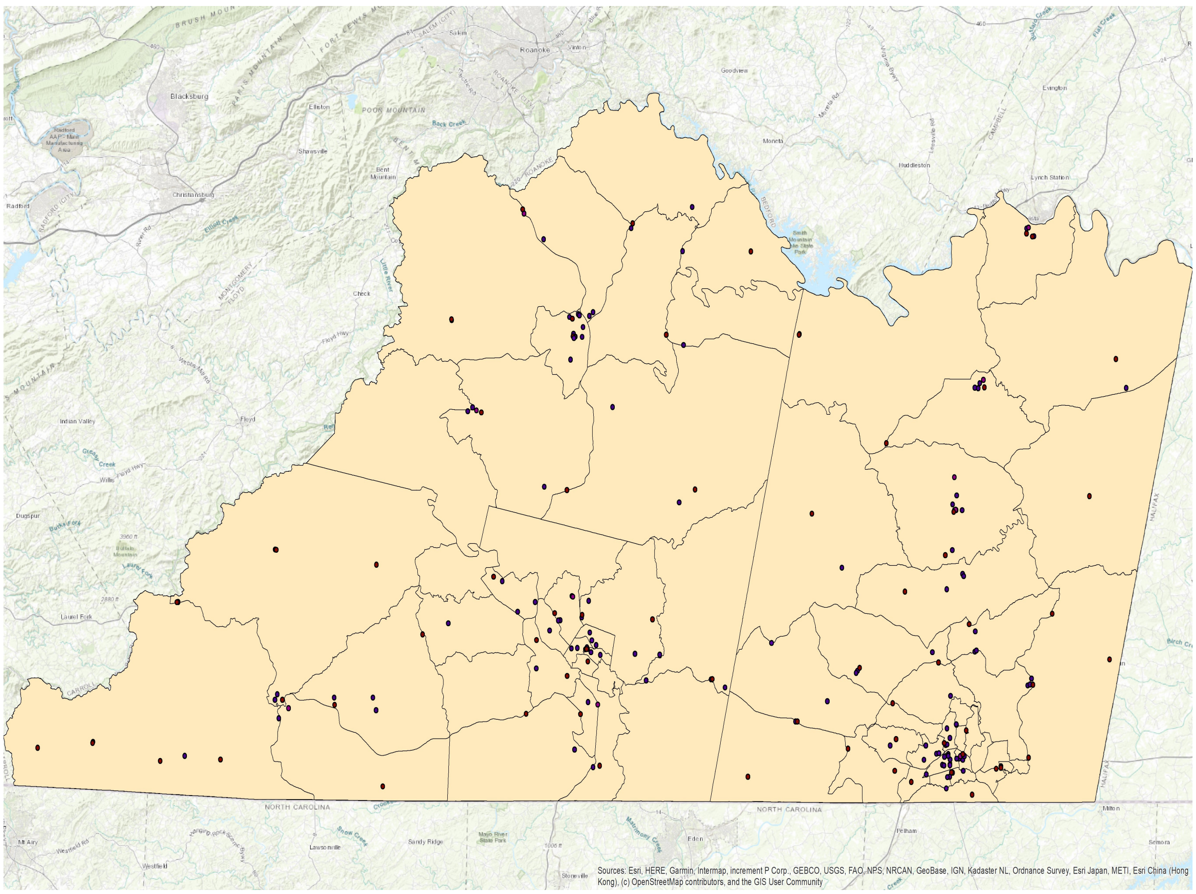
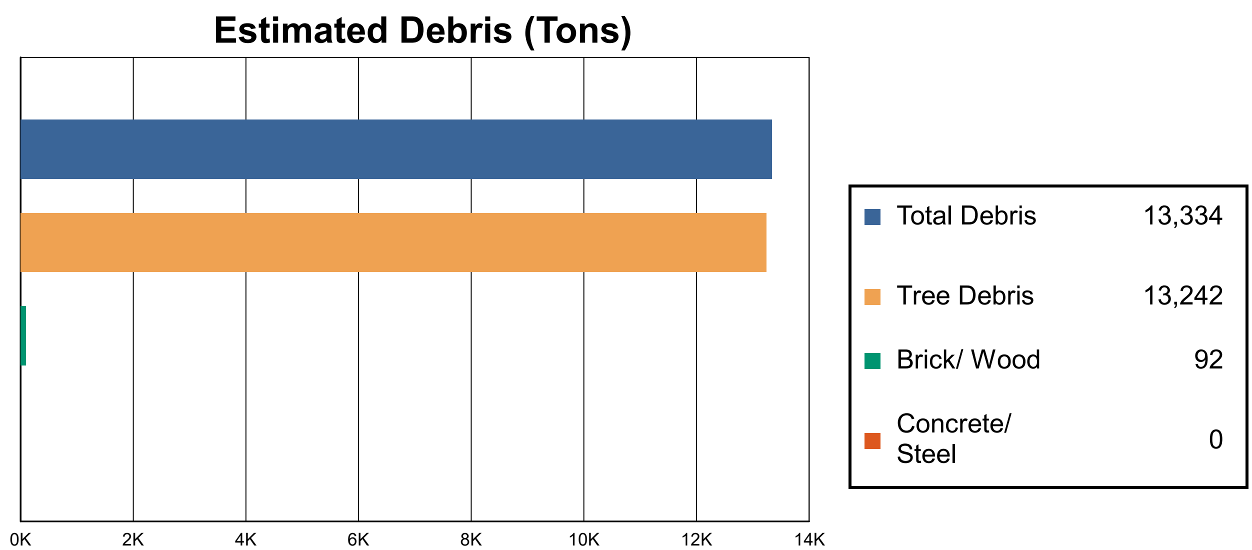


Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate Damage > 50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
EOCs	6	0	0	6
Fire Stations	66	0	0	66
Hospitals	6	0	0	6
Police Stations	19	0	0	19
Schools	114	0	0	114

Induced Hurricane Damage

Debris Generation

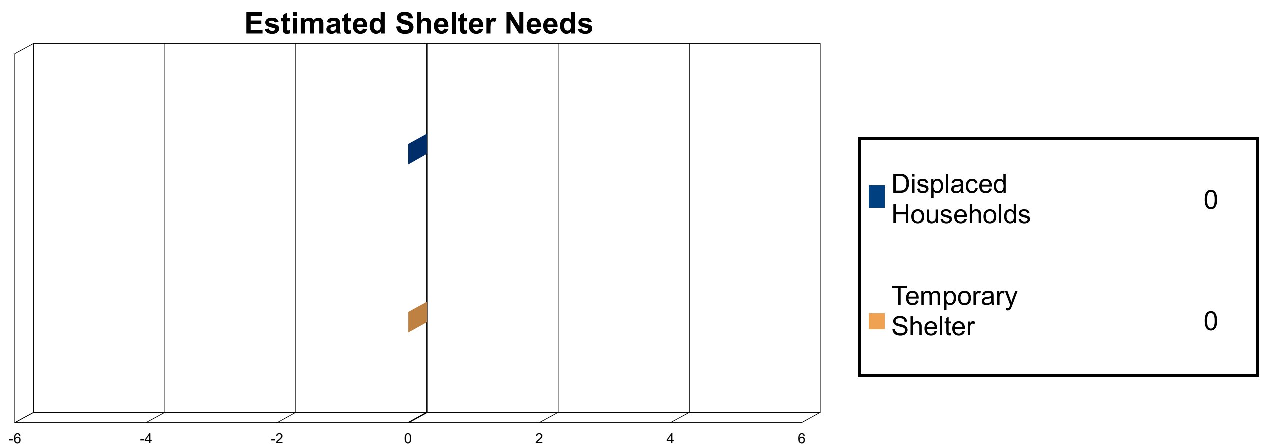


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 13,334 tons of debris will be generated. Of the total amount, 12,288 tons (92%) is Other Tree Debris. Of the remaining 1,046 tons, Brick/Wood comprises 9% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 4 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 954 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 249,182) will seek temporary shelter in public shelters.

Economic Loss

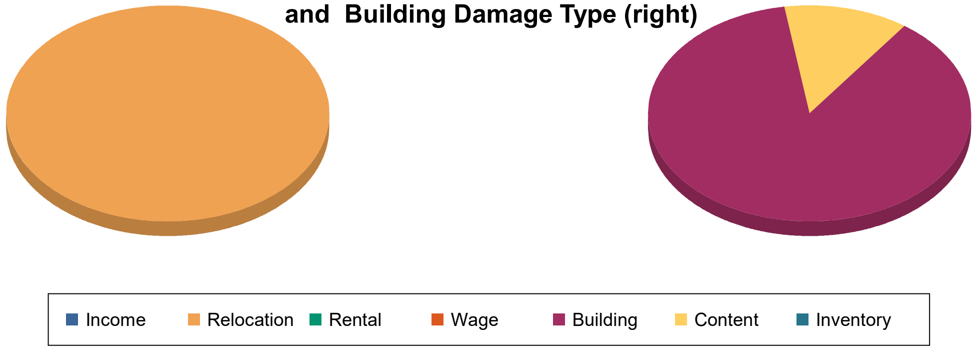
The total economic loss estimated for the hurricane is 3.4 million dollars, which represents 0.01 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 3 million dollars. 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 94% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left) and Building Damage Type (right)



Loss Type by General Occupancy

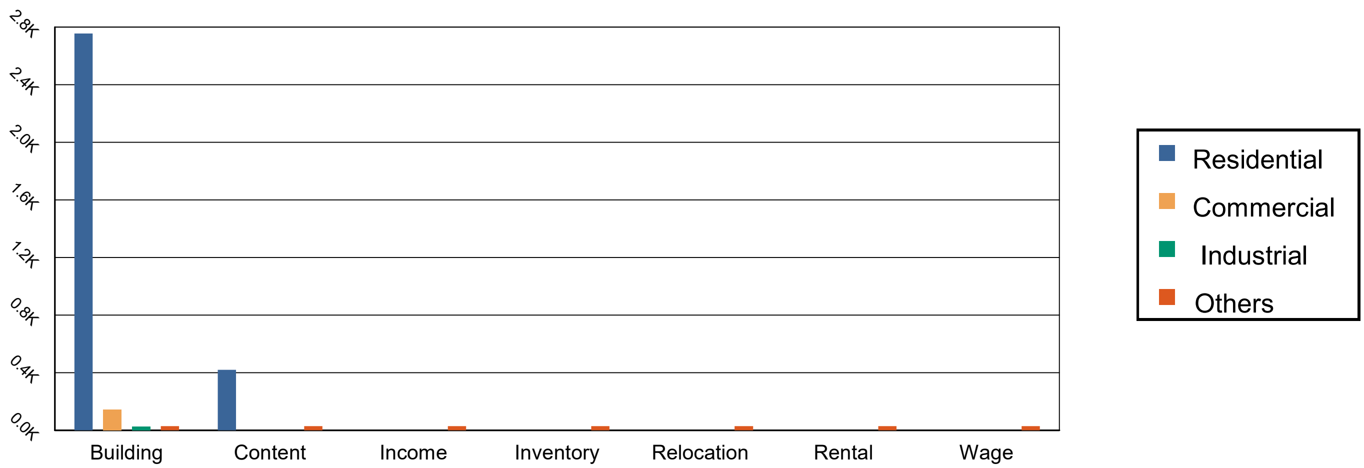


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	2,756.26	145.09	26.76	29.37	2,957.48
	Content	419.78	0.00	0.00	0.00	419.78
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	**3,176.04**	**145.09**	**26.76**	**29.37**	**3,377.26**
Business Interruption Loss						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	1.02	0.00	0.00	0.00	1.02
	Rental	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	**1.02**	**0.00**	**0.00**	**0.00**	**1.02**

Total

Total	**3,177.06**	**145.09**	**26.76**	**29.37**	**3,378.28**

Appendix A: County Listing for the Region

Virginia
- Franklin
- Henry
- Patrick
- Pittsylvania
- Danville
- Martinsville

Appendix B: Regional Population and Building Value Data

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
Virginia				
Danville	43,055	3,910,725	1,756,360	5,667,085
Franklin	56,159	6,160,537	1,274,476	7,435,013
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Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**
Study Region Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**

Hazus: Hurricane Global Risk Report

Region Name: WPPDC_HURR_Prob

Hurricane Scenario: Probabilistic 100-year Return Period

Print Date: Monday, March 22, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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The hurricane loss estimates provided in this report are based on a region that includes 6 county(ies) from the following state(s):

- Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 2,614.91 square miles and contains 65 census tracts. There are over 105 thousand households in the region and a total population of 249,182 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 125 thousand buildings in the region with a total building replacement value (excluding contents) of 29,468 million dollars (2014 dollars). Approximately 93% of the buildings (and 76% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 125,170 buildings in the region which have an aggregate total replacement value of 29,468 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

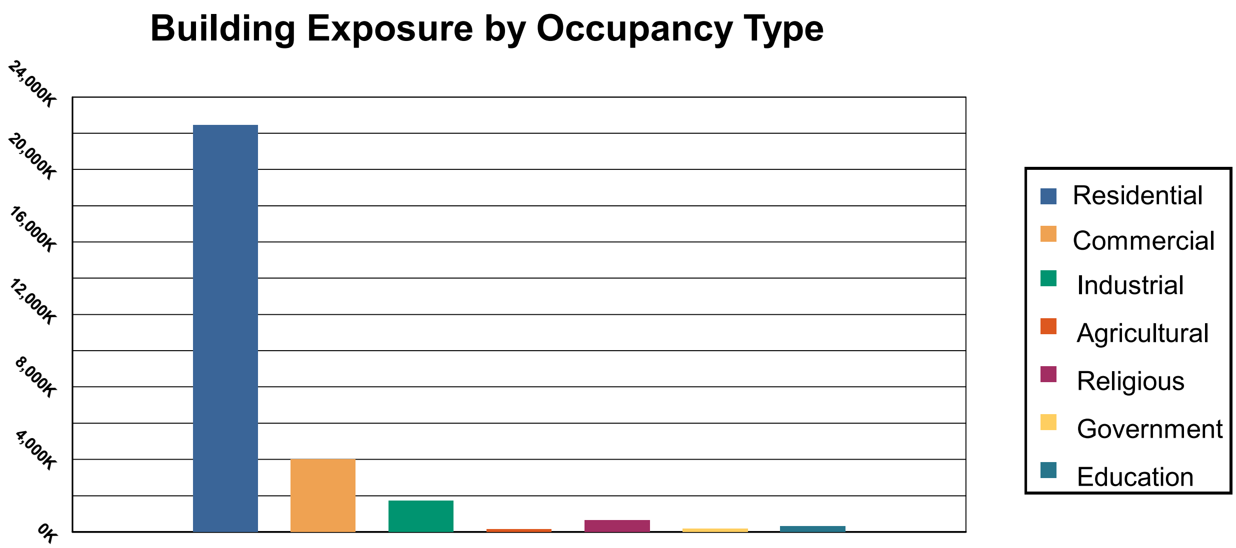

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	22,459,560	76.22 %
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Industrial	1,710,413	5.80%
Agricultural	149,048	0.51%
Religious	650,001	2.21%
Government	167,366	0.57%
Education	315,866	1.07%
Total	**29,468,177**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 6 hospitals in the region with a total bed capacity of 510 beds. There are 114 schools, 66 fire stations, 19 police stations and 6 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 5 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the ‘damage states’ is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

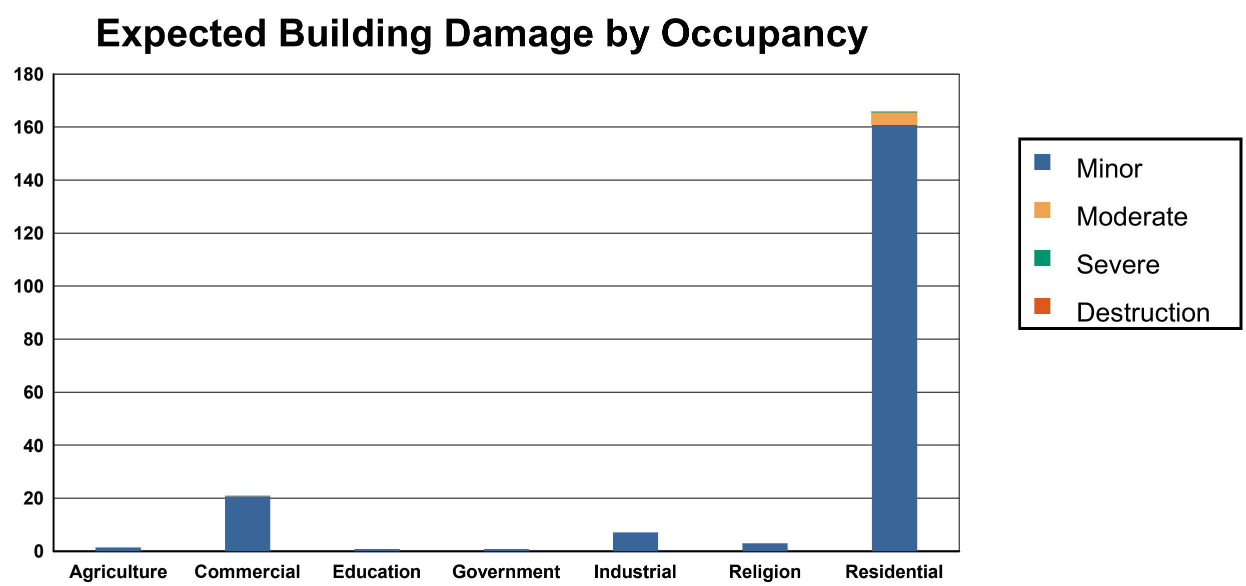


Table 2: Expected Building Damage by Occupancy : 100 - year Event

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	473.63	99.71	1.35	0.28	0.02	0.00	0.00	0.00	0.00	0.00
Commercial	5,444.92	99.61	20.74	0.38	0.35	0.01	0.00	0.00	0.00	0.00
Education	204.17	99.59	0.83	0.41	0.00	0.00	0.00	0.00	0.00	0.00
Government	194.17	99.57	0.83	0.43	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	1,740.88	99.59	7.09	0.41	0.02	0.00	0.00	0.00	0.00	0.00
Religion	968.98	99.69	3.02	0.31	0.00	0.00	0.00	0.00	0.00	0.00
Residential	115,943.31	99.86	160.86	0.14	4.79	0.00	0.03	0.00	0.00	0.00
Total	**124,970.06**		**194.72**		**5.18**		**0.04**		**0.00**	

Table 3: Expected Building Damage by Building Type : 100 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	925	99.47	5	0.53	0	0.00	0	0.00	0	0.00
Masonry	26,154	99.67	83	0.32	4	0.01	0	0.00	0	0.00
MH	21,993	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	4,007	99.57	17	0.43	0	0.01	0	0.00	0	0.00
Wood	71,878	99.89	77	0.11	0	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 510 hospital beds (0%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, none of the beds will be in service. By 30 days, none will be operational.

Thematic Map of Essential Facilities with greater than 50% moderate

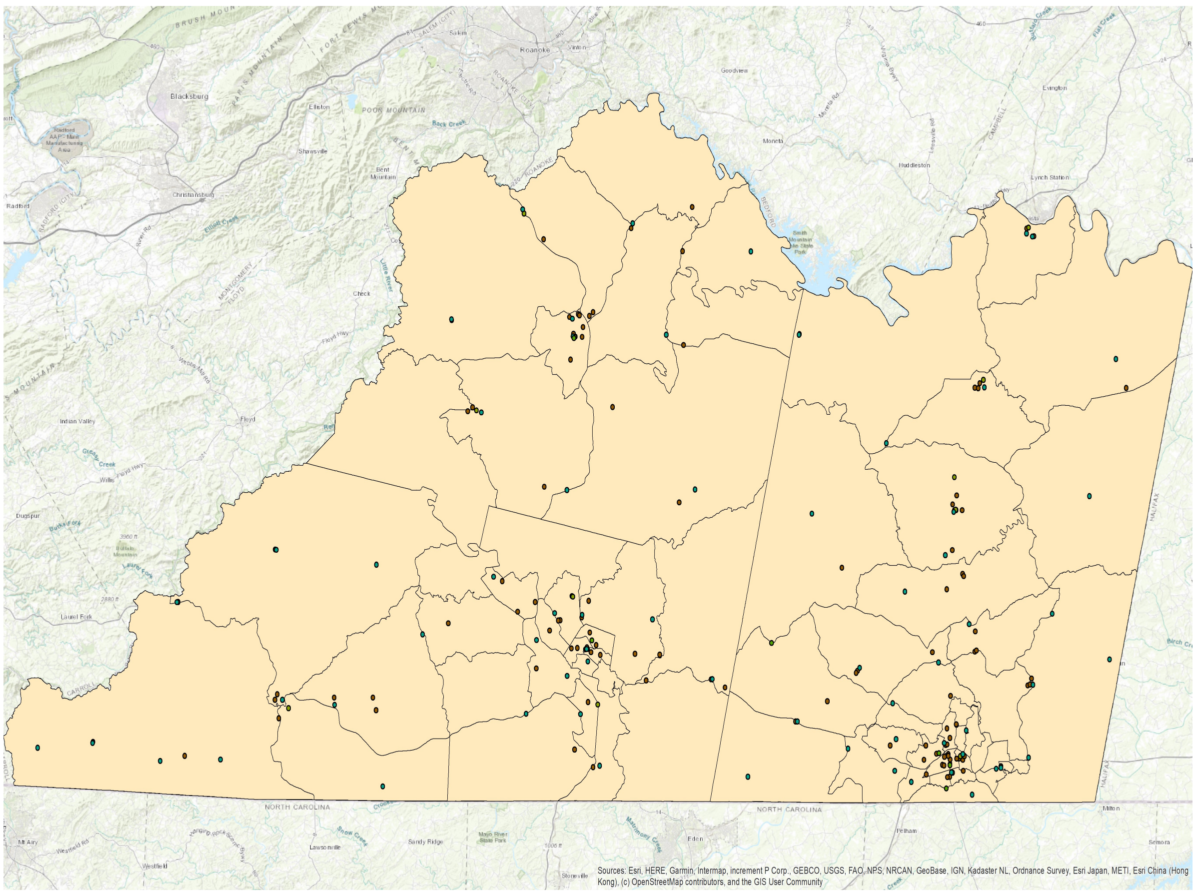
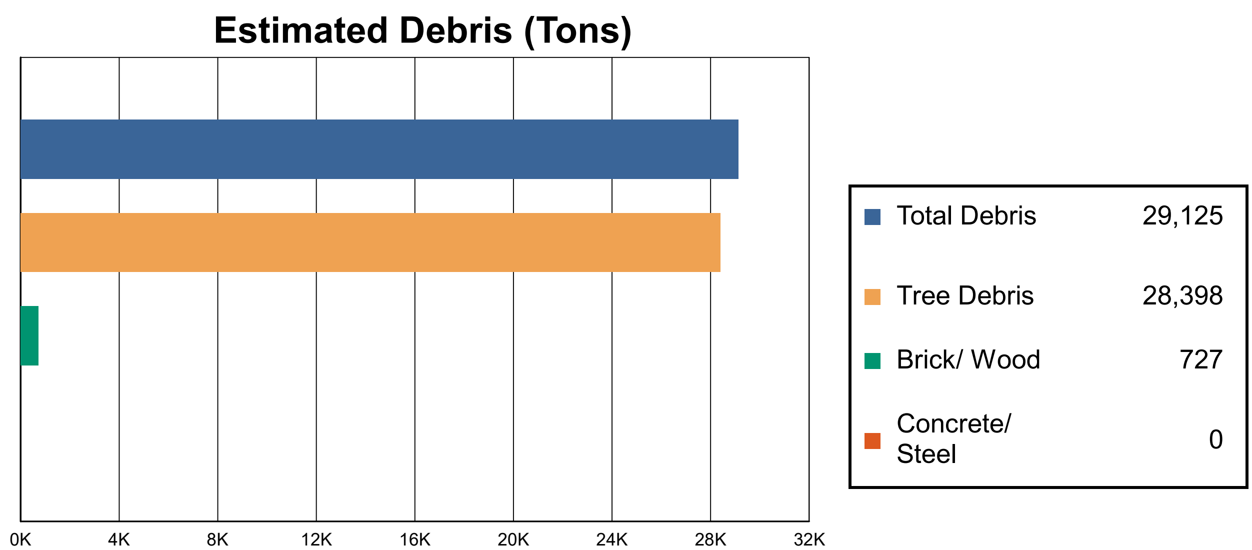


Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate Damage > 50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
EOCs	6	0	0	6
Fire Stations	66	0	0	66
Hospitals	6	0	0	6
Police Stations	19	0	0	19
Schools	114	0	0	114

Induced Hurricane Damage

Debris Generation

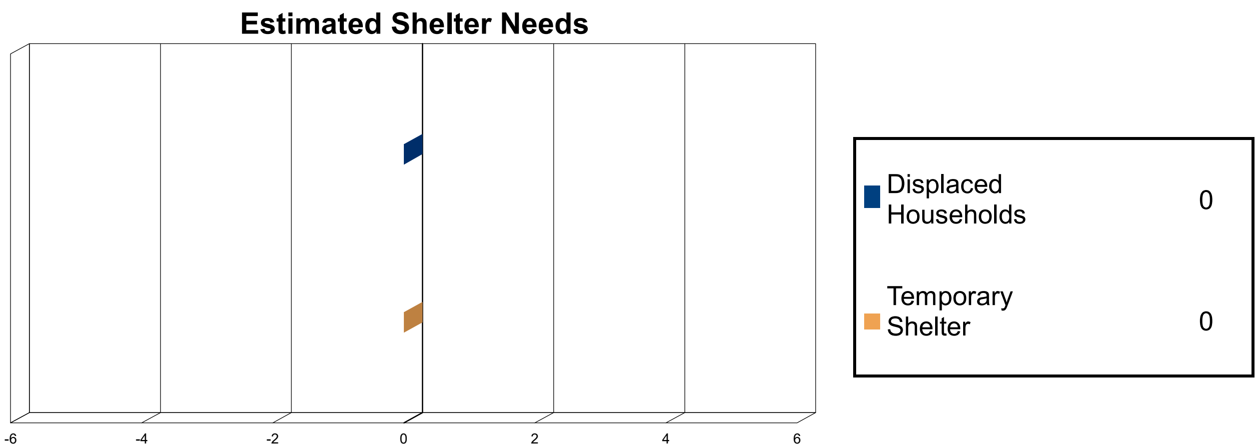


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 29,125 tons of debris will be generated. Of the total amount, 26,086 tons (90%) is Other Tree Debris. Of the remaining 3,039 tons, Brick/Wood comprises 24% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 29 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 2,312 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 249,182) will seek temporary shelter in public shelters.

Economic Loss

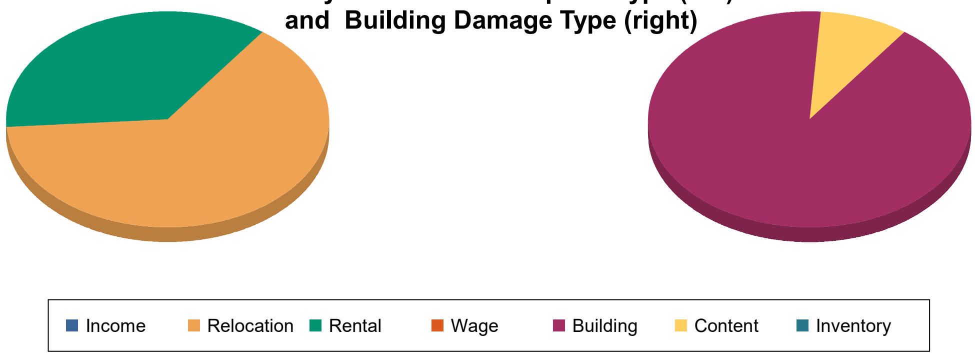
The total economic loss estimated for the hurricane is 14.4 million dollars, which represents 0.05 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 14 million dollars. 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 96% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left) and Building Damage Type (right)



Loss Type by General Occupancy

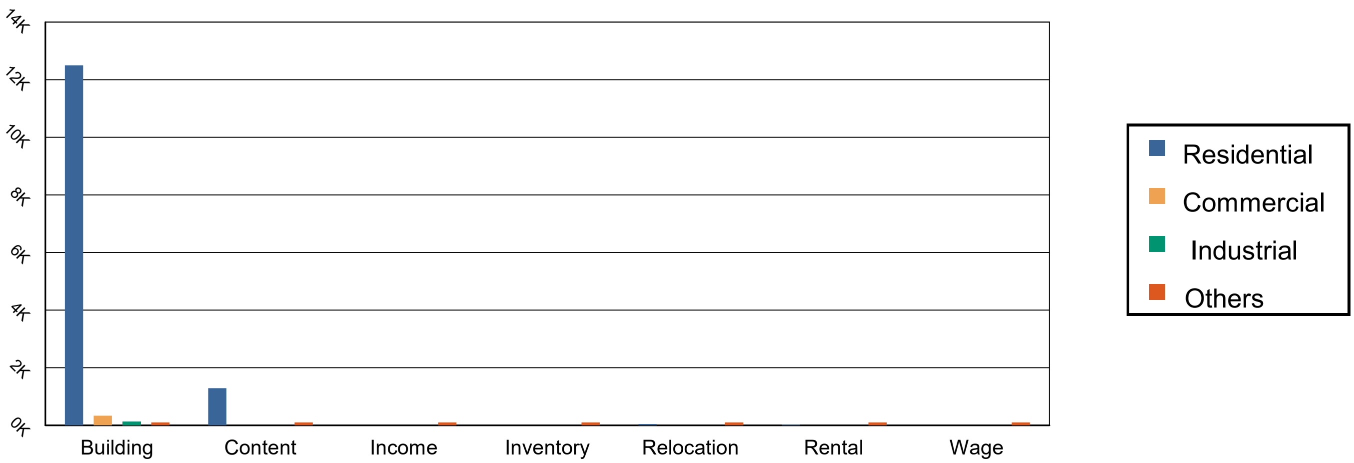


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	12,494.86	332.31	133.38	98.00	13,058.55
	Content	1,292.51	0.00	0.00	0.00	1,292.51
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	**13,787.37**	**332.31**	**133.38**	**98.00**	**14,351.06**
Business Interruption Loss						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	41.25	3.75	0.00	0.05	45.05
	Rental	25.54	0.00	0.00	0.00	25.54
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	**66.79**	**3.75**	**0.00**	**0.05**	**70.59**

Total

Total	**13,854.16**	**336.06**	**133.38**	**98.04**	**14,421.65**

Appendix A: County Listing for the Region

Virginia
- Franklin
- Henry
- Patrick
- Pittsylvania
- Danville
- Martinsville

Appendix B: Regional Population and Building Value Data

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
Virginia				
Danville	43,055	3,910,725	1,756,360	5,667,085
Franklin	56,159	6,160,537	1,274,476	7,435,013
Henry	54,151	4,273,395	1,804,696	6,078,091
Martinsville	13,821	1,341,692	816,490	2,158,182
Patrick	18,490	1,588,733	379,015	1,967,748
Pittsylvania	63,506	5,184,478	977,580	6,162,058
Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**
Study Region Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**

Hazus: Hurricane Global Risk Report

Region Name: WPPDC_HURR_Prob

Hurricane Scenario: Probabilistic 200-year Return Period

Print Date: Monday, March 22, 2021

Table of Contents

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 6 county(ies) from the following state(s):

- Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 2,614.91 square miles and contains 65 census tracts. There are over 105 thousand households in the region and a total population of 249,182 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 125 thousand buildings in the region with a total building replacement value (excluding contents) of 29,468 million dollars (2014 dollars). Approximately 93% of the buildings (and 76% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 125,170 buildings in the region which have an aggregate total replacement value of 29,468 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Building Exposure by Occupancy Type

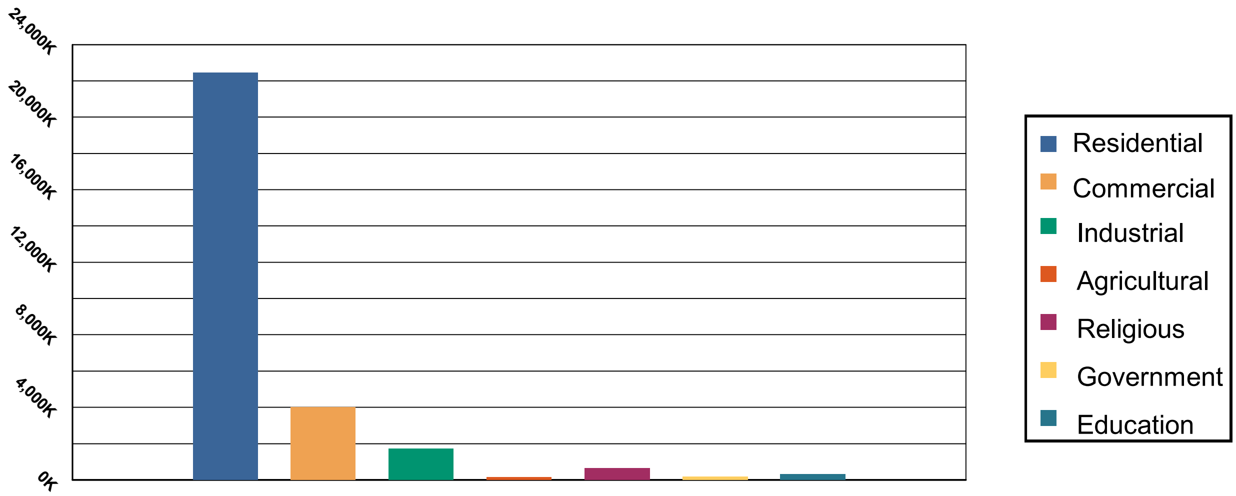


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	22,459,560	76.22 %
Commercial	4,015,923	13.63%
Industrial	1,710,413	5.80%
Agricultural	149,048	0.51%
Religious	650,001	2.21%
Government	167,366	0.57%
Education	315,866	1.07%
Total	**29,468,177**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 6 hospitals in the region with a total bed capacity of 510 beds. There are 114 schools, 66 fire stations, 19 police stations and 6 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 14 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

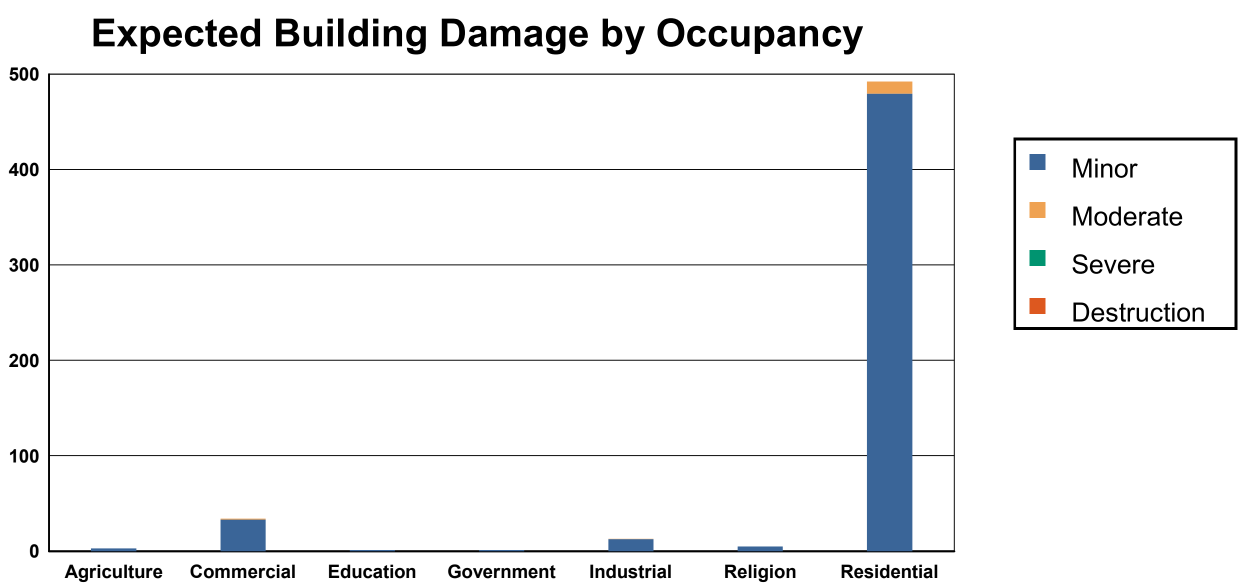


Table 2: Expected Building Damage by Occupancy : 200 - year Event

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	472.04	99.38	2.82	0.59	0.12	0.02	0.02	0.00	0.00	0.00
Commercial	5,431.94	99.38	33.10	0.61	0.96	0.02	0.00	0.00	0.00	0.00
Education	203.63	99.33	1.37	0.67	0.00	0.00	0.00	0.00	0.00	0.00
Government	193.65	99.31	1.35	0.69	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	1,735.10	99.26	12.74	0.73	0.14	0.01	0.02	0.00	0.00	0.00
Religion	967.15	99.50	4.85	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Residential	115,616.84	99.58	479.43	0.41	12.58	0.01	0.15	0.00	0.00	0.00
Total	**124,620.35**		**535.66**		**13.80**		**0.19**		**0.00**	

Table 3: Expected Building Damage by Building Type : 200 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	922	99.14	8	0.86	0	0.00	0	0.00	0	0.00
Masonry	26,053	99.28	179	0.68	9	0.03	0	0.00	0	0.00
MH	21,990	99.99	1	0.01	1	0.01	0	0.00	0	0.00
Steel	3,996	99.30	28	0.69	1	0.02	0	0.00	0	0.00
Wood	71,676	99.61	277	0.38	3	0.00	0	0.00	0	0.00

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 510 hospital beds (0%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, none of the beds will be in service. By 30 days, none will be operational.

Thematic Map of Essential Facilities with greater than 50% moderate

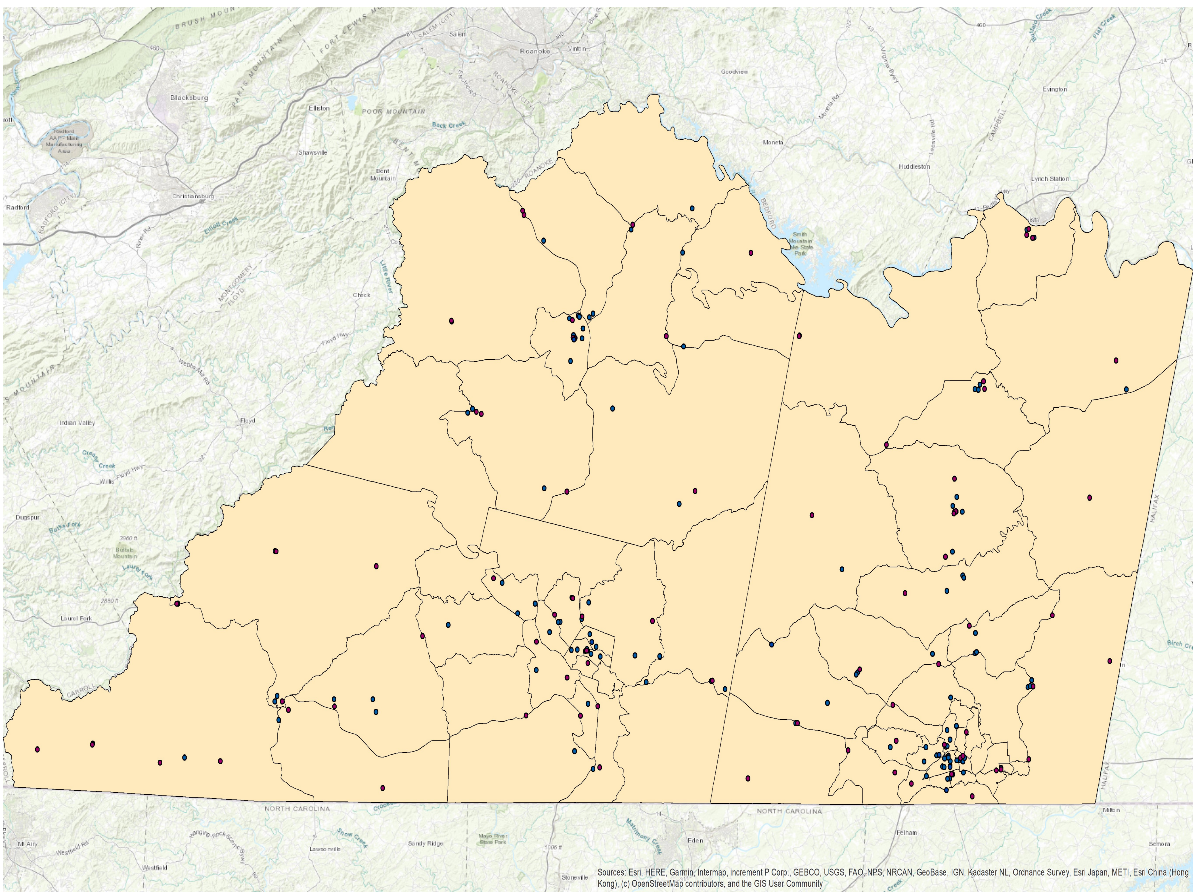
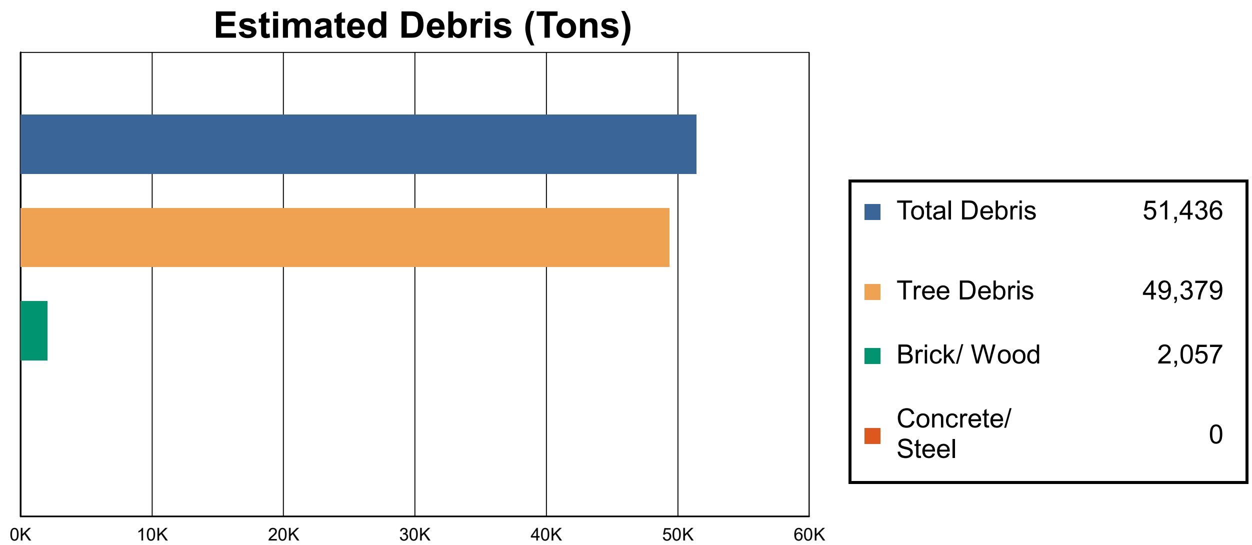


Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate Damage > 50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
EOCs	6	0	0	6
Fire Stations	66	0	0	66
Hospitals	6	0	0	6
Police Stations	19	0	0	19
Schools	114	0	0	114

Induced Hurricane Damage

Debris Generation

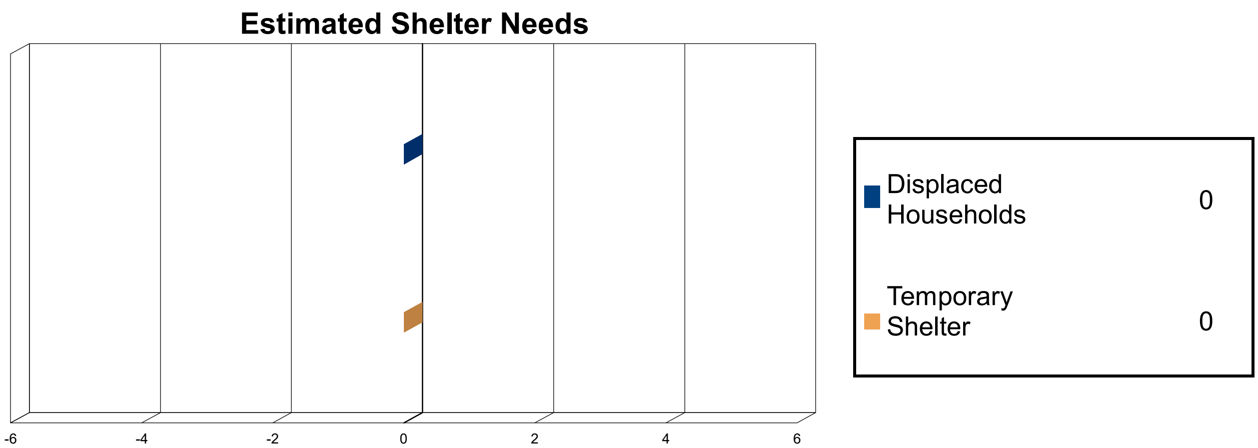


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 51,436 tons of debris will be generated. Of the total amount, 44,979 tons (87%) is Other Tree Debris. Of the remaining 6,457 tons, Brick/Wood comprises 32% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 82 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 4,400 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 249,182) will seek temporary shelter in public shelters.

Economic Loss

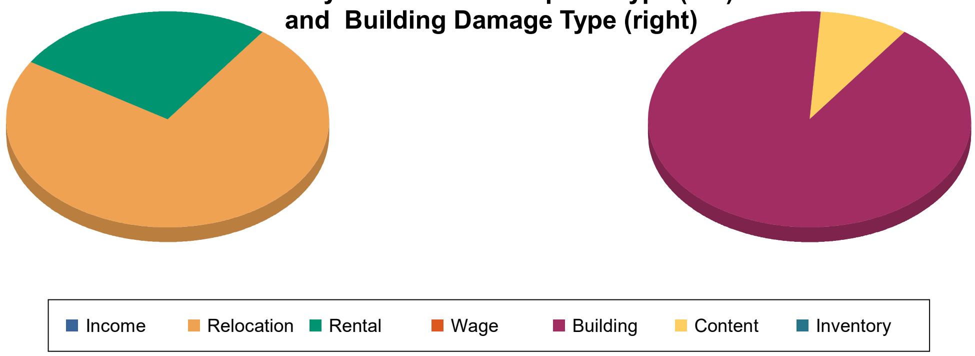
The total economic loss estimated for the hurricane is 33.7 million dollars, which represents 0.11 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 34 million dollars. 1% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 97% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left)
and Building Damage Type (right)



Loss Type by General Occupancy

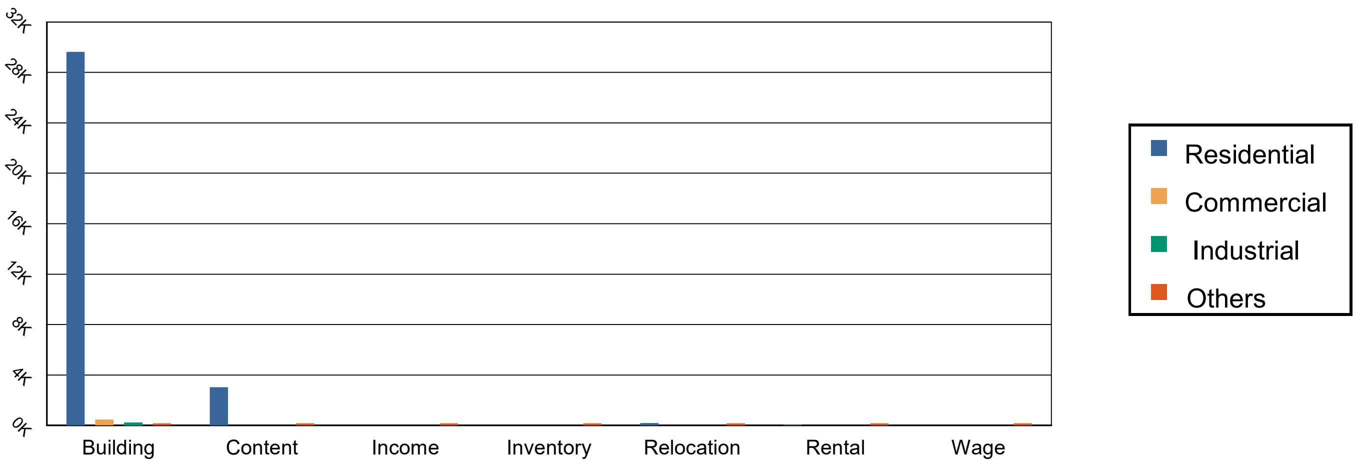


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	29,644.28	462.58	215.60	158.62	30,481.08
	Content	3,019.26	0.00	0.00	0.00	3,019.26
	Inventory	0.00	0.00	0.00	0.00	0.00
	Subtotal	**32,663.54**	**462.58**	**215.60**	**158.62**	**33,500.34**
Business Interruption Loss						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	170.03	6.50	0.03	0.34	176.90
	Rental	62.27	0.00	0.00	0.00	62.27
	Wage	0.00	0.00	0.00	0.00	0.00
	Subtotal	**232.30**	**6.50**	**0.03**	**0.34**	**239.17**

Total

Total	**32,895.84**	**469.08**	**215.63**	**158.96**	**33,739.52**

Appendix A: County Listing for the Region

Virginia

- Franklin
- Henry
- Patrick
- Pittsylvania
- Danville
- Martinsville

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars) Residential	Non-Residential	Total
Virginia				
Danville	43,055	3,910,725	1,756,360	5,667,085
Franklin	56,159	6,160,537	1,274,476	7,435,013
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Study Region Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**

Hazus: Hurricane Global Risk Report

Region Name: WPPDC_HURR_Prob

Hurricane Scenario: Probabilistic 500-year Return Period

Print Date: Monday, March 22, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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The hurricane loss estimates provided in this report are based on a region that includes 6 county(ies) from the following state(s):

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Note:
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The geographical size of the region is 2,614.91 square miles and contains 65 census tracts. There are over 105 thousand households in the region and a total population of 249,182 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 125 thousand buildings in the region with a total building replacement value (excluding contents) of 29,468 million dollars (2014 dollars). Approximately 93% of the buildings (and 76% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 125,170 buildings in the region which have an aggregate total replacement value of 29,468 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

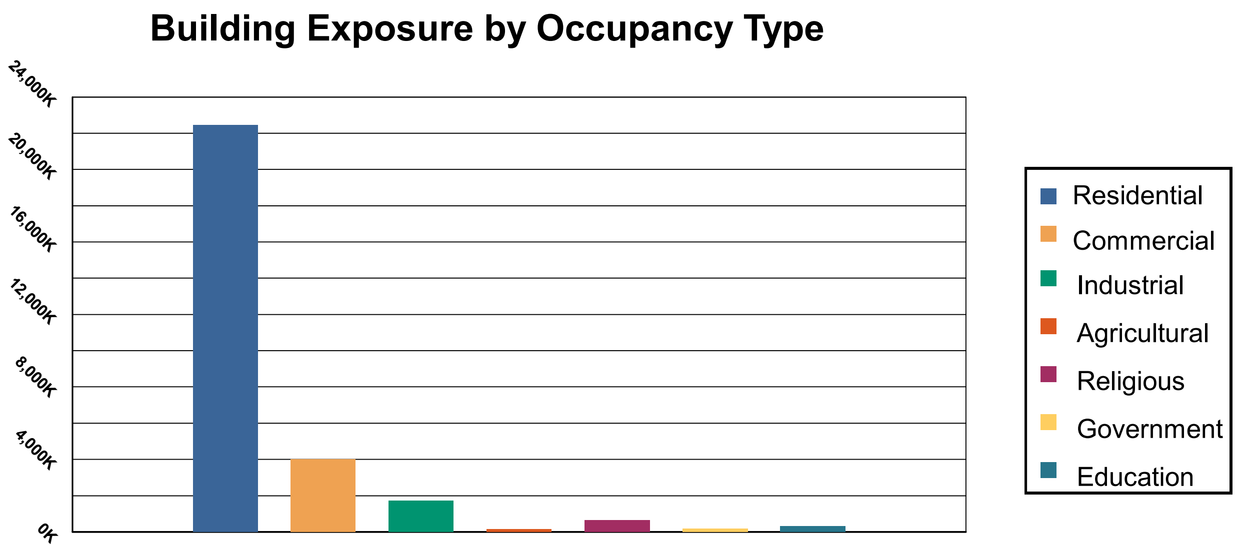

Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	22,459,560	76.22 %
Commercial	4,015,923	13.63%
Industrial	1,710,413	5.80%
Agricultural	149,048	0.51%
Religious	650,001	2.21%
Government	167,366	0.57%
Education	315,866	1.07%
Total	**29,468,177**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 6 hospitals in the region with a total bed capacity of 510 beds. There are 114 schools, 66 fire stations, 19 police stations and 6 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 215 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 6 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

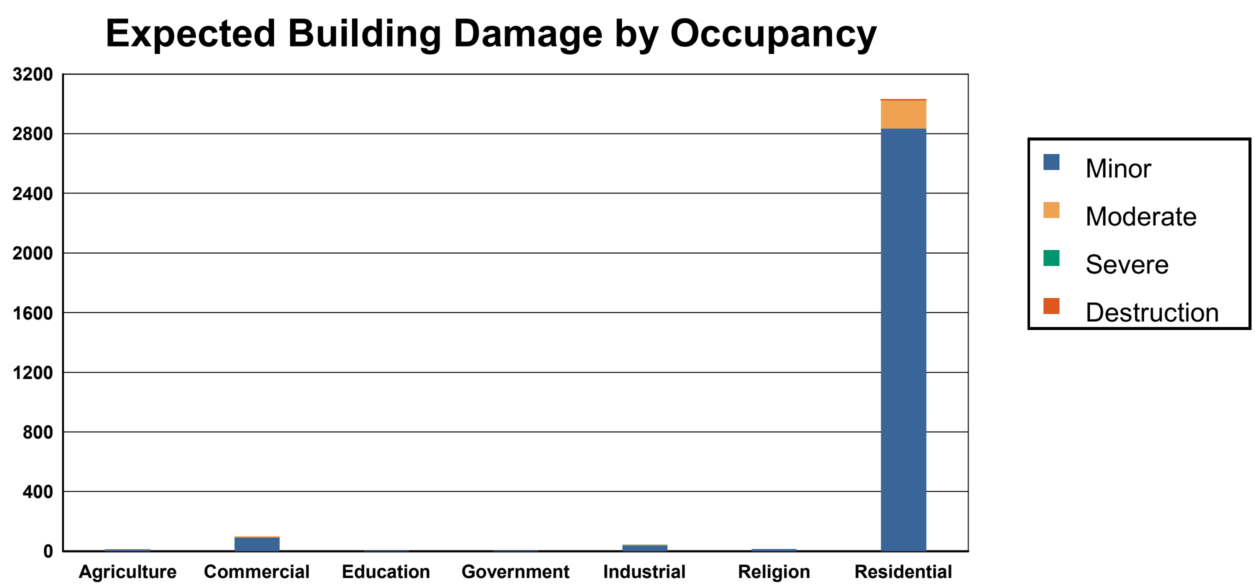

Table 2: Expected Building Damage by Occupancy : 500 - year Event

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	461.06	97.07	11.50	2.42	1.70	0.36	0.71	0.15	0.03	0.01
Commercial	5,365.19	98.16	90.43	1.65	9.59	0.18	0.80	0.01	0.00	0.00
Education	201.81	98.44	3.08	1.50	0.11	0.05	0.00	0.00	0.00	0.00
Government	191.28	98.09	3.54	1.82	0.17	0.09	0.00	0.00	0.00	0.00
Industrial	1,703.70	97.47	37.89	2.17	4.75	0.27	1.58	0.09	0.08	0.00
Religion	956.73	98.43	14.74	1.52	0.53	0.05	0.00	0.00	0.00	0.00
Residential	113,079.80	97.39	2,833.78	2.44	188.76	0.16	1.14	0.00	5.53	0.00
Total	**121,959.57**		**2,994.95**		**205.61**		**4.23**		**5.64**	

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FEMA

Table 3: Expected Building Damage by Building Type : 500 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	909	97.80	19	2.09	1	0.12	0	0.00	0	0.00
Masonry	25,417	96.86	735	2.80	80	0.30	8	0.03	1	0.00
MH	21,915	99.65	57	0.26	16	0.07	0	0.00	5	0.02
Steel	3,947	98.08	69	1.72	7	0.18	1	0.02	0	0.00
Wood	69,967	97.24	1,894	2.63	93	0.13	1	0.00	1	0.00

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 510 hospital beds (0%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, none of the beds will be in service. By 30 days, none will be operational.

Thematic Map of Essential Facilities with greater than 50% moderate

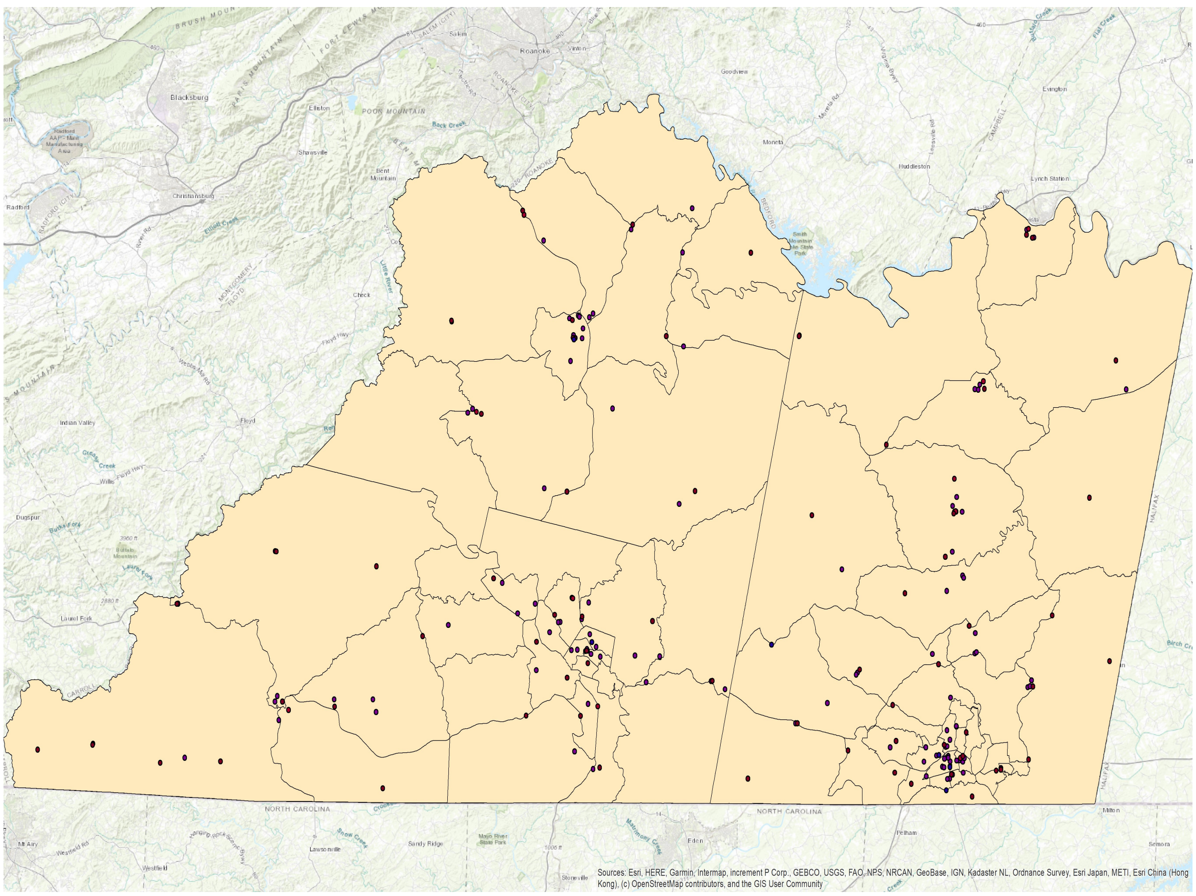
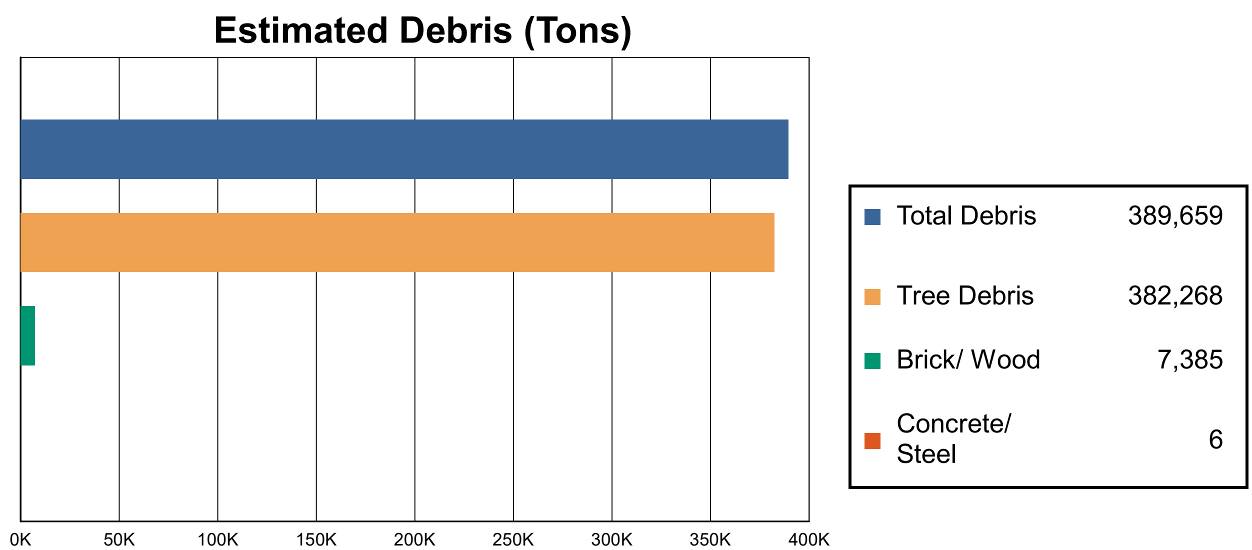


Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate Damage > 50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
EOCs	6	0	0	6
Fire Stations	66	0	0	66
Hospitals	6	0	0	6
Police Stations	19	0	0	19
Schools	114	0	0	114

Induced Hurricane Damage

Debris Generation

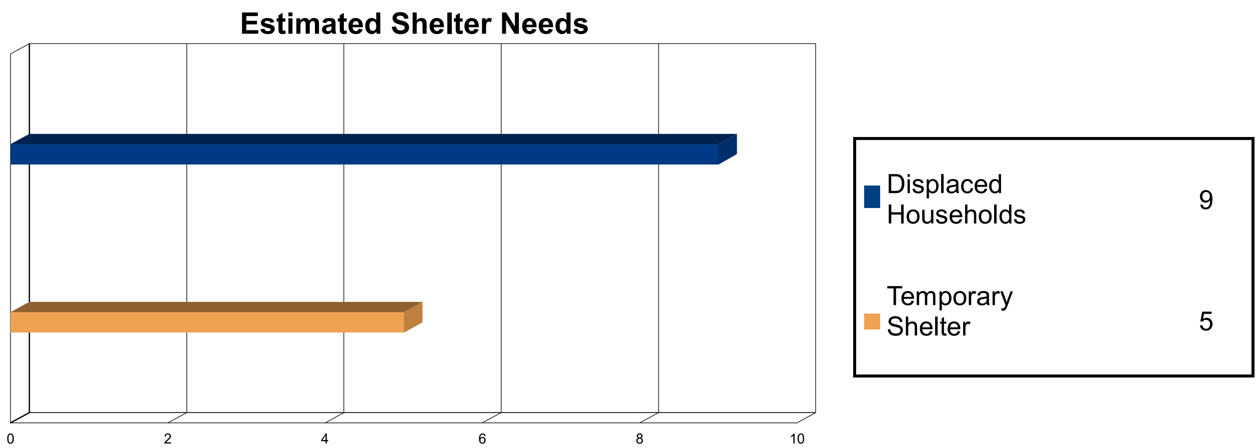


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 389,659 tons of debris will be generated. Of the total amount, 348,831 tons (90%) is Other Tree Debris. Of the remaining 40,828 tons, Brick/Wood comprises 18% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 296 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 33,437 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 9 households to be displaced due to the hurricane. Of these, 5 people (out of a total population of 249,182) will seek temporary shelter in public shelters.

Economic Loss

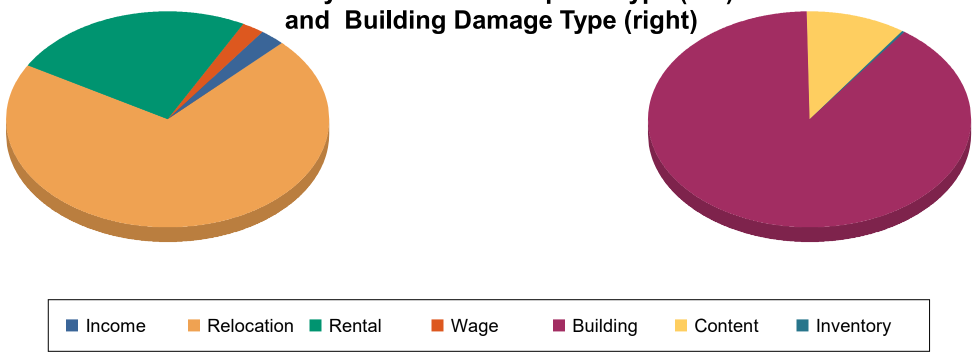
The total economic loss estimated for the hurricane is 86.2 million dollars, which represents 0.29 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 86 million dollars. 4% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 95% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left) and Building Damage Type (right)



Loss Type by General Occupancy

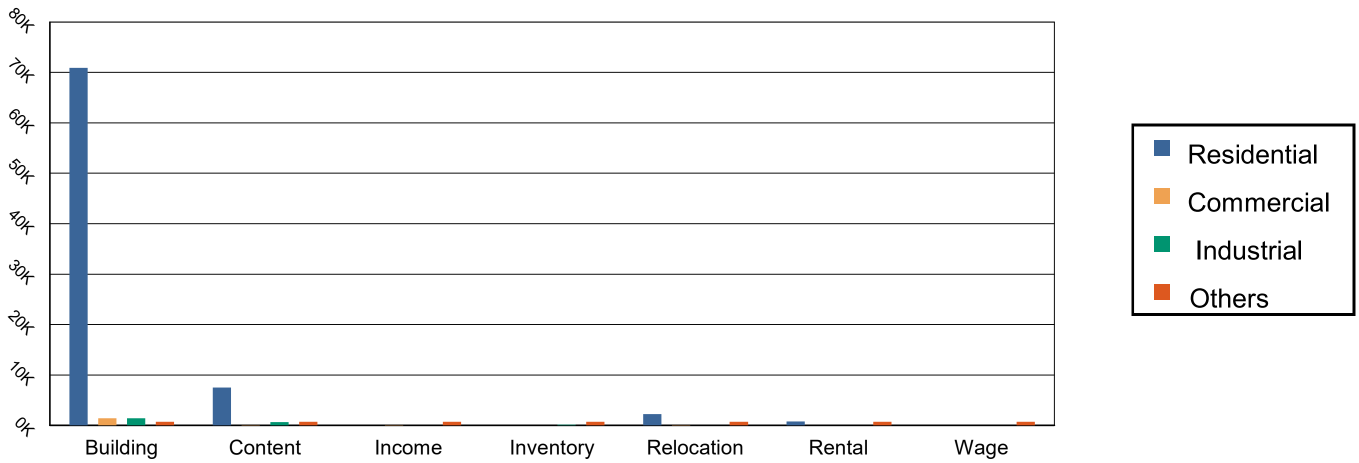


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	70,931.75	1,431.78	1,375.55	559.13	74,298.21
	Content	7,526.98	98.21	622.17	67.13	8,314.49
	Inventory	0.00	3.87	130.66	5.69	140.21
	Subtotal	**78,458.73**	**1,533.86**	**2,128.38**	**631.95**	**82,752.92**
Business Interruption Loss						
	Income	0.00	55.20	9.90	17.06	82.16
	Relocation	2,257.06	87.63	31.40	34.03	2,410.13
	Rental	799.73	25.68	8.17	1.85	835.43
	Wage	0.00	19.82	16.38	39.99	76.19
	Subtotal	**3,056.78**	**188.33**	**65.86**	**92.94**	**3,403.91**

<u>Total</u>

Total	**81,515.52**	**1,722.19**	**2,194.24**	**724.89**	**86,156.83**

Appendix A: County Listing for the Region

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Table of Contents

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 6 county(ies) from the following state(s):

- Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 2,614.91 square miles and contains 65 census tracts. There are over 105 thousand households in the region and a total population of 249,182 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 125 thousand buildings in the region with a total building replacement value (excluding contents) of 29,468 million dollars (2014 dollars). Approximately 93% of the buildings (and 76% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 125,170 buildings in the region which have an aggregate total replacement value of 29,468 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

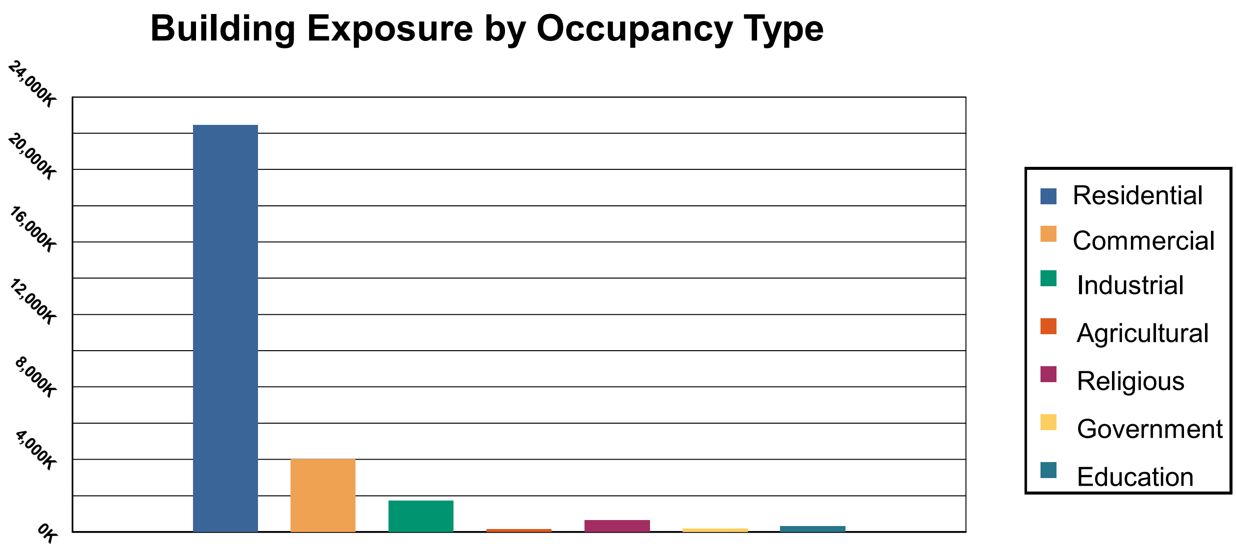


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	22,459,560	76.22 %
Commercial	4,015,923	13.63%
Industrial	1,710,413	5.80%
Agricultural	149,048	0.51%
Religious	650,001	2.21%
Government	167,366	0.57%
Education	315,866	1.07%
Total	**29,468,177**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 6 hospitals in the region with a total bed capacity of 510 beds. There are 114 schools, 66 fire stations, 19 police stations and 6 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 648 buildings will be at least moderately damaged. This is over 1% of the total number of buildings in the region. There are an estimated 25 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

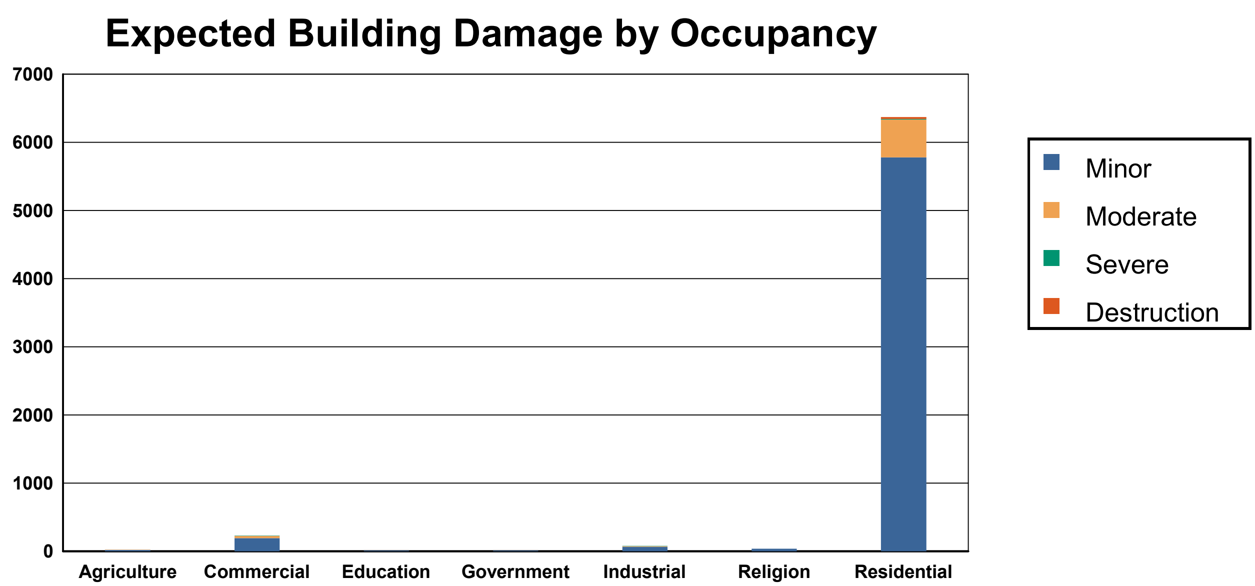


Table 2: Expected Building Damage by Occupancy : 1000 - year Event

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	454.03	95.58	16.61	3.50	2.96	0.62	1.30	0.27	0.11	0.02
Commercial	5,239.52	95.86	189.87	3.47	32.35	0.59	4.25	0.08	0.00	0.00
Education	197.44	96.31	7.05	3.44	0.50	0.24	0.01	0.01	0.00	0.00
Government	187.00	95.89	7.27	3.73	0.71	0.36	0.03	0.01	0.00	0.00
Industrial	1,670.17	95.55	64.47	3.69	10.19	0.58	2.98	0.17	0.19	0.01
Religion	934.55	96.15	35.01	3.60	2.37	0.24	0.06	0.01	0.00	0.00
Residential	109,740.44	94.52	5,778.87	4.98	554.32	0.48	10.44	0.01	24.93	0.02
Total	**118,423.16**		**6,099.15**		**603.39**		**19.07**		**25.23**	

Table 3: Expected Building Damage by Building Type : 1000 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	889	95.59	37	3.98	4	0.42	0	0.01	0	0.00
Masonry	24,597	93.74	1,424	5.43	203	0.77	14	0.05	2	0.01
MH	21,742	98.86	167	0.76	62	0.28	1	0.01	20	0.09
Steel	3,863	96.01	131	3.25	26	0.64	4	0.10	0	0.00
Wood	67,763	94.17	3,914	5.44	267	0.37	6	0.01	7	0.01

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 510 hospital beds (0%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, none of the beds will be in service. By 30 days, none will be operational.

Thematic Map of Essential Facilities with greater than 50% moderate

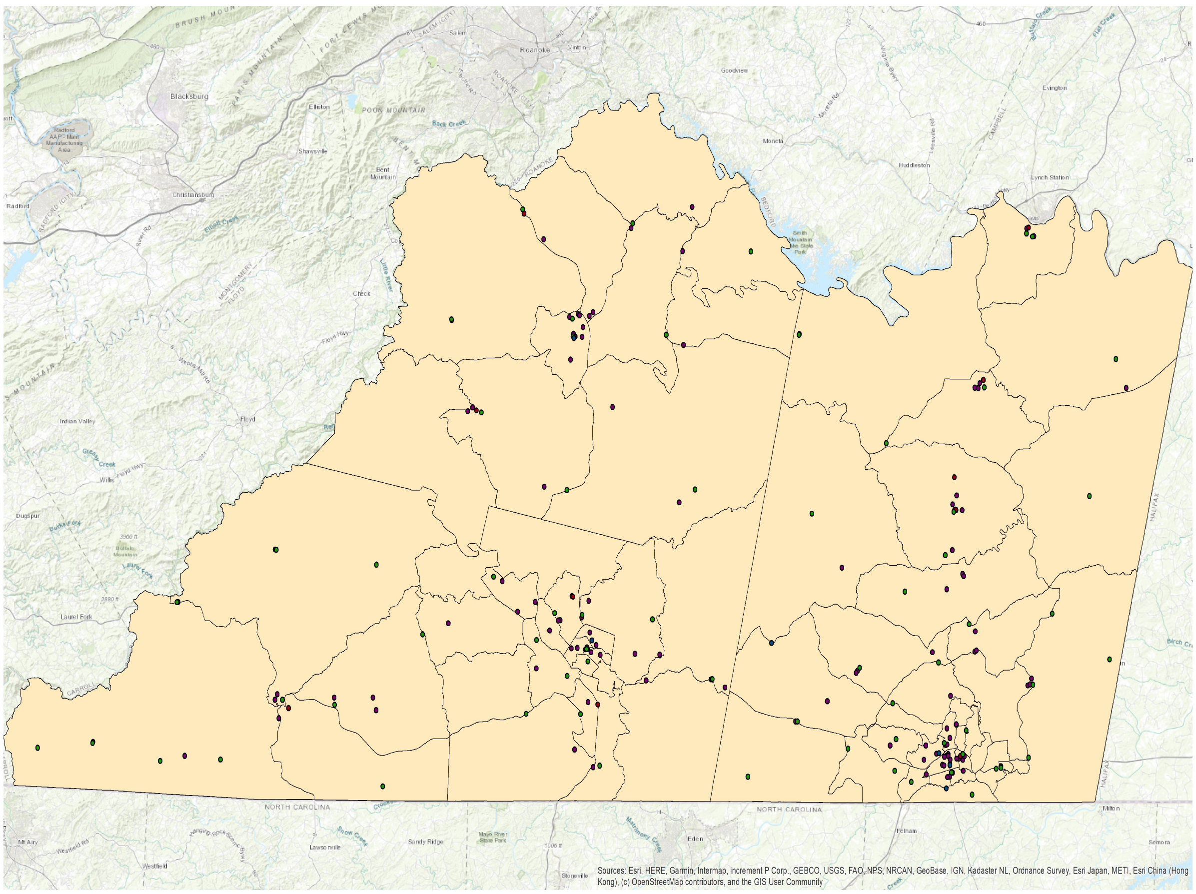
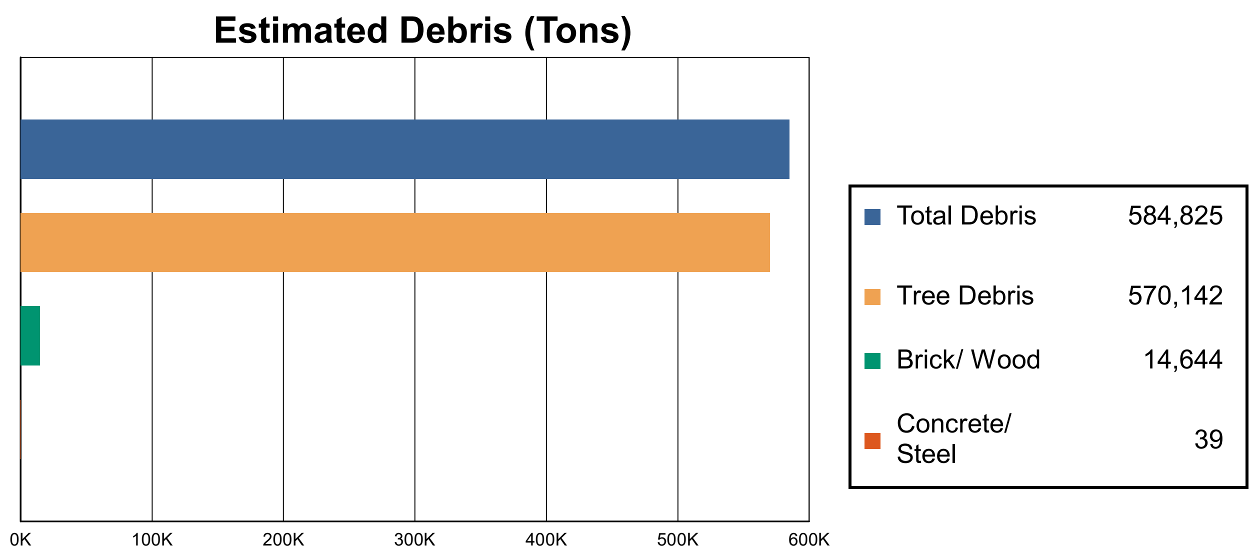


Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate Damage > 50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
EOCs	6	0	0	6
Fire Stations	66	0	0	66
Hospitals	6	0	0	6
Police Stations	19	0	0	19
Schools	114	0	0	114

Induced Hurricane Damage

Debris Generation

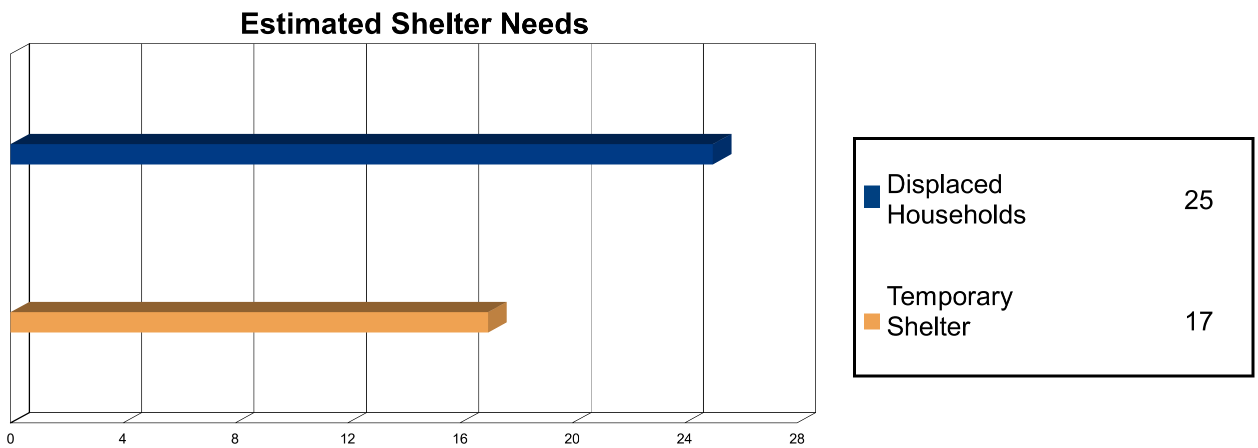


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 584,825 tons of debris will be generated. Of the total amount, 515,873 tons (88%) is Other Tree Debris. Of the remaining 68,952 tons, Brick/Wood comprises 21% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 587 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 54,269 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 25 households to be displaced due to the hurricane. Of these, 17 people (out of a total population of 249,182) will seek temporary shelter in public shelters.

Economic Loss

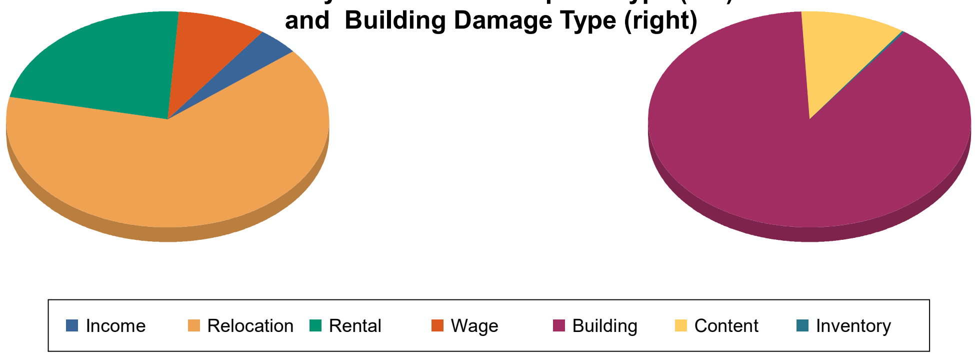
The total economic loss estimated for the hurricane is 145.4 million dollars, which represents 0.49 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 145 million dollars. 7% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 92% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left) and Building Damage Type (right)



Loss Type by General Occupancy

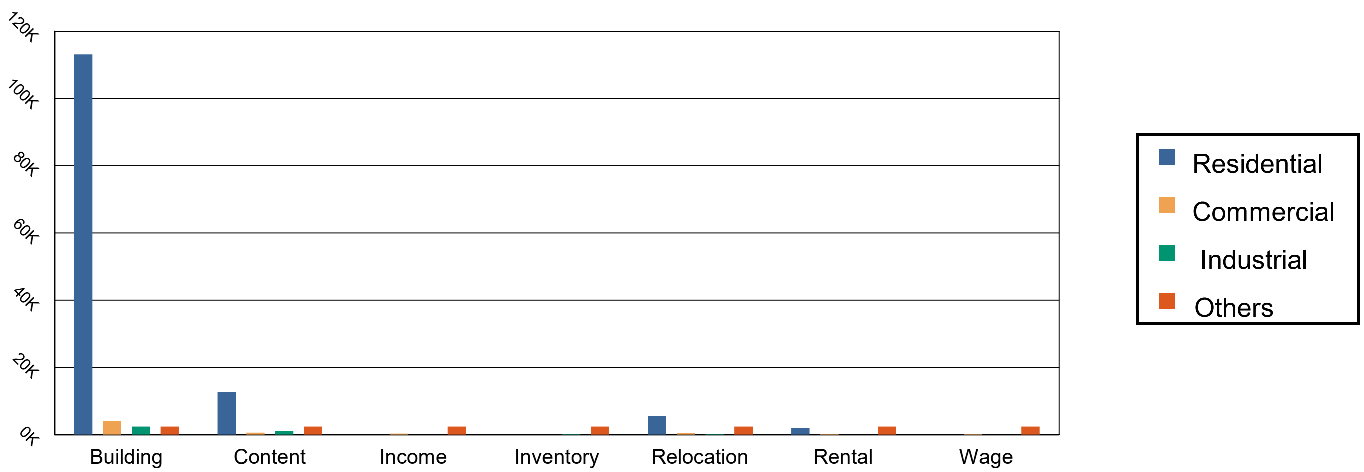


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	113,117.69	4,076.77	2,372.33	1,316.30	120,883.08
	Content	12,707.63	617.03	1,068.03	203.55	14,596.24
	Inventory	0.00	27.39	197.04	13.52	237.95
	Subtotal	**125,825.31**	**4,721.18**	**3,637.40**	**1,533.37**	**135,717.26**
Business Interruption Loss						
	Income	0.00	283.15	17.45	101.51	402.11
	Relocation	5,503.47	488.48	90.08	140.29	6,222.33
	Rental	2,010.76	177.04	14.24	10.20	2,212.24
	Wage	0.00	191.67	28.90	643.35	863.92
	Subtotal	**7,514.23**	**1,140.34**	**150.67**	**895.36**	**9,700.60**

Total

Total	**133,339.55**	**5,861.52**	**3,788.07**	**2,428.73**	**145,417.86**

Appendix A: County Listing for the Region

Virginia

- Franklin
- Henry
- Patrick
- Pittsylvania
- Danville
- Martinsville

Appendix B: Regional Population and Building Value Data

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
Virginia				
Danville	43,055	3,910,725	1,756,360	5,667,085
Franklin	56,159	6,160,537	1,274,476	7,435,013
Henry	54,151	4,273,395	1,804,696	6,078,091
Martinsville	13,821	1,341,692	816,490	2,158,182
Patrick	18,490	1,588,733	379,015	1,967,748
Pittsylvania	63,506	5,184,478	977,580	6,162,058
Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**
Study Region Total	**249,182**	**22,459,560**	**7,008,617**	**29,468,177**

Hazus: Earthquake Global Risk Report

Region Name WPPDC_EQ_Danville

Earthquake Scenario: Danville-Prob

Print Date: February 23, 2021

Table of Contents

General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 43.94 square miles and contains 16 census tracts. There are over 18 thousand households in the region which has a total population of 43,055 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 20 thousand buildings in the region with a total building replacement value (excluding contents) of 5,667 (millions of dollars). Approximately 90.00 % of the buildings (and 69.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,046 and 369 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 20 thousand buildings in the region which have an aggregate total replacement value of 5,667 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 65% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 3 hospitals in the region with a total bed capacity of 250 beds. There are 29 schools, 9 fire stations, 2 police stations and 1 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 29 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 1,415.00 (millions of dollars). This inventory includes over 47.22 miles of highways, 69 bridges, 1,746.05 miles of pipes.

Table 1: Transportation System Lifeline Inventory

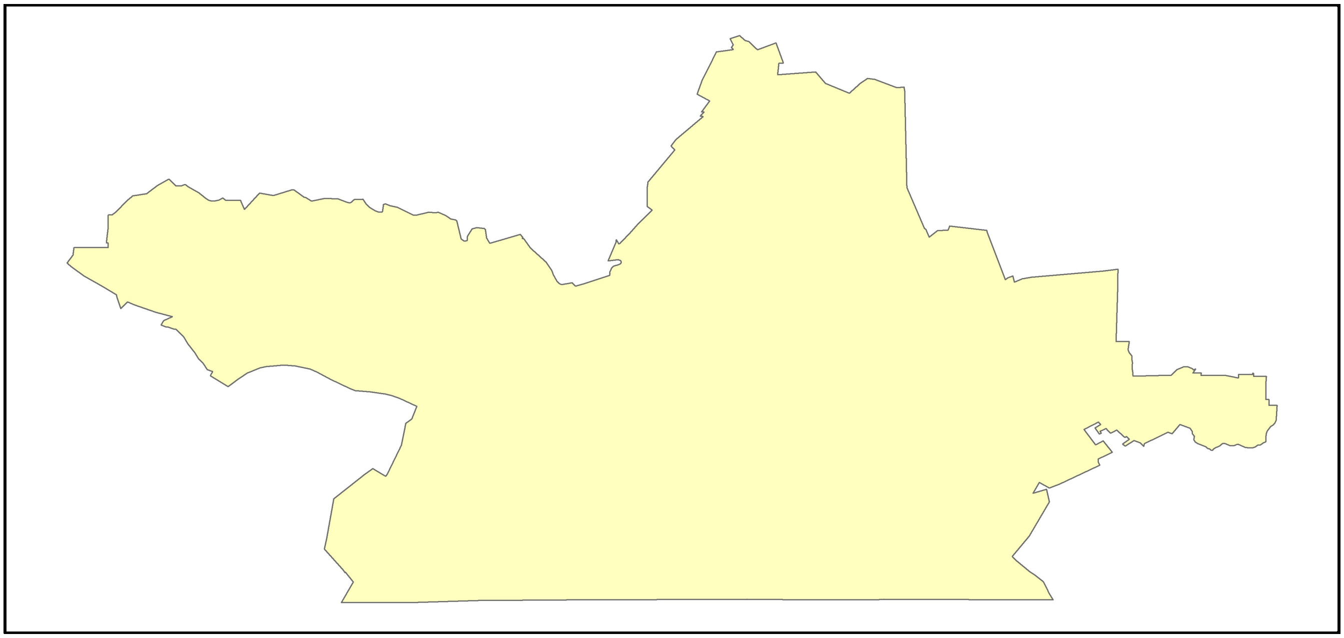
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	69	350.9138
	Segments	38	515.3383
	Tunnels	0	0.0000
		Subtotal	**866.2521**
Railways	Bridges	9	39.5529
	Facilities	2	5.3260
	Segments	67	53.6740
	Tunnels	0	0.0000
		Subtotal	**98.5529**
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
		Subtotal	**0.0000**
Bus	Facilities	0	0.0000
		Subtotal	**0.0000**
Ferry	Facilities	0	0.0000
		Subtotal	**0.0000**
Port	Facilities	0	0.0000
		Subtotal	**0.0000**
Airport	Facilities	0	0.0000
	Runways	2	81.9142
		Subtotal	**81.9142**
		Total	**1,046.70**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	28.1021
	Facilities	2	61.9380
	Pipelines	0	0.0000
		Subtotal	**90.0401**
Waste Water	Distribution Lines	NA	16.8613
	Facilities	2	251.3811
	Pipelines	0	0.0000
		Subtotal	**268.2424**
Natural Gas	Distribution Lines	NA	11.2408
	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**11.2408**
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**0.0000**
Electrical Power	Facilities	0	0.0000
		Subtotal	**0.0000**
Communication	Facilities	3	0.2790
		Subtotal	**0.2790**
		Total	**369.80**

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Danville-Prob
Type of Earthquake	Probabilistic
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	Annualized
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	NA
Depth (km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Direct Earthquake Damage

Building Damage

Hazus estimates that about buildings will be at least moderately damaged. This is over % of the buildings in the region. There are an estimated buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 250 hospital beds available for use. On the day of the earthquake, the model estimates that only 0 hospital beds (0.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 0.00% of the beds will be back in service. By 30 days, 0.00% will be operational.

Table 5: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**At Least Moderate Damage > 50%**	**Complete Damage > 50%**	**With Functionality > 50% on day 1**
Hospitals	3	0	0	0
Schools	29	0	0	0
EOCs	1	0	0	0
PoliceStations	2	0	0	0
FireStations	9	0	0	0

Transportation Lifeline Damage

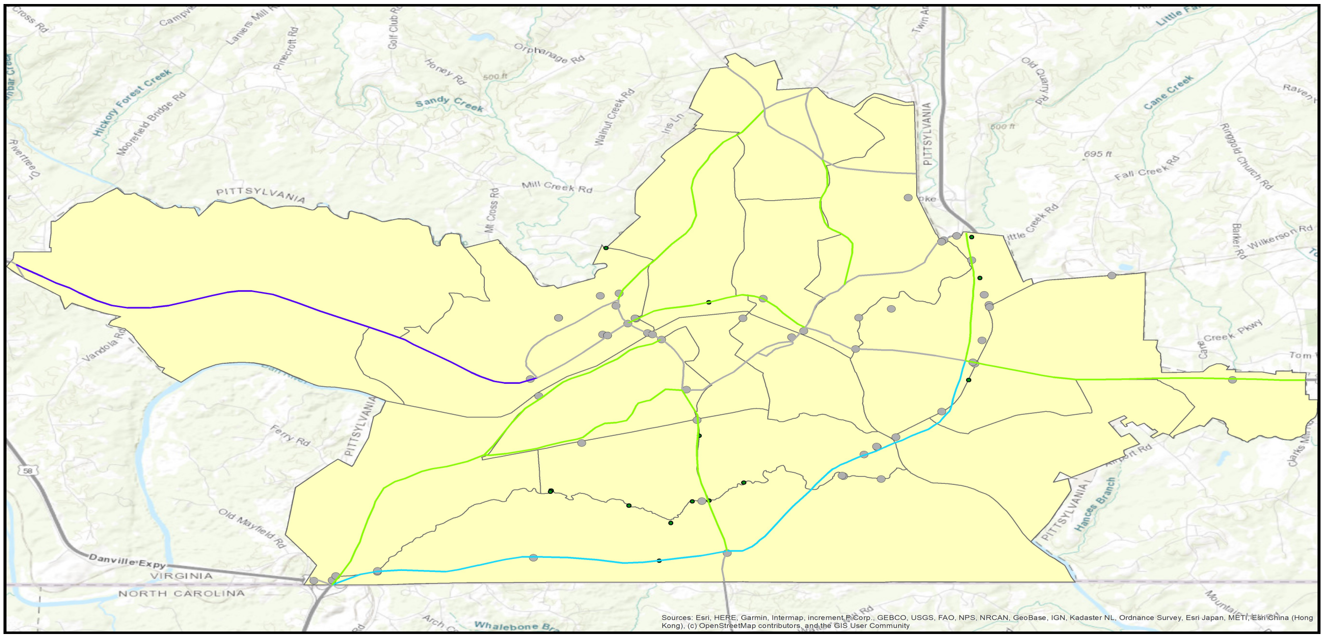


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	38	0	0	0	0
	Bridges	69	0	0	0	0
	Tunnels	0	0	0	0	0
Railways	Segments	67	0	0	0	0
	Bridges	9	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	2	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	2	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	2	0	0	0	0
Waste Water	2	0	0	0	0
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	3	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	873	0	0
Waste Water	524	0	0
Natural Gas	349	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water						
Electric Power						

Induced Earthquake Damage

Fire Following Earthquake

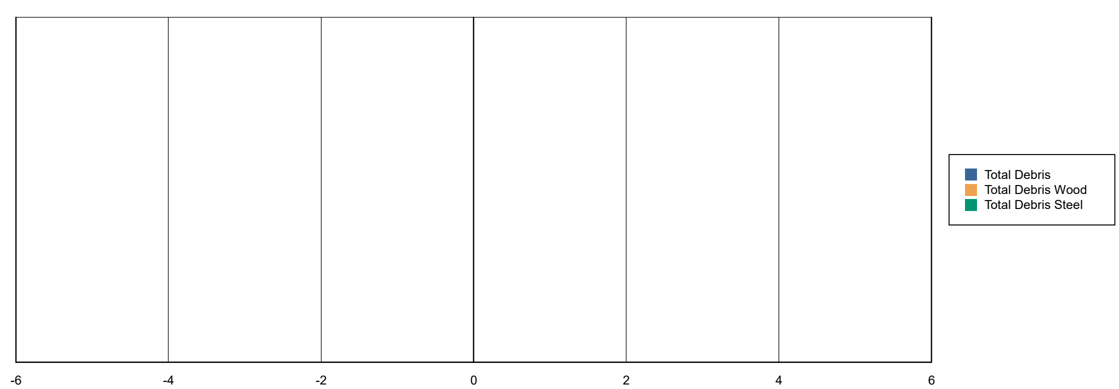
Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about sq. mi % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of tons of debris will be generated. Of the total amount, Brick/Wood comprises % of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require   truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Earthquake Debris (millions of tons)



Brick/ Wood **Reinforced Concrete/Steel** **Total Debris** **Truck Load**

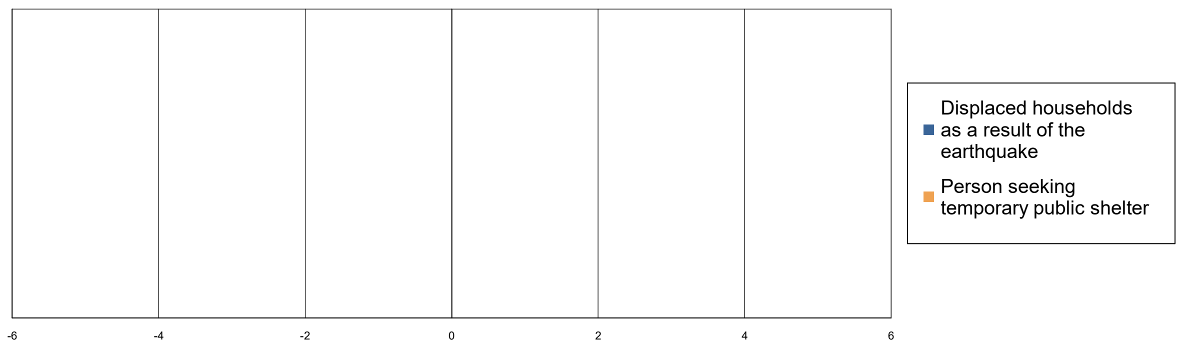
(@25 tons/truck)

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates households to be displaced due to the earthquake. Of these, people (out of a total population of 43,055) will seek temporary shelter in public shelters.

Displaced Households/ Persons Seeking Short Term Public Shelter



Displaced households as a result of the earthquake	Persons seeking temporary public shelter

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

· Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
· Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
· Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
· Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.01	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
2 PM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
5 PM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**

Economic Loss

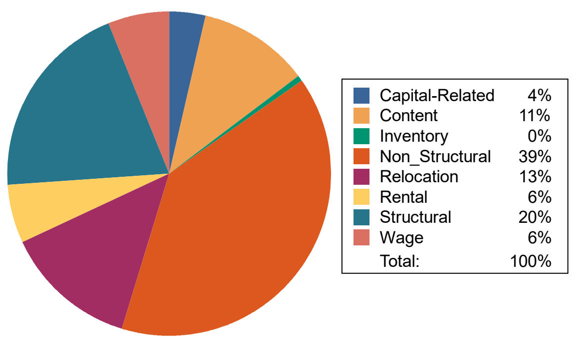
The total economic loss estimated for the earthquake is 0.05 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 0.05 (millions of dollars); 29 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 53 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type ($ millions)



Earthquake Losses by Occupancy Type ($ millions)

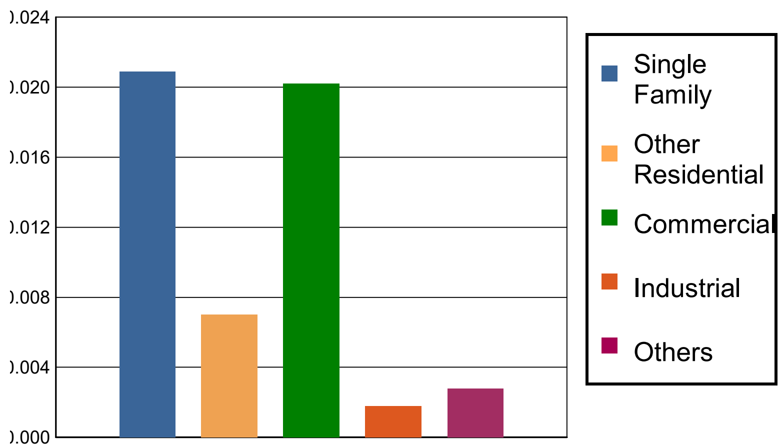


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	0.0002	0.0029	0.0000	0.0001	0.0032
	Capital-Related	0.0000	0.0000	0.0019	0.0000	0.0000	0.0019
	Rental	0.0009	0.0007	0.0015	0.0000	0.0000	0.0031
	Relocation	0.0034	0.0006	0.0024	0.0001	0.0006	0.0071
	Subtotal	**0.0043**	**0.0015**	**0.0087**	**0.0001**	**0.0007**	**0.0153**
Capital Stock Losses							
	Structural	0.0048	0.0013	0.0035	0.0003	0.0006	0.0105
	Non_Structural	0.0098	0.0036	0.0055	0.0008	0.0011	0.0208
	Content	0.0020	0.0006	0.0024	0.0005	0.0004	0.0059
	Inventory	0.0000	0.0000	0.0001	0.0001	0.0000	0.0002
	Subtotal	**0.0166**	**0.0055**	**0.0115**	**0.0017**	**0.0021**	**0.0374**
	Total	**0.02**	**0.01**	**0.02**	**0.00**	**0.00**	**0.05**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	515.3383	0.0000	0.00
	Bridges	350.9138	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Subtotal	**866.2521**	**0.0000**	
Railways	Segments	53.6740	0.0000	0.00
	Bridges	39.5529	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	5.3260	0.0000	0.00
	Subtotal	**98.5529**	**0.0000**	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	81.9142	0.0000	0.00
	Subtotal	**81.9142**	**0.0000**	
	Total	**1,046.72**	**0.00**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	61.9380	0.0000	0.00
	Distribution Line	28.1021	0.0000	0.00
	Subtotal	**90.0401**	**0.0000**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	251.3811	0.0000	0.00
	Distribution Line	16.8613	0.0000	0.00
	Subtotal	**268.2424**	**0.0000**	
Natural Gas	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Line	11.2408	0.0000	0.00
	Subtotal	**11.2408**	**0.0000**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Electrical Power	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Communication	Facilities	0.2790	0.0000	0.00
	Subtotal	**0.2790**	**0.0000**	
	Total	**369.80**	**0.00**	

Appendix A: County Listing for the Region

Danville,VA

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Virginia					
	Danville	43,055	3,910	1,756	5,667
Total Region		**43,055**	**3,910**	**1,756**	**5,667**

Hazus: Earthquake Global Risk Report

Region Name WPPDC_EQ_FranklinC

Earthquake Scenario: Franklin_Prob

Print Date: February 23, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

Table of Contents

General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 711.36 square miles and contains 10 census tracts. There are over 22 thousand households in the region which has a total population of 56,159 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 29 thousand buildings in the region with a total building replacement value (excluding contents) of 7,435 (millions of dollars). Approximately 94.00 % of the buildings (and 83.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,023 and 1,639 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 29 thousand buildings in the region which have an aggregate total replacement value of 7,435 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 57% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 37 beds. There are 20 schools, 10 fire stations, 5 police stations and 1 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 9 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 2,662.00 (millions of dollars). This inventory includes over 98.18 miles of highways, 170 bridges, 11,887.45 miles of pipes.

Table 1: Transportation System Lifeline Inventory

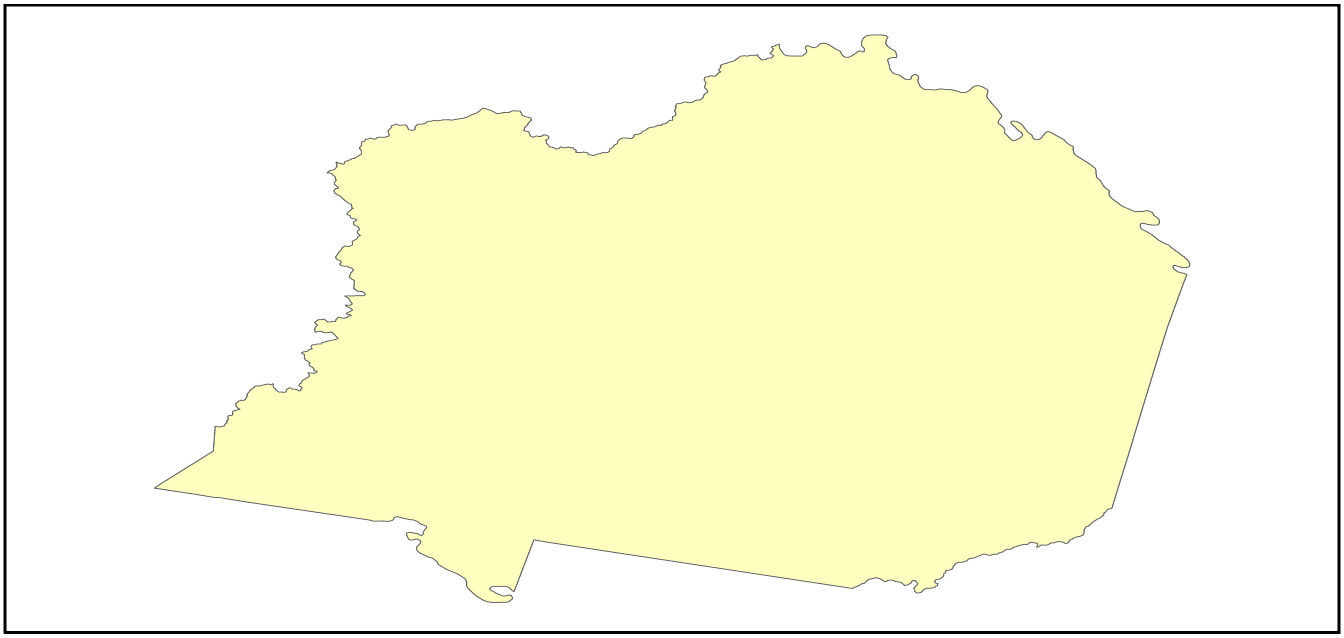
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	170	154.8902
	Segments	30	677.4555
	Tunnels	0	0.0000
		Subtotal	**832.3457**
Railways	Bridges	27	118.6589
	Facilities	0	0.0000
	Segments	20	72.0572
	Tunnels	0	0.0000
		Subtotal	**190.7161**
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
		Subtotal	**0.0000**
Bus	Facilities	0	0.0000
		Subtotal	**0.0000**
Ferry	Facilities	0	0.0000
		Subtotal	**0.0000**
Port	Facilities	0	0.0000
		Subtotal	**0.0000**
Airport	Facilities	0	0.0000
	Runways	0	0.0000
		Subtotal	**0.0000**
		Total	**1,023.10**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	191.3145
	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**191.3145**
Waste Water	Distribution Lines	NA	114.7887
	Facilities	10	1256.9059
	Pipelines	0	0.0000
		Subtotal	**1371.6946**
Natural Gas	Distribution Lines	NA	76.5258
	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**76.5258**
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**0.0000**
Electrical Power	Facilities	0	0.0000
		Subtotal	**0.0000**
Communication	Facilities	4	0.3720
		Subtotal	**0.3720**
		Total	**1,639.90**

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Franklin_Prob
Type of Earthquake	Probabilistic
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	Annualized
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	NA
Depth (km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Direct Earthquake Damage

Building Damage

Hazus estimates that about buildings will be at least moderately damaged. This is over % of the buildings in the region. There are an estimated buildings that will be damaged beyond repair. The definition of the ‘damage states’ is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

Complete
Extensive
Moderate
Slight

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

*Note:
RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 37 hospital beds available for use. On the day of the earthquake, the model estimates that only 0 hospital beds (0.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 0.00% of the beds will be back in service. By 30 days, 0.00% will be operational.

Table 5: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**At Least Moderate Damage > 50%**	**Complete Damage > 50%**	**With Functionality > 50% on day 1**
Hospitals	1	0	0	0
Schools	20	0	0	0
EOCs	1	0	0	0
PoliceStations	5	0	0	0
FireStations	10	0	0	0

Transportation Lifeline Damage

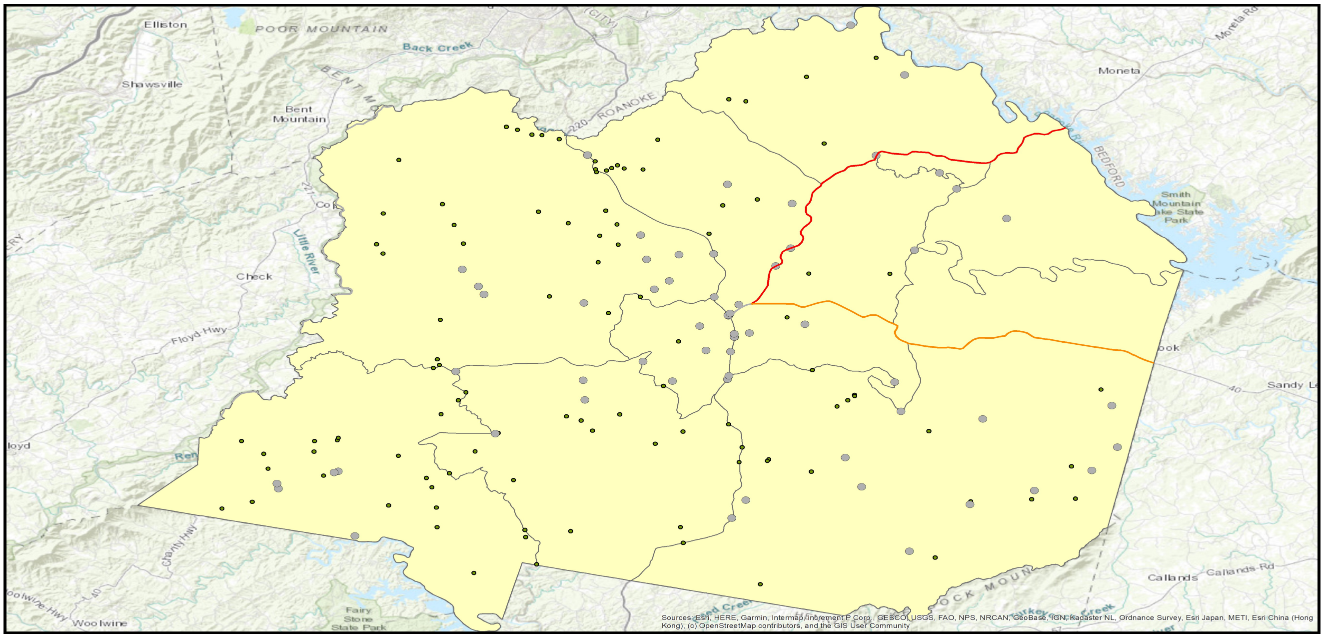


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	30	0	0	0	0
	Bridges	170	0	0	0	0
	Tunnels	0	0	0	0	0
Railways	Segments	20	0	0	0	0
	Bridges	27	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	10	0	0	0	0
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	4	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	5,944	0	0
Waste Water	3,566	0	0
Natural Gas	2,378	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water						
Electric Power						

Induced Earthquake Damage

Fire Following Earthquake

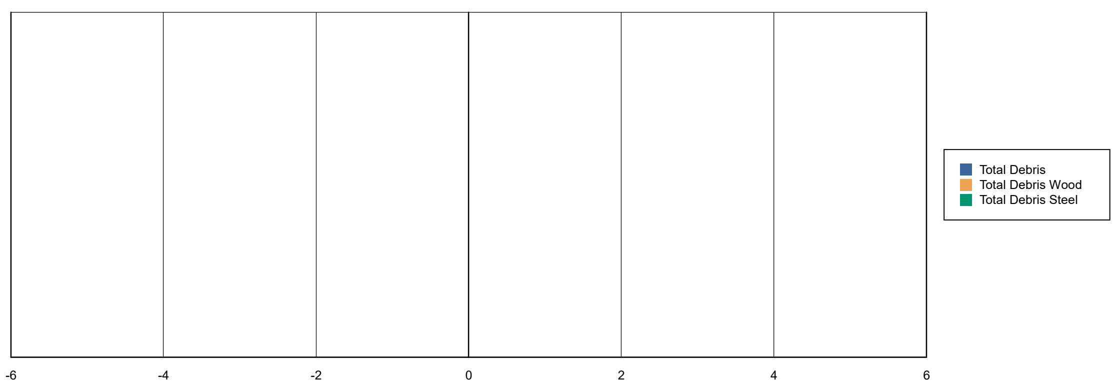
Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about sq. mi % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of tons of debris will be generated. Of the total amount, Brick/Wood comprises % of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Earthquake Debris (millions of tons)



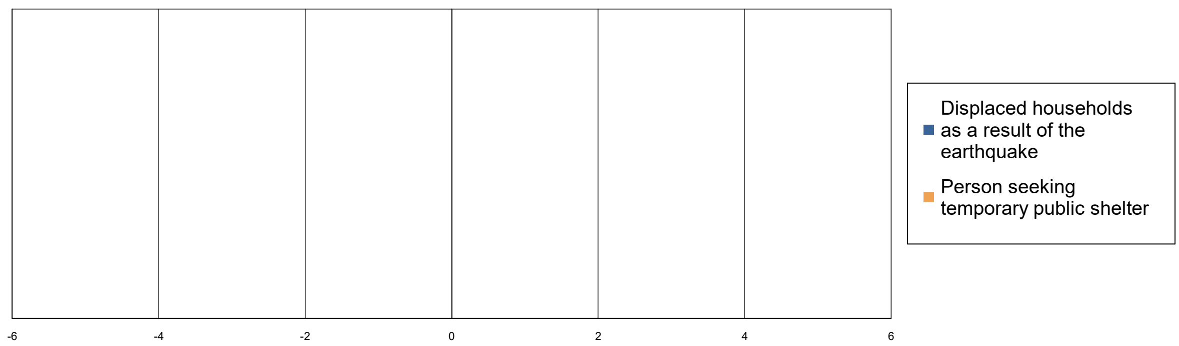
Brick/ Wood	Reinforced Concrete/Steel	Total Debris	Truck Load
			(@25 tons/truck)

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates households to be displaced due to the earthquake. Of these,   people (out of a total population of 56,159) will seek temporary shelter in public shelters.

Displaced Households/ Persons Seeking Short Term Public Shelter



Displaced households as a result of the earthquake	Persons seeking temporary public shelter

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.01	0.00	0.00	0.00
	Single Family	0.01	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
2 PM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
5 PM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.01	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**

Economic Loss

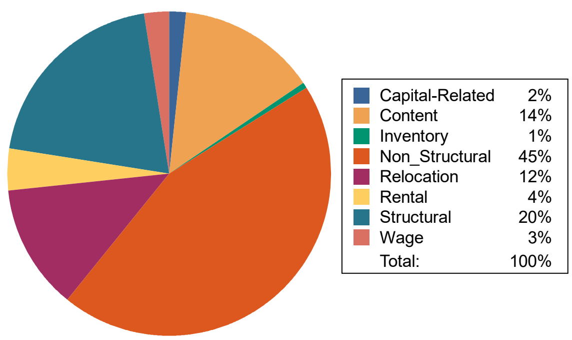
The total economic loss estimated for the earthquake is 0.09 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 0.09 (millions of dollars); 21 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 70 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type ($ millions)



Earthquake Losses by Occupancy Type ($ millions)

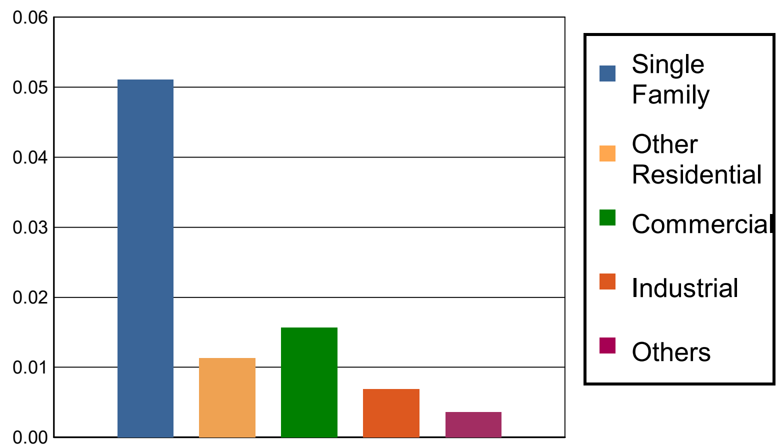


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	0.0001	0.0018	0.0002	0.0002	0.0023
	Capital-Related	0.0000	0.0000	0.0015	0.0001	0.0000	0.0016
	Rental	0.0018	0.0006	0.0014	0.0000	0.0000	0.0038
	Relocation	0.0064	0.0017	0.0019	0.0003	0.0006	0.0109
	Subtotal	**0.0082**	**0.0024**	**0.0066**	**0.0006**	**0.0008**	**0.0186**
Capital Stock Losses							
	Structural	0.0110	0.0025	0.0024	0.0010	0.0007	0.0176
	Non_Structural	0.0253	0.0056	0.0045	0.0029	0.0014	0.0397
	Content	0.0066	0.0008	0.0022	0.0019	0.0007	0.0122
	Inventory	0.0000	0.0000	0.0000	0.0005	0.0000	0.0005
	Subtotal	**0.0429**	**0.0089**	**0.0091**	**0.0063**	**0.0028**	**0.0700**
	Total	**0.05**	**0.01**	**0.02**	**0.01**	**0.00**	**0.09**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	677.4555	0.0000	0.00
	Bridges	154.8902	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Subtotal	**832.3457**	**0.0000**	
Railways	Segments	72.0572	0.0000	0.00
	Bridges	118.6589	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**190.7161**	**0.0000**	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
	Total	**1,023.06**	**0.00**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Line	191.3145	0.0000	0.00
	Subtotal	**191.3145**	**0.0000**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	1256.9059	0.0000	0.00
	Distribution Line	114.7887	0.0000	0.00
	Subtotal	**1371.6946**	**0.0000**	
Natural Gas	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Line	76.5258	0.0000	0.00
	Subtotal	**76.5258**	**0.0000**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Electrical Power	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Communication	Facilities	0.3720	0.0000	0.00
	Subtotal	**0.3720**	**0.0000**	
	Total	**1,639.91**	**0.00**	

Appendix A: County Listing for the Region

Franklin,VA

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Virginia					
	Franklin	56,159	6,160	1,274	7,435
Total Region		**56,159**	**6,160**	**1,274**	**7,435**

Hazus: Earthquake Global Risk Report

Region Name WPPDC_EQ_HenryCo

Earthquake Scenario: Henry_Prob

Print Date: February 23, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

Table of Contents

General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 384.28 square miles and contains 14 census tracts. There are over 23 thousand households in the region which has a total population of 54,151 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 26 thousand buildings in the region with a total building replacement value (excluding contents) of 6,078 (millions of dollars). Approximately 92.00 % of the buildings (and 70.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,180 and 1,733 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 26 thousand buildings in the region which have an aggregate total replacement value of 6,078 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 55% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 0 hospitals in the region with a total bed capacity of beds. There are 20 schools, 10 fire stations, 2 police stations and 1 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 30 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 2,913.00 (millions of dollars). This inventory includes over 88.86 miles of highways, 134 bridges, 6,024.81 miles of pipes.

Table 1: Transportation System Lifeline Inventory

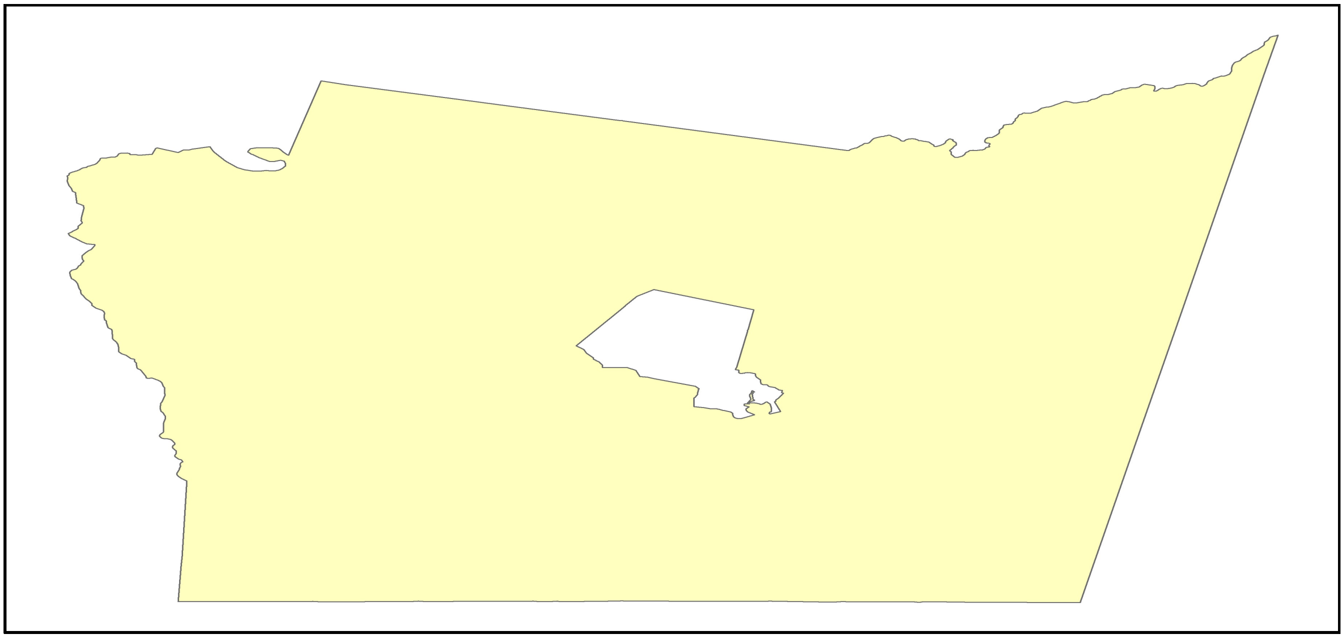
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	134	279.2022
	Segments	29	687.9667
	Tunnels	0	0.0000
		Subtotal	**967.1689**
Railways	Bridges	16	70.3164
	Facilities	0	0.0000
	Segments	47	96.3773
	Tunnels	0	0.0000
		Subtotal	**166.6937**
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
		Subtotal	**0.0000**
Bus	Facilities	0	0.0000
		Subtotal	**0.0000**
Ferry	Facilities	0	0.0000
		Subtotal	**0.0000**
Port	Facilities	0	0.0000
		Subtotal	**0.0000**
Airport	Facilities	1	4.3947
	Runways	1	41.7670
		Subtotal	**46.1617**
		Total	**1,180.00**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	120.7954
	Facilities	2	61.9380
	Pipelines	0	0.0000
		Subtotal	**182.7334**
Waste Water	Distribution Lines	NA	72.4772
	Facilities	10	1256.9059
	Pipelines	0	0.0000
		Subtotal	**1329.3831**
Natural Gas	Distribution Lines	NA	48.3181
	Facilities	0	0.0000
	Pipelines	1	19.5789
		Subtotal	**67.8970**
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**0.0000**
Electrical Power	Facilities	1	152.9382
		Subtotal	**152.9382**
Communication	Facilities	5	0.4650
		Subtotal	**0.4650**
		Total	**1,733.40**

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Henry_Prob
Type of Earthquake	Probabilistic
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	Annualized
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	NA
Depth (km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Direct Earthquake Damage

Building Damage

Hazus estimates that about buildings will be at least moderately damaged. This is over % of the buildings in the region. There are an estimated buildings that will be damaged beyond repair. The definition of the ‘damage states’ is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

Complete
Extensive
Moderate
Slight

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

*Note:
RM	Reinforced Masonry
URM	Unreinforced Masonry
MH	Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had hospital beds available for use. On the day of the earthquake, the model estimates that only hospital beds (%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, % of the beds will be back in service. By 30 days, % will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	0	0	0	0
Schools	20	0	0	0
EOCs	1	0	0	0
PoliceStations	2	0	0	0
FireStations	10	0	0	0

Transportation Lifeline Damage

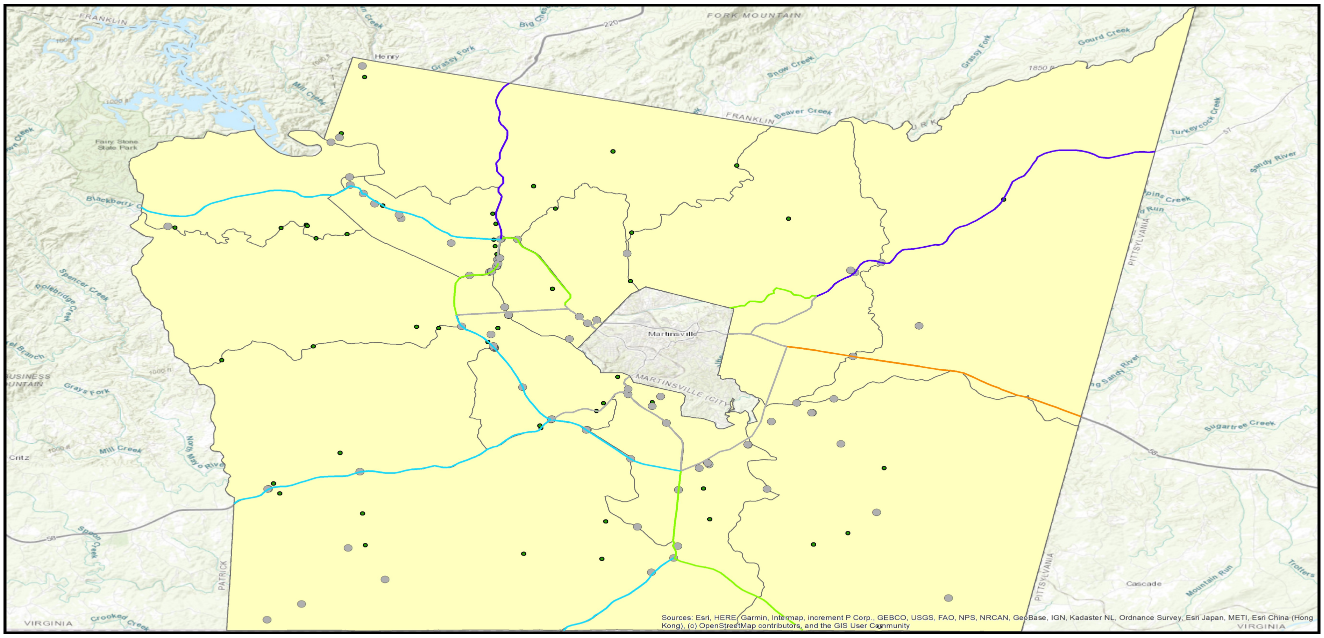


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	29	0	0	0	0
	Bridges	134	0	0	0	0
	Tunnels	0	0	0	0	0
Railways	Segments	47	0	0	0	0
	Bridges	16	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	0	0	0	0
	Runways	1	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	2	0	0	0	0
Waste Water	10	0	0	0	0
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	1	0	0	0	0
Communication	5	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	3,753	0	0
Waste Water	2,252	0	0
Natural Gas	20	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water						
Electric Power						

Induced Earthquake Damage

Fire Following Earthquake

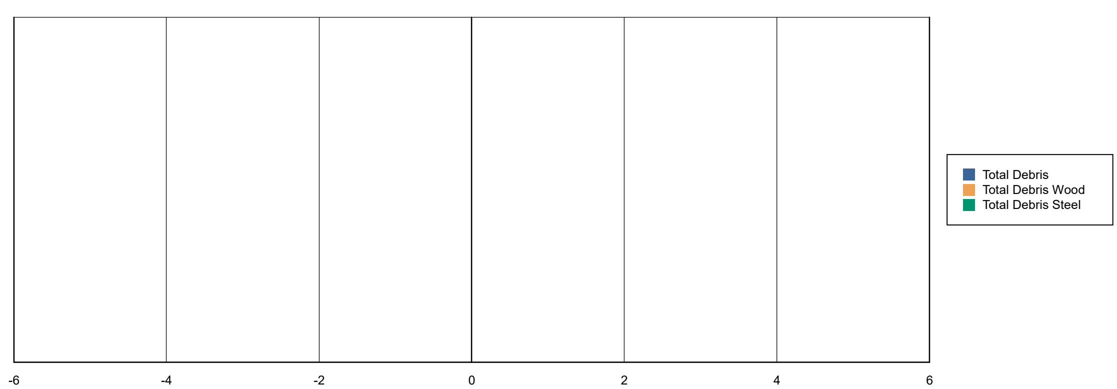
Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about sq. mi % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of tons of debris will be generated. Of the total amount, Brick/Wood comprises % of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Earthquake Debris (millions of tons)



Brick/ Wood | **Reinforced Concrete/Steel** | **Total Debris** | **Truck Load**

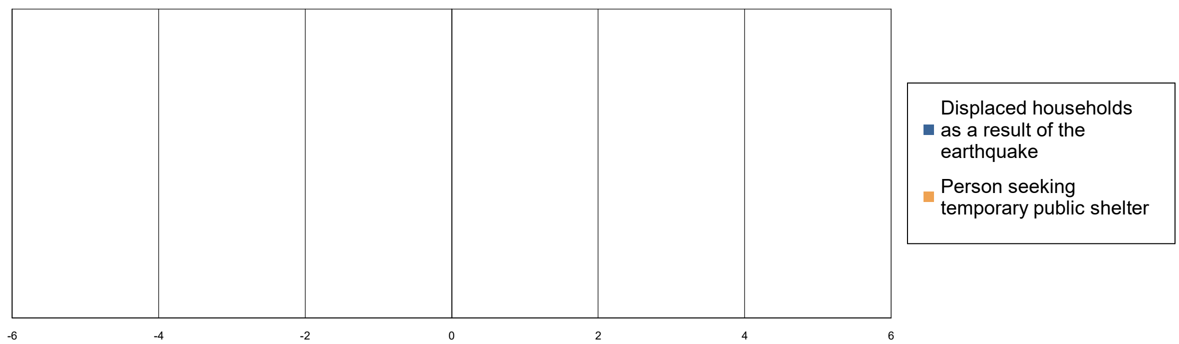
(@25 tons/truck)

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates households to be displaced due to the earthquake. Of these,   people (out of a total population of 54,151) will seek temporary shelter in public shelters.

Displaced Households/ Persons Seeking Short Term Public Shelter



Displaced households as a result of the earthquake	Persons seeking temporary public shelter

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

· Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
· Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
· Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
· Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.01	0.00	0.00	0.00
	Single Family	0.02	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
2 PM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
5 PM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.01	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**

Economic Loss

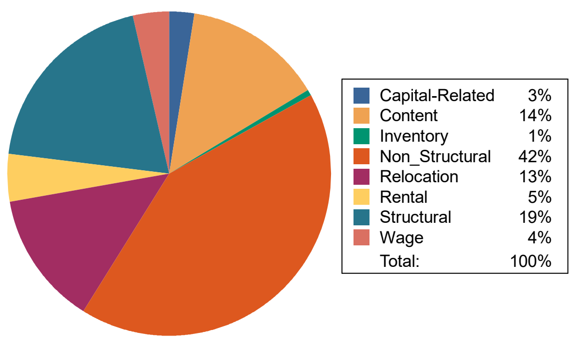
The total economic loss estimated for the earthquake is 0.09 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 0.09 (millions of dollars); 24 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 56 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type ($ millions)



Earthquake Losses by Occupancy Type ($ millions)

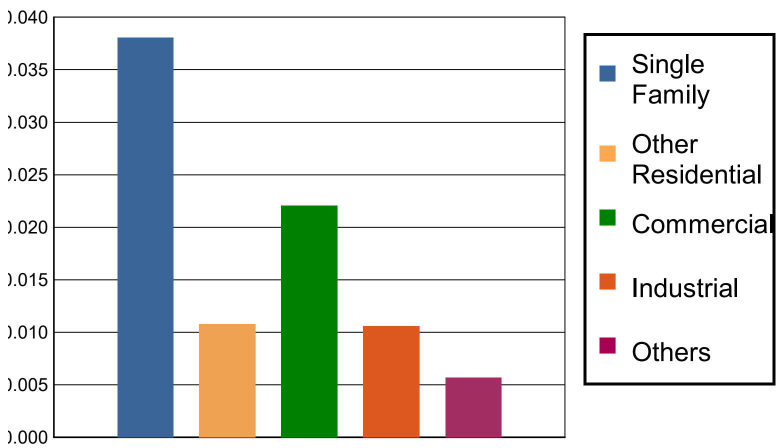


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	0.0001	0.0025	0.0002	0.0004	0.0032
	Capital-Related	0.0000	0.0000	0.0022	0.0001	0.0000	0.0023
	Rental	0.0015	0.0005	0.0019	0.0001	0.0000	0.0040
	Relocation	0.0055	0.0018	0.0026	0.0008	0.0010	0.0117
	Subtotal	**0.0070**	**0.0024**	**0.0092**	**0.0012**	**0.0014**	**0.0212**
Capital Stock Losses							
	Structural	0.0081	0.0024	0.0035	0.0019	0.0011	0.0170
	Non_Structural	0.0184	0.0053	0.0064	0.0043	0.0022	0.0366
	Content	0.0046	0.0007	0.0029	0.0028	0.0010	0.0120
	Inventory	0.0000	0.0000	0.0001	0.0004	0.0000	0.0005
	Subtotal	**0.0311**	**0.0084**	**0.0129**	**0.0094**	**0.0043**	**0.0661**
	Total	**0.04**	**0.01**	**0.02**	**0.01**	**0.01**	**0.09**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	687.9667	0.0000	0.00
	Bridges	279.2022	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Subtotal	**967.1689**	**0.0000**	
Railways	Segments	96.3773	0.0000	0.00
	Bridges	70.3164	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**166.6937**	**0.0000**	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Airport	Facilities	4.3947	0.0000	0.00
	Runways	41.7670	0.0000	0.00
	Subtotal	**46.1617**	**0.0000**	
	Total	**1,180.02**	**0.00**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	61.9380	0.0000	0.00
	Distribution Line	120.7954	0.0000	0.00
	Subtotal	**182.7334**	**0.0000**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	1256.9059	0.0000	0.00
	Distribution Line	72.4772	0.0000	0.00
	Subtotal	**1329.3831**	**0.0000**	
Natural Gas	Pipelines	19.5789	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Line	48.3181	0.0000	0.00
	Subtotal	**67.8970**	**0.0000**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Electrical Power	Facilities	152.9382	0.0000	0.00
	Subtotal	**152.9382**	**0.0000**	
Communication	Facilities	0.4650	0.0000	0.00
	Subtotal	**0.4650**	**0.0000**	
	Total	**1,733.42**	**0.00**	

Appendix A: County Listing for the Region

Henry,VA

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Virginia					
	Henry	54,151	4,273	1,804	6,078
Total Region		**54,151**	**4,273**	**1,804**	**6,078**

Hazus: Earthquake Global Risk Report

Region Name	WPPDC_EQ_Martinsvl
Earthquake Scenario:	Martinsville_Prob
Print Date:	February 23, 2021

Disclaimer:

This version of Hazus utilizes 2010 Census Data.

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 11.00 square miles and contains 5 census tracts. There are over 6 thousand households in the region which has a total population of 13,821 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 6 thousand buildings in the region with a total building replacement value (excluding contents) of 2,158 (millions of dollars). Approximately 89.00 % of the buildings (and 62.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 137 and 44 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 6 thousand buildings in the region which have an aggregate total replacement value of 2,158 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 68% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 223 beds. There are 8 schools, 2 fire stations, 3 police stations and 1 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 5 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 181.00 (millions of dollars). This inventory includes over 8.70 miles of highways, 10 bridges, 402.65 miles of pipes.

Table 1: Transportation System Lifeline Inventory

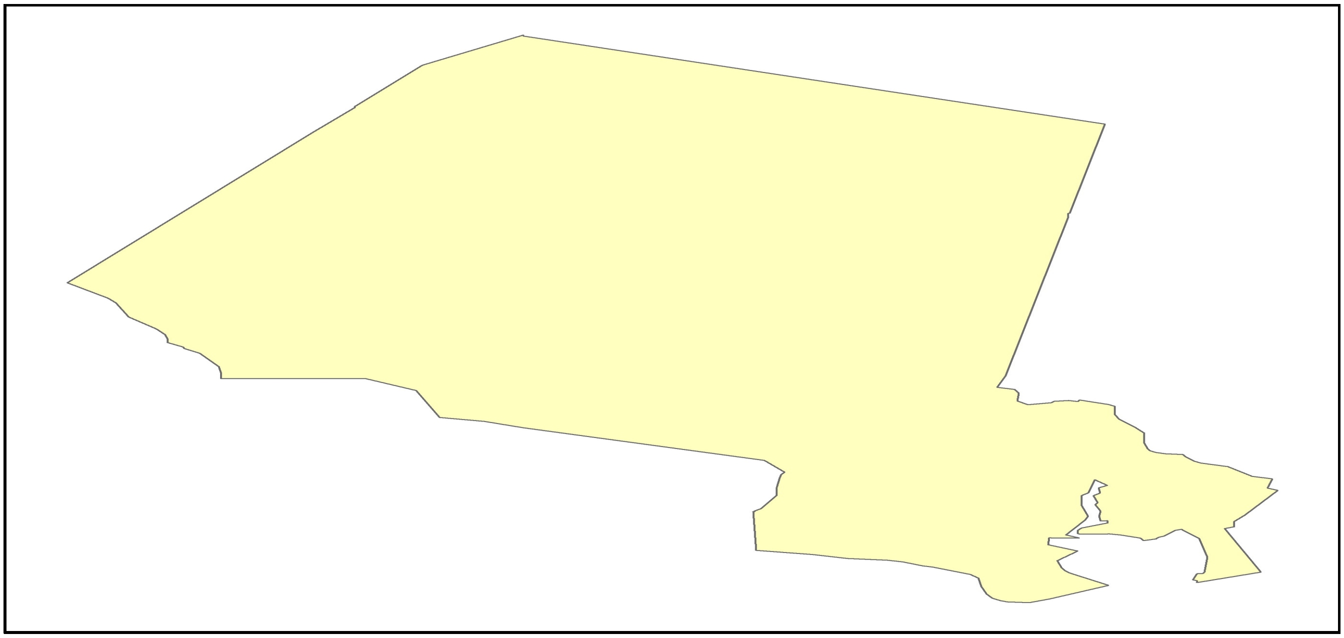
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	10	21.4891
	Segments	12	96.9671
	Tunnels	0	0.0000
		Subtotal	**118.4562**
Railways	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	6	18.7148
	Tunnels	0	0.0000
		Subtotal	**18.7148**
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
		Subtotal	**0.0000**
Bus	Facilities	0	0.0000
		Subtotal	**0.0000**
Ferry	Facilities	0	0.0000
		Subtotal	**0.0000**
Port	Facilities	0	0.0000
		Subtotal	**0.0000**
Airport	Facilities	0	0.0000
	Runways	0	0.0000
		Subtotal	**0.0000**
		Total	**137.20**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	6.4891
	Facilities	1	30.9690
	Pipelines	0	0.0000
		Subtotal	**37.4581**
Waste Water	Distribution Lines	NA	3.8935
	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**3.8935**
Natural Gas	Distribution Lines	NA	2.5957
	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**2.5957**
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**0.0000**
Electrical Power	Facilities	0	0.0000
		Subtotal	**0.0000**
Communication	Facilities	1	0.0930
		Subtotal	**0.0930**
		Total	**44.00**

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Martinsville_Prob
Type of Earthquake	Probabilistic
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	Annualized
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	NA
Depth (km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Direct Earthquake Damage

Building Damage

Hazus estimates that about buildings will be at least moderately damaged. This is over % of the buildings in the region. There are an estimated buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

Complete
Extensive
Moderate
Slight

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 223 hospital beds available for use. On the day of the earthquake, the model estimates that only 0 hospital beds (0.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 0.00% of the beds will be back in service. By 30 days, 0.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	0	0	0
Schools	8	0	0	0
EOCs	1	0	0	0
PoliceStations	3	0	0	0
FireStations	2	0	0	0

Transportation Lifeline Damage

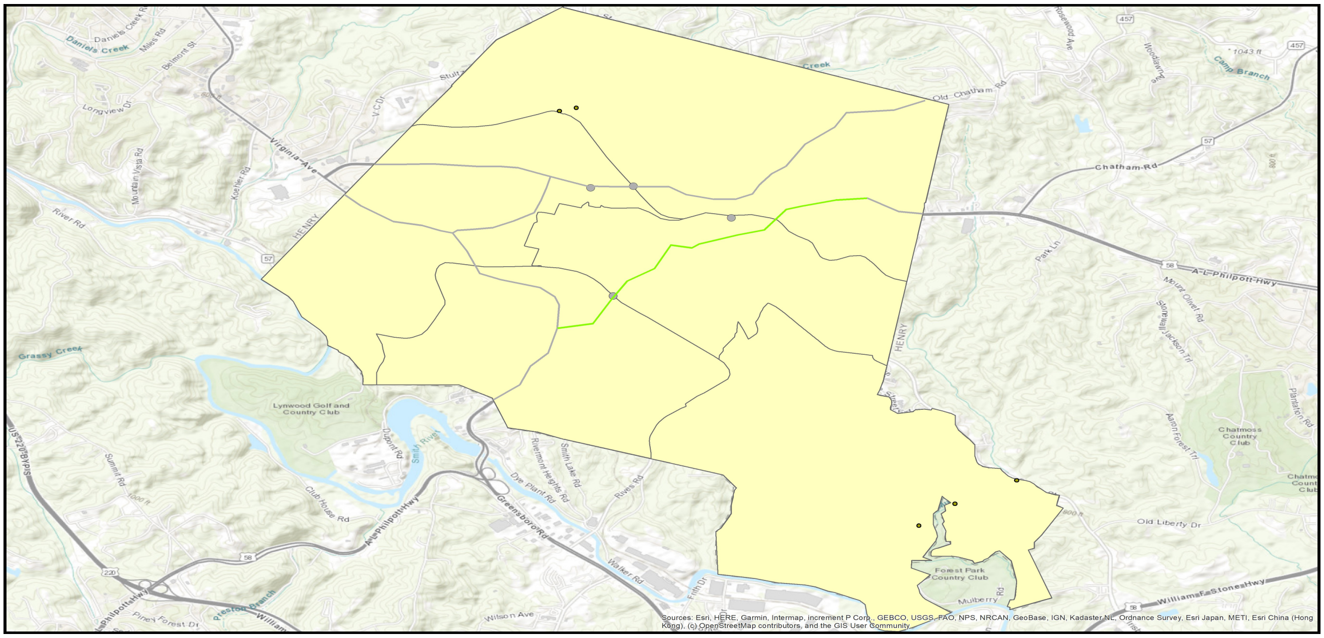


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 % After Day 1	With Functionality > 50 % After Day 7
Highway	Segments	12	0	0	0	0
	Bridges	10	0	0	0	0
	Tunnels	0	0	0	0	0
Railways	Segments	6	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 % After Day 1	with Functionality > 50 % After Day 7
Potable Water	1	0	0	0	0
Waste Water	0	0	0	0	0
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	1	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	202	0	0
Waste Water	121	0	0
Natural Gas	81	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water						
Electric Power						

Induced Earthquake Damage

Fire Following Earthquake

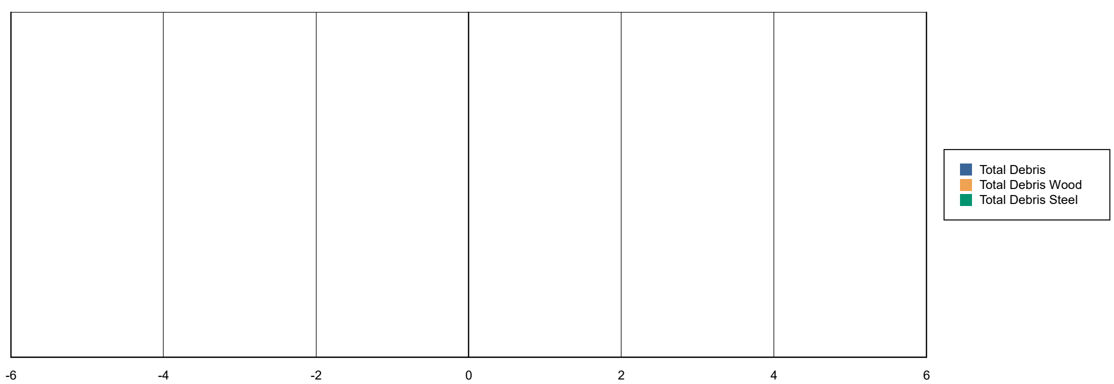
Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about sq. mi % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of tons of debris will be generated. Of the total amount, Brick/Wood comprises % of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Earthquake Debris (millions of tons)



Brick/ Wood | **Reinforced Concrete/Steel** | **Total Debris** | **Truck Load**

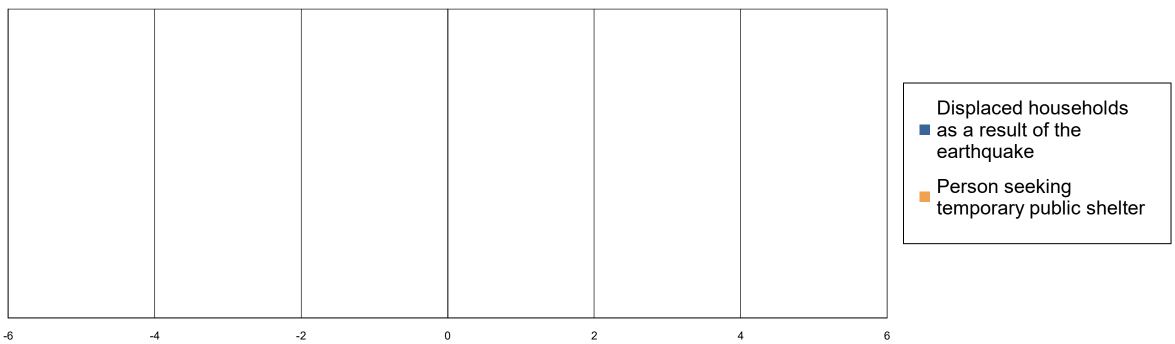
(@25 tons/truck)

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates households to be displaced due to the earthquake. Of these, people (out of a total population of 13,821) will seek temporary shelter in public shelters.

Displaced Households/ Persons Seeking Short Term Public Shelter



Displaced households as a result of the earthquake	Persons seeking temporary public shelter

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- · Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- · Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- · Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- · Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.01	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
2 PM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
5 PM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**

Economic Loss

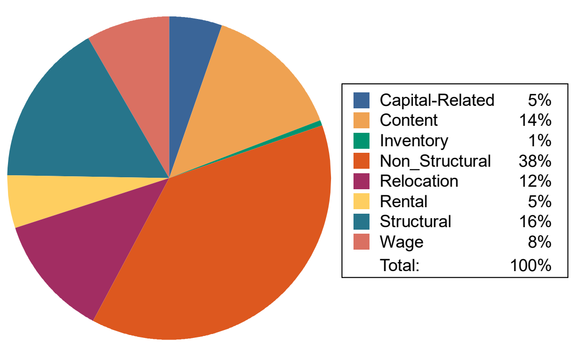
The total economic loss estimated for the earthquake is 0.05 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 0.05 (millions of dollars); 31 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 36 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type ($ millions)



Earthquake Losses by Occupancy Type ($ millions)

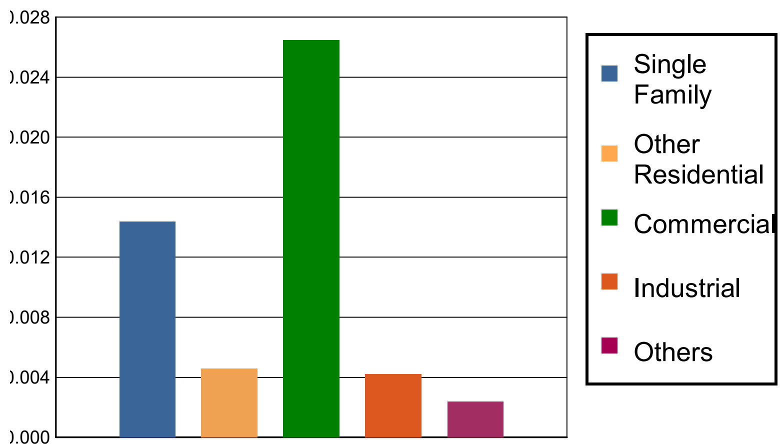


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	0.0002	0.0040	0.0001	0.0001	0.0044
	Capital-Related	0.0000	0.0000	0.0026	0.0001	0.0000	0.0027
	Rental	0.0005	0.0004	0.0018	0.0000	0.0000	0.0027
	Relocation	0.0020	0.0003	0.0034	0.0002	0.0005	0.0064
	Subtotal	**0.0025**	**0.0009**	**0.0118**	**0.0004**	**0.0006**	**0.0162**
Capital Stock Losses							
	Structural	0.0030	0.0007	0.0037	0.0007	0.0004	0.0085
	Non_Structural	0.0071	0.0025	0.0074	0.0018	0.0010	0.0198
	Content	0.0018	0.0005	0.0035	0.0011	0.0004	0.0073
	Inventory	0.0000	0.0000	0.0001	0.0002	0.0000	0.0003
	Subtotal	**0.0119**	**0.0037**	**0.0147**	**0.0038**	**0.0018**	**0.0359**
	Total	**0.01**	**0.00**	**0.03**	**0.00**	**0.00**	**0.05**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	96.9671	0.0000	0.00
	Bridges	21.4891	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Subtotal	**118.4562**	**0.0000**	
Railways	Segments	18.7148	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**18.7148**	**0.0000**	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
	Total	**137.17**	**0.00**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	30.9690	0.0000	0.00
	Distribution Line	6.4891	0.0000	0.00
	Subtotal	**37.4581**	**0.0000**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Line	3.8935	0.0000	0.00
	Subtotal	**3.8935**	**0.0000**	
Natural Gas	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Line	2.5957	0.0000	0.00
	Subtotal	**2.5957**	**0.0000**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Electrical Power	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Communication	Facilities	0.0930	0.0000	0.00
	Subtotal	**0.0930**	**0.0000**	
	Total	**44.04**	**0.00**	

Appendix A: County Listing for the Region

Martinsville,VA

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Virginia					
	Martinsville	13,821	1,341	816	2,158
Total Region		**13,821**	**1,341**	**816**	**2,158**

Hazus: Earthquake Global Risk Report

Region Name WPPDC_EQ_PatrickCo

Earthquake Scenario: Patrick_Prob

Print Date: February 23, 2021

Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

Table of Contents

General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 485.73 square miles and contains 4 census tracts. There are over 8 thousand households in the region which has a total population of 18,490 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 10 thousand buildings in the region with a total building replacement value (excluding contents) of 1,967 (millions of dollars). Approximately 93.00 % of the buildings (and 81.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 617 and 680 (millions of dollars), respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 10 thousand buildings in the region which have an aggregate total replacement value of 1,967 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 53% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 0 hospitals in the region with a total bed capacity of beds. There are 10 schools, 11 fire stations, 1 police stations and 1 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 10 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 1,297.00 (millions of dollars). This inventory includes over 92.58 miles of highways, 146 bridges, 5,557.54 miles of pipes.

Table 1: Transportation System Lifeline Inventory

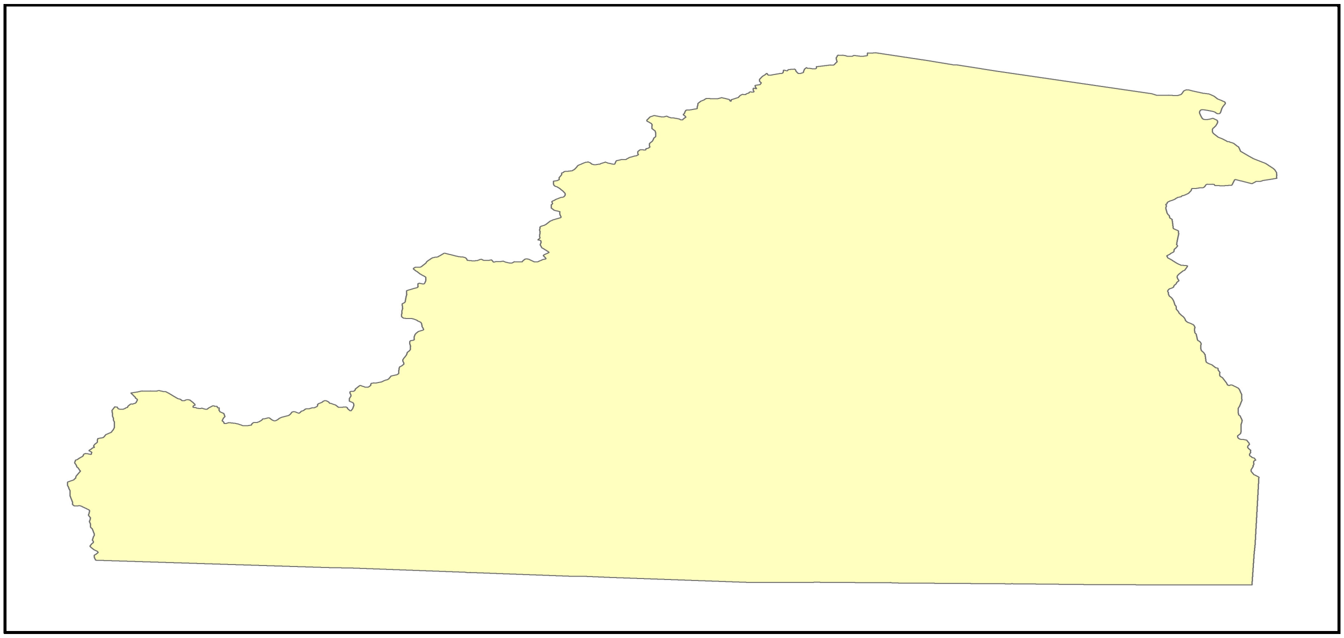
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	146	91.1749
	Segments	40	497.4138
	Tunnels	0	0.0000
		Subtotal	**588.5887**
Railways	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
		Subtotal	**0.0000**
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
		Subtotal	**0.0000**
Bus	Facilities	0	0.0000
		Subtotal	**0.0000**
Ferry	Facilities	0	0.0000
		Subtotal	**0.0000**
Port	Facilities	0	0.0000
		Subtotal	**0.0000**
Airport	Facilities	0	0.0000
	Runways	1	29.3421
		Subtotal	**29.3421**
		Total	**617.90**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	111.3529
	Facilities	1	30.9690
	Pipelines	0	0.0000
		Subtotal	**142.3219**
Waste Water	Distribution Lines	NA	66.8118
	Facilities	2	251.3811
	Pipelines	0	0.0000
		Subtotal	**318.1929**
Natural Gas	Distribution Lines	NA	44.5412
	Facilities	0	0.0000
	Pipelines	1	21.9824
		Subtotal	**66.5236**
Oil Systems	Facilities	1	0.0930
	Pipelines	0	0.0000
		Subtotal	**0.0930**
Electrical Power	Facilities	1	152.9382
		Subtotal	**152.9382**
Communication	Facilities	1	0.0930
		Subtotal	**0.0930**
		Total	**680.20**

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Patrick_Prob
Type of Earthquake	Probabilistic
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	Annualized
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	NA
Depth (km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Direct Earthquake Damage

Building Damage

Hazus estimates that about buildings will be at least moderately damaged. This is over % of the buildings in the region. There are an estimated buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

Complete
Extensive
Moderate
Slight

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

*Note:
RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had hospital beds available for use. On the day of the earthquake, the model estimates that only hospital beds (%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, % of the beds will be back in service. By 30 days, % will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	0	0	0	0
Schools	10	0	0	0
EOCs	1	0	0	0
PoliceStations	1	0	0	0
FireStations	11	0	0	0

<u>Transportation Lifeline Damage</u>

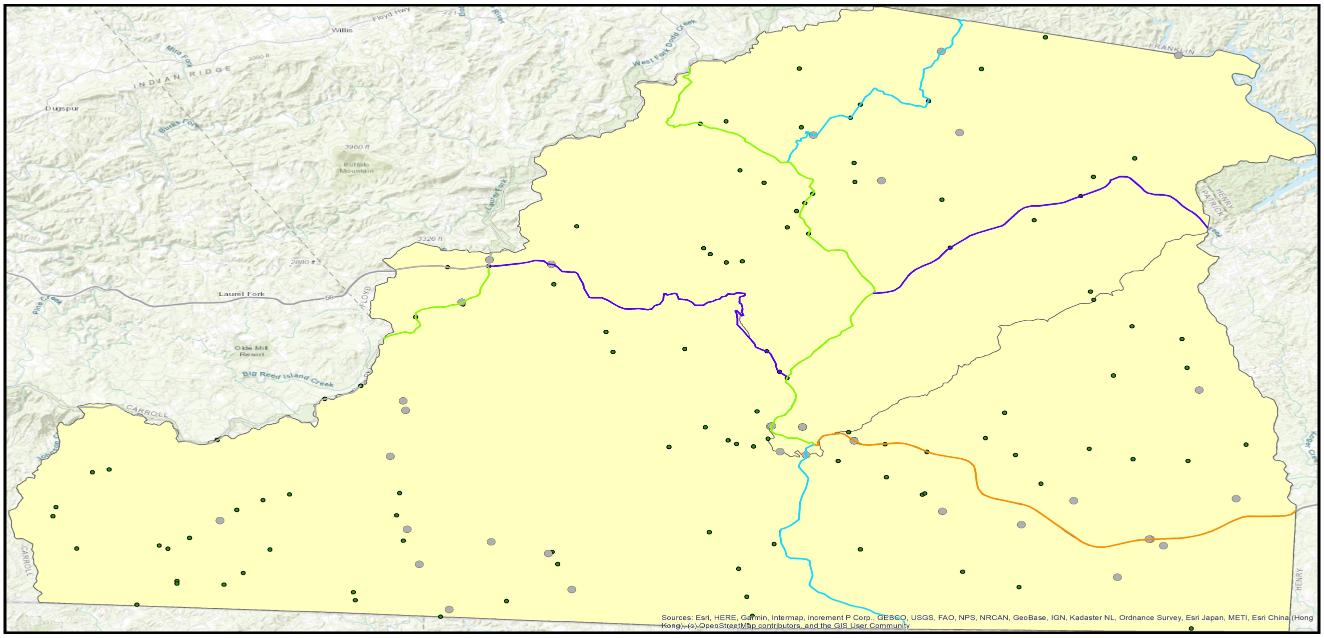


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	40	0	0	0	0
	Bridges	146	0	0	0	0
	Tunnels	0	0	0	0	0
Railways	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	1	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	1	0	0	0	0
Waste Water	2	0	0	0	0
Natural Gas	0	0	0	0	0
Oil Systems	1	0	0	0	0
Electrical Power	1	0	0	0	0
Communication	1	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	3,460	0	0
Waste Water	2,076	0	0
Natural Gas	23	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water						
Electric Power						

Induced Earthquake Damage

Fire Following Earthquake

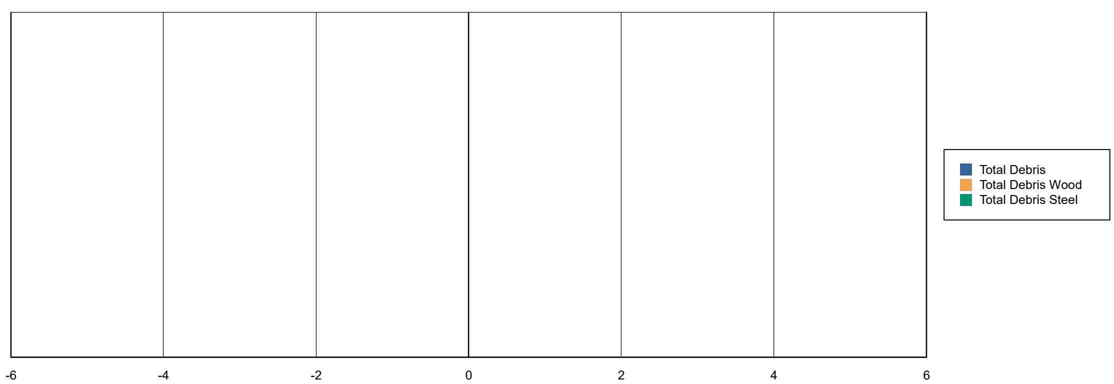
Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about sq. mi % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of tons of debris will be generated. Of the total amount, Brick/Wood comprises % of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Earthquake Debris (millions of tons)



Brick/ Wood **Reinforced Concrete/Steel** **Total Debris** **Truck Load**

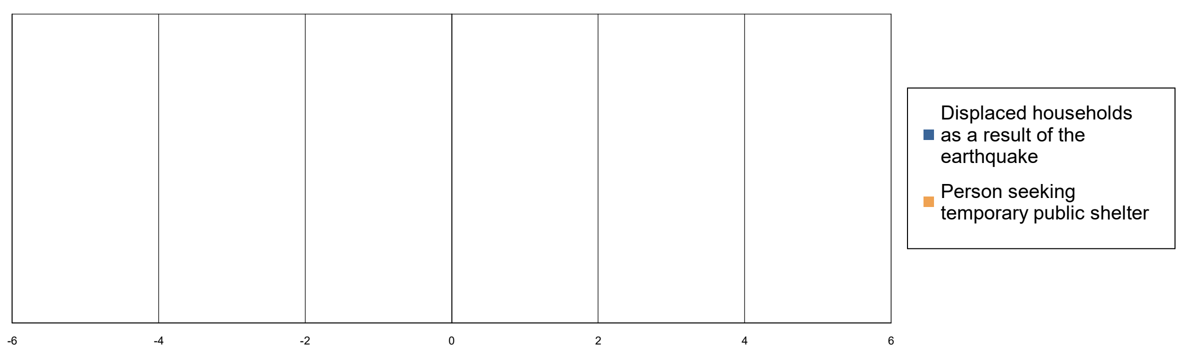
(@25 tons/truck)

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates households to be displaced due to the earthquake. Of these, people (out of a total population of 18,490) will seek temporary shelter in public shelters.

Displaced Households/ Persons Seeking Short Term Public Shelter



Displaced households as a result of the earthquake	Persons seeking temporary public shelter

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.01	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
2 PM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
5 PM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**

Economic Loss

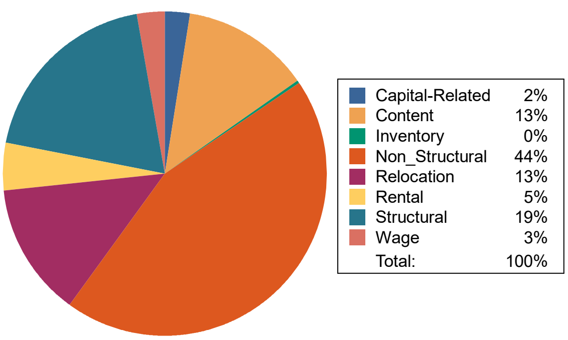
The total economic loss estimated for the earthquake is 0.03 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 0.03 (millions of dollars); 23 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 71 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type ($ millions)



Earthquake Losses by Occupancy Type ($ millions)

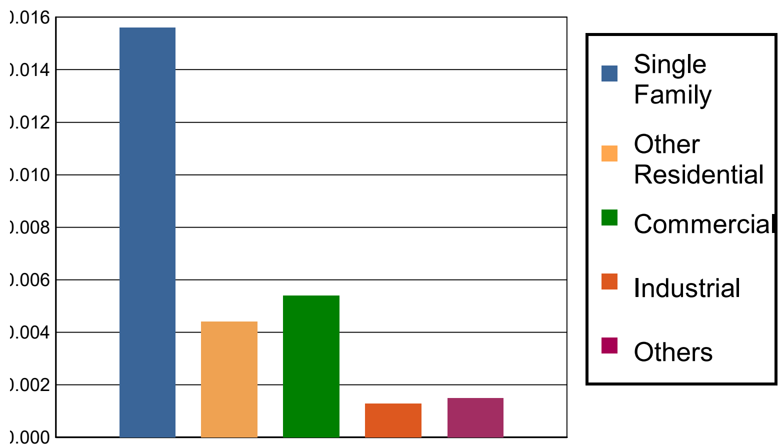


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	0.0001	0.0006	0.0000	0.0001	0.0008
	Capital-Related	0.0000	0.0000	0.0007	0.0000	0.0000	0.0007
	Rental	0.0006	0.0002	0.0005	0.0000	0.0000	0.0013
	Relocation	0.0022	0.0008	0.0006	0.0000	0.0002	0.0038
	Subtotal	**0.0028**	**0.0011**	**0.0024**	**0.0000**	**0.0003**	**0.0066**
Capital Stock Losses							
	Structural	0.0032	0.0010	0.0007	0.0002	0.0003	0.0054
	Non_Structural	0.0076	0.0021	0.0016	0.0006	0.0006	0.0125
	Content	0.0020	0.0002	0.0007	0.0004	0.0003	0.0036
	Inventory	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001
	Subtotal	**0.0128**	**0.0033**	**0.0030**	**0.0013**	**0.0012**	**0.0216**
	Total	**0.02**	**0.00**	**0.01**	**0.00**	**0.00**	**0.03**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	497.4138	0.0000	0.00
	Bridges	91.1749	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Subtotal	**588.5887**	**0.0000**	
Railways	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	29.3421	0.0000	0.00
	Subtotal	**29.3421**	**0.0000**	
	Total	**617.93**	**0.00**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	30.9690	0.0000	0.00
	Distribution Line	111.3529	0.0000	0.00
	Subtotal	**142.3219**	**0.0000**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	251.3811	0.0000	0.00
	Distribution Line	66.8118	0.0000	0.00
	Subtotal	**318.1929**	**0.0000**	
Natural Gas	Pipelines	21.9824	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Line	44.5412	0.0000	0.00
	Subtotal	**66.5236**	**0.0000**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0930	0.0000	0.00
	Subtotal	**0.0930**	**0.0000**	
Electrical Power	Facilities	152.9382	0.0000	0.00
	Subtotal	**152.9382**	**0.0000**	
Communication	Facilities	0.0930	0.0000	0.00
	Subtotal	**0.0930**	**0.0000**	
	Total	**680.16**	**0.00**	

Appendix A: County Listing for the Region

Patrick,VA

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Virginia					
	Patrick	18,490	1,588	379	1,967
Total Region		**18,490**	**1,588**	**379**	**1,967**

Hazus: Earthquake Global Risk Report

Region Name WPPDC_EQ_PIttsylCo

Earthquake Scenario: Pittsylvannia_Prob

Print Date: February 23, 2021

Disclaimer:

This version of Hazus utilizes 2010 Census Data.

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

Table of Contents

General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Virginia

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 977.92 square miles and contains 16 census tracts. There are over 26 thousand households in the region which has a total population of 63,506 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 32 thousand buildings in the region with a total building replacement value (excluding contents) of 6,162 (millions of dollars). Approximately 94.00 % of the buildings (and 84.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 2,035 and 2,004 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 32 thousand buildings in the region which have an aggregate total replacement value of 6,162 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 54% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of beds. There are 27 schools, 24 fire stations, 6 police stations and 1 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 60 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 4,039.00 (millions of dollars). This inventory includes over 187.03 miles of highways, 250 bridges, 12,641.17 miles of pipes.

Table 1: Transportation System Lifeline Inventory

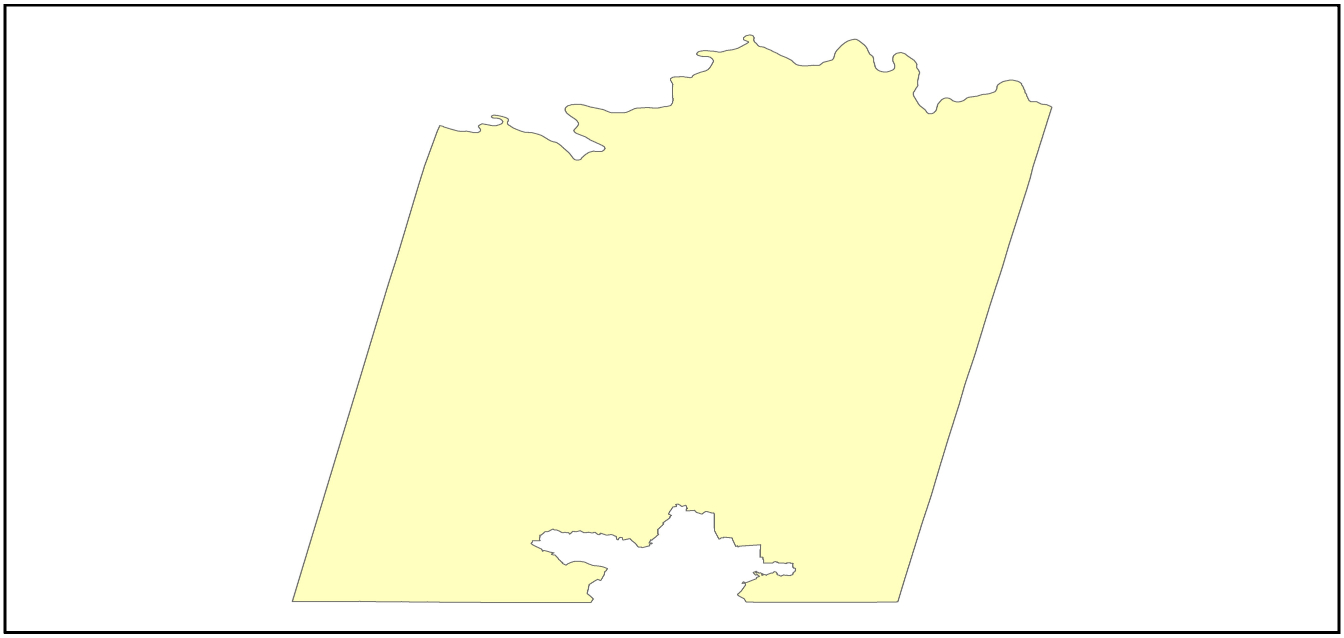
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	250	321.3680
	Segments	41	1332.4959
	Tunnels	0	0.0000
		Subtotal	**1653.8639**
Railways	Bridges	56	246.1074
	Facilities	0	0.0000
	Segments	40	131.5795
	Tunnels	0	0.0000
		Subtotal	**377.6869**
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
		Subtotal	**0.0000**
Bus	Facilities	0	0.0000
		Subtotal	**0.0000**
Ferry	Facilities	0	0.0000
		Subtotal	**0.0000**
Port	Facilities	0	0.0000
		Subtotal	**0.0000**
Airport	Facilities	1	4.3947
	Runways	0	0.0000
		Subtotal	**4.3947**
		Total	**2,035.90**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	253.1478
	Facilities	1	30.9690
	Pipelines	0	0.0000
		Subtotal	**284.1168**
Waste Water	Distribution Lines	NA	151.8887
	Facilities	10	1256.9059
	Pipelines	0	0.0000
		Subtotal	**1408.7946**
Natural Gas	Distribution Lines	NA	101.2591
	Facilities	1	1.5381
	Pipelines	6	55.5956
		Subtotal	**158.3928**
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**0.0000**
Electrical Power	Facilities	1	152.9382
		Subtotal	**152.9382**
Communication	Facilities	7	0.6510
		Subtotal	**0.6510**
		Total	**2,004.90**

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Pittsylvannia_Prob
Type of Earthquake	Probabilistic
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	Annualized
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	NA
Depth (km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Direct Earthquake Damage

Building Damage

Hazus estimates that about buildings will be at least moderately damaged. This is over % of the buildings in the region. There are an estimated buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

Complete
Extensive
Moderate
Slight

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Total										

*Note:
RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had hospital beds available for use. On the day of the earthquake, the model estimates that only hospital beds (0.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 0.00% of the beds will be back in service. By 30 days, 0.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	0	0	0
Schools	27	0	0	0
EOCs	1	0	0	0
PoliceStations	6	0	0	0
FireStations	24	0	0	0

Transportation Lifeline Damage

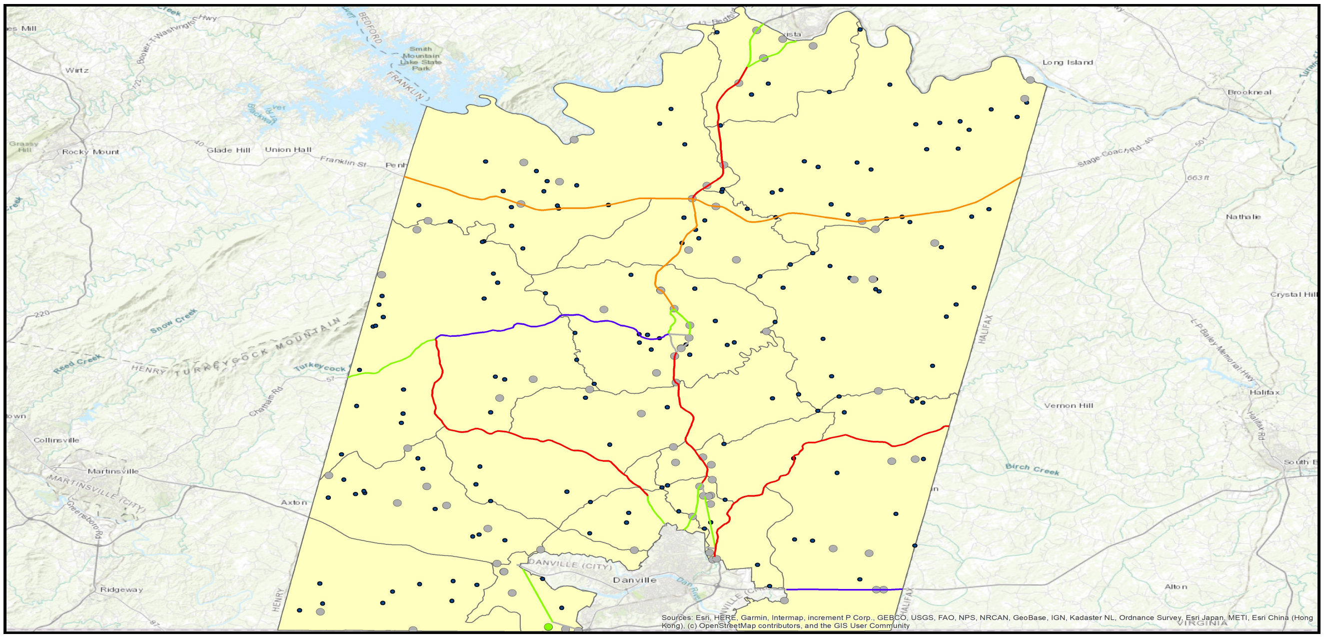


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	41	0	0	0	0
	Bridges	250	0	0	0	0
	Tunnels	0	0	0	0	0
Railways	Segments	40	0	0	0	0
	Bridges	56	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 % After Day 1	with Functionality > 50 % After Day 7
Potable Water	1	0	0	0	0
Waste Water	10	0	0	0	0
Natural Gas	1	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	1	0	0	0	0
Communication	7	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	7,865	0	0
Waste Water	4,719	0	0
Natural Gas	58	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water						
Electric Power						

Induced Earthquake Damage

Fire Following Earthquake

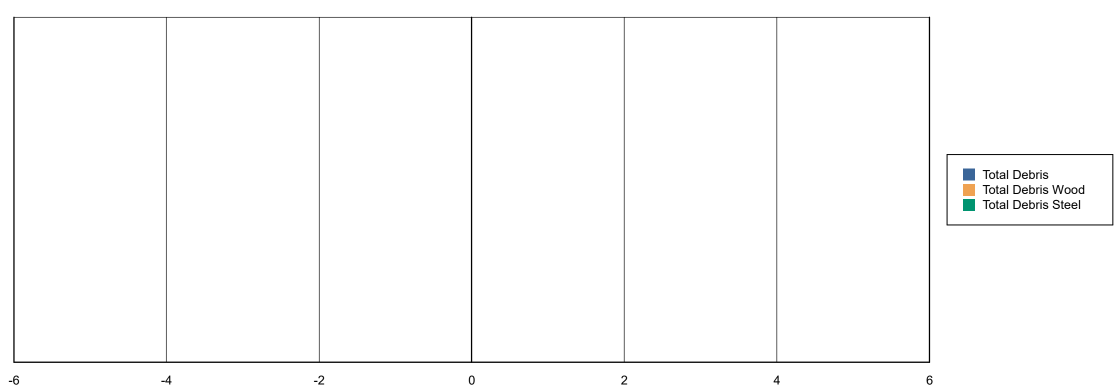
Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about sq. mi % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of tons of debris will be generated. Of the total amount, Brick/Wood comprises % of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require   truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Earthquake Debris (millions of tons)



Brick/ Wood **Reinforced Concrete/Steel** **Total Debris** **Truck Load**

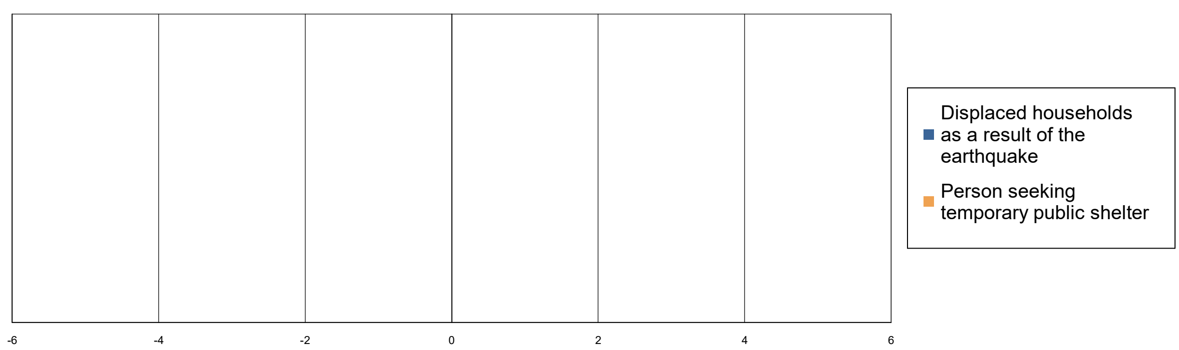
(@25 tons/truck)

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates households to be displaced due to the earthquake. Of these, people (out of a total population of 63,506) will seek temporary shelter in public shelters.

Displaced Households/ Persons Seeking Short Term Public Shelter



Displaced households as a result of the earthquake	Persons seeking temporary public shelter

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

· Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
· Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
· Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
· Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.01	0.00	0.00	0.00
	Single Family	0.02	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
2 PM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.00	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**
5 PM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.00	0.00	0.00	0.00
	Single Family	0.01	0.00	0.00	0.00
	Total	**0**	**0**	**0**	**0**

Economic Loss

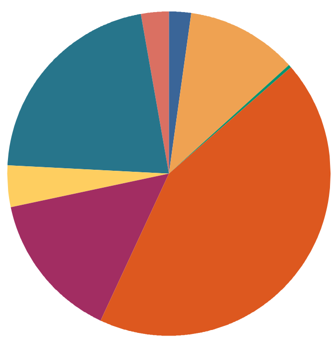
The total economic loss estimated for the earthquake is 0.07 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 0.07 (millions of dollars); 24 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 74 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type ($ millions)



Earthquake Losses by Occupancy Type ($ millions)

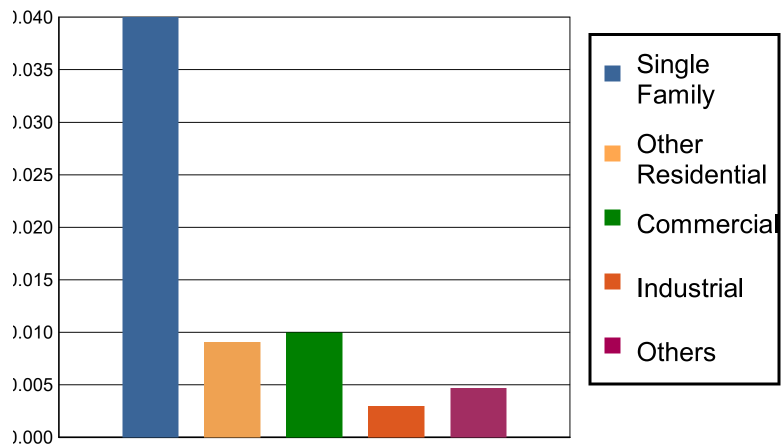


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	0.0000	0.0015	0.0000	0.0004	0.0019
	Capital-Related	0.0000	0.0000	0.0014	0.0000	0.0000	0.0014
	Rental	0.0017	0.0003	0.0008	0.0000	0.0000	0.0028
	Relocation	0.0059	0.0018	0.0011	0.0002	0.0008	0.0098
	Subtotal	**0.0076**	**0.0021**	**0.0048**	**0.0002**	**0.0012**	**0.0159**
Capital Stock Losses							
	Structural	0.0089	0.0023	0.0014	0.0006	0.0010	0.0142
	Non_Structural	0.0191	0.0043	0.0027	0.0013	0.0017	0.0291
	Content	0.0044	0.0004	0.0011	0.0008	0.0008	0.0075
	Inventory	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001
	Subtotal	**0.0324**	**0.0070**	**0.0052**	**0.0028**	**0.0035**	**0.0509**
	Total	**0.04**	**0.01**	**0.01**	**0.00**	**0.00**	**0.07**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	1332.4959	0.0000	0.00
	Bridges	321.3680	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Subtotal	**1653.8639**	**0.0000**	
Railways	Segments	131.5795	0.0000	0.00
	Bridges	246.1074	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**377.6869**	**0.0000**	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Airport	Facilities	4.3947	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	**4.3947**	**0.0000**	
	Total	**2,035.95**	**0.00**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	30.9690	0.0000	0.00
	Distribution Line	253.1478	0.0000	0.00
	Subtotal	**284.1168**	**0.0000**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	1256.9059	0.0000	0.00
	Distribution Line	151.8887	0.0000	0.00
	Subtotal	**1408.7946**	**0.0000**	
Natural Gas	Pipelines	55.5956	0.0000	0.00
	Facilities	1.5381	0.0000	0.00
	Distribution Line	101.2591	0.0000	0.00
	Subtotal	**158.3928**	**0.0000**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Electrical Power	Facilities	152.9382	0.0000	0.00
	Subtotal	**152.9382**	**0.0000**	
Communication	Facilities	0.6510	0.0000	0.00
	Subtotal	**0.6510**	**0.0000**	
	Total	**2,004.89**	**0.00**	

Appendix A: County Listing for the Region

Pittsylvania,VA

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Virginia					
	Pittsylvania	63,506	5,184	977	6,162
Total Region		**63,506**	**5,184**	**977**	**6,162**