



NRV Hazard Mitigation Plan 2016/2017 Update Steering Committee

April 6, 2017, 10:30 am - 12:00 pm

New River Room, New River Valley Business Center
Fairlawn, VA

Agenda

1. Welcome
2. Review and confirm final hazard and risk mapping
3. Hazard ranking review
4. Wrap Up
 - a. Question and answer
 - b. Next steps
 - c. Next meeting – May 4, 2017 – Steering Committee

NRV Hazard Mitigation Plan - 2016/17 Plan Update

April 6, 2017 - 10:30 am

	Name	Organization/Representing	Email (if new)
1	WILLIE RICHARDSON	VDEM	
2	Jonathan T. Simmons	VDEM RC	
3	Burdly KAST	NARROWS	
4	JOHN ROSS	GILES CO.	
5	KAEI Howard	Town of Blacksburg	
6	Fanny Wilkin	Putaski County	
7	Will Duke	Town of Christiansburg	
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Regional Hazard Mitigation Plan Update

Steering Committee

April 6, 2017

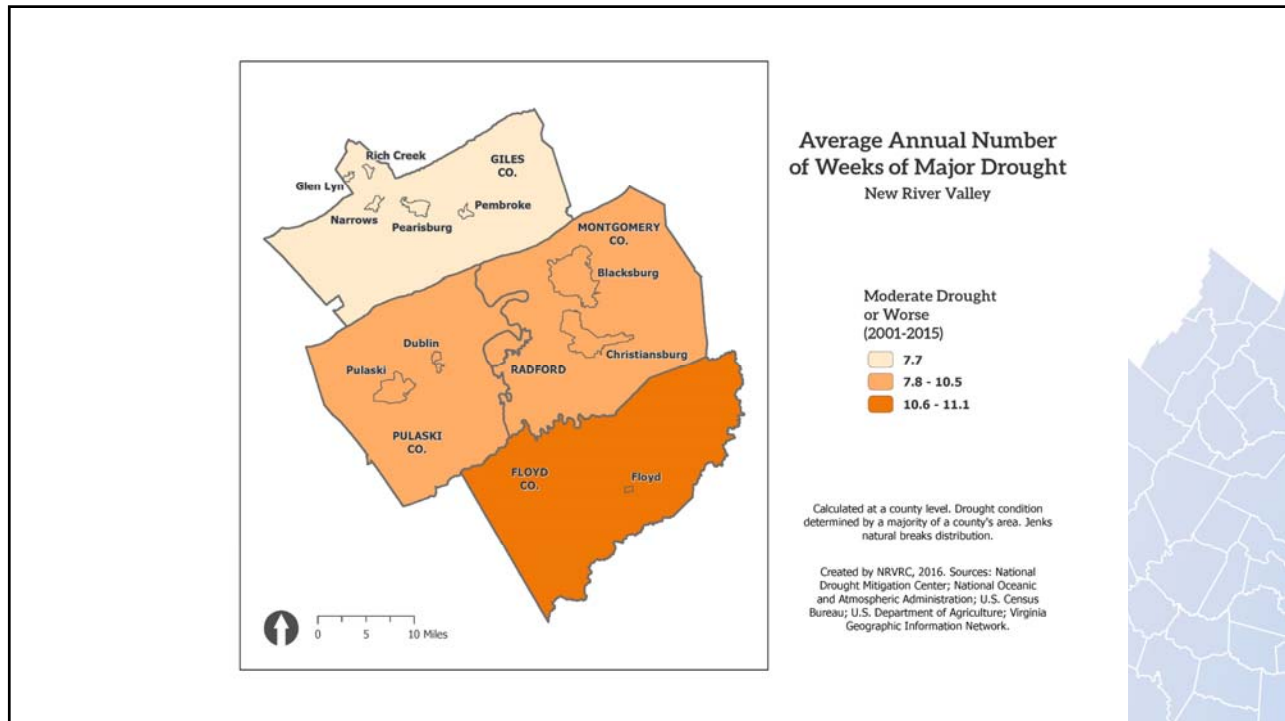
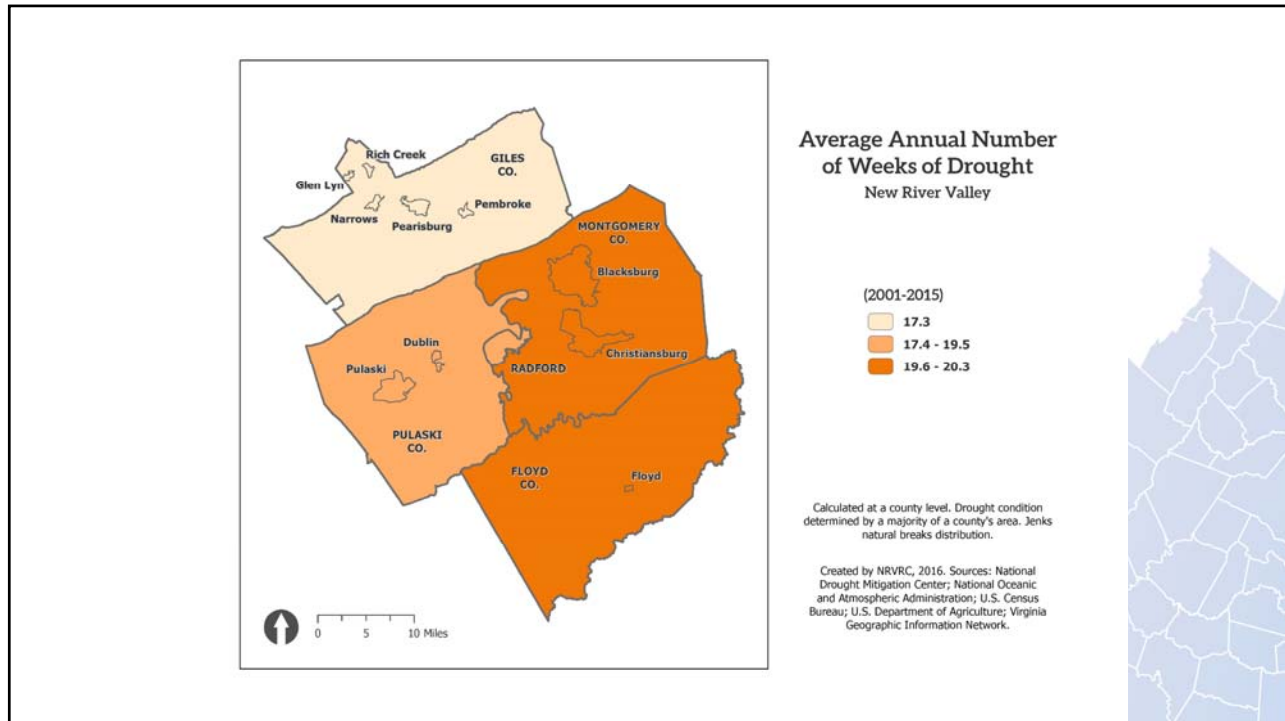
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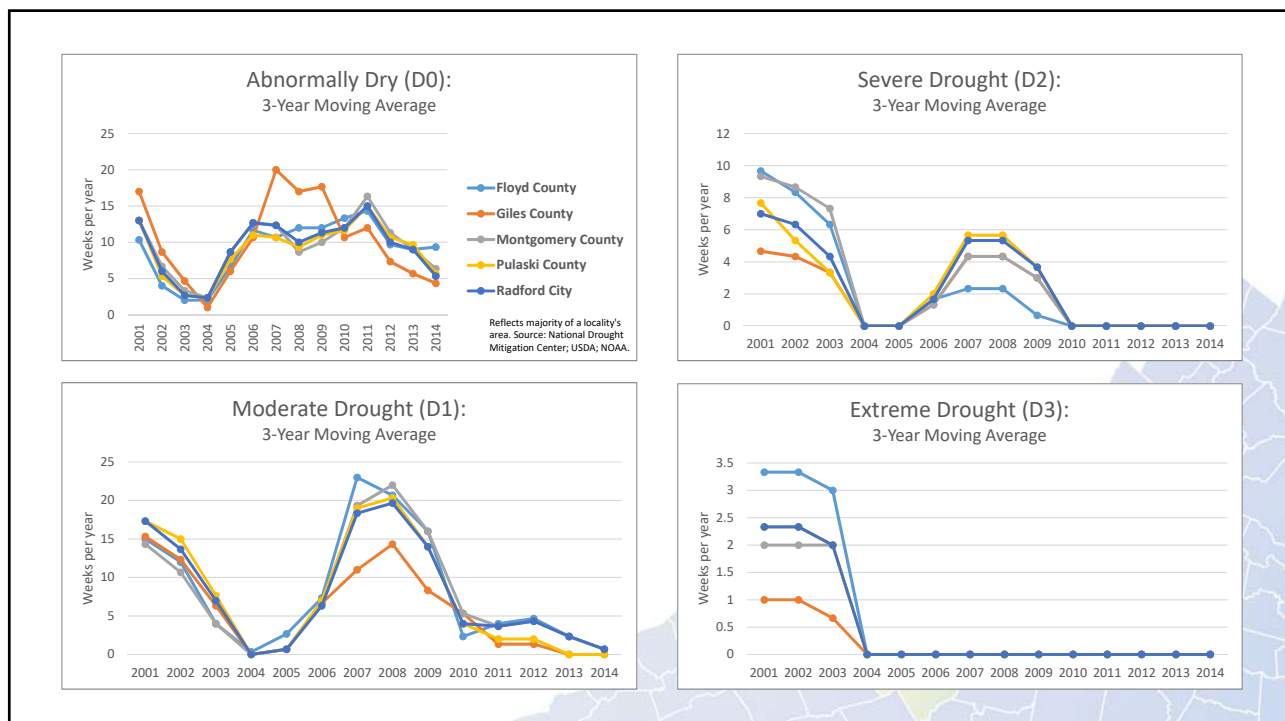
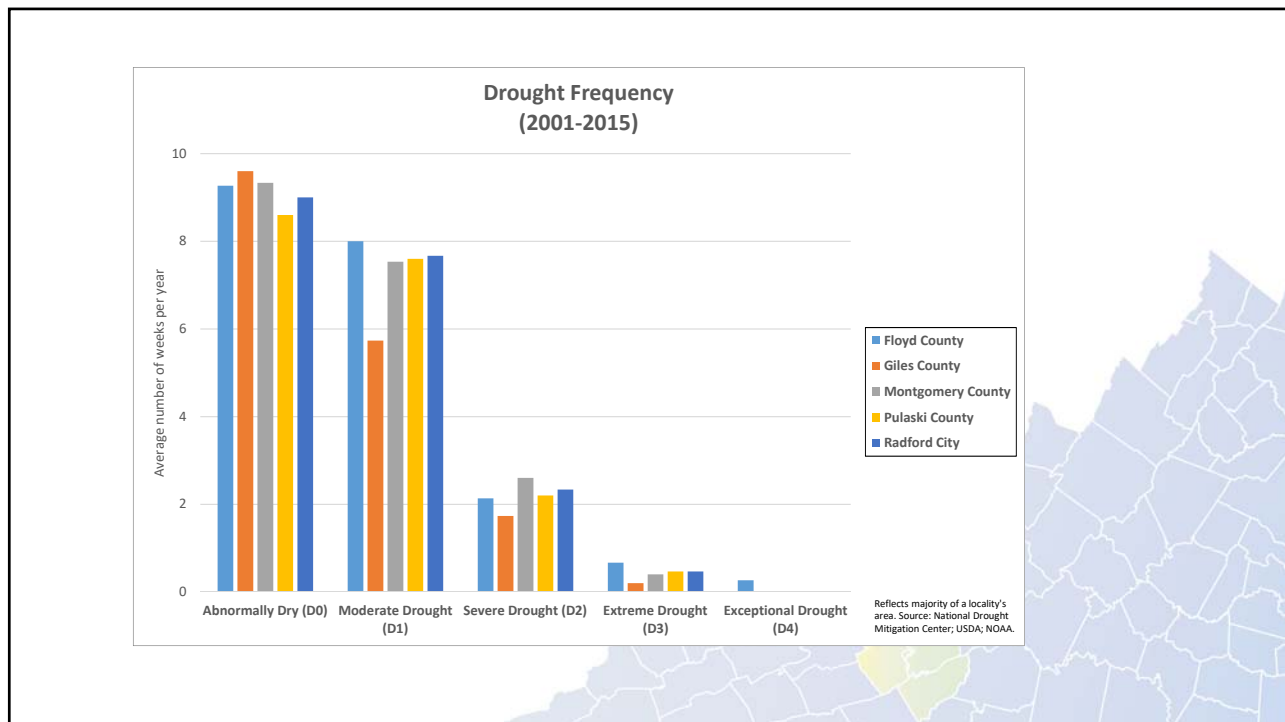


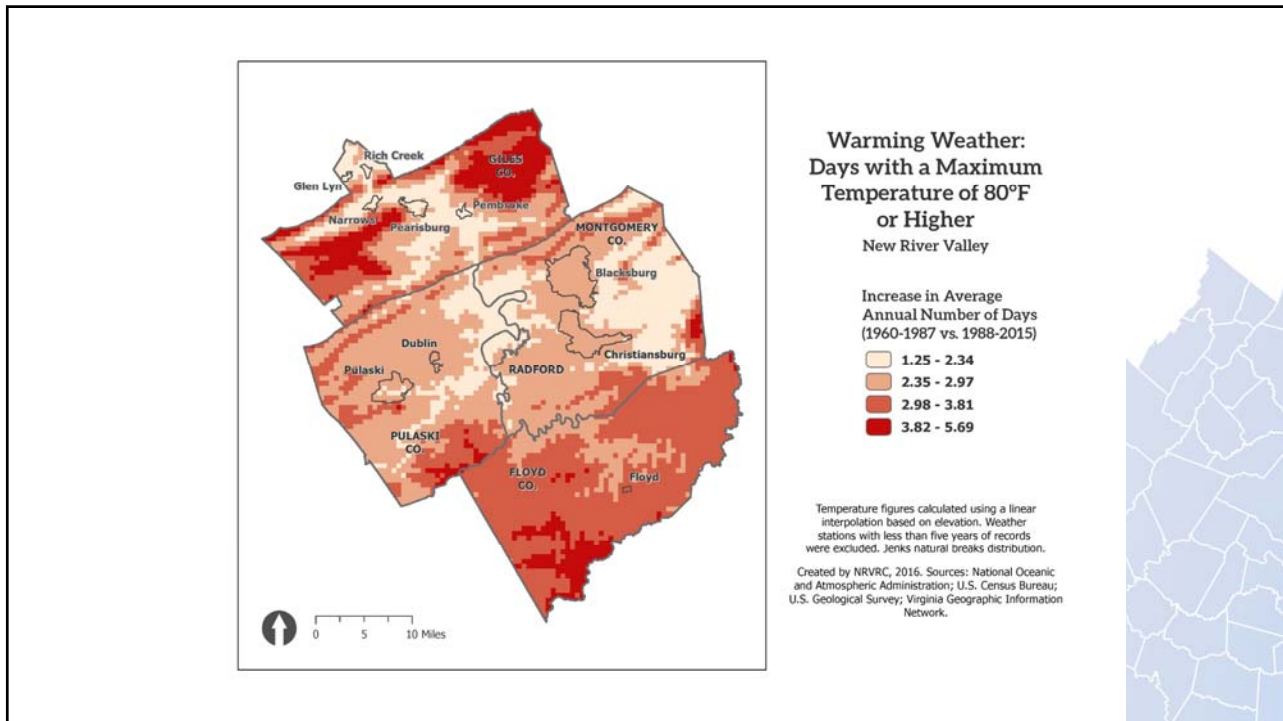
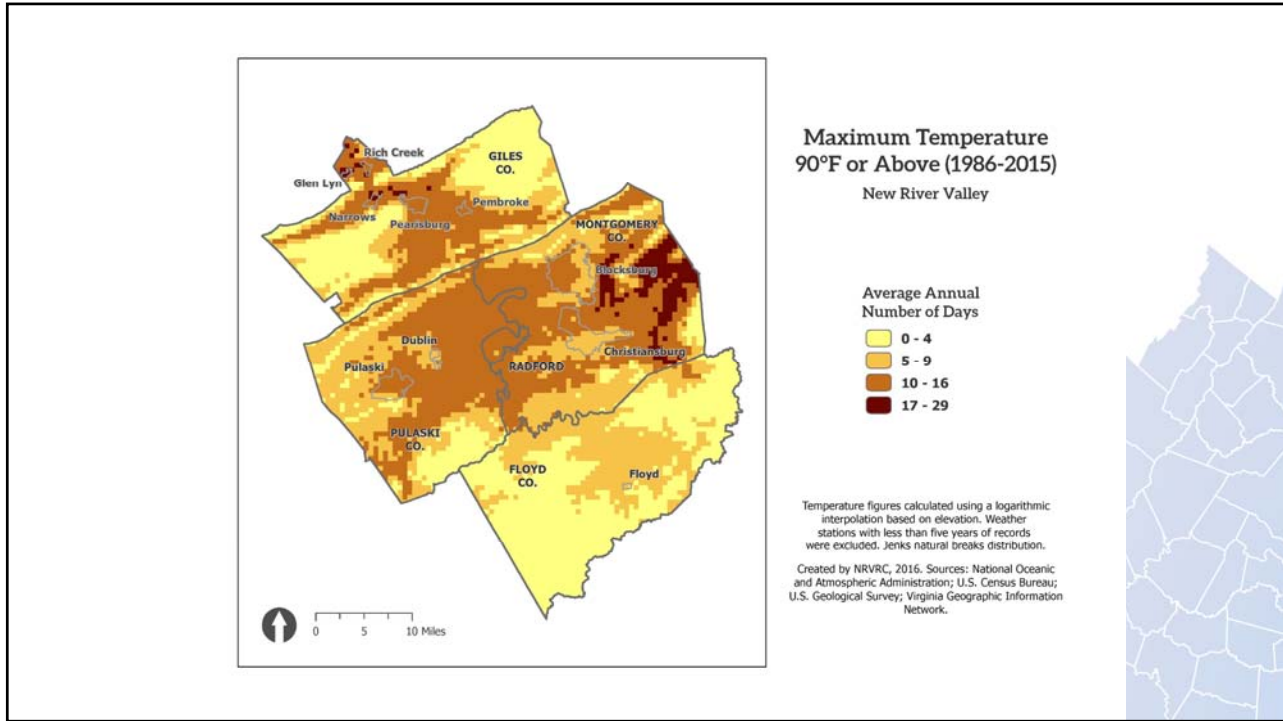
Today we will

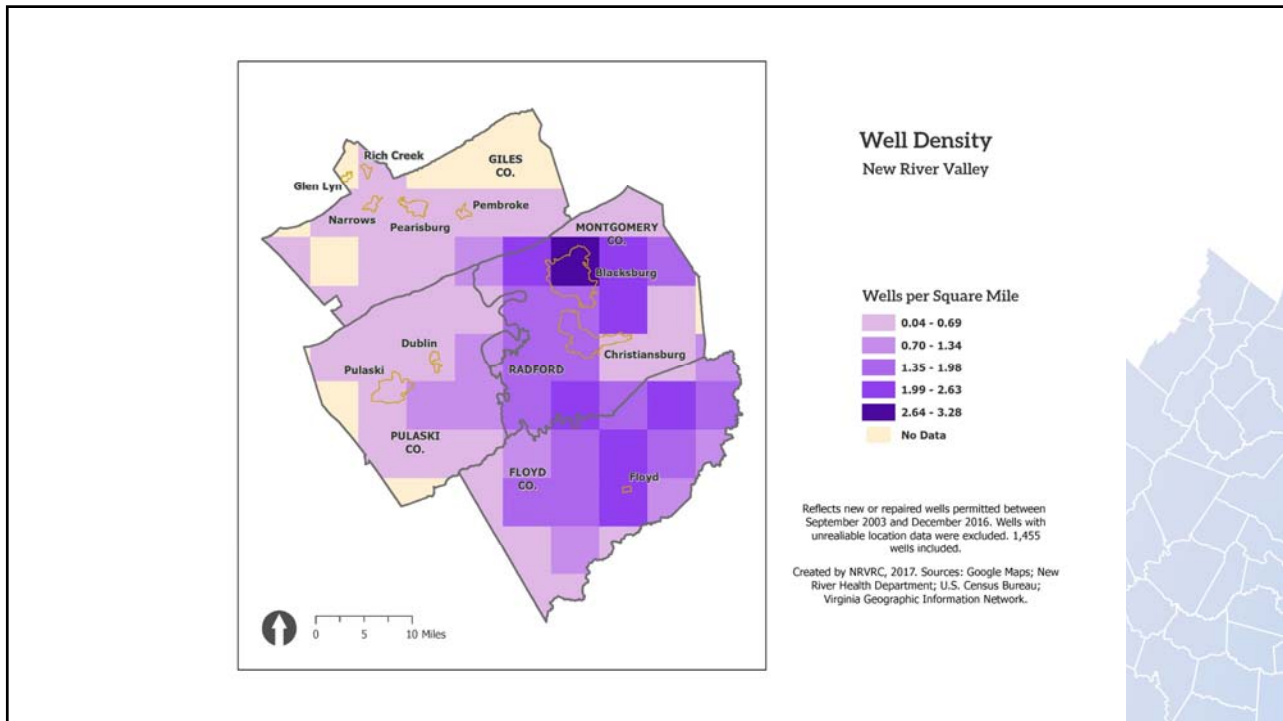
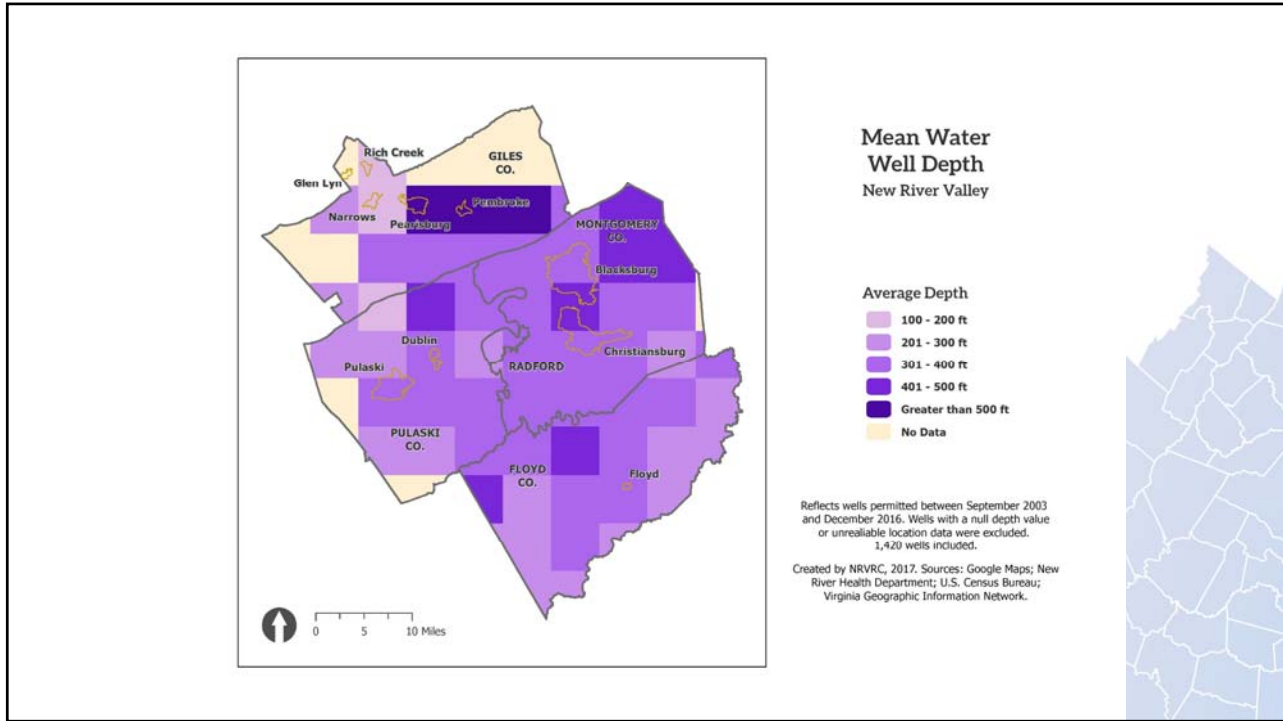
- Finalize hazard identification and risk assessment (HIRA) mapping
- Review a hazard ranking results
- Discuss next steps

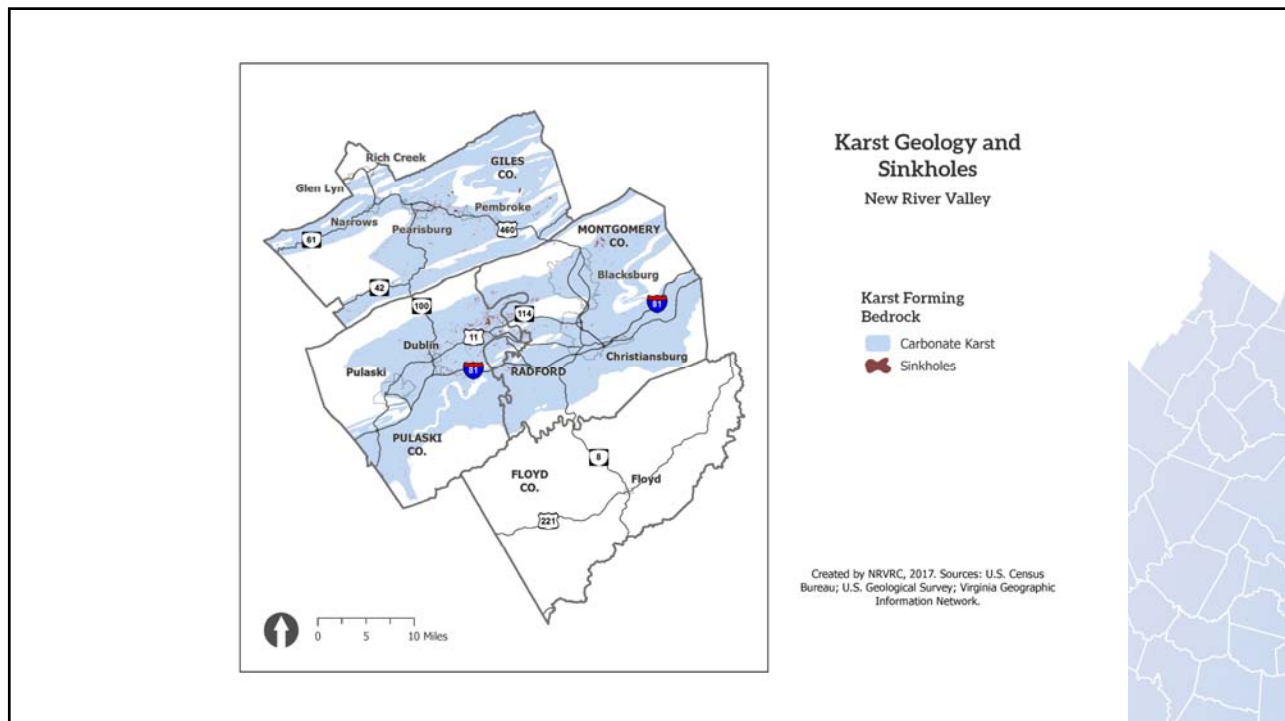
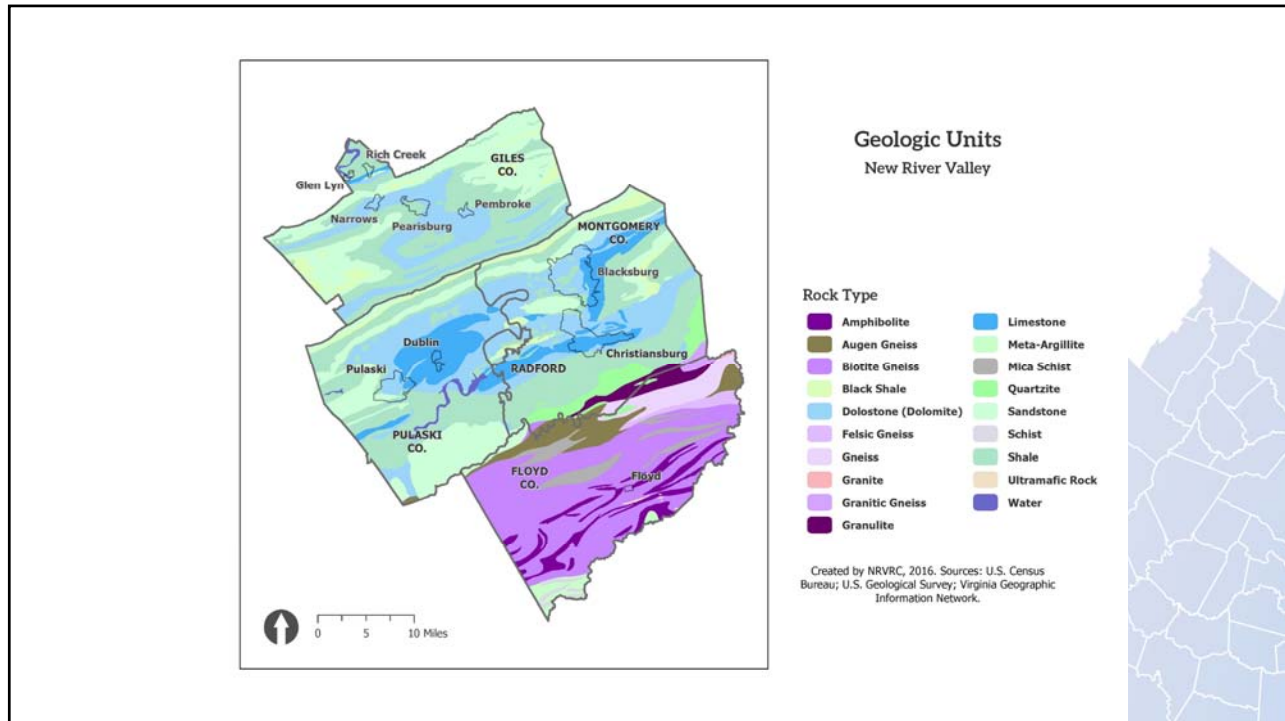
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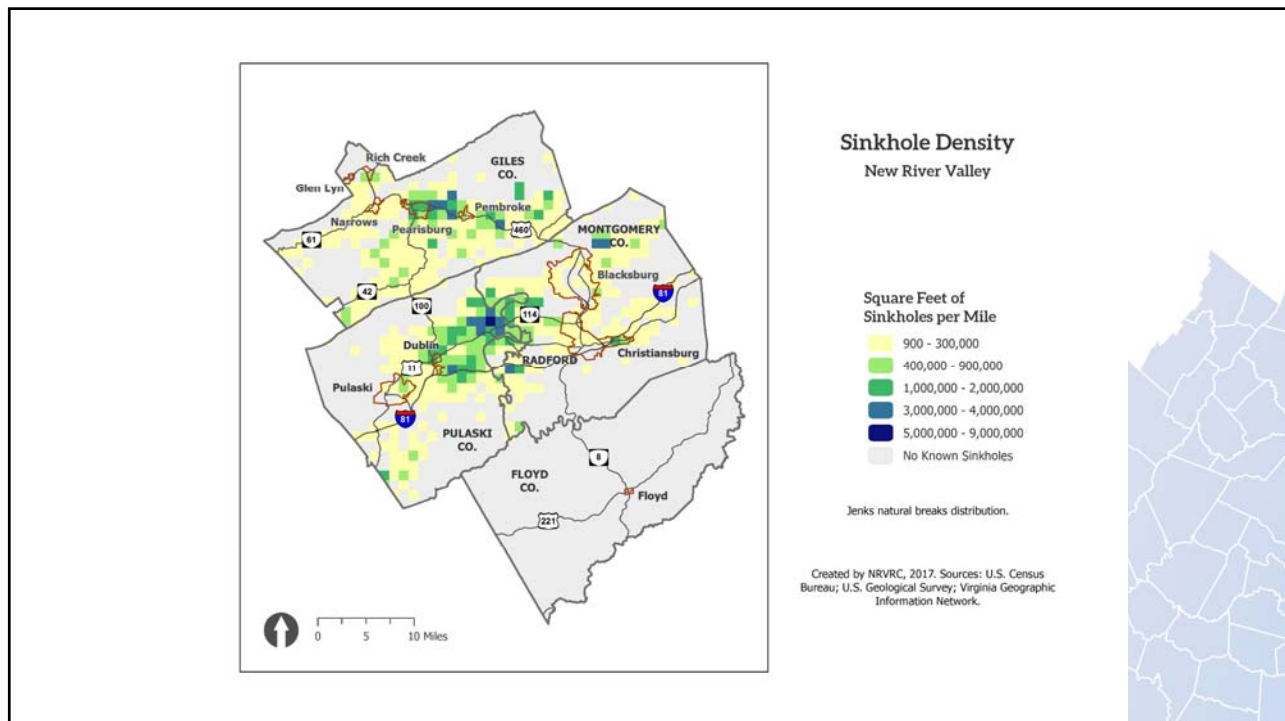
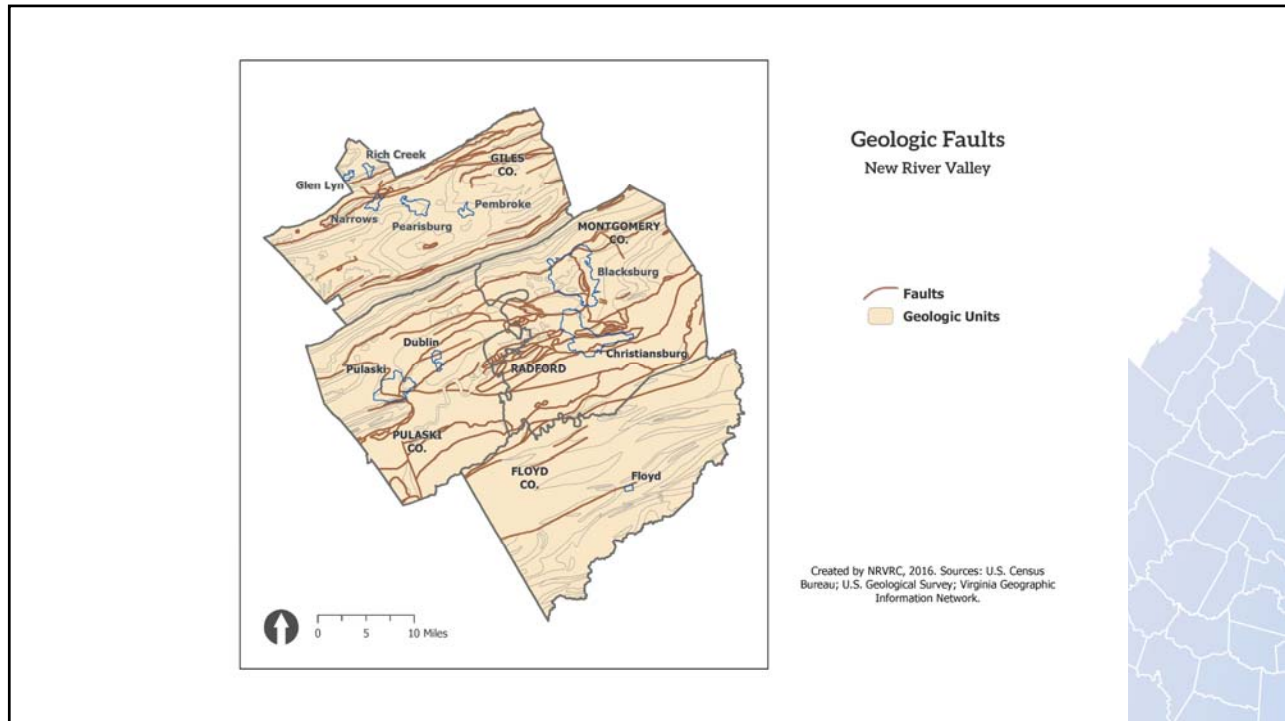


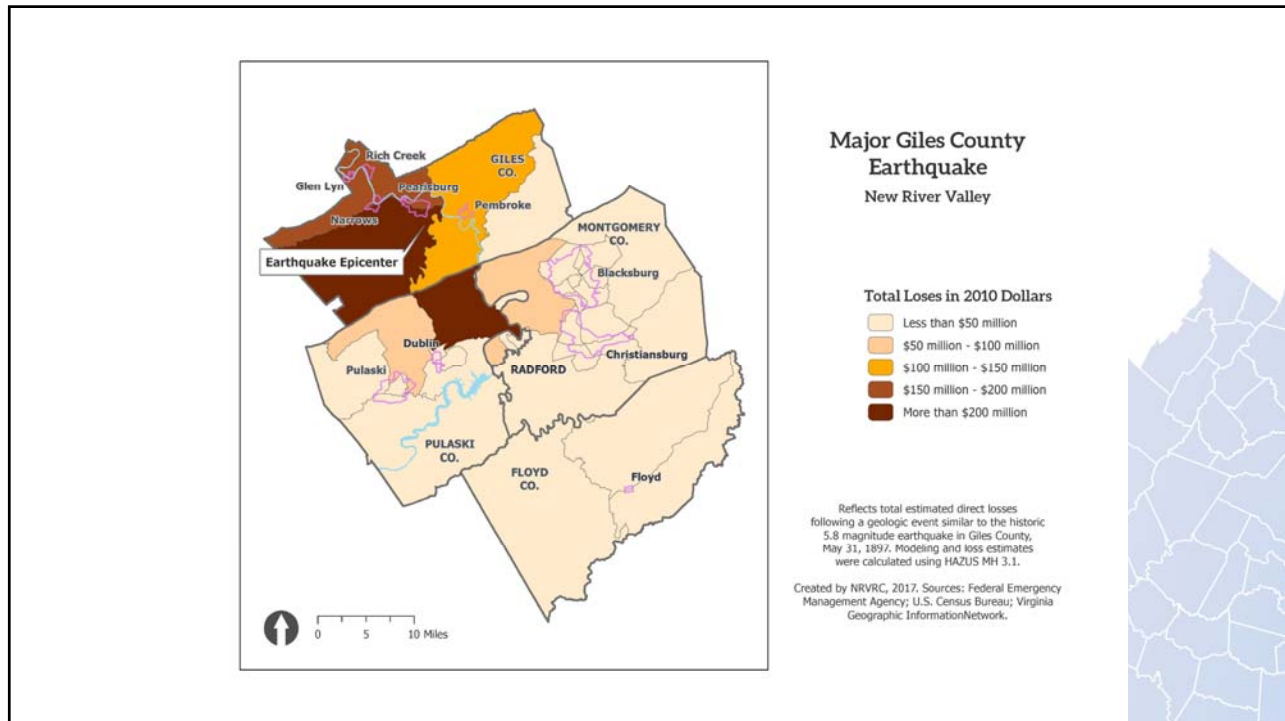
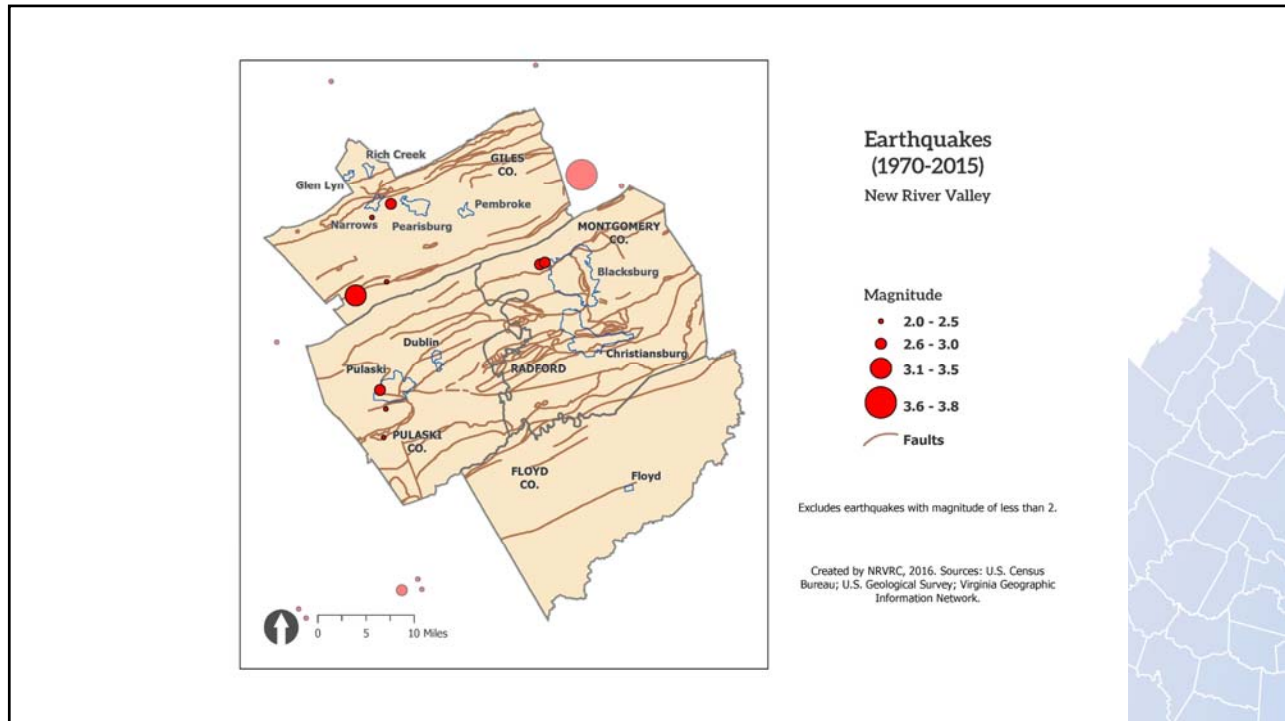


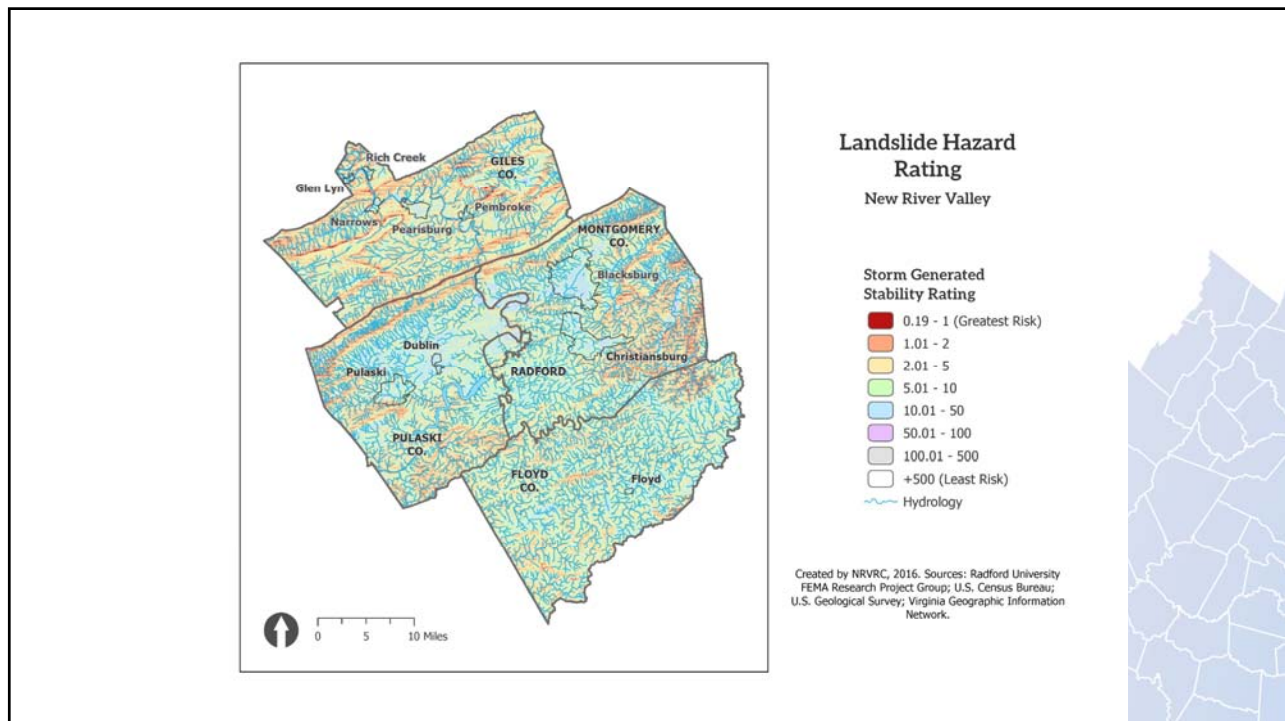
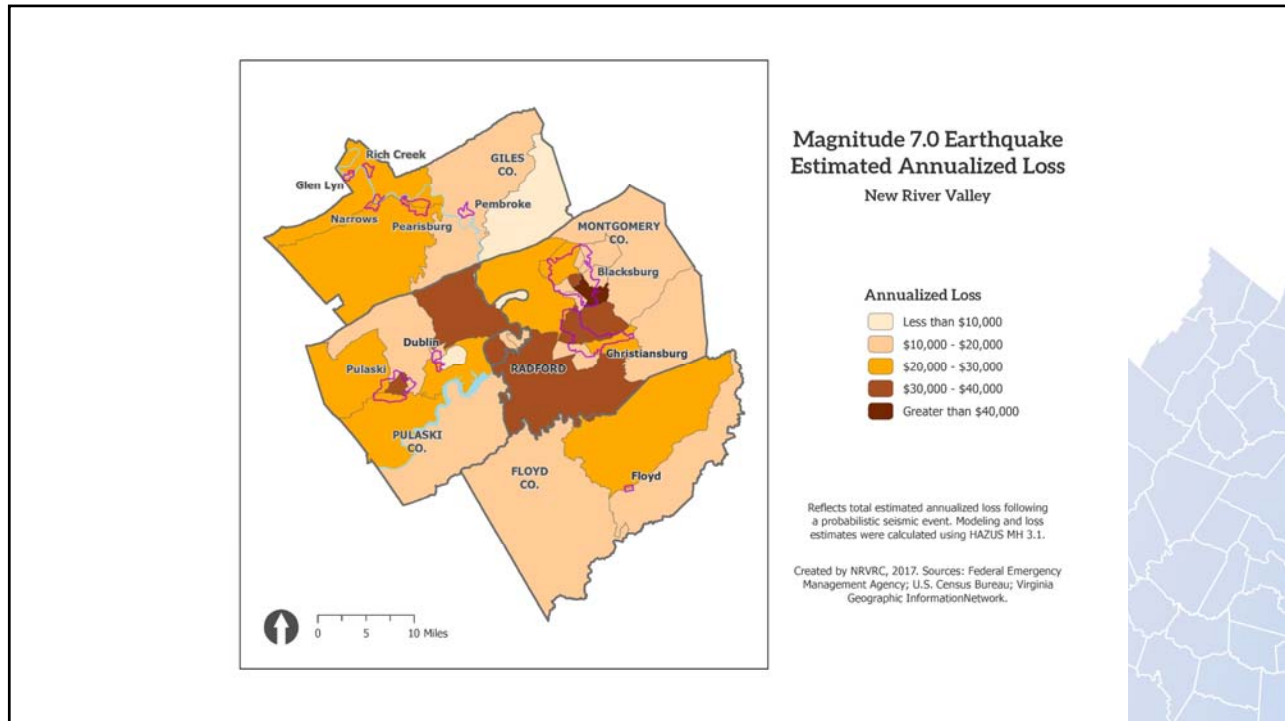


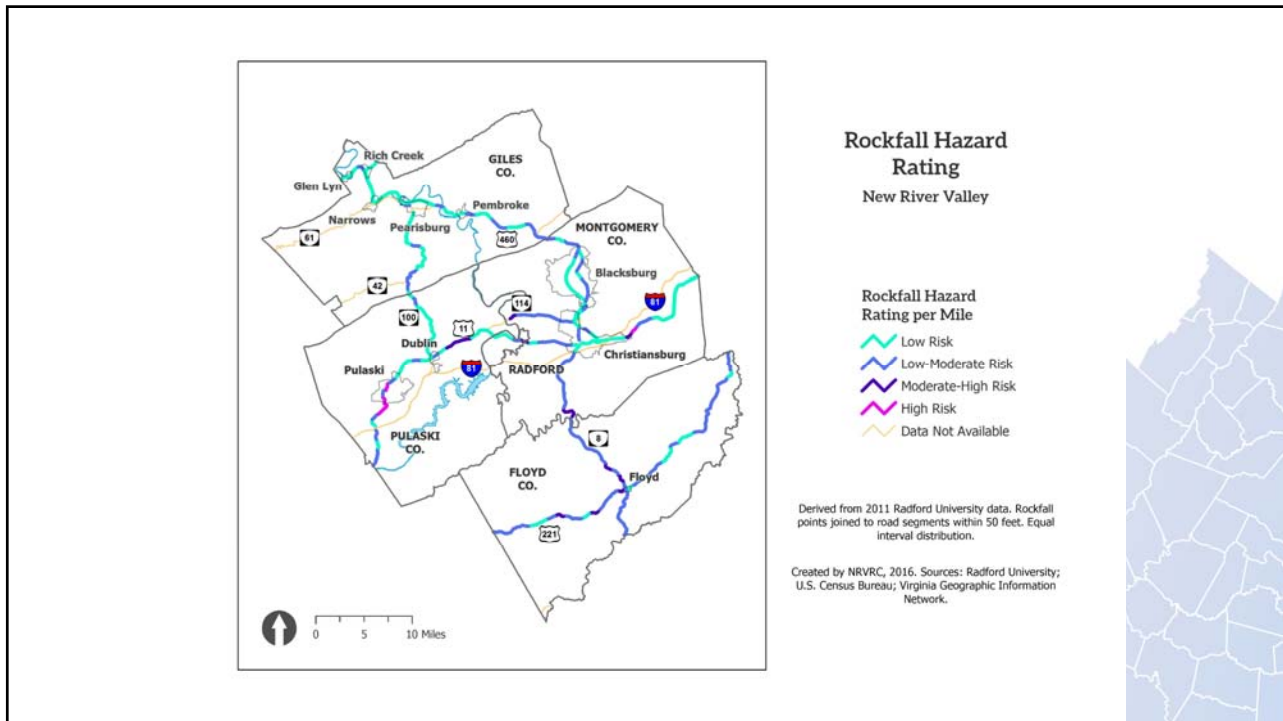
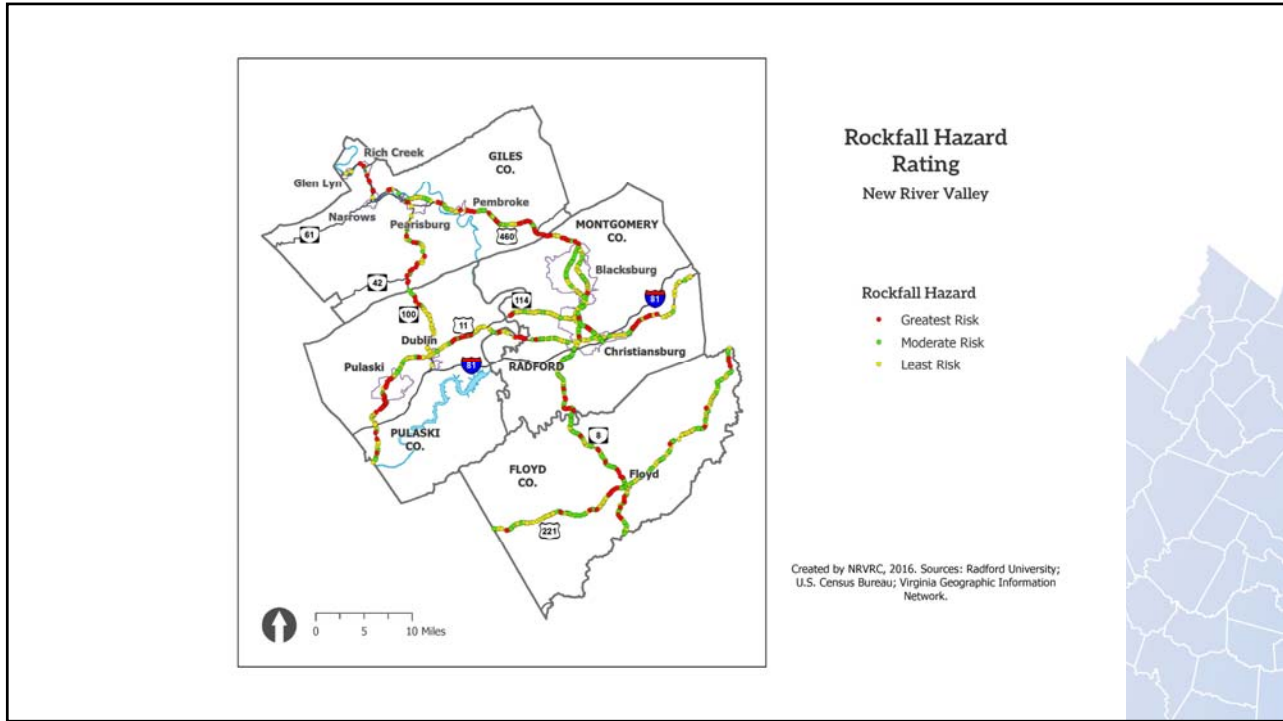


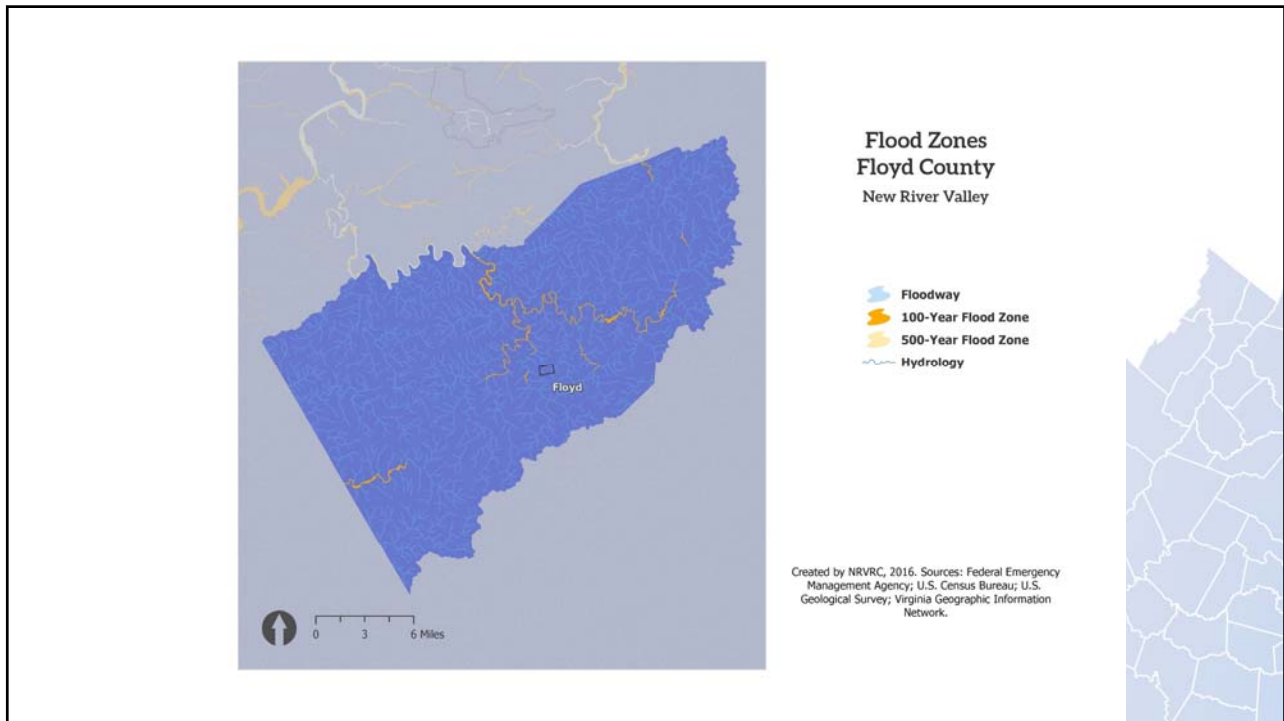
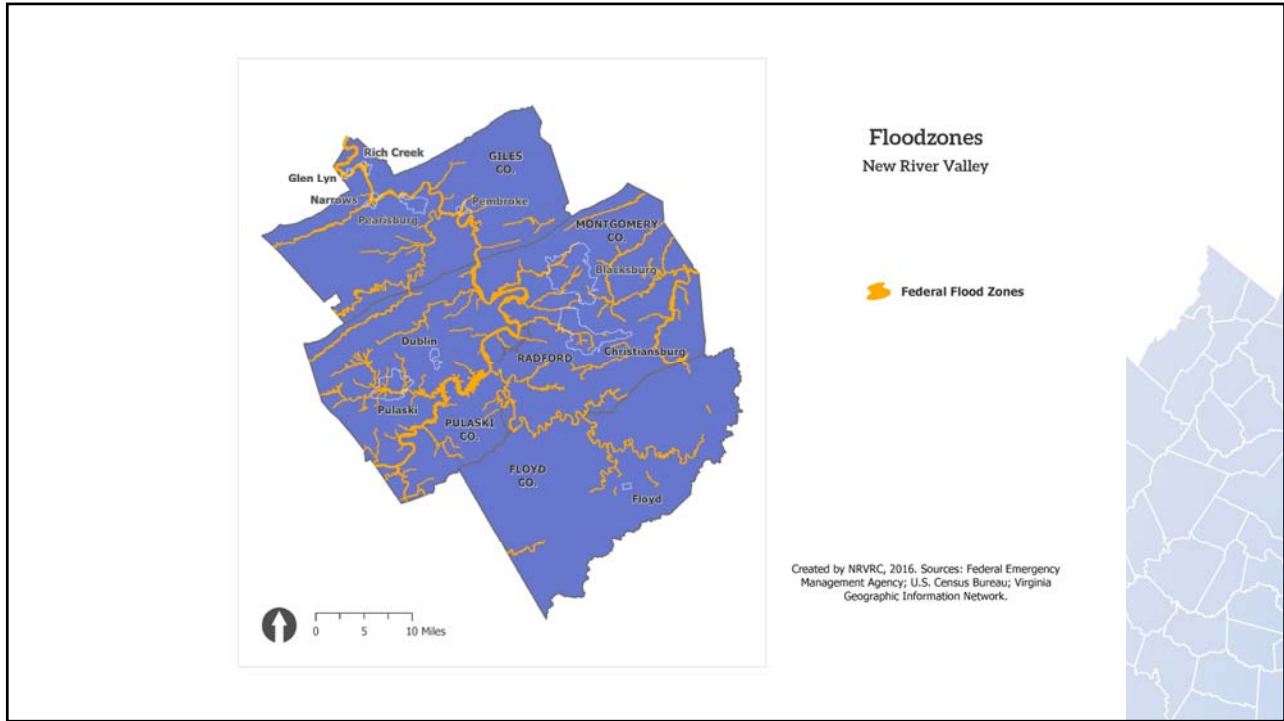


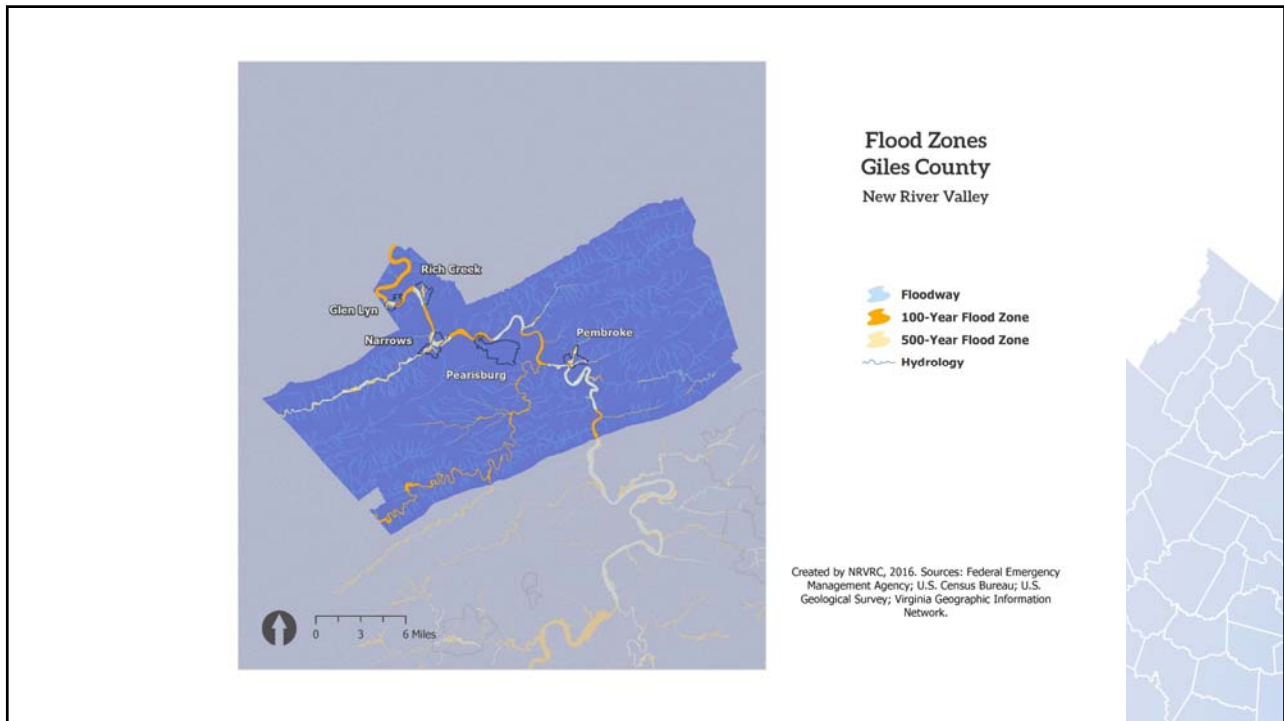
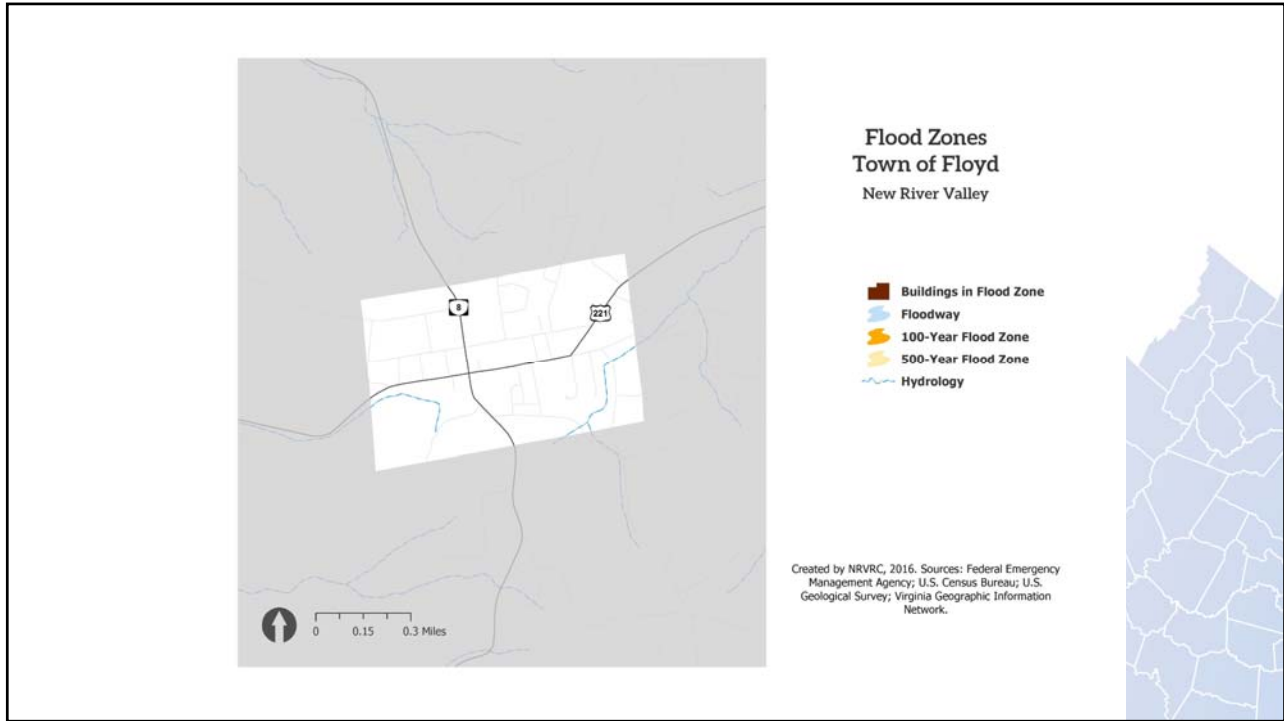


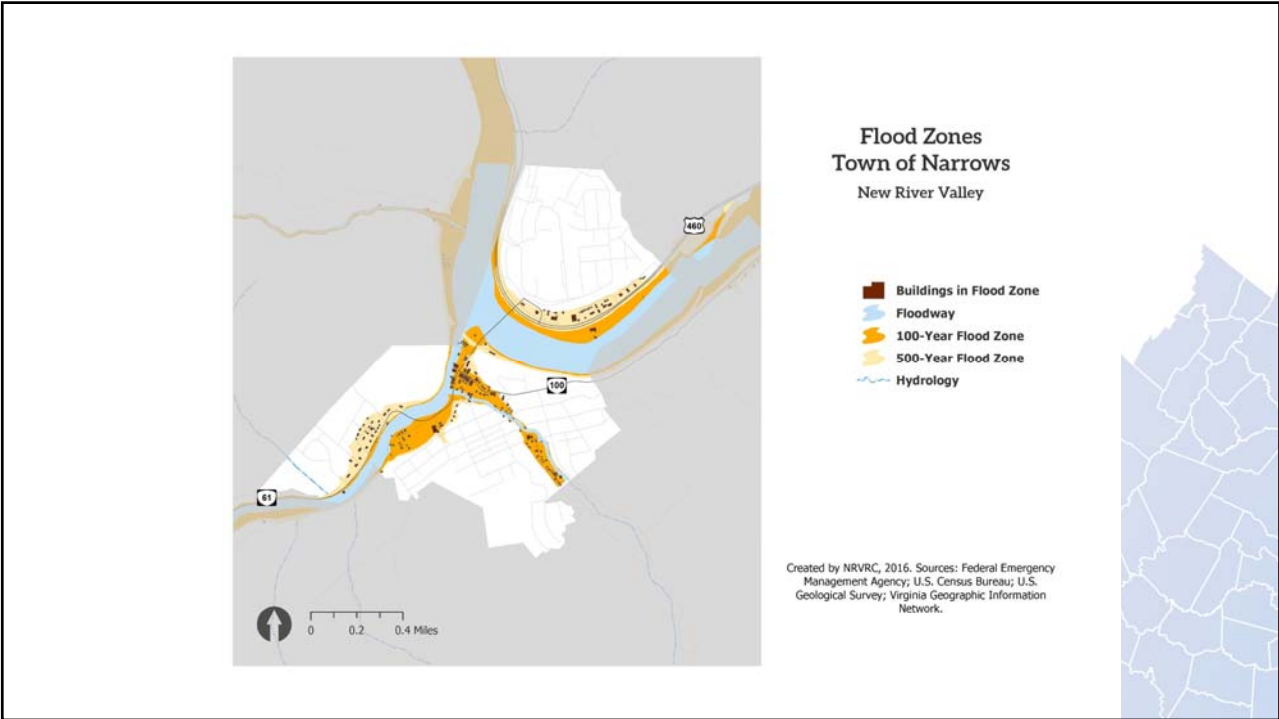
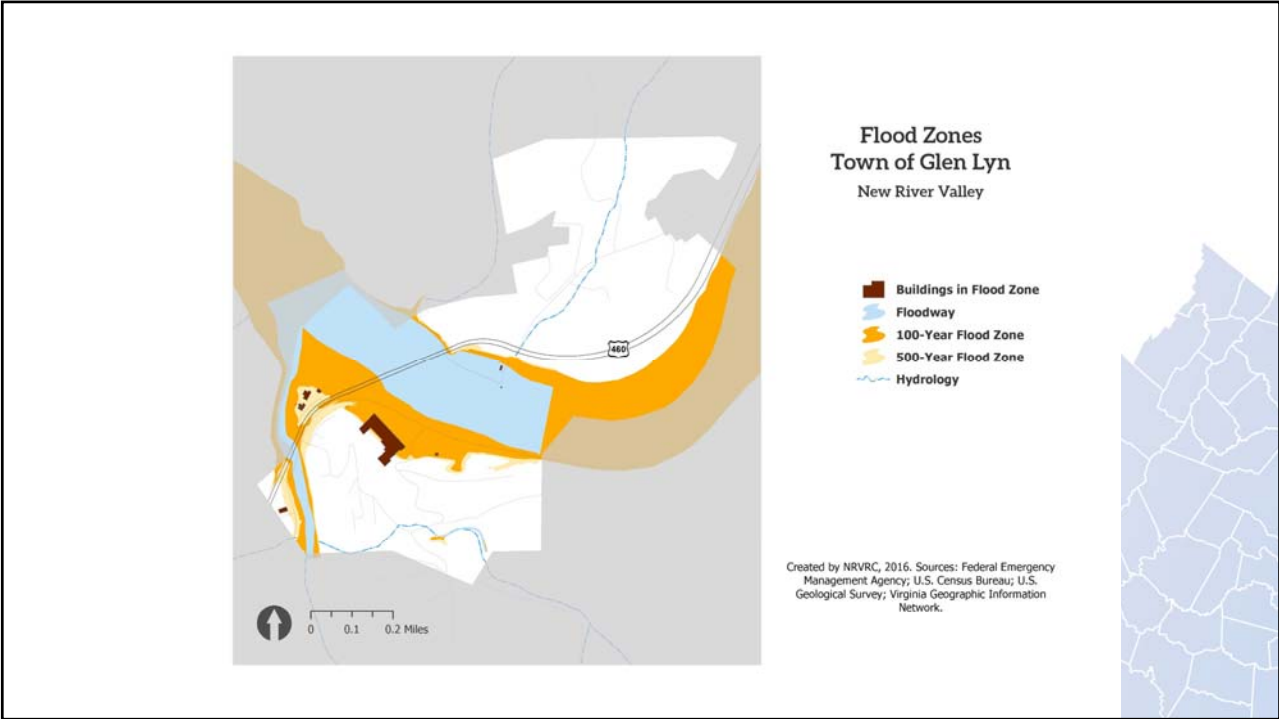


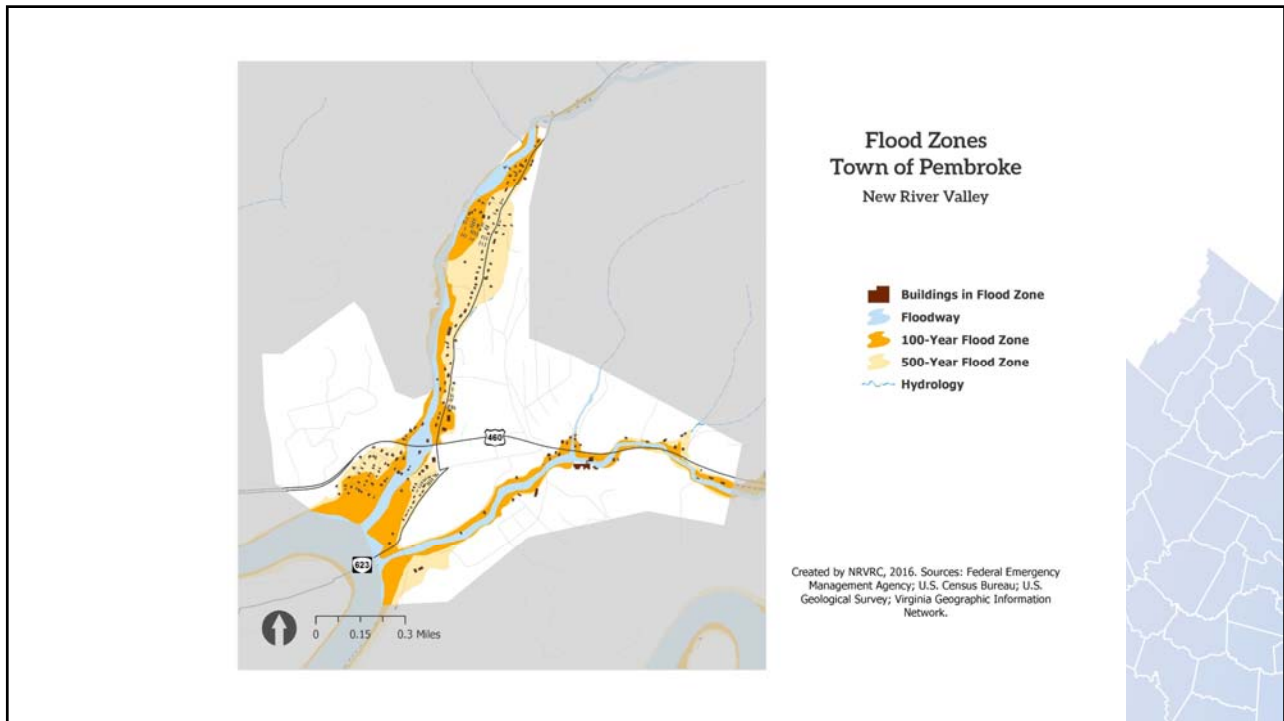
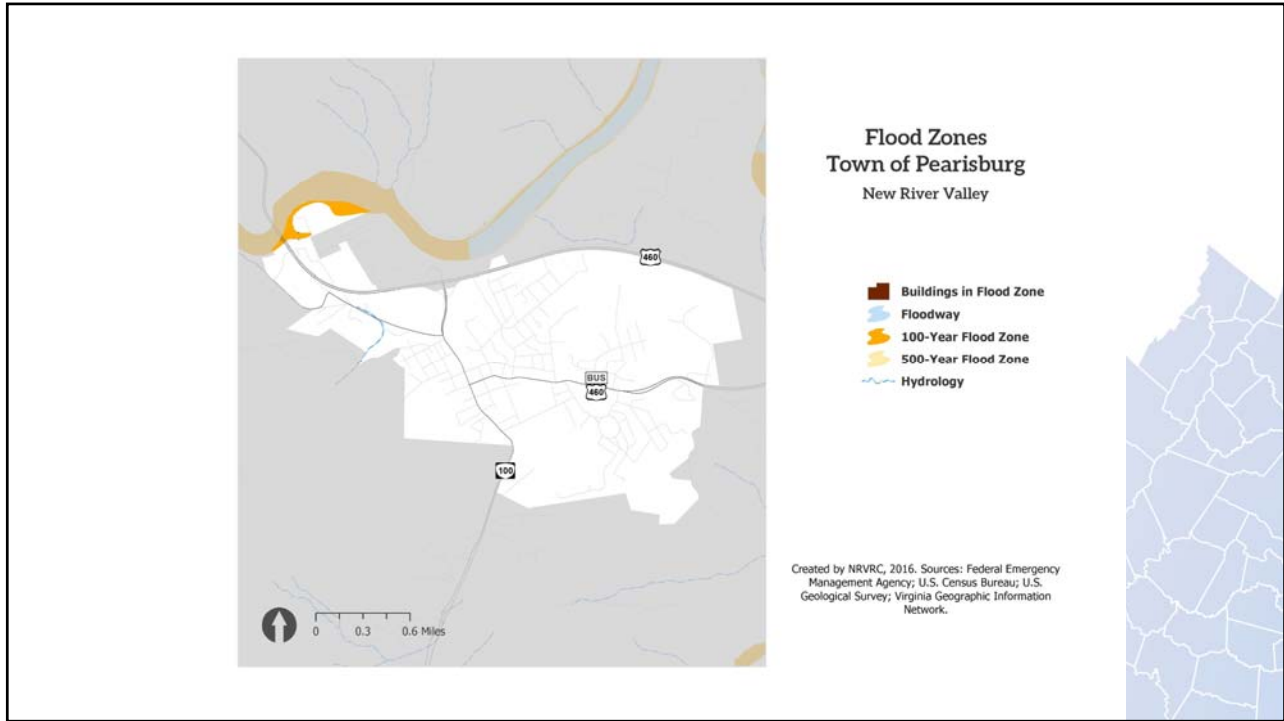


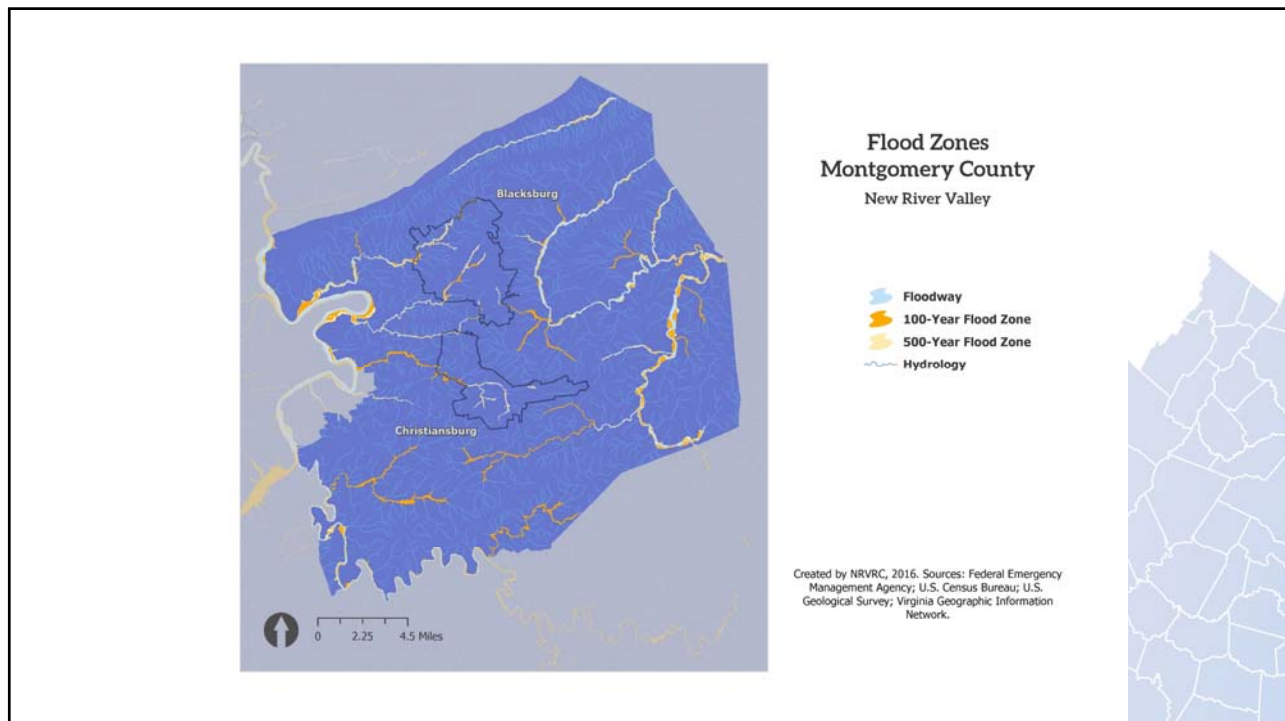
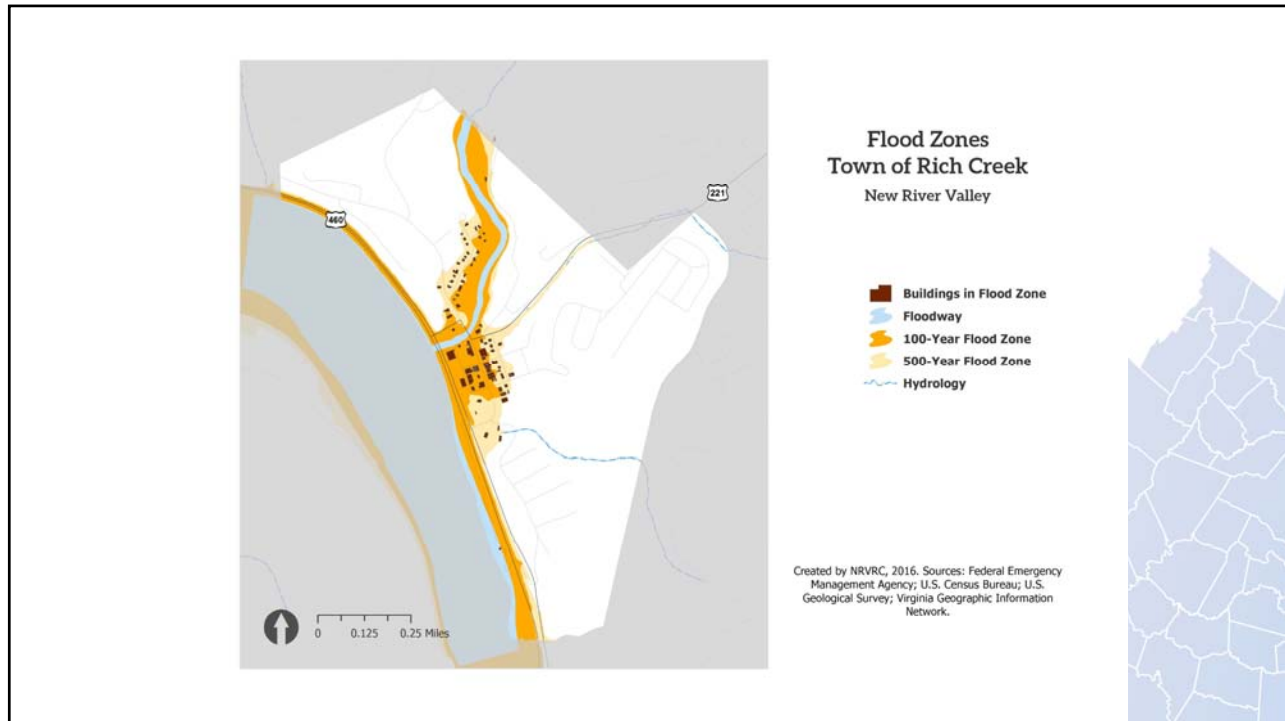


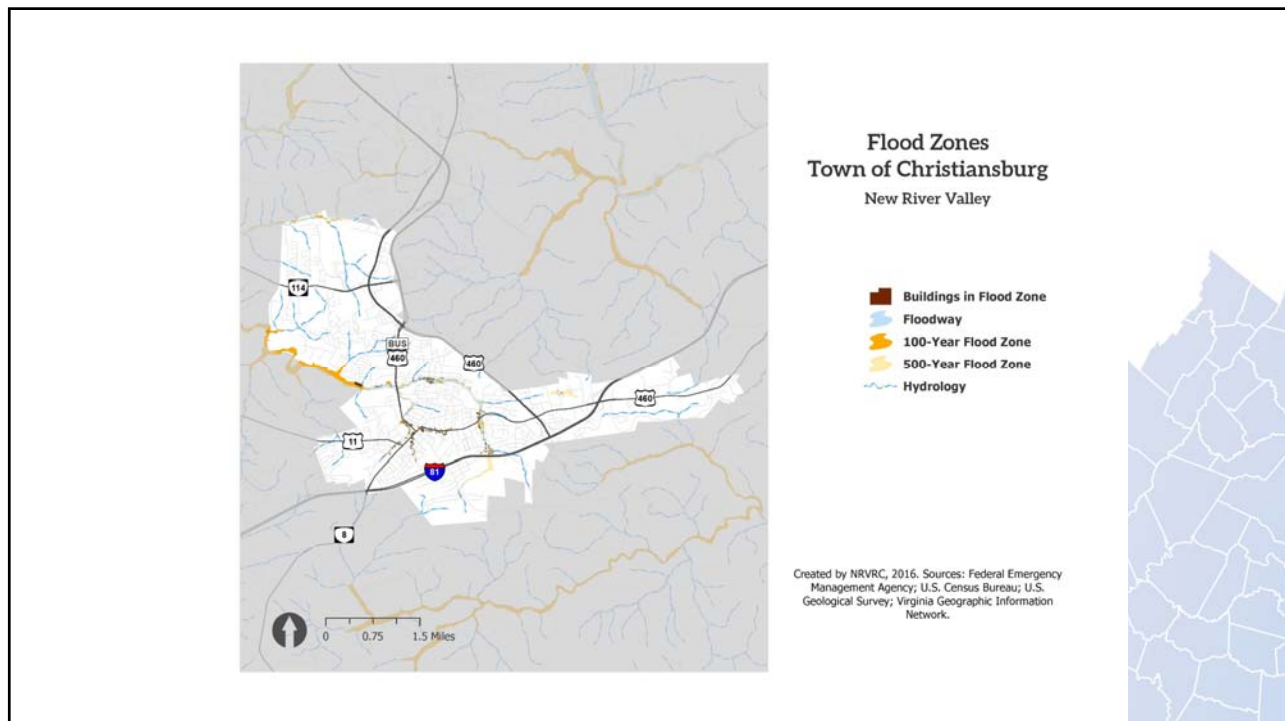
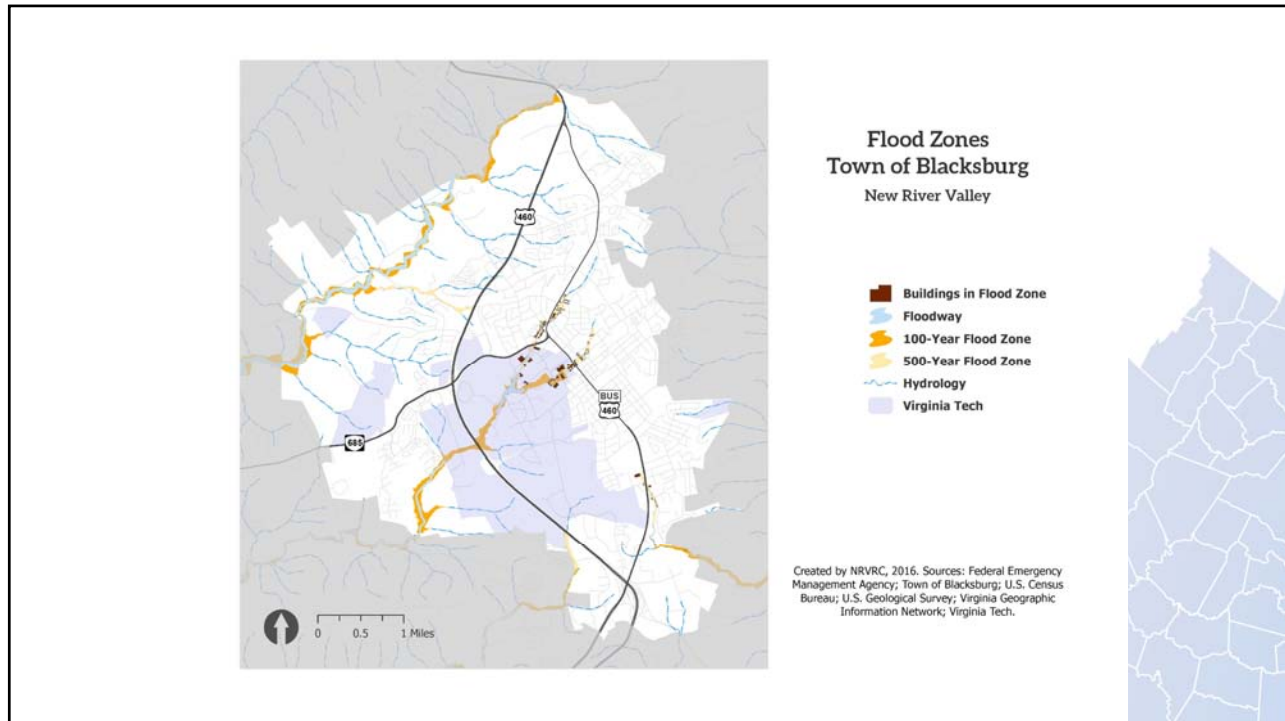


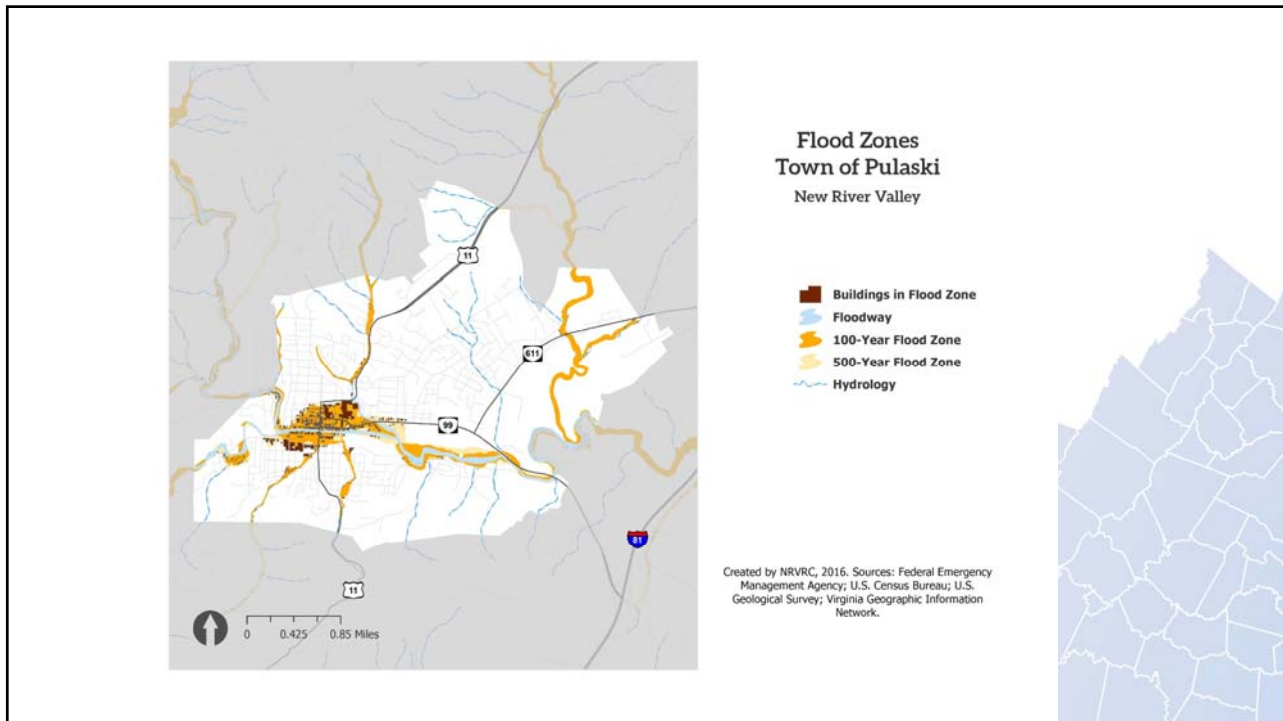
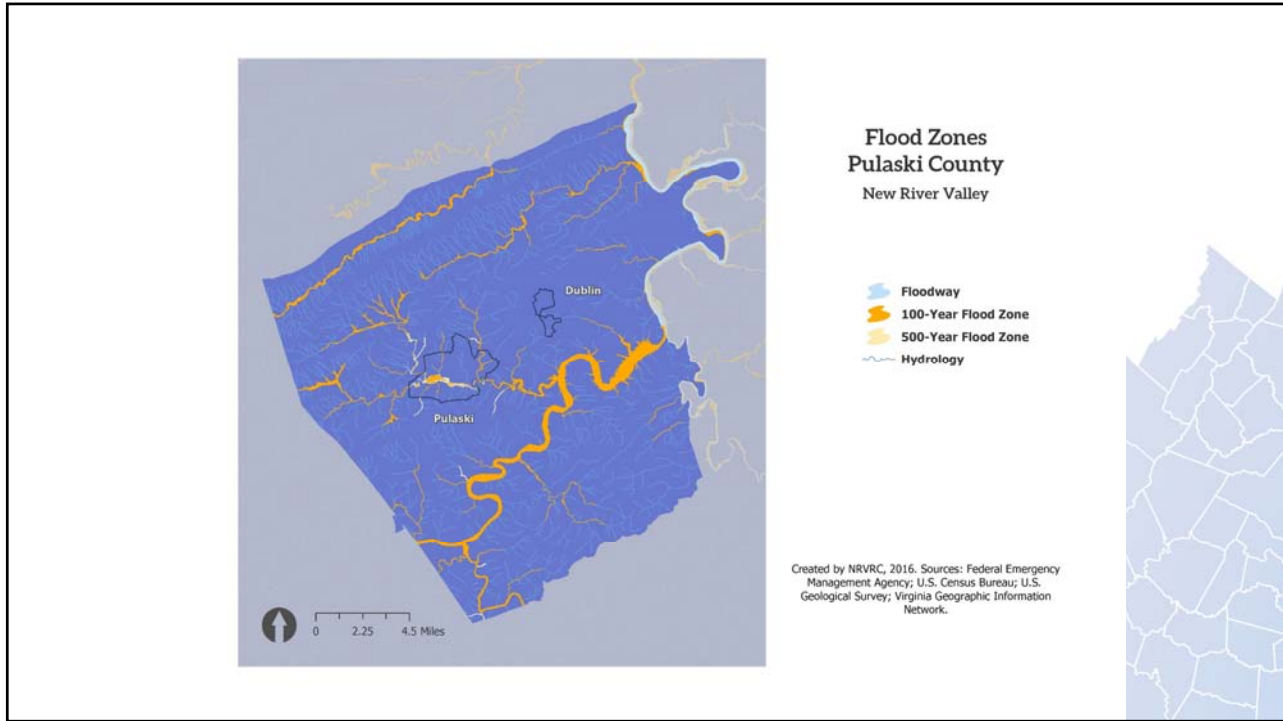


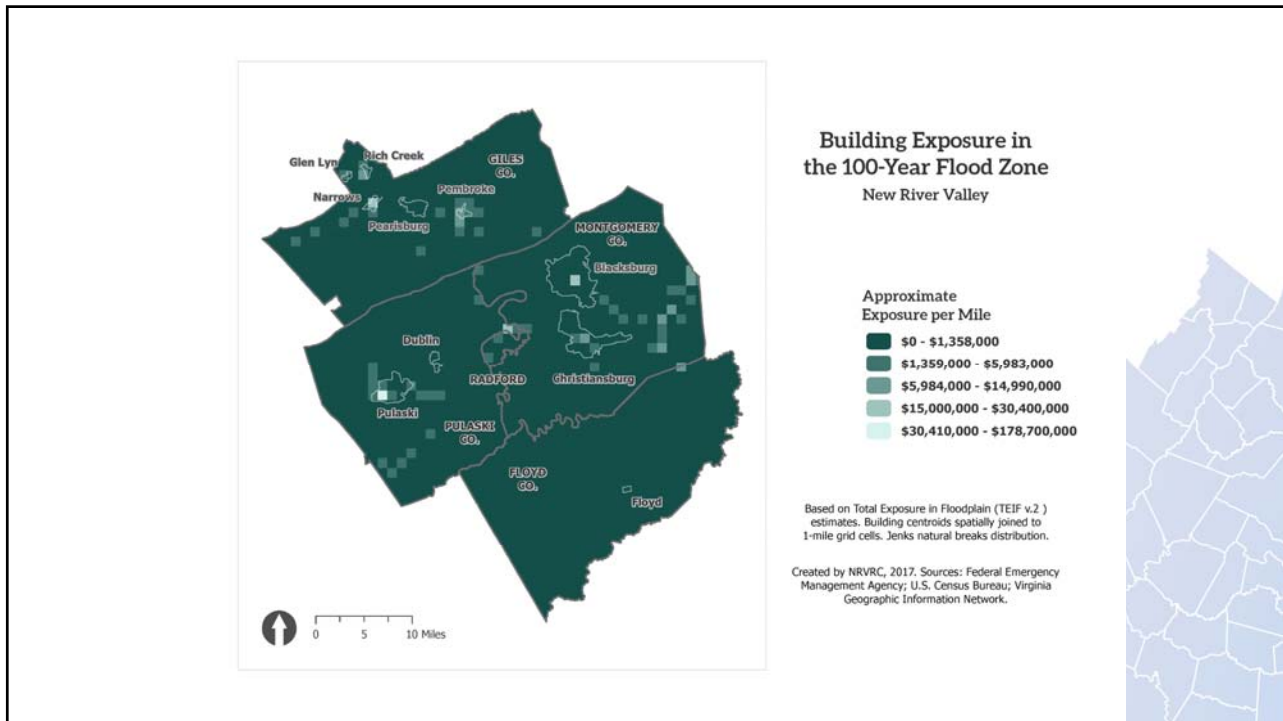
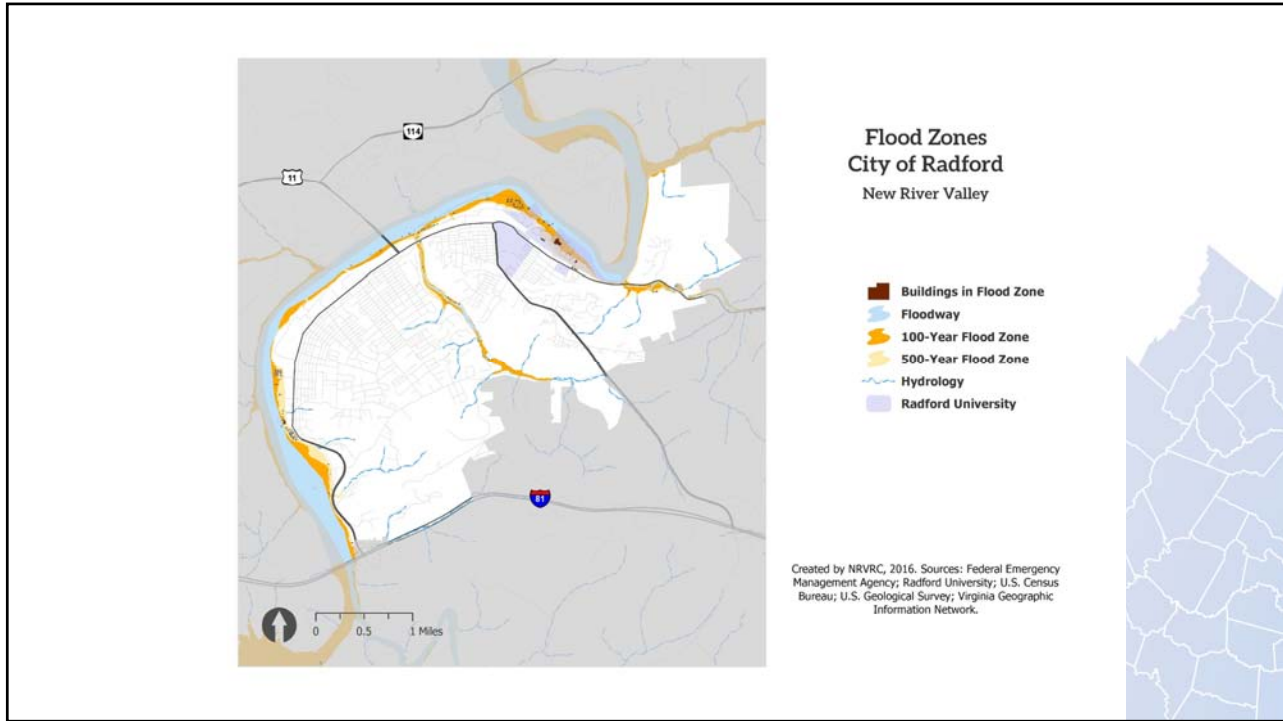


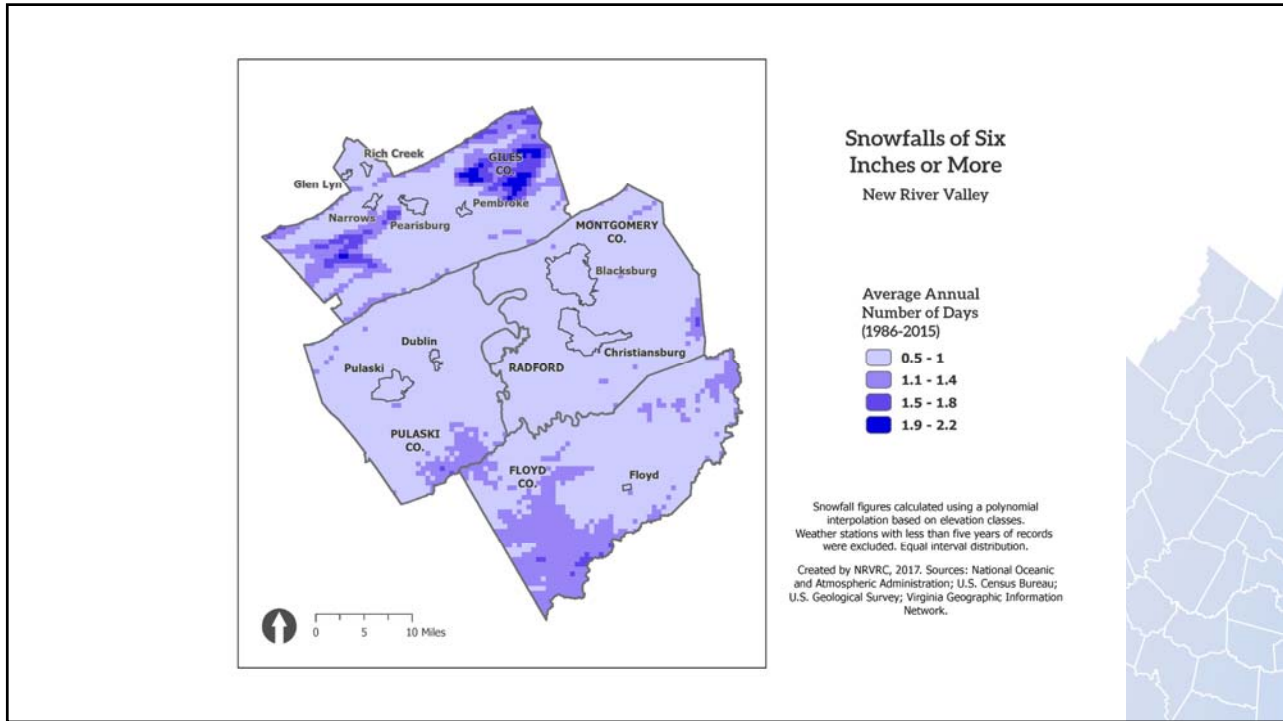
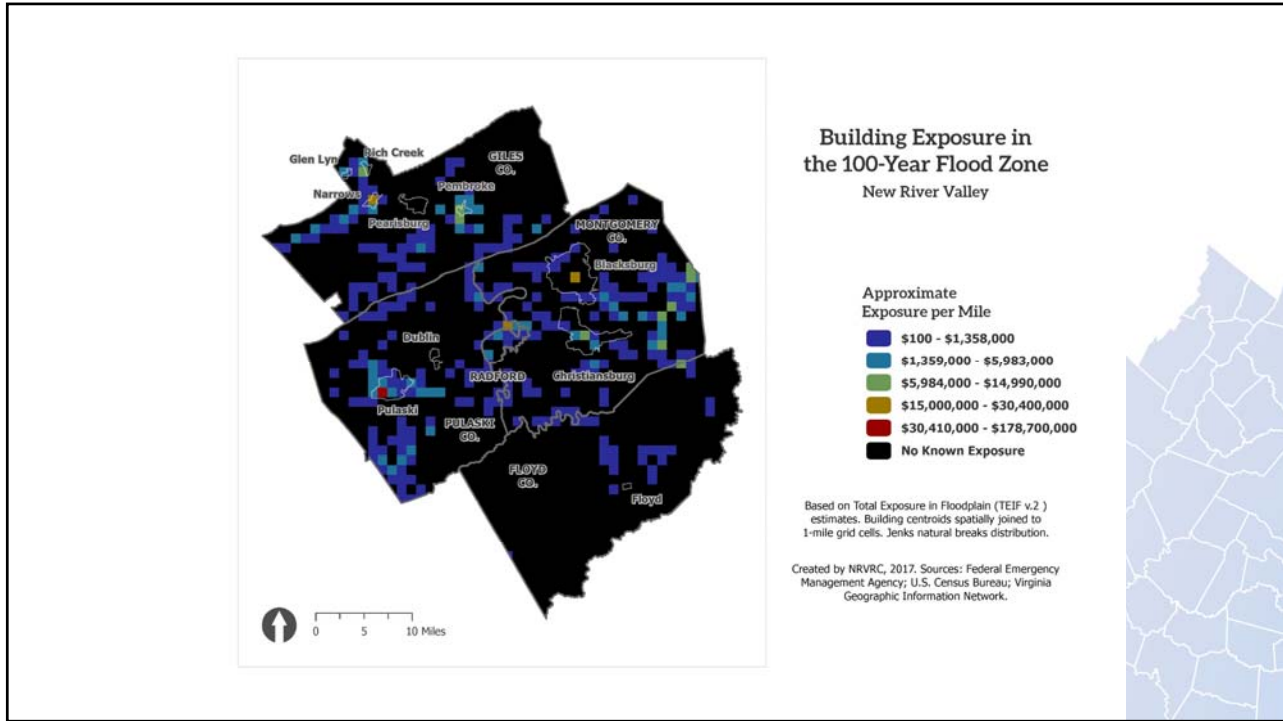


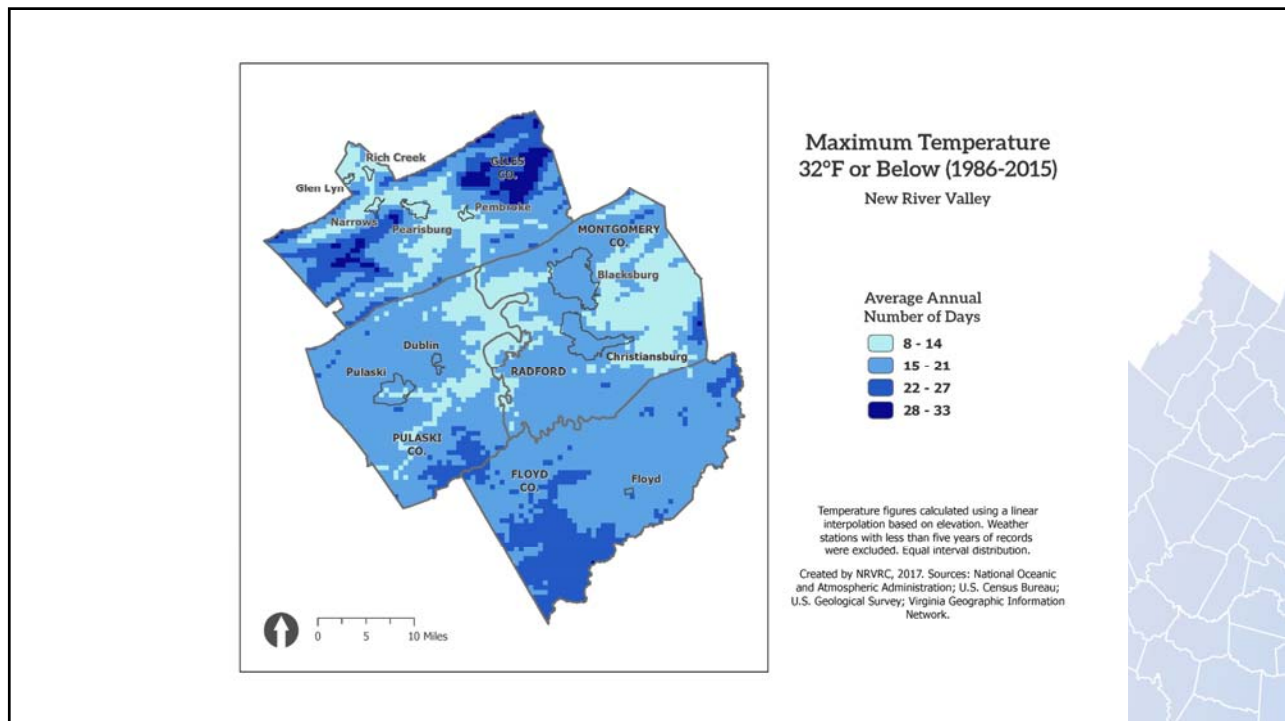
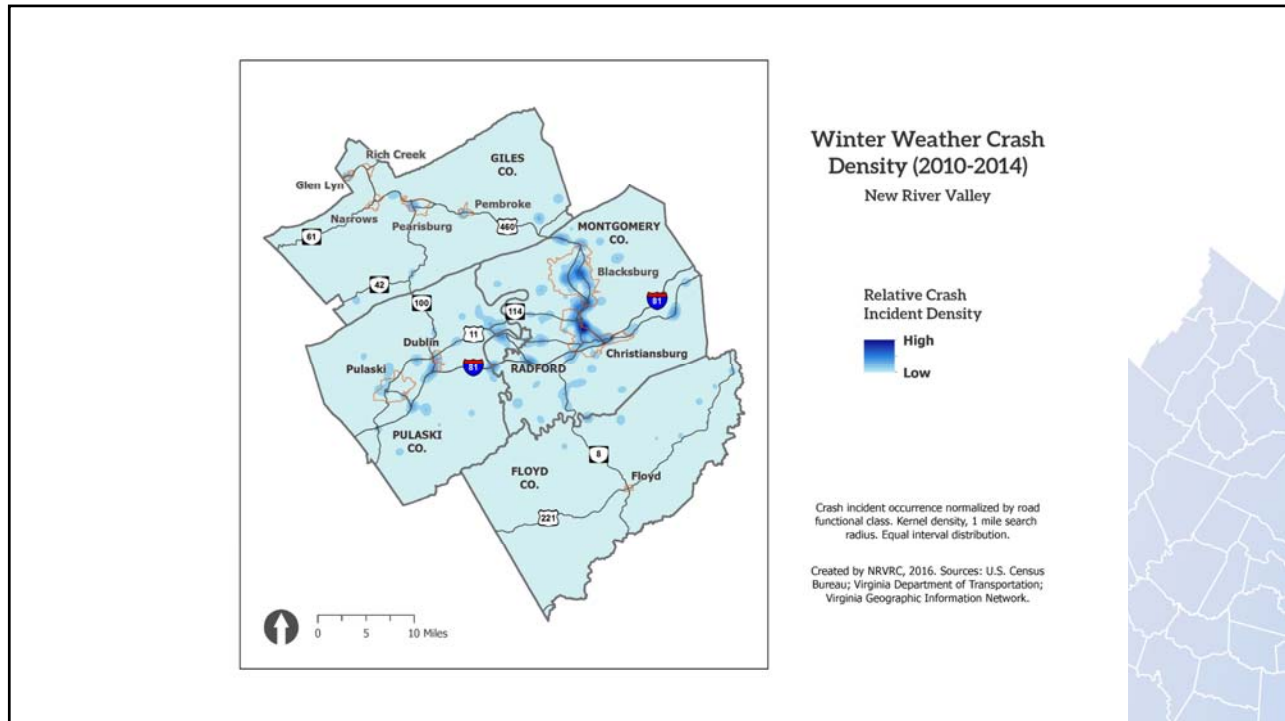


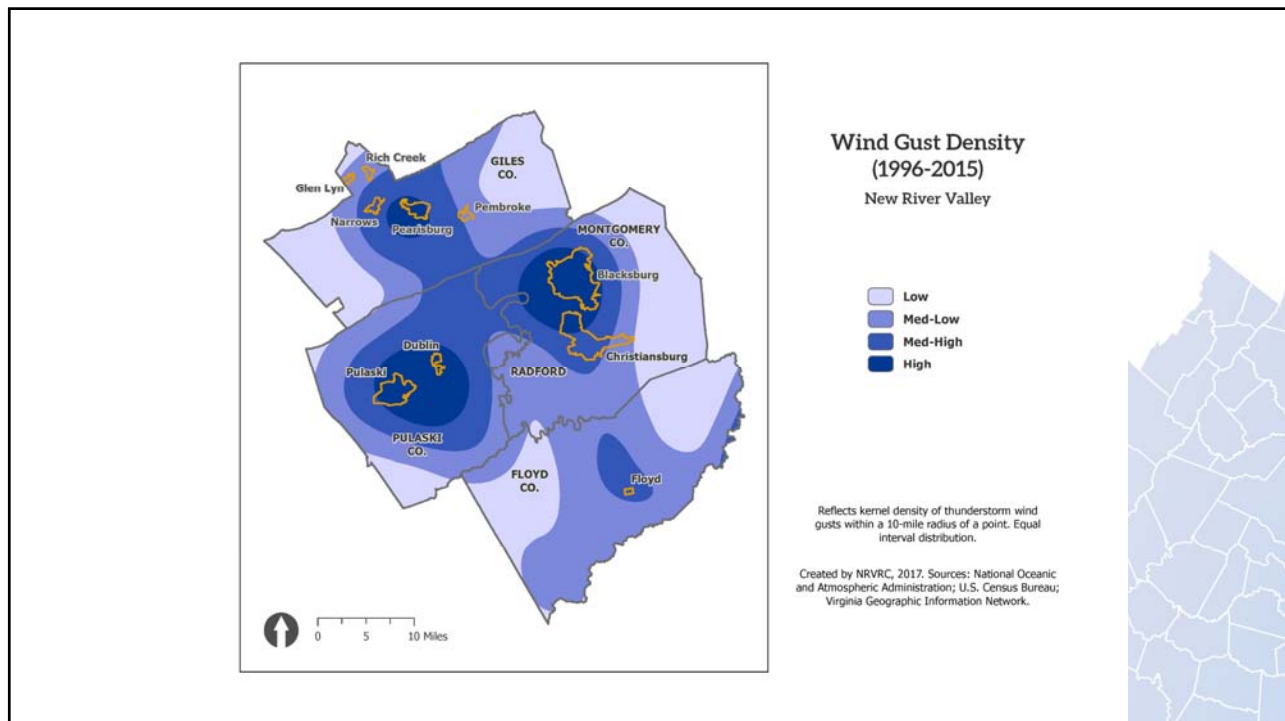
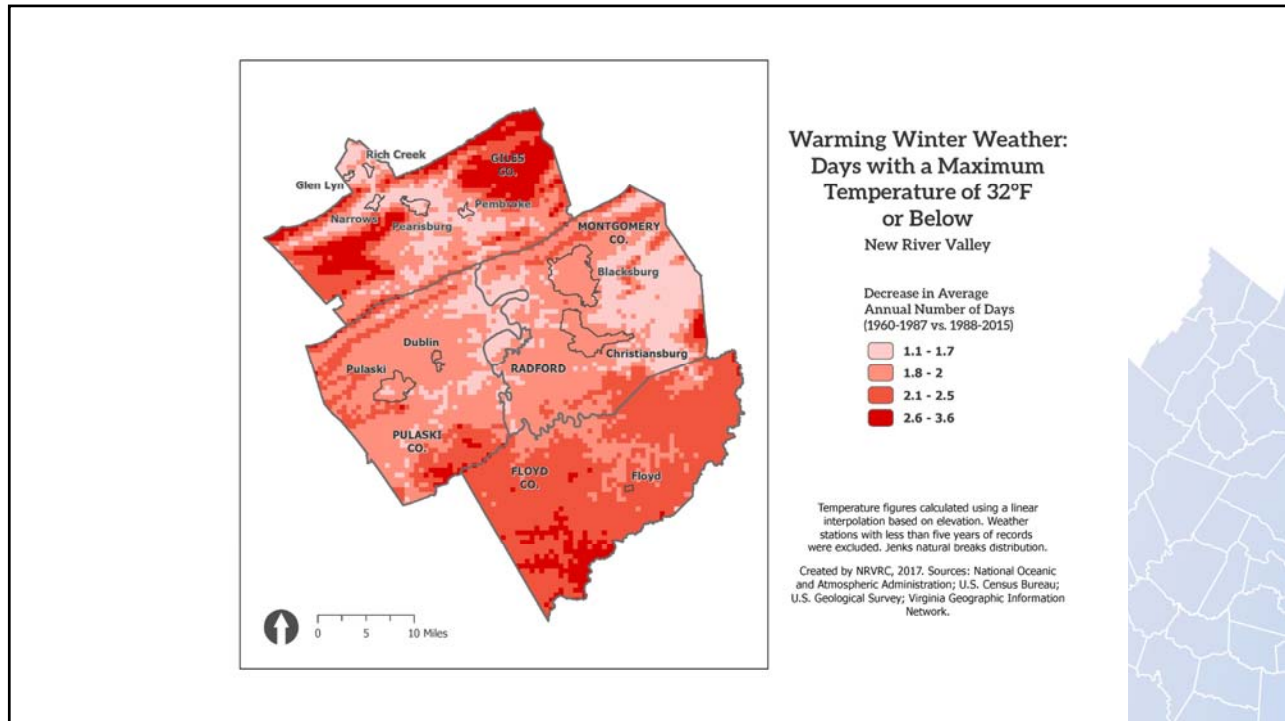


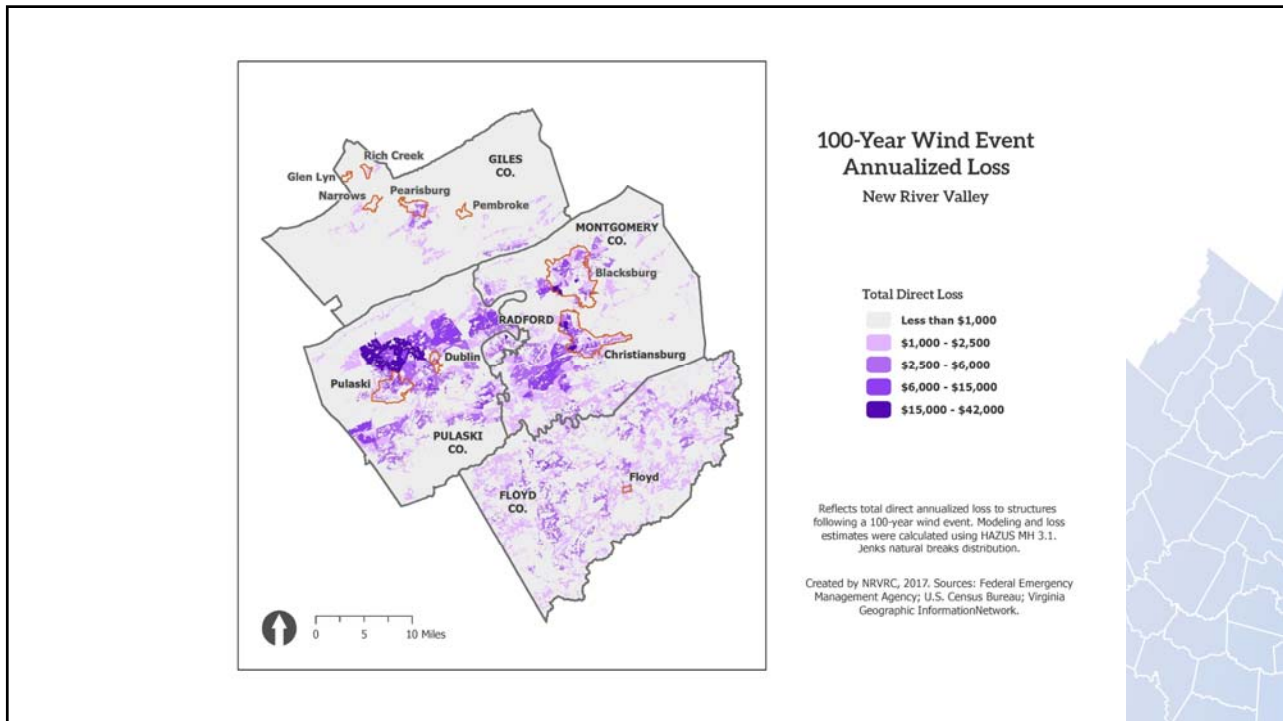
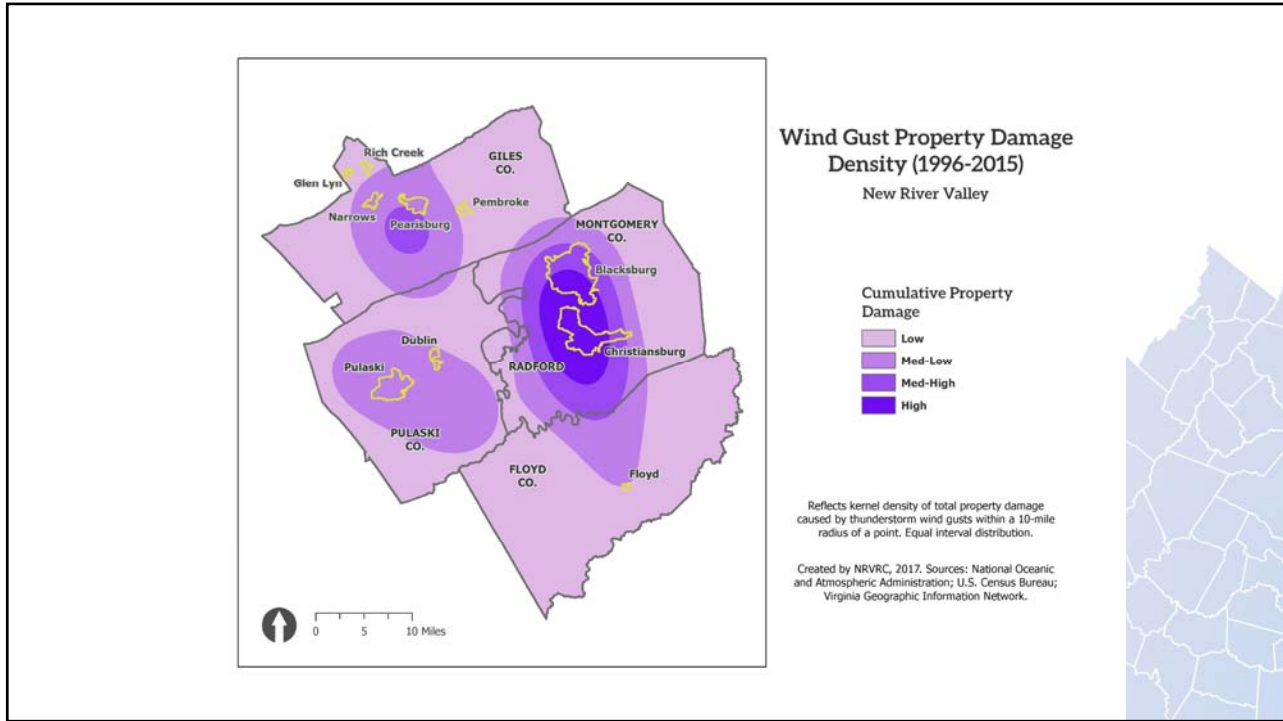


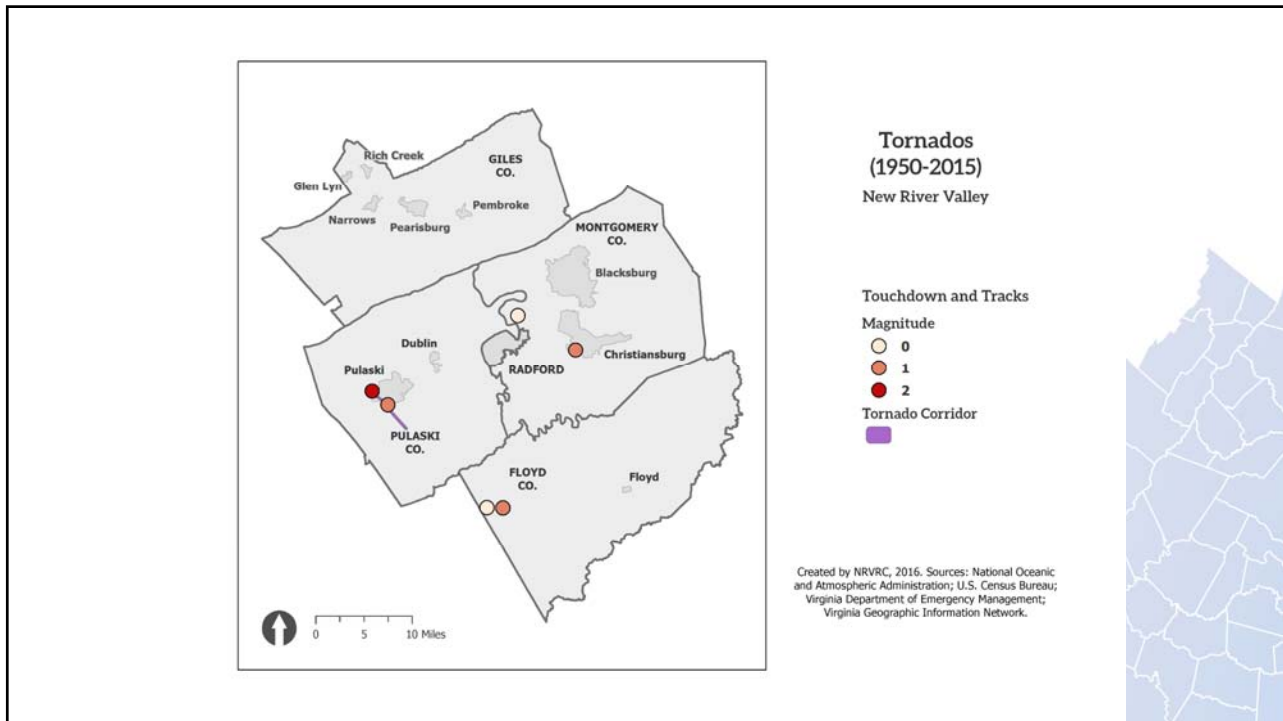
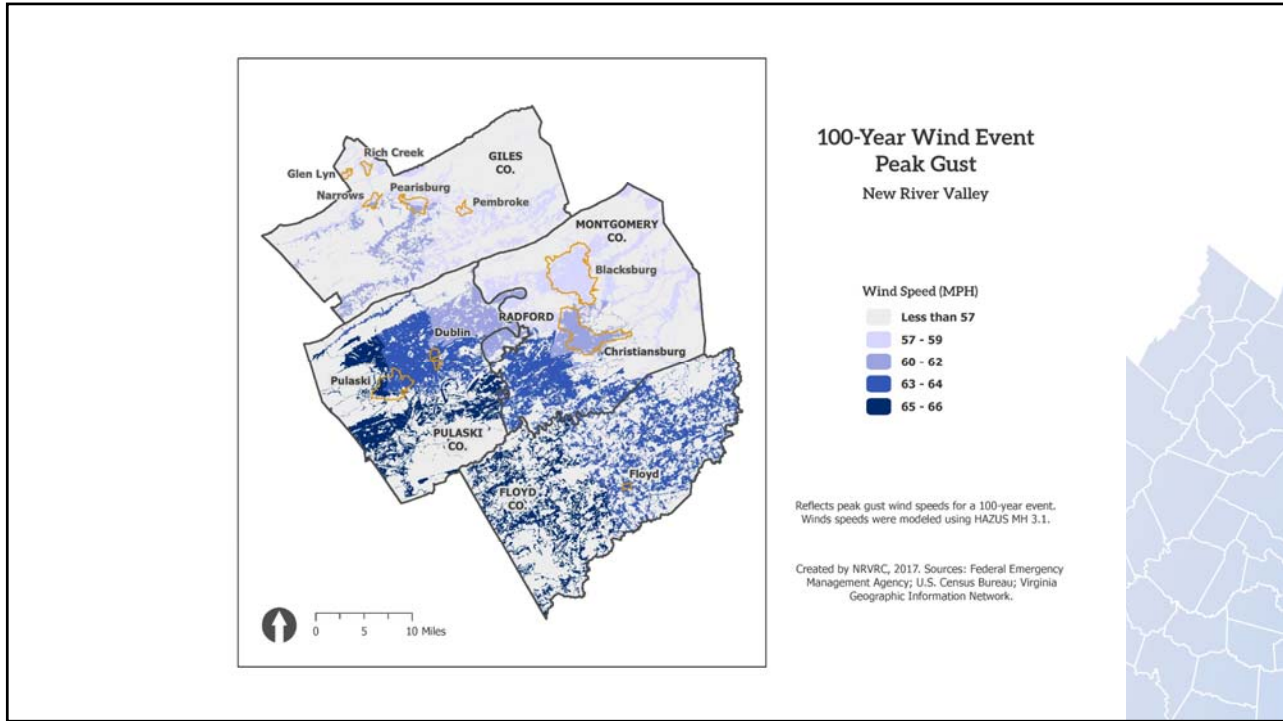


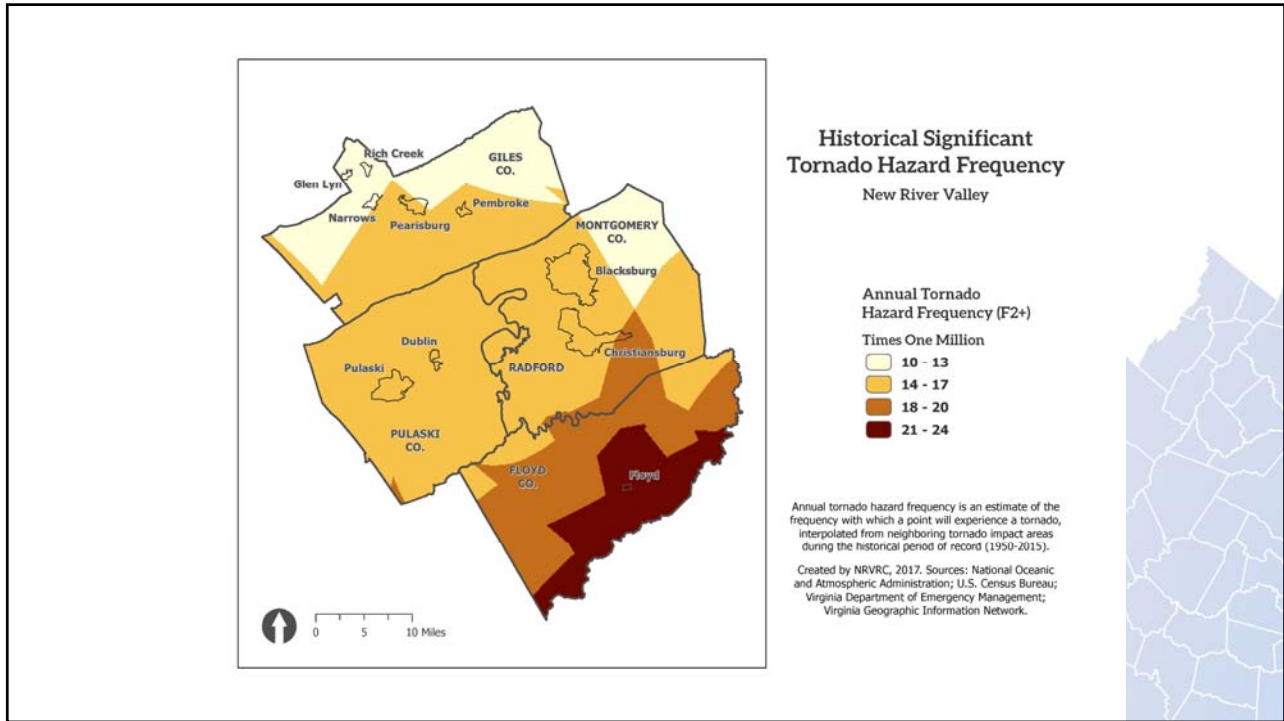
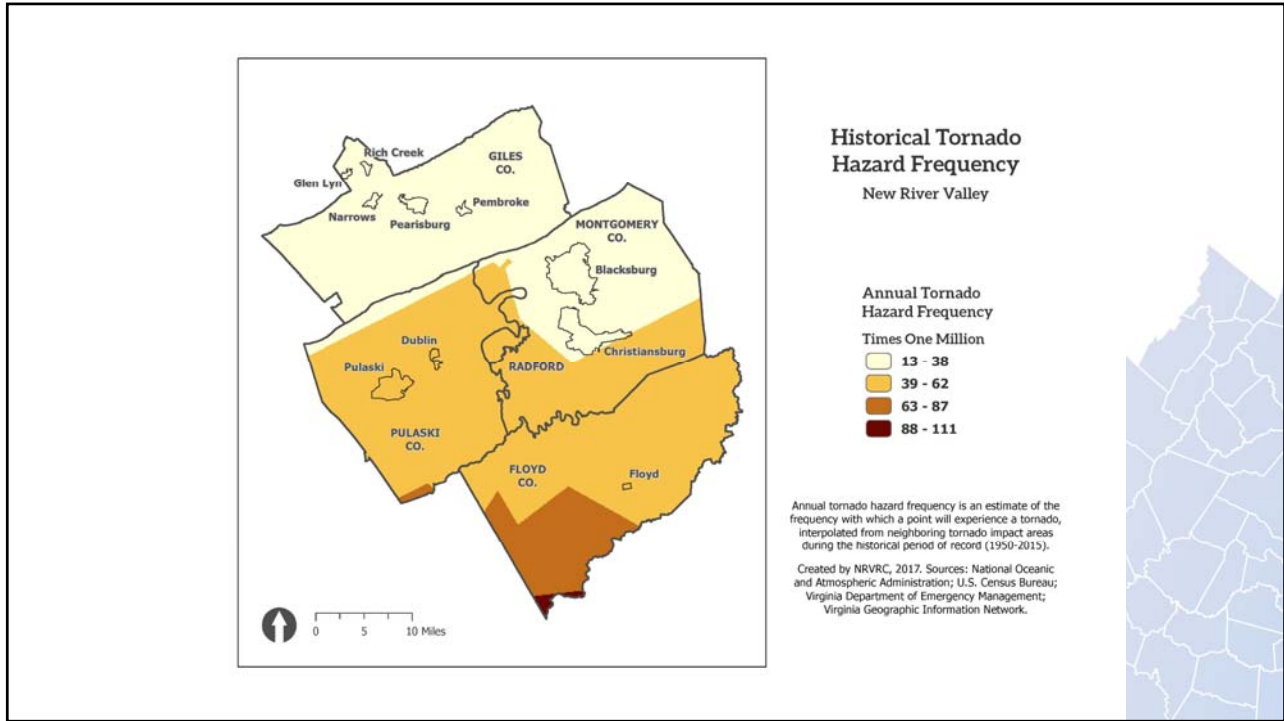


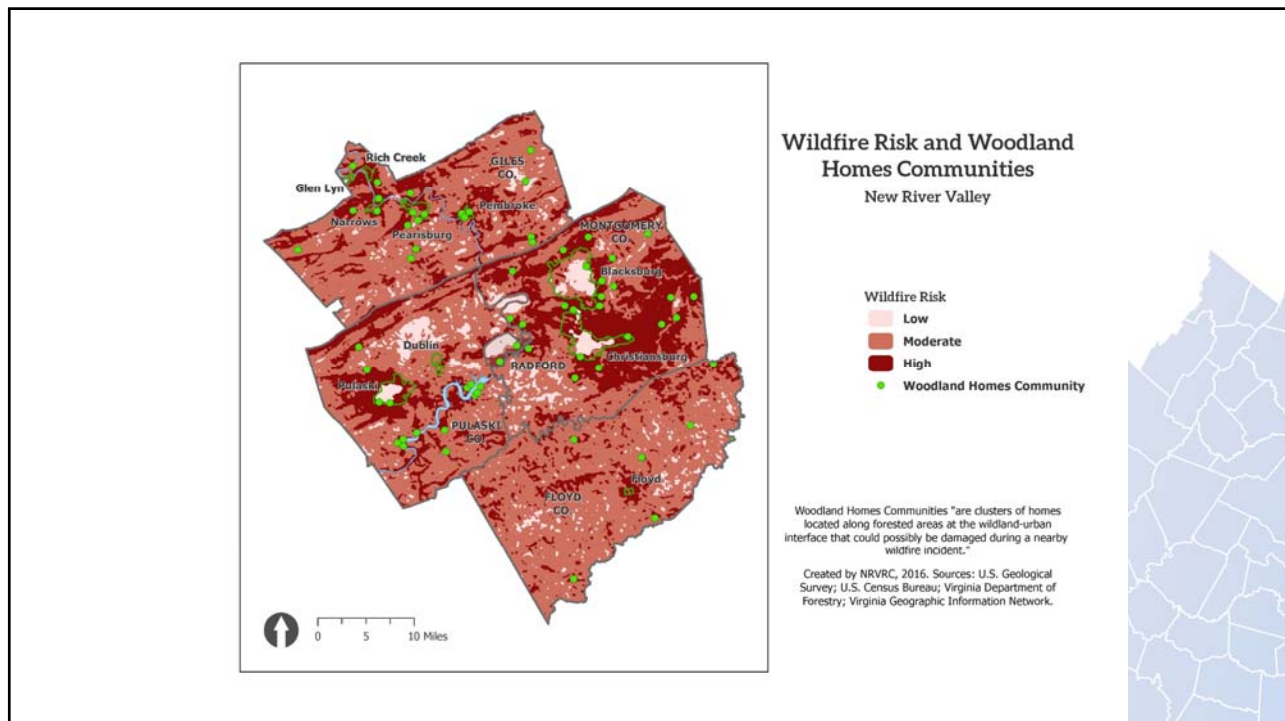
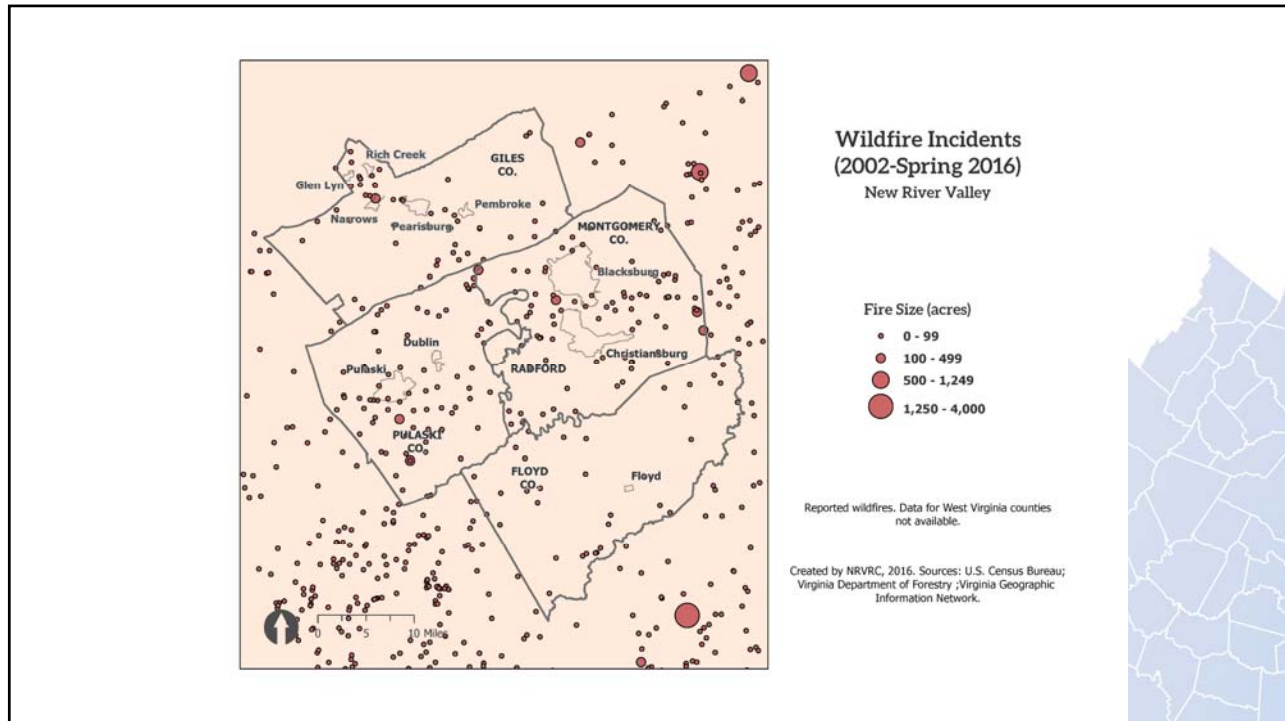


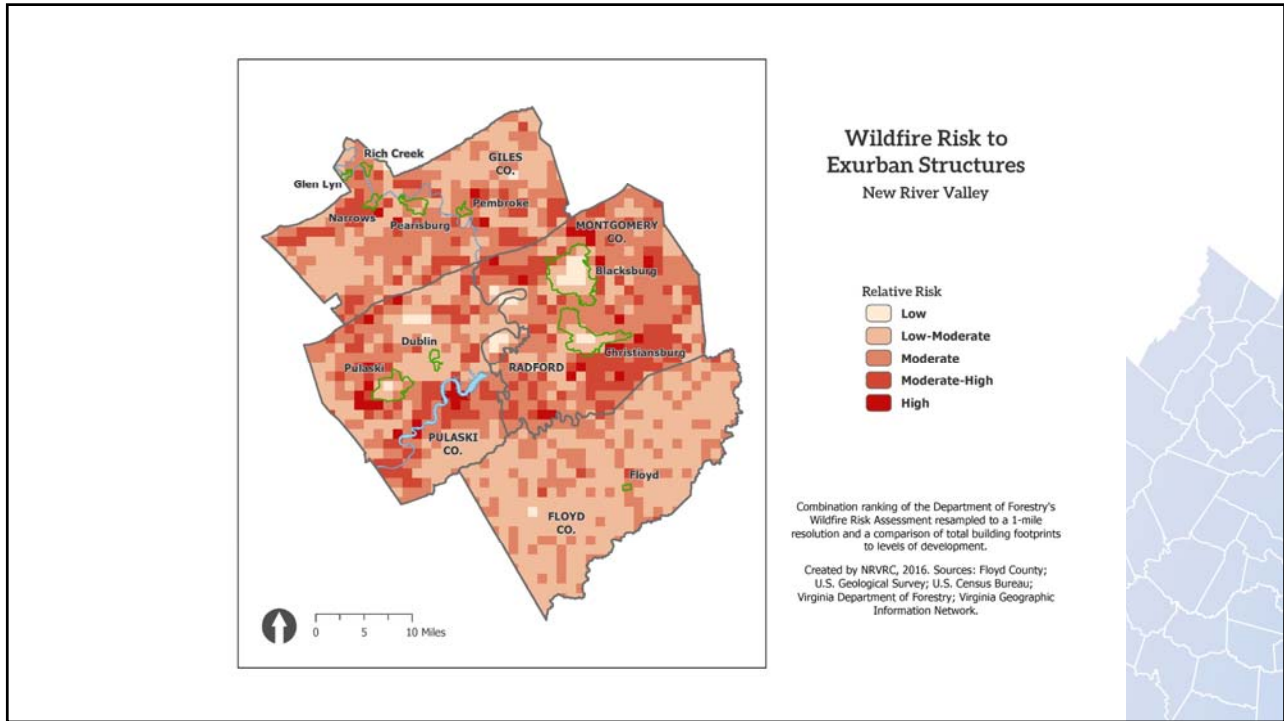
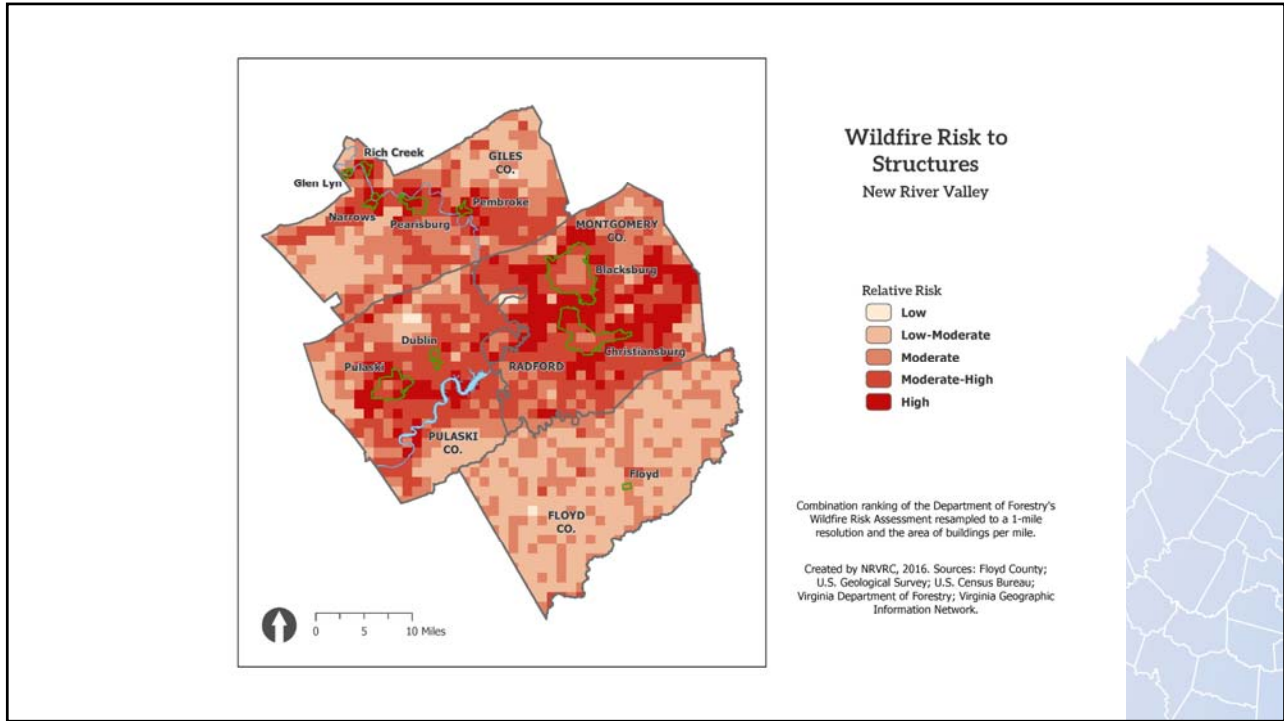


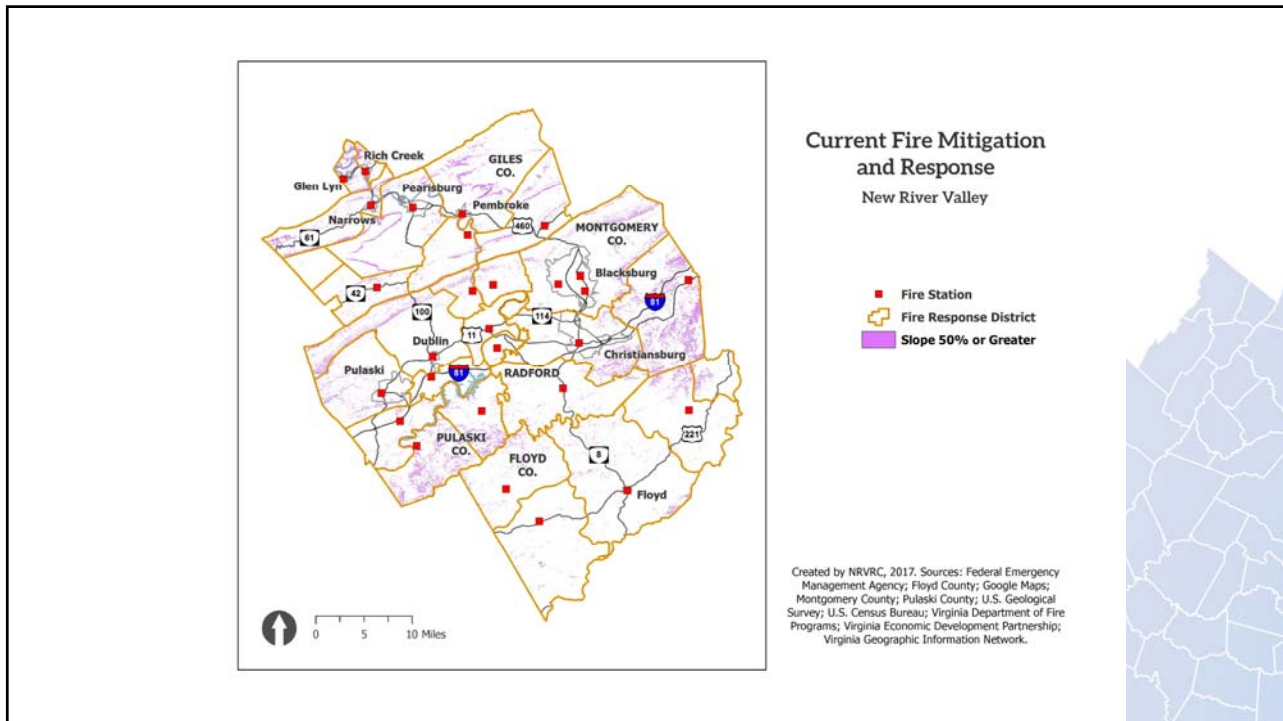
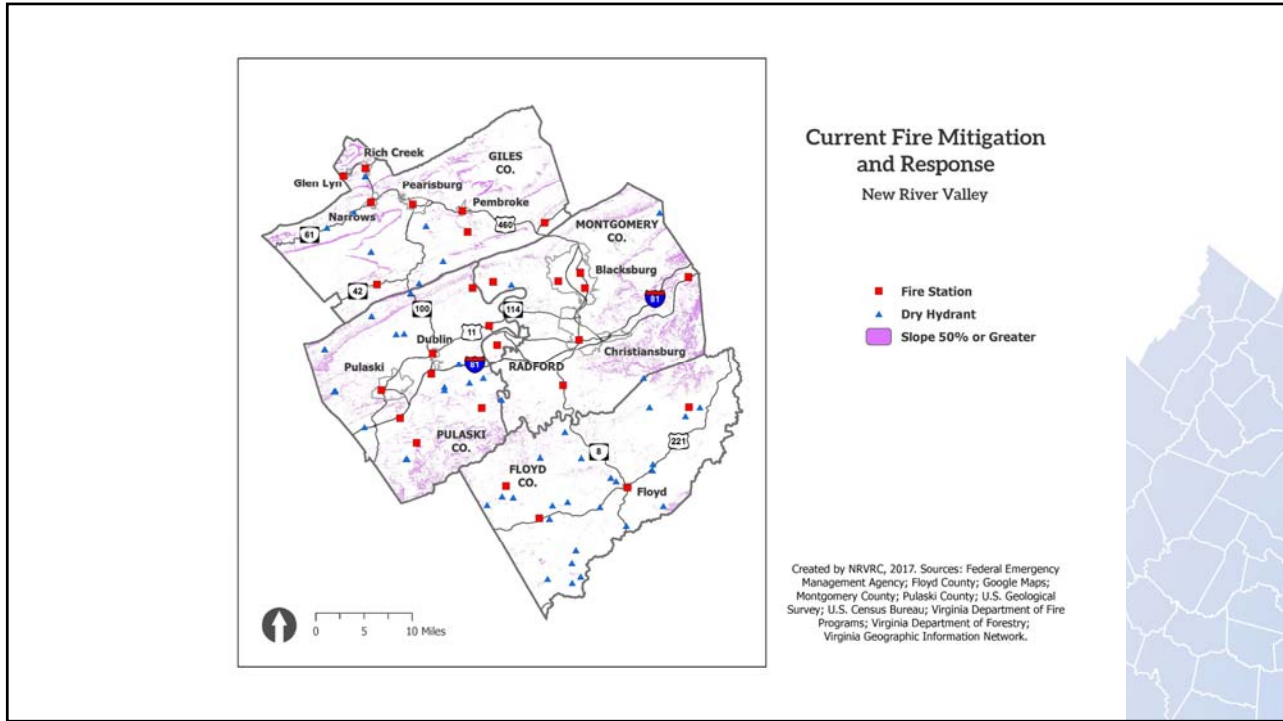


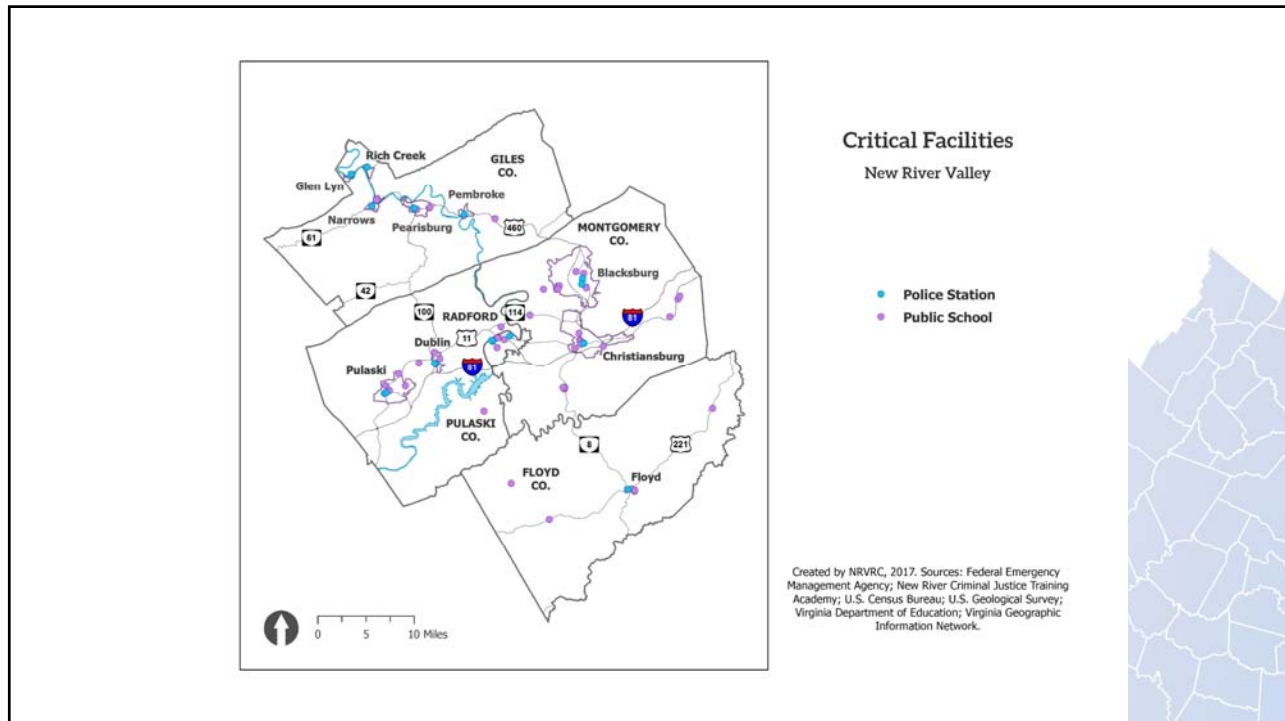
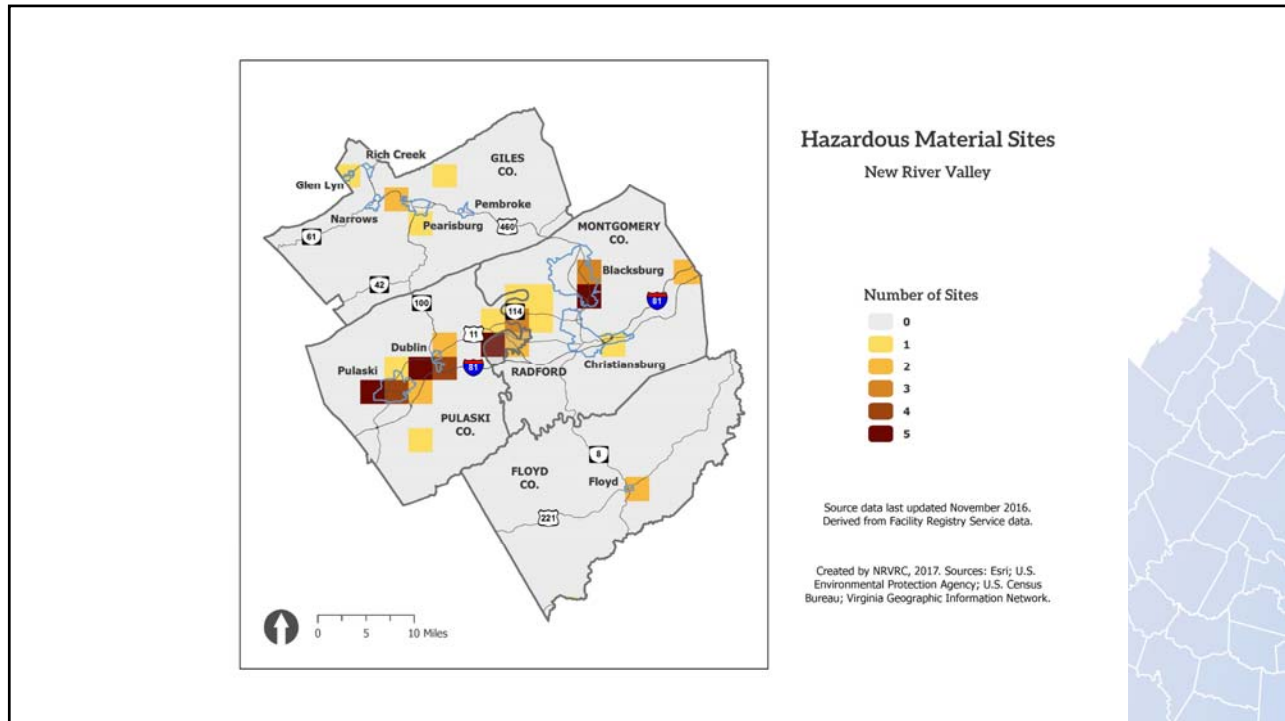


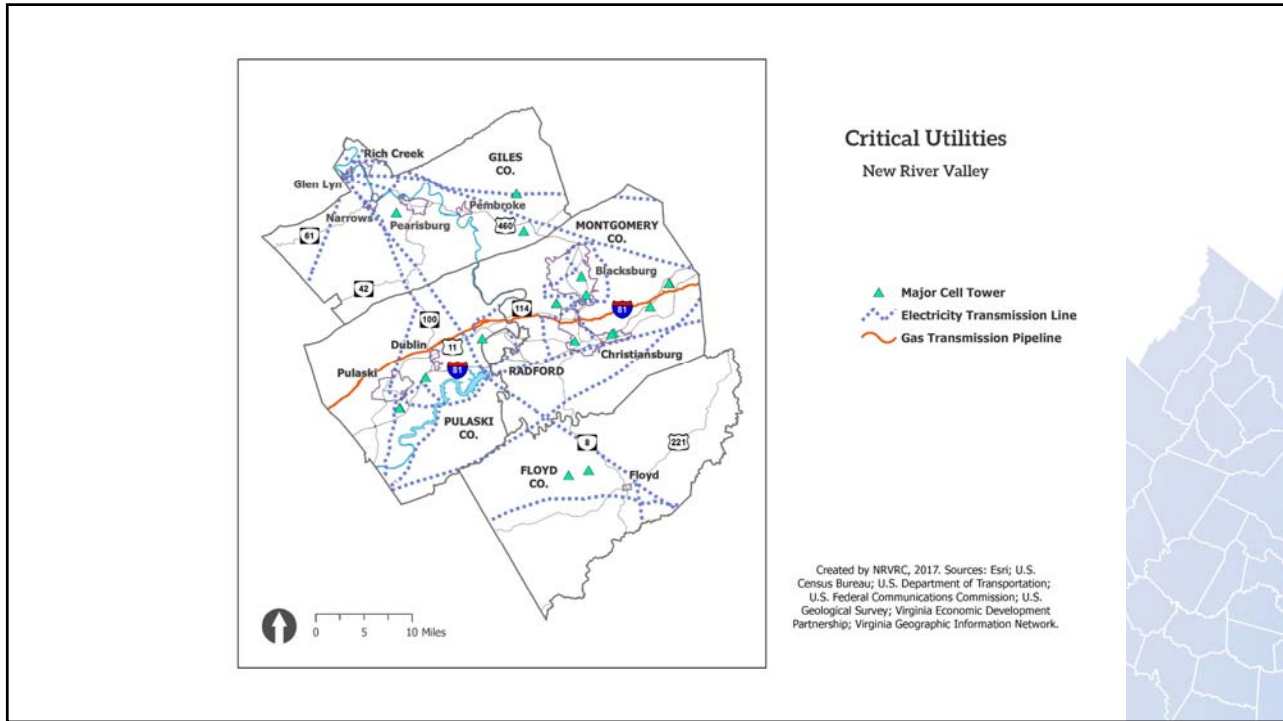
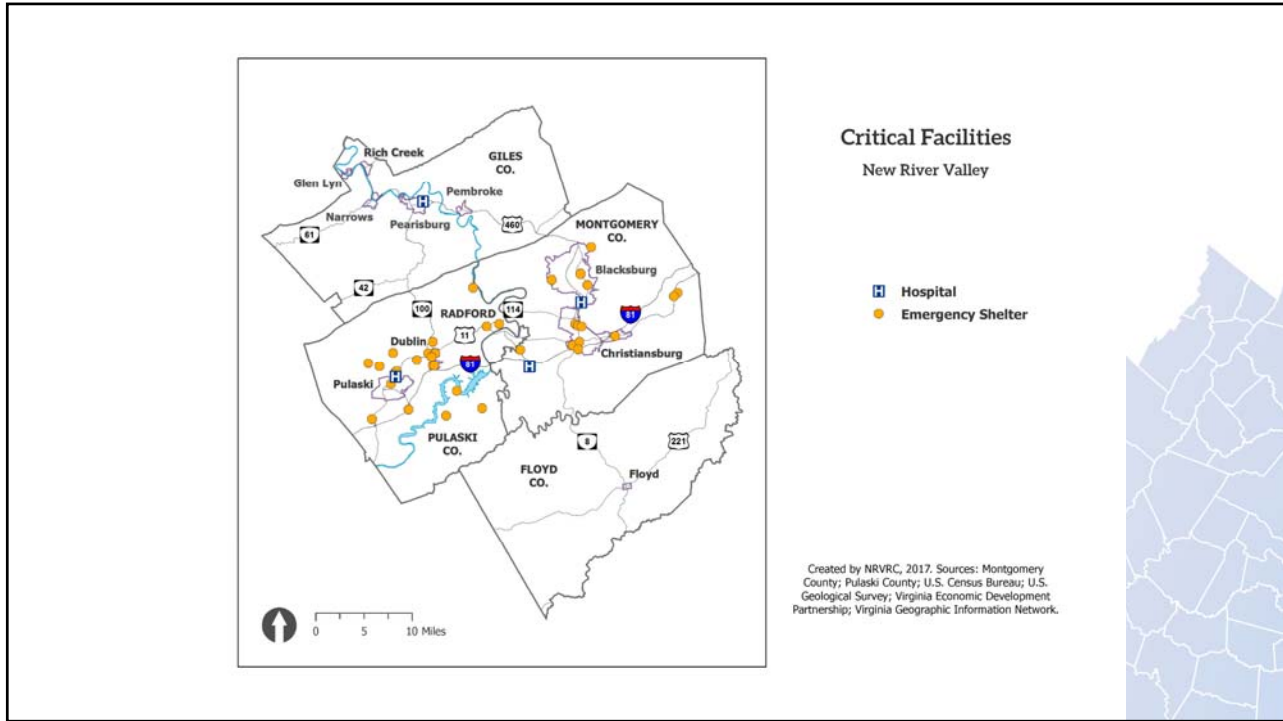


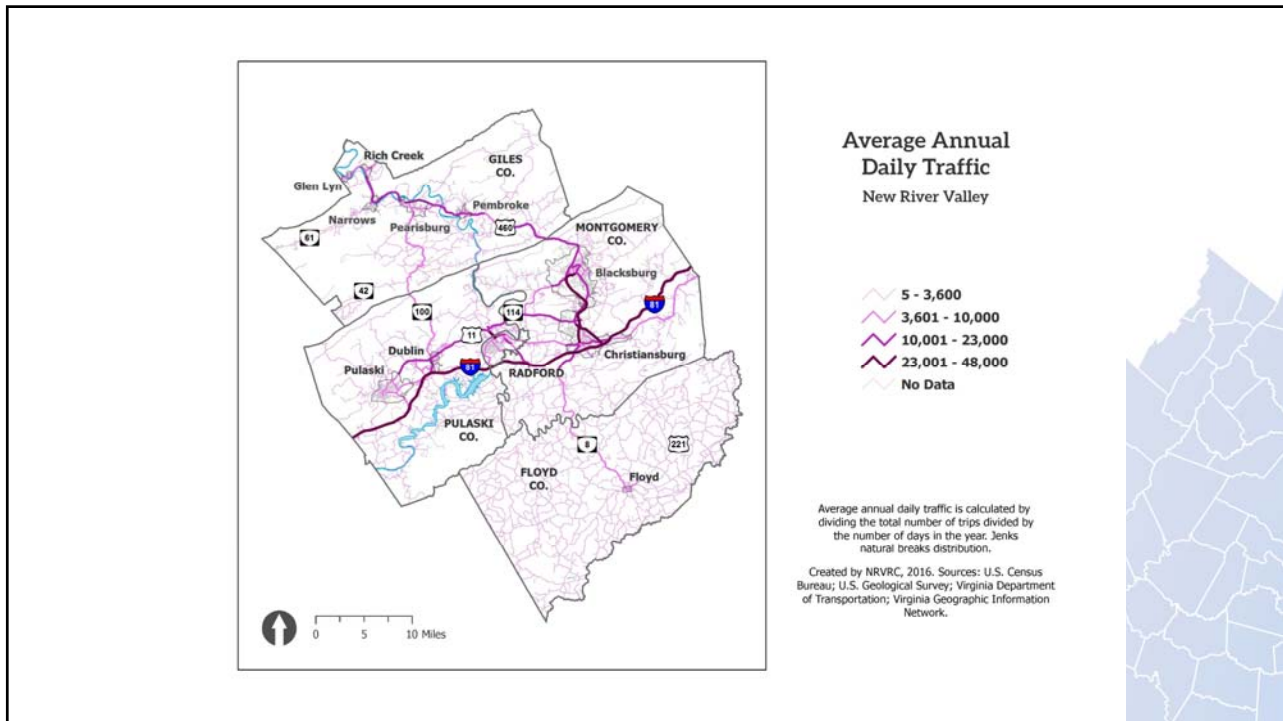
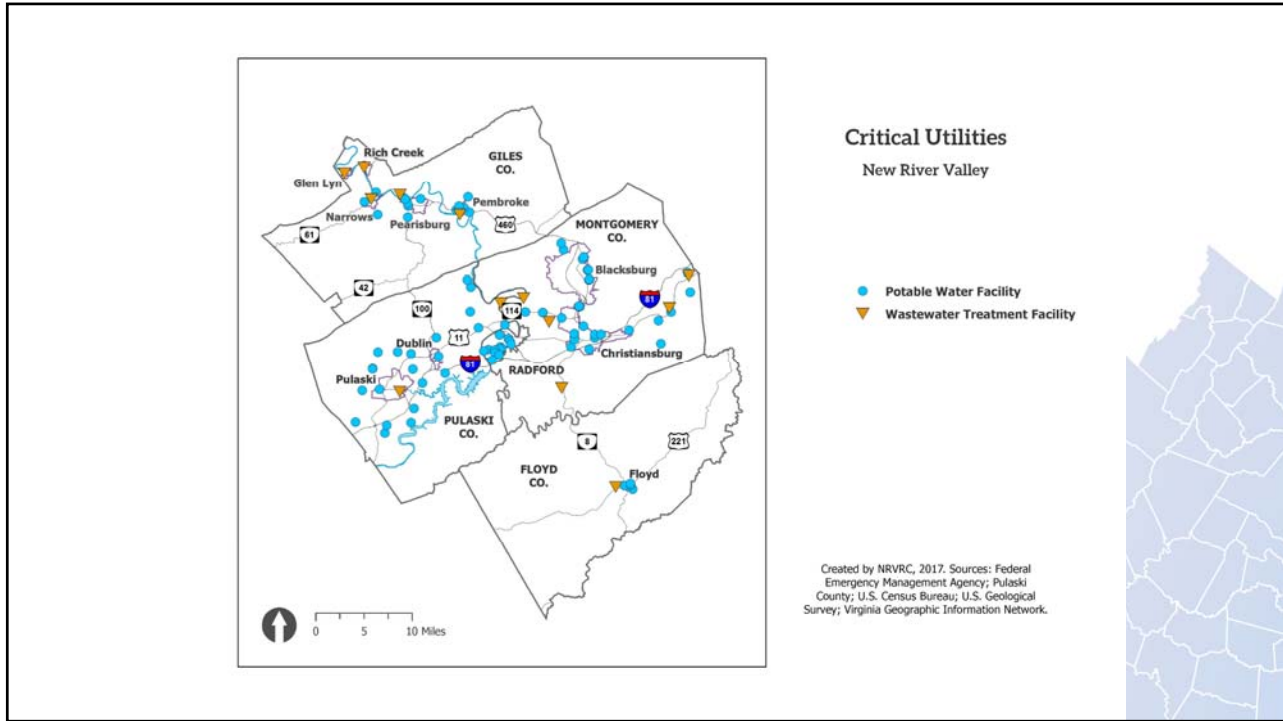


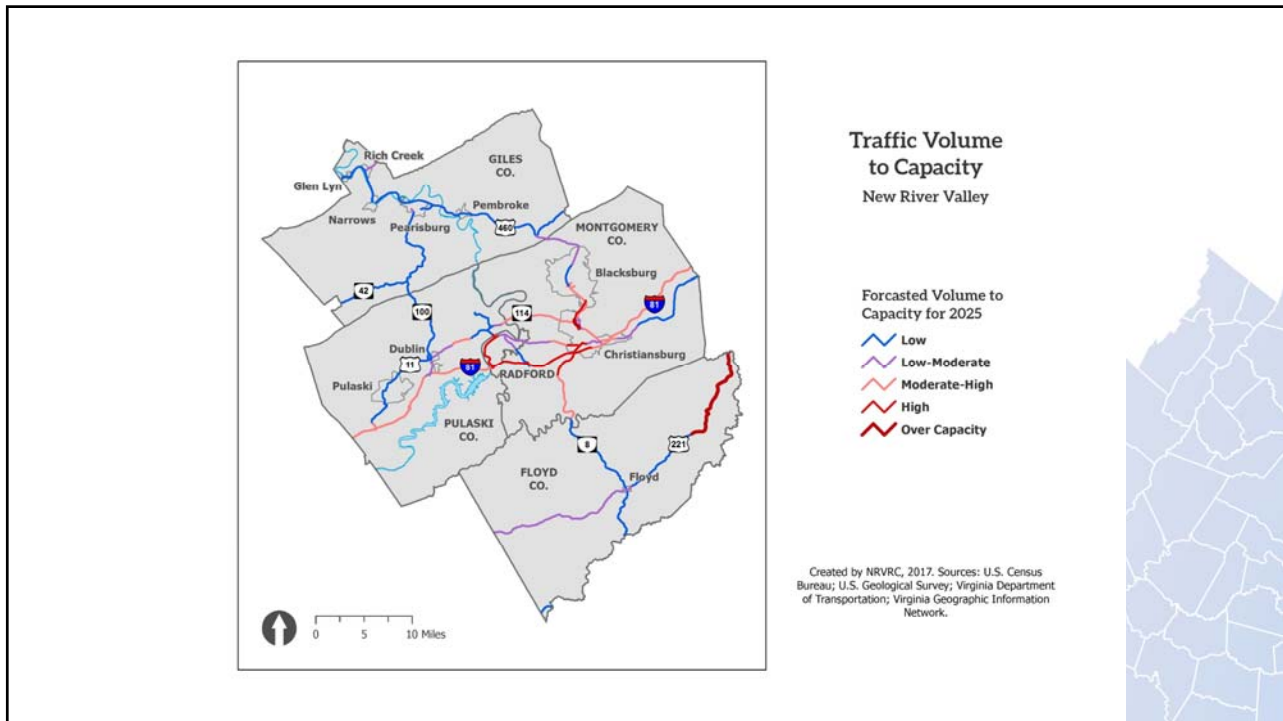
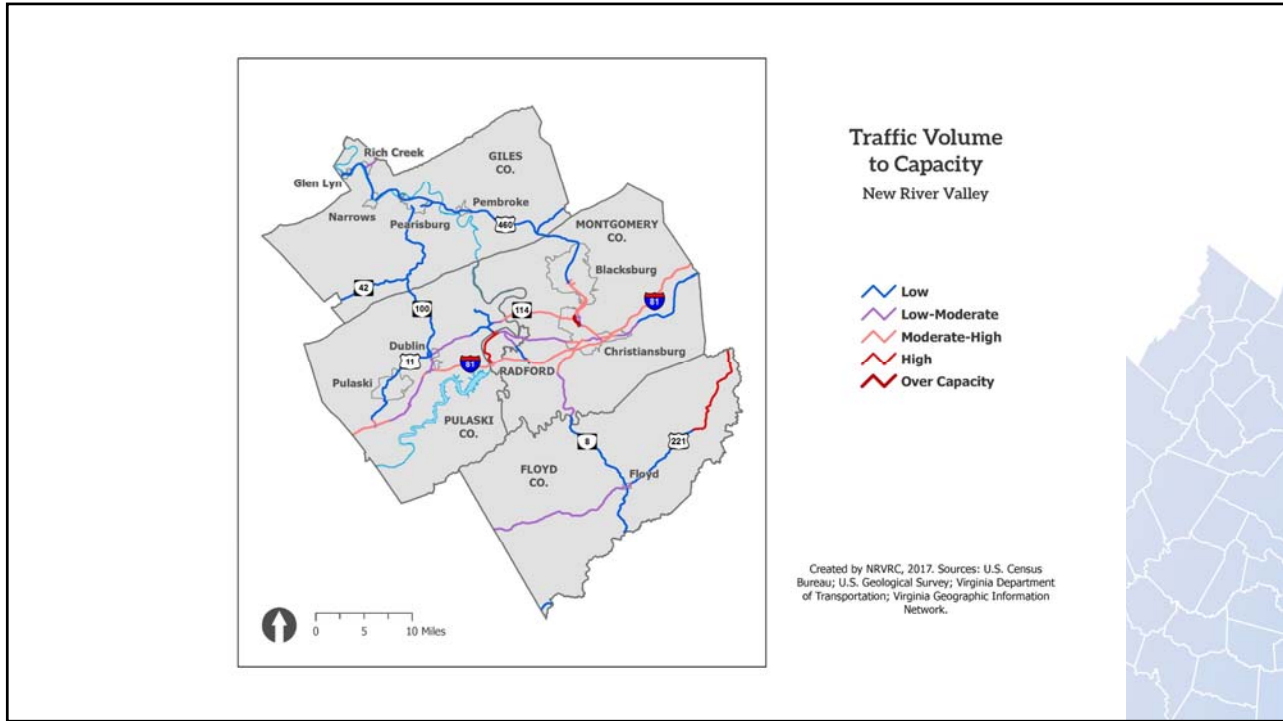


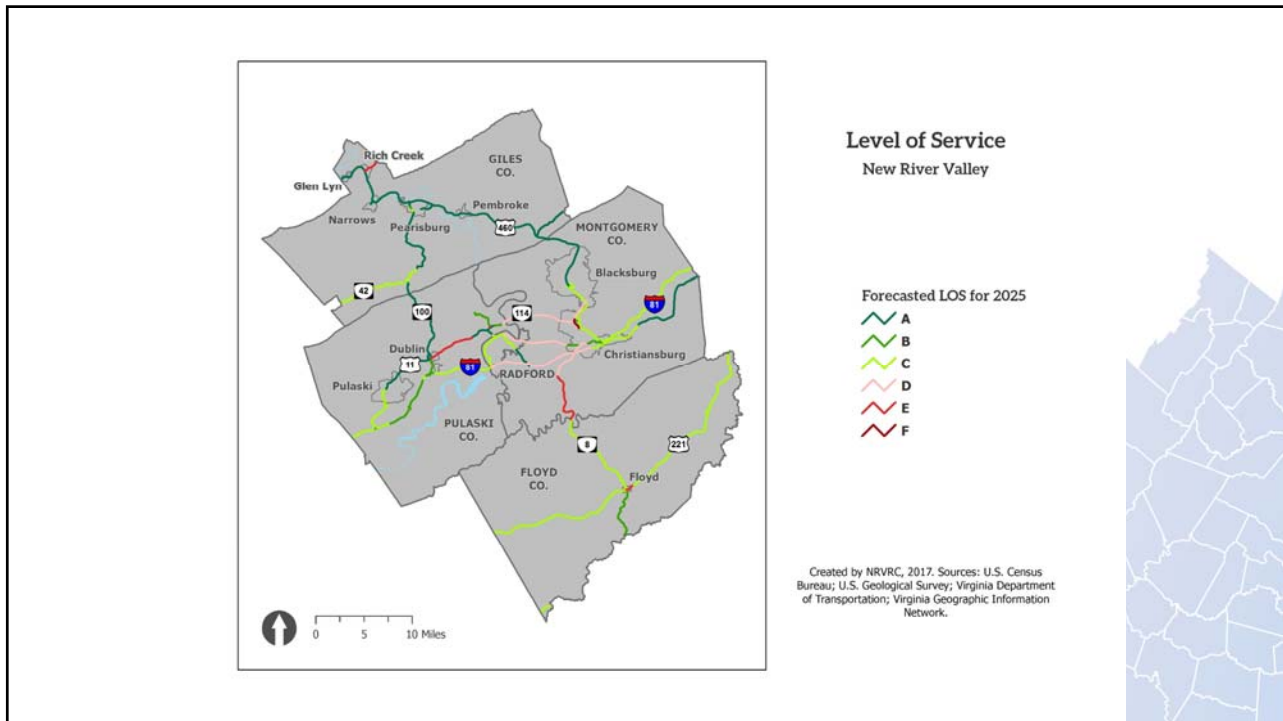
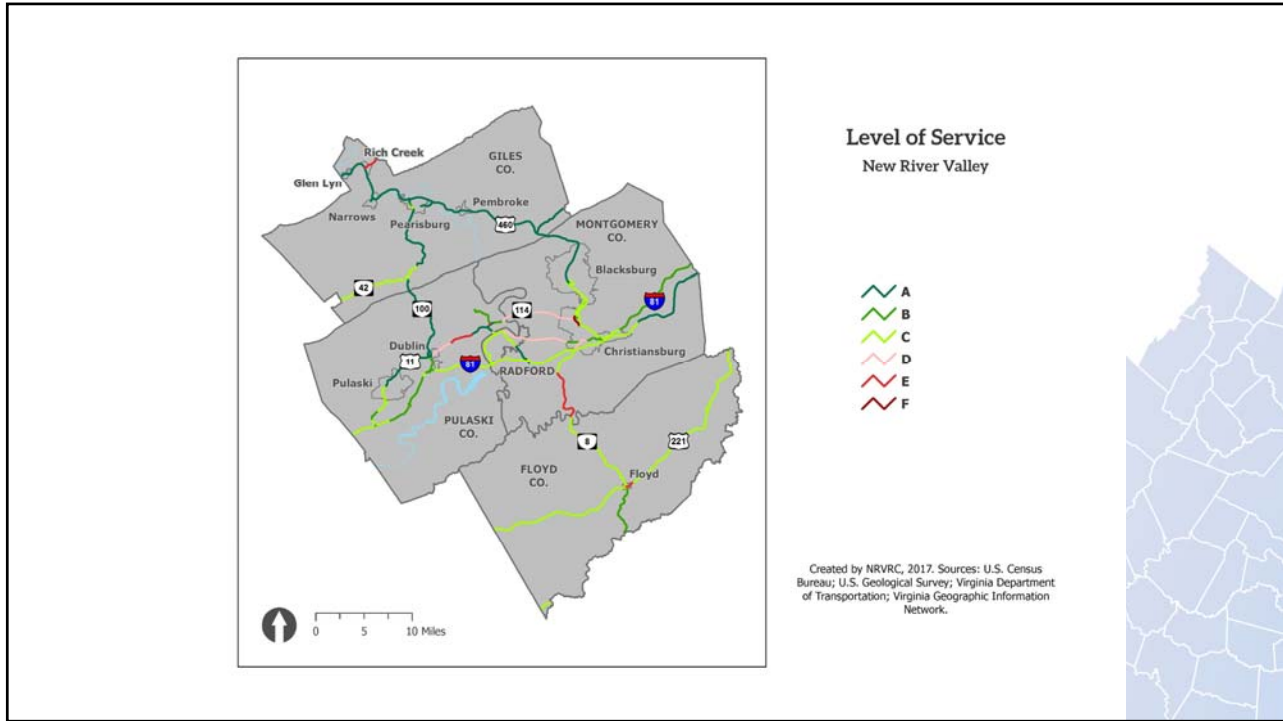


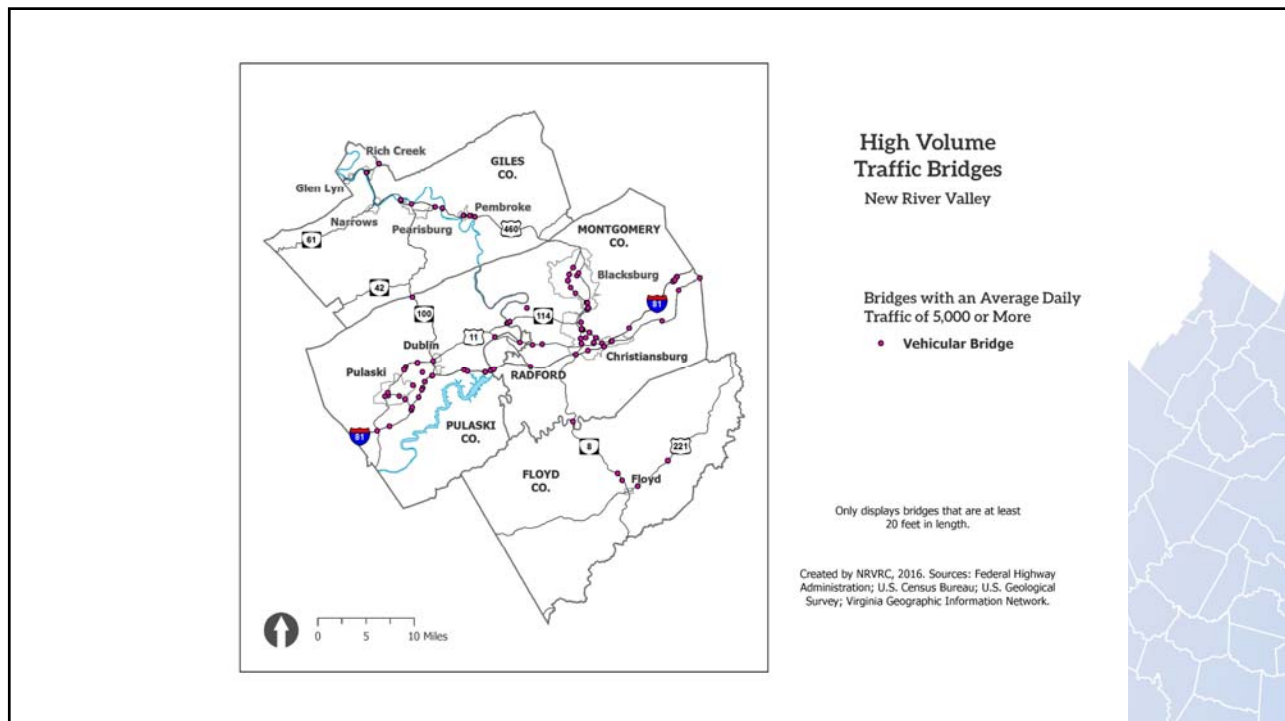
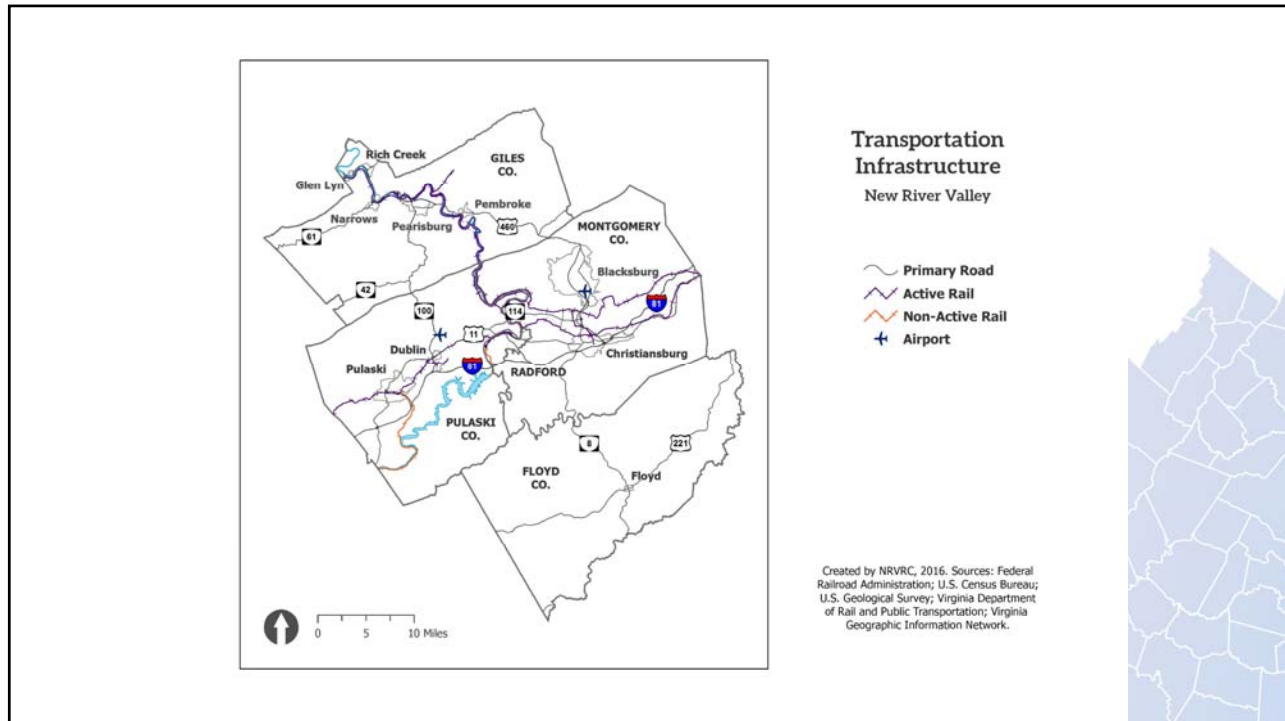












Hazard ranking



Frequency	Intensity	Area Affected	Relative Risk
1- Unlikely	1- Negligible	1- Isolated	= (Intensity + Area) * Frequency
2- Seldom	2- Moderate	2- Local Community	
3- Occasional	3- Severe	3- Several Communities	
4- Likely	4- Catastrophic	4- Region-wide	
5- Frequent			

N R V R C . O R G

Hazard ranking results



Hazard	2011	2017
Freezing Temperatures	30	26
High Winds	22	25.2
Flooding	22	24.2
Snowfall	18	19.7
Human-caused	16	18.7
Drought	19.5	18.4
Ice Storms	14	16.7
Wildfire	1	13.7
Karst	4	9.8
Landslide	10.5	8.5
Tornado	3	7.6
Earthquake	7	6.9
Rockfall	6	6.6

Upcoming tasks



- TODAY - Confirm maps to include in the plan (Steering committee)
- APRIL - Submit local mitigation projects (Localities)
- APRIL - Draft plan chapters (Commission staff)
- MAY - Plan review (Steering committee)
- APRIL/MAY - Set up public information meetings (Commission staff with locality support)

N R V R C . O R G

Wrap up



- Questions?
- Next meeting – Steering Committee, May 4, 10:30 am
- Contact information for NRVRC
Christy Straight (cstraight@nrvc.org)
Michael Gottfredson (michaelg@nrvc.org)
Zach Swick (zswick@nrvc.org)
540.639.9313

Thank you for coming!

N R V R C . O R G

New River Valley Hazard Mitigation 2017 Plan Maps
(updated existing map layers to latest available and added data and analysis)

Map status	Hazard Section	Map title	Keep	Revise	Delete	Notes
New	Drought	1. Average Annual Number of Weeks of Drought			X	
New	Drought	2. Average Annual Number of Weeks of Major Drought		X		Change title from “major” to “Moderate”
New	Drought	3. Drought Frequency Graph	X			
New	Drought	4. Graphs: Separate Categories, Moving Average	X			
Updated	Drought	5. NRV Mean Water Well Depths	X			
New	Drought	6. Maximum Temperatures Average Annual Days of 90 degrees or above	X			
New	Drought	7. Warming Weather Average Annual Days of 80 degrees or higher			X	
Updated	Drought	8. NRV Well Density	X			
Updated	Geologic	9. Geologic Units	X			
Updated	Karst	10. NRV Karst Geology	X			
Updated	Geologic	11. Geologic Faults	X			
New	Karst	12. Karst Density per Square Feet	X			
Updated	Geologic	13. NRV Earthquakes	X			
Updated	Earthquake	14. NRV 1897 Earthquake Loss Estimates	X			
Updated	Earthquake	15. NRV Magnitude 7.0 Earthquake Estimate Annualized Loss	X			Map not as useful as 1897 map of loss; other way to display data for meaningful interpretation?
Updated	Landslide	16. Landslide Hazard Rating	X			
Updated	Rockfall	17. NRV Rockfall Hazard		X		Move to second tier in plan (as figure rather than Map)
New	Rockfall	18. NRV Rockfall Hazard Rating Per Mile		X		Change the colors for greater differentiation

Map status	Hazard Section	Map title	Keep	Revise	Delete	Notes
Updated	Flooding	19. NRV Floodplains		X		See comments for “revision”
Updated	Flooding	20. Floyd County Floodplains		X		
Updated	Flooding	21. Town of Floyd Floodplains		X		
Updated	Flooding	22. Giles County Floodplains		X		
Updated	Flooding	23. Town of Glen Lyn Floodplains		X		
Updated	Flooding	24. Town of Narrows Floodplains		X		
Updated	Flooding	25. Town of Pearisburg Floodplains		X		
Updated	Flooding	26. Town of Pembroke Floodplains		X		
Updated	Flooding	27. Town of Rich Creek Floodplains		X		
Updated	Flooding	28. Montgomery County Floodplains		X		
Updated	Flooding	29. Town of Blacksburg Floodplains		X		Change color of VT
Updated	Flooding	30. Town of Christiansburg Floodplains		X		
Updated	Flooding	31. Pulaski County Floodplains		X		
Updated	Flooding	32. Town of Dublin Floodplains		X		Add to files
Updated	Flooding	33. Town of Pulaski Floodplains		X		Need updated file in folder
Updated	Flooding	34. City of Radford Floodplains		X		Change color of RU
New	Flooding	35. Building Exposure in the 100-year Flood Zone (TEIF)			X	
New	Flooding	36. Building Exposure in the 100-year Flood Zone (scale variation, min. \$100)		X		Change legend to read “exposure per square mile”; reverse color scheme – no known exposure a light shade to make other colors more visible; is the red block in Town of Pulaski correct? A. This is correct. Exposure is based on structure footprints in the floodplain – all of downtown Pulaski is in the floodplain.
Updated	Snowfall	37. NRV Six-inch or More Snowfalls (scale variation, 1 mile)	X			
Updated	Severe Weather	38. Winter Weather Crash Density	x			How is winter weather crash determined (v. any other)? A. By date and reported road conditions, i.e., icy, snow
Updated	Severe Weather	39. Winter Weather Crash Density (normalized by road type)		X		How is winter weather crash determined (v. any other)? A. By date and reported road conditions, i.e., icy, snow

Map status	Hazard Section	Map title	Keep	Revise	Delete	Notes
Updated	Freezing Temperatures	40. NRV Freezing Temperature – Average Annual Days of Maximum 32 degrees or Below (scale variation, 1 mile)	X			
New	Severe Weather	41. Warming Winter Weather (scale variation, 1 mile)	X			
New	High Winds (Non-rotational)	42. Wind Gust Density		X		Update title to include “Thunderstorm Wind”
New	High Winds (Non-rotational)	43. Wind Gust Property Damage Density		X		Update title to include “Thunderstorm Wind”
New	High Winds (Non-rotational)	44. 100-Year Wind Event Annualized Loss	X			Confirm if annual loss is Census block or per square mile. A: census block
New	High Winds (Non-rotational)	45. 100-Year Wind Event Peak Gust	X			
Updated	Tornado	46. NRV TORNADOS	X			Add buffer of data (as in wildfire) to demonstrate relative risk that will be shown for Floyd in later map; 10 mile buffer suggested
Updated	Tornado	47. NRV Tornado Hazard Risk	X			Need to add to plan text – tornadoes outside of region affect Floyd’s relative frequency risk level
Updated	Tornado	48. NRV Tornado Hazard F2+	X			
Updated	Wildfire	49. NRV Wildfires		X		Reduce extent of buffer for wildfires outside the region; 10 mile buffer suggested
Updated	Wildfire	50. NRV Wildfire Risk Assessment	X			
New	Wildfire	51. NRV Wildfire Risk to Structures	X			Note relationship... Include explanation in plan text of weighting and analysis of structures v. DOF assessment
New	Wildfire	52. NRV Wildfire Risk to Exurban Structures	X			Note relationship... Include explanation in plan text of weighting and analysis of structures v. level of development
Updated	Wildfire	53. Current Fire Mitigation and Response				Not reviewed at meeting
Updated	Human-caused	54. Hazardous Materials		X		Include in plan text that these are not hazmat dumps
Updated	Human-caused	55. Critical Facilities (hospitals, emergency shelters)	X			

Map status	Hazard Section	Map title	Keep	Revise	Delete	Notes
Updated	Human-caused	56. Critical Facilities (police stations, public schools)		X		Relabel “police station” to “law enforcement”
Updated	Human-caused	57. Critical Utilities (water, wastewater)	X			Add data from Giles, Pulaski, Radford if available
Updated	Human-caused	58. Critical Utilities (cell towers, ...)		X		Add all available data on cell towers. make new/separate map for cell towers if needed to show locations or density of towers
Updated	Human-caused	59. Average Annual Daily Traffic	X			
New	Human-caused	60. Traffic Volume to Capacity	X			
New	Human-caused	61. Forecasted Traffic Volume to Capacity	X			
New	Human-caused	62. Level of Service for Principal Travel Corridors		X		Change colors for better differentiation of similar shades; add to plan text definition of “level of service” in this context; reduce shading of background to help lines stand out
New	Human-caused	63. Level of Service Forecast for Principal Travel Corridors		X		Change colors for better differentiation of similar shades; reduce shading of background to help lines stand out
Updated	Human-caused	64. Transportation Infrastructure	X			
New	Human-caused	65. High Volume Traffic Bridges		X		Extended discussion on adding all bridges regardless of length or capacity – does this represent vulnerable infrastructure, evacuation and response routes, or both? Need to find a way to present data in a workable format given the high count of bridges under 20 feet long. NOTE: Review of data since meeting indicates data for bridges under 20 feet long is not known to exist. This map represents trips of >5,000 per day. Second map showing all bridges will be included in the plan as a figure.

Comments:

For all floodplain maps, need text that discusses accuracy of FIRM mapping shown... provide FEMA website in plan for redirect of current (The floodplain maps are created from data developed by FEMA; more detailed mapping on a given address can be accessed at <http://msc.fema.gov/portal>. FIRM maps are the official maps by which FEMA designates special hazard areas and risk premium zones for the NFIP. These may or may not match current conditions in the field; localities can request updated FIRMs for their area and physical map revisions can be made by Letters of Map Change.)

NRV Hazard Mitigation Plan 2017 Update

Relative Hazard Ratings

Hazard	Frequency	Intensity	Area Affected	Relative Risk
	1- Unlikely 2- Seldom 3- Occasional 4- Likely 5- Frequent	1- Negligible 2- Moderate 3- Severe 4- Catastrophic	1- Isolated 2- Local Community 3- Several Communities 4- Region-wide	(Intensity + Area) * Frequency
Drought	3.1	2.1	3.7	18.4
Geologic				
Landslide	2.4	1.9	1.6	8.5
Rockfall	2.6	1.6	1.0	6.6
Karst	2.9	1.6	1.9	9.8
Earthquake	1.1	2.6	3.4	6.9
Severe Weather				
Tornado	1.7	2.6	1.9	7.6
Freezing Temperatures	4.3	2.2	3.9	26.0
High Winds	4.1	2.6	3.4	25.2
Ice Storms	2.7	2.4	3.7	16.7
Snowfall	3.4	2.0	3.9	19.7
Wildfire	3.1	2.2	2.1	13.7
Flooding	4.3	2.5	3.1	24.2
Human-Caused	3.6	2.4	2.7	18.7

Comments:

Averaged scoring from 7 responses

Relative Hazard Rankings

Hazard	2011	2017
Freezing Temperatures	30	26
High Winds	22	25.2
Flooding	22	24.2
Snowfall	18	19.7
Human-caused	16	18.7
Drought	19.5	18.4
Ice Storms	14	16.7
Wildfire	1	13.7
Karst	4	9.8
Landslide	10.5	8.5
Tornado	3	7.6
Earthquake	7	6.9
Rockfall	6	6.6

Risk Levels

High
Medium
Low