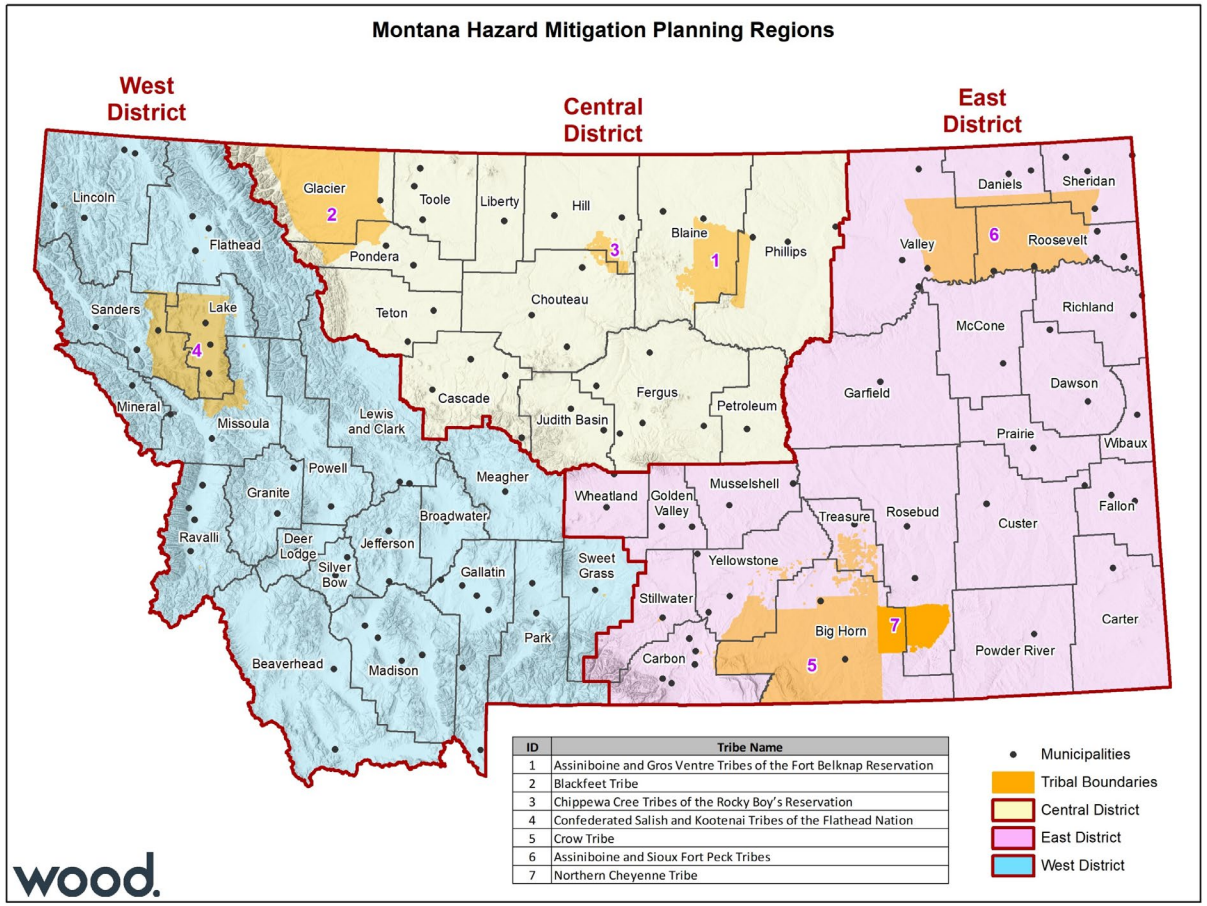
State of Montana Central Region Hazard Mitigation Plan



Meeting 2 – Risk Assessment Update

August 17, 2022, 10:00-12:00 MDT

Please type your name, title, and affiliation in the chat box

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Agenda

1. Introductions
2. Review of the hazard mitigation planning process
3. Public survey results
4. Hazard identification and risk assessment update review and highlights
5. Goals review and mitigation strategy update needs
6. Next steps
7. Questions and answers

Meeting Logistics

- Please mute your mic when not speaking.
- …but please feel free to unmute when you have something to say!
- You can also use the chat log to make comments, ask questions, or provide information.
- This meeting is being recorded.
- Slides, meeting summary, and recording will be made available.

Introductions

Introductions

- **Montana Disaster and Emergency Services**
  - Sara Hartley – State Hazard Mitigation Officer
  - Hannah Shultz – Mitigation Coordinator
  - J. Lee Okeson – Central Region Supervisor
  - Joey Zahara – Central Region Field Officer
  - Ed Greiberis – Central Region Field Officer
- County/Tribal Emergency Management Coordinators
- Federal & State Partners
- Other Stakeholders

- **Wood Project Team**
  - Jeff Brislawn – Project Manger
  - Scott Field – Lead Planner, Central Region
  - Bob Vince – Project Principal, Local Support
  - Juliana Prosperi – Lead Planner, East Region
  - Amy Carr – Lead Planner, West Region
  - Mack Chambers – Lead GIS Analyst
  - Cameron Nelson – Hazard Mitigation Specialist
  - Chris Johnson – Hazard Mitigation Planner/GIS
  - Natalie Schoen – Hazard Mitigation Planner
  - Emily Geery – SWCA Wildfire Risk Assessment Support
  - Victoria Amato – SWCA Wildfire Planning Specialist

Jurisdictional representatives & stakeholders
Type your name, title, and affiliation in chat box

Review of the Hazard Mitigation Planning Process

Terminology

Hazard: Act or phenomenon with potential to do harm

Vulnerability: Susceptibility to harm, damage, loss

Exposure: People, property, systems or functions that could be lost to a hazard

Risk: Combines hazard, vulnerability, exposure and probability

Mitigation: Actions taken in advance of a hazard's impact that reduce its severity

MONTANA DISASTER + EMERGENCY SERVICES
DES

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Disaster Mitigation Action of 2000

Federal Legislation

44 CFR 201.6

- Requires communities to update their hazard mitigation plans every 5 years to remain eligible for federal pre- and post-disaster funding for hazard mitigation grants from FEMA
- Plan ensures the counties and municipalities in the Region will remain eligible for mitigation projects when funding becomes available

FEMA's Nine-Step Planning Process

- **Step 1** **Determine the Planning Area and Resources**
- **Step 2** **Build the Planning Team**
- **Step 3** **Create an Outreach Strategy**
- **Step 4** **Review Community Capabilities**
- **Step 5** **Conduct a Risk Assessment**
- **Step 6** Develop a Mitigation Strategy
- **Step 7** Keep the Plan Current
- **Step 8** Review and Adopt the Plan
- **Step 9** Create a Safe and Resilient Community

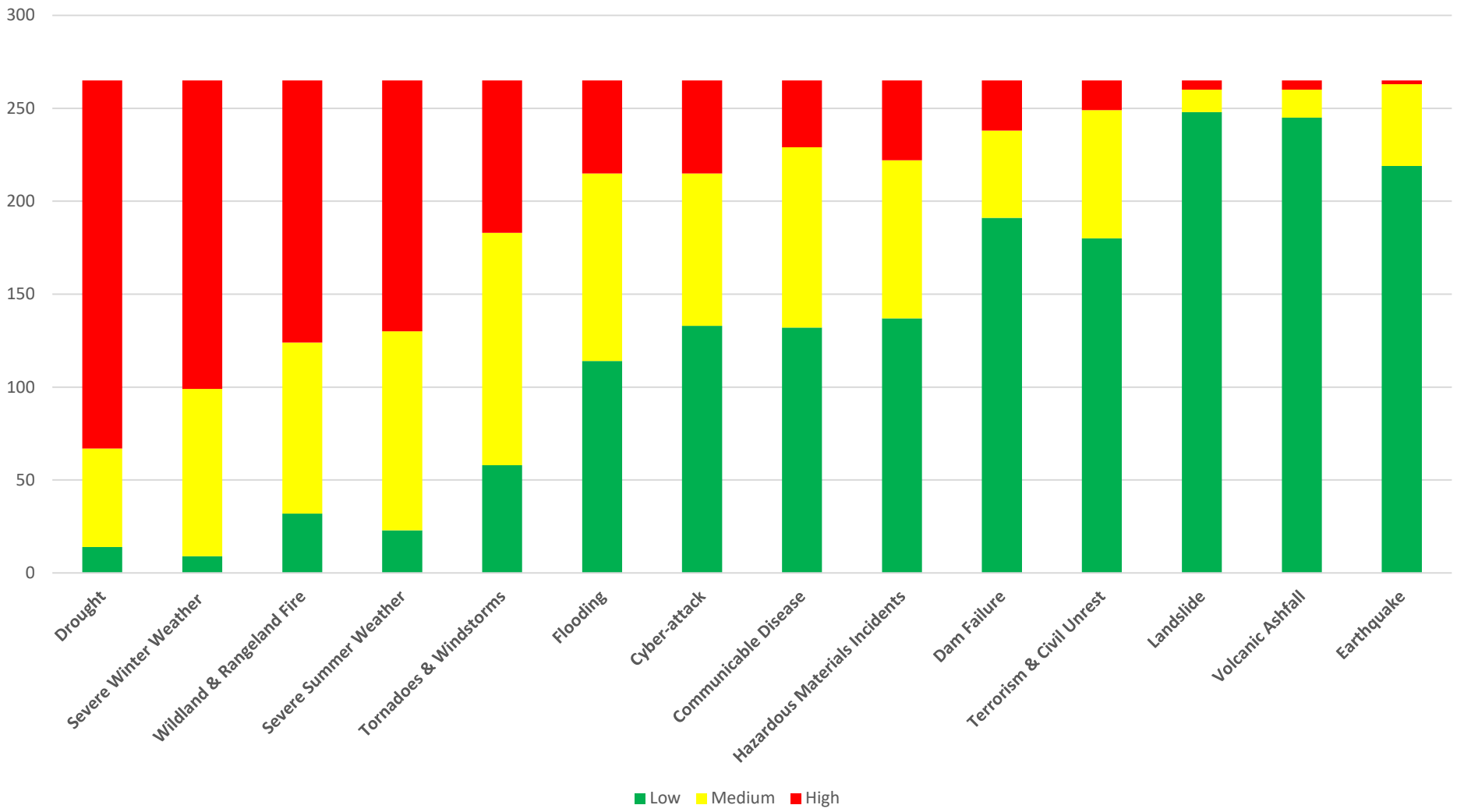
Progress So Far

- Kickoff meeting March 31, 2022
- Risk and capability assessments in process of being drafted by Wood, based on research and HMPC/stakeholder input
- Plan update guides provided to participating jurisdictions
- Online public survey closed August 8th: 265 responses

Public Survey Results

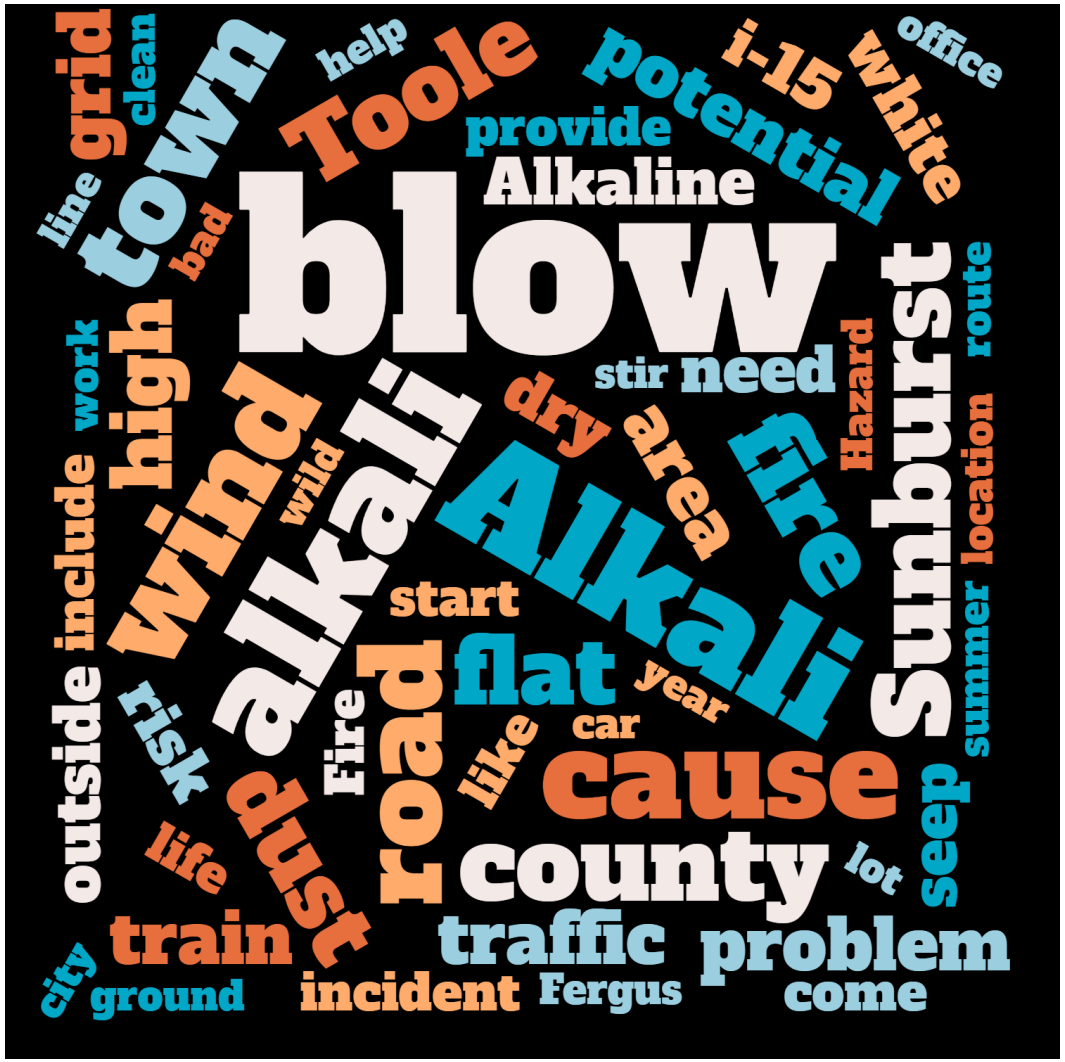
Public Survey Results

Please indicate the level of significance you perceive for each hazard for the community you live in.



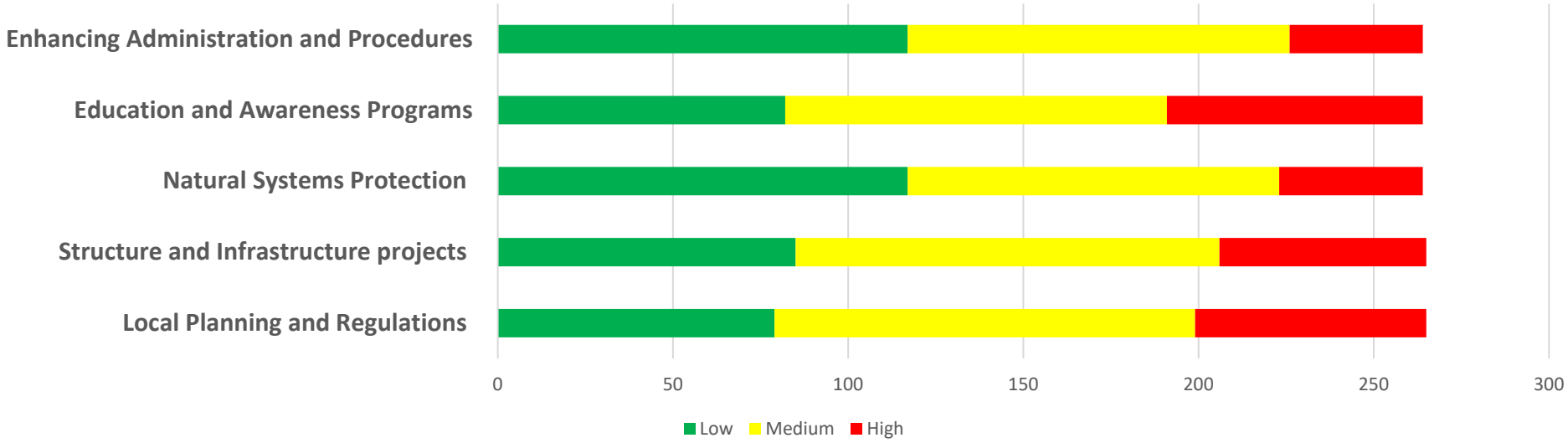
Public Survey Results

Other hazards/specific hazard issues/problem areas?



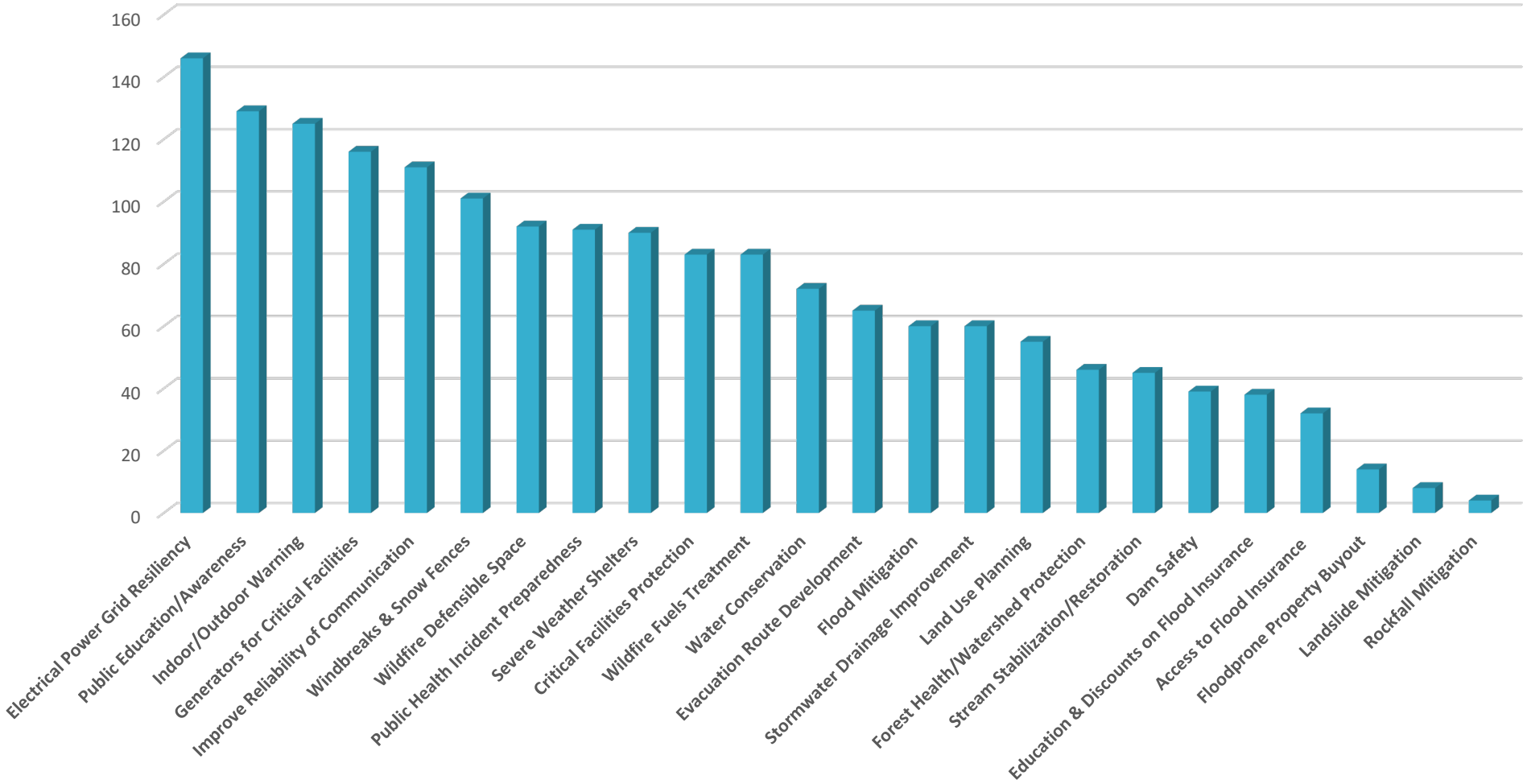
Public Survey Results

Please indicate the significance you perceive for the following mitigation action categories.



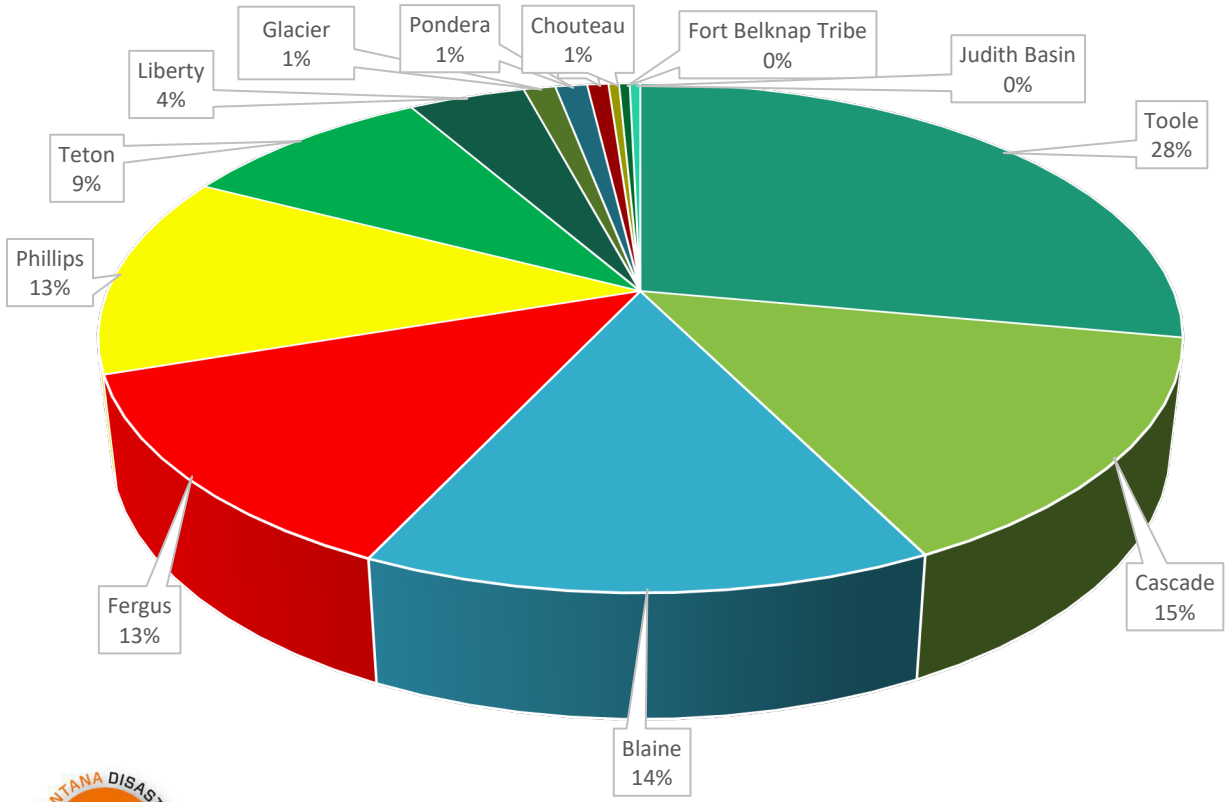
Public Survey Results

Please indicate the types of mitigation actions that you think should have the highest priority.

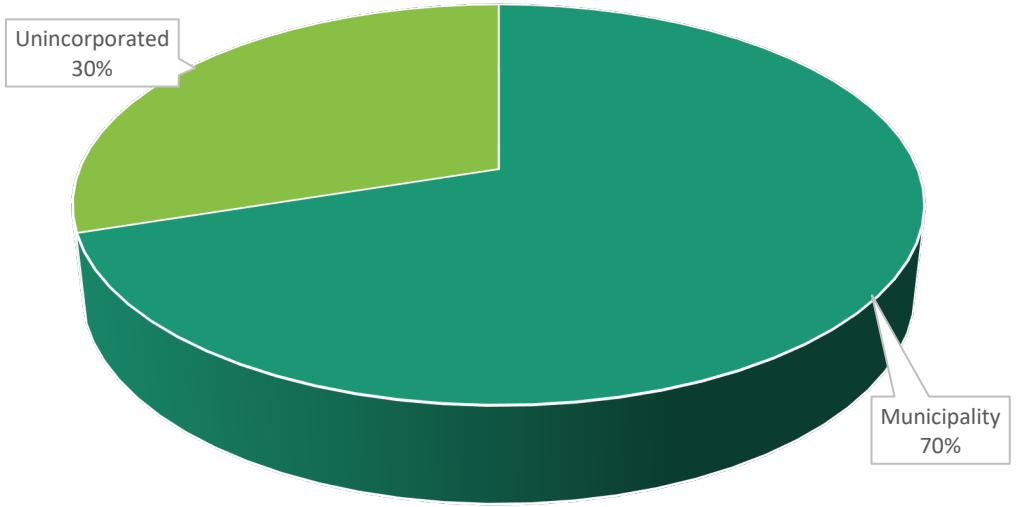


Public Survey Results

Which County or Reservation do you live in?



Where in the County do you live?



Review of Hazards and Vulnerability Assessment Update

Conducting a Risk Assessment - Components

- Hazard Identification
  - What, where, how often, how bad

- Vulnerability Assessment
  - What will be affected?
  - Estimate losses by jurisdiction
  - Assess vulnerabilities of Critical Facilities
  - Includes a Mitigation Capability Assessment

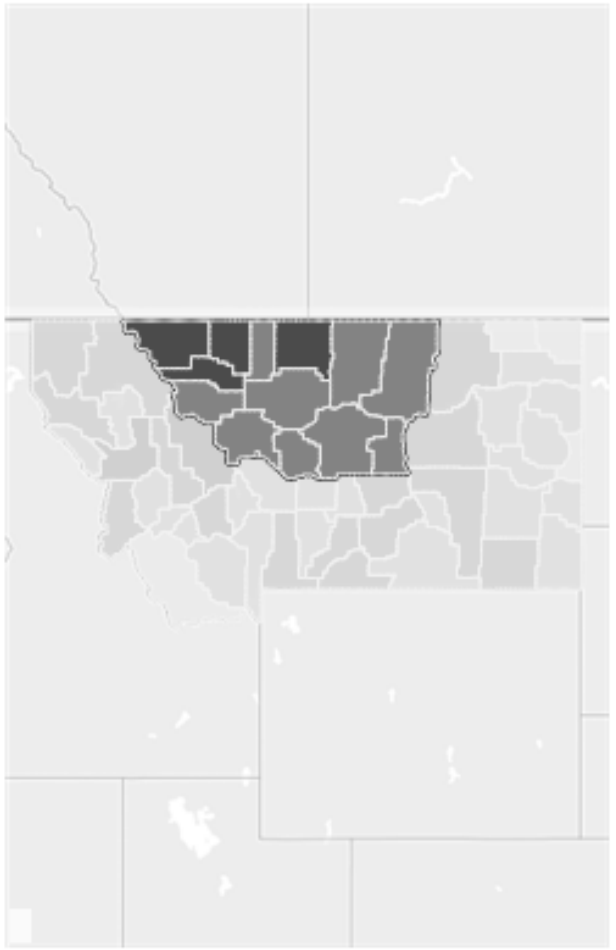
Hazard Identification and Risk Assessment Includes

- Hazard description
- Past events
- Location (geographical area affected)
- Probability of future occurrences
- Impact severity
- Warning time
- Related hazards
- Climate change considerations
- Vulnerability assessment
  - Population
  - Property
  - Critical facilities and infrastructure
  - Economy
  - Environment and cultural resources
  - Development trends
- Risk summary and significance by jurisdiction

Disaster History

The Central Region has had 23 Federal Declarations since 1953

- 8 Flood
- 8 Severe Storm(s)
- 3 Fire
- 2 Biological
- 1 Drought
- 1 Hurricane



23 Disaster Declarations in the Central Region since 1953

Year	Declaration Title	Disaster Number	Area Impacted
1974	SEVERE STORMS, FLOODING & LANDSLIDES	DR-417-MT	Glacier
1975	RAINS, SHOWMELT, STORMS & FLOODING	DR-472-MT	Cascade, Fergus, Glacier, Judith Basin, Pondera, Teton, Toole
1977	DROUGHT	EM-3050-MT	Glacier, Teton
1981	SEVERE STORMS & FLOODING	DR-640-MT	Cascade
1986	HEAVY RAINS, LANDSLIDES & FLOODING	DR-761-MT	Chouteau, Fergus, Glacier, Liberty, Petroleum, Phillips, Pondera, Teton, Toole
1986	SEVERE STORMS & FLOODING	DR-777-MT	Blaine, Hill, Phillips
1996	SEVERE STORMS, FLOODING, AND ICE JAMS	DR-1105-MT	Chouteau
1996	SEVERE STORMS, FLOODING, ICE JAMS, SOIL SATURATION	DR-1113-MT	Blaine, Hill, Liberty, Toole, Phillips
1997	SEVERE STORMS,ICE JAMS, SNOW MELT, FLOODING	DR-1183-MT	Judith Basin
2000	WILDFIRES	DR-1340-MT	All counties in Central Region
2002	SEVERE STORMS AND FLOODING	DR-1424-MT	Glacier, Liberty, Toole, Hill, Pondera
2005	HURRICANE KATRINA EVACUATION	EM-3253-MT	Statewide
2010	SEVERE STORMS AND FLOODING	DR-1922-MT	Hill, Chouteau, Rocky Boy's Reservation
2011	SEVERE STORMS AND FLOODING	DR-1996-MT	All counties in Central Region
2013	FLOODING	DR-4127-MT	Hill, Chouteau, Blaine, Fergus, Petroleum, Rocky Boy's Reservation, Fort Belknap
2014	ICE JAMS AND FLOODING	DR-4172-MT	Pondera
2014	SEVERE STORMS, STRAIGHT-LINE WINDS, AND FLOODING	DR-4198-MT	Blaine, Fort Belknap, Petroleum
2016	SEVERE WINTER STORM AND STRAIGHT-LINE WINDS	DR-4271-MT	Liberty, Toole, Glacier, Pondera, Teton
2017	LODGEPOLE FIRE COMPLEX	FM-5194-MT	Petroleum
2017	STRAWBERRY FIRE	FM-5212-MT	Blackfeet Reservation, Pondera, Teton
2018	FLOODING	DR-4388-MT	Pondera, Toole, Liberty, Hill, Blaine, Petroleum
2020	COVID-19	EM-3476-MT	Statewide
2020	COVID-19 PANDEMIC	DR-4508-MT	Statewide

Asset Inventory Update

- Parcel level analysis
  - Assessors' data, parcel centroids
  - General property
  - Residential, commercial, etc.
- People
- Critical facilities and infrastructure
  - Grouped by FEMA Lifeline categories

Hazard Rankings

Location/Spatial Extent

Extensive: 50-100% of planning area

Significant: 10-50% of planning area

Limited: Less than 10% of planning area

Potential Severity

Catastrophic: Multiple deaths, shutdown of facilities for 30 days or more, >50% of property is severely damaged

Critical: Multiple severe injuries, shutdown of facilities for at least 2 weeks, >25% of property is severely damaged

Moderate: Some injuries, shutdown of critical facilities for more than one week, >10% of property is severely damaged

Negligible: Minor injuries, minimal quality-of-life impact, interruption of facilities and services for 24 hours or less, less than 10% of property is severely damaged.

Frequency of Occurrence

Highly Likely: Near 100% probability each year.

Likely: Between 10 and 100% probability per year or at least one chance in ten years.

Occasional: Between 1 and 10% probability per year or at least one chance in next 100 years.

Unlikely: Less than 1% probability in next 100 years.

Significance (combination of Location/Severity/Frequency)

High: widespread potential impact

Medium: moderate potential impact

Low: minimal potential impact

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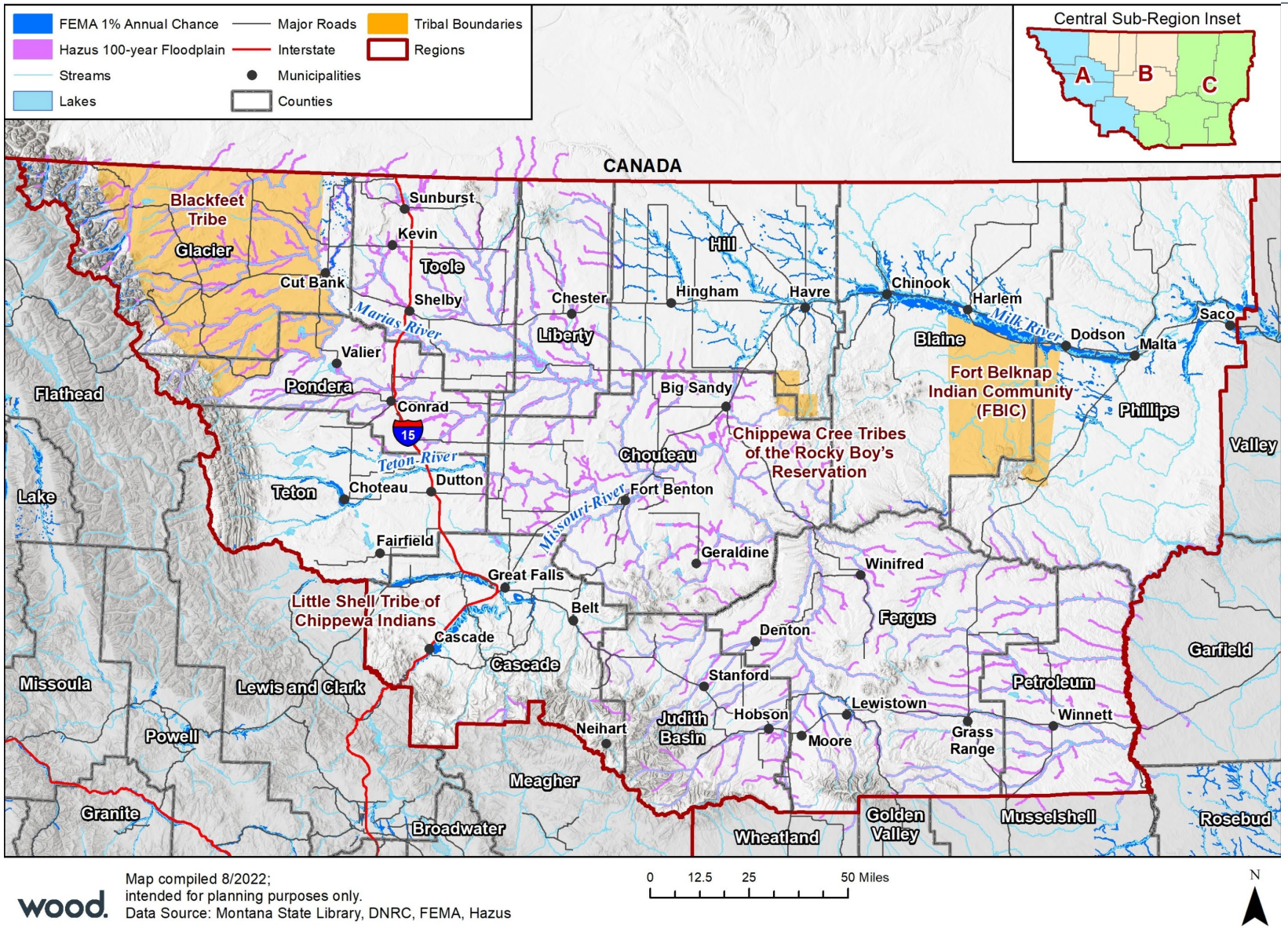
What jurisdiction do you represent?

ⓘ Start presenting to display the poll results on this slide.

Flooding – Montana Central Region Flood Hazards



Map compiled 8/2022;
intended for planning purposes only.
Data Source: Montana State Library, DNRC, FEMA, Hazus

- The Missouri River, along with its tributaries are Central Montana's primary flood hazards. Among the major tributaries are the Marias, Milk, Sun and Teton Rivers.
- Montana's Central Region averages 7 flooding events per year based on NCEI data.

Flood Sources

County	Flood Source
Blaine	NFHL
Cascade	NFHL
Chouteau	Hazus
Fergus	NFHL (partial), Hazus
Glacier	DNRC (partial), Hazus
Hill	DNRC
Judith Basin	Hazus
Liberty	Hazus
Petroleum	Hazus
Phillips	DNRC
Pondera	Hazus
Teton	DNRC
Toole	Hazus

- NFHL counties: **3***
- Digitized paper FIRM counties: **4***
- Hazus-based approximate flood hazard areas counties: **8***

***some counties are partial and Hazus was used to supplement to get complete coverage.**

Flooding – Past Occurrences

NCEI Reported Flood Events Montana Central Region (1996-2022)

County	# of Events	Property Damage	Crop Damage
Blaine	16	$30,000	-
Cascade	21	$330,000	-
Chouteau	8	$150,000	-
Fergus	12	$125,000	-
Glacier	11	-	-
Hill	6	$233,000	-
Judith Basin	6	$50,000	-
Liberty	1	-	-
Petroleum	21	$515,00	-
Phillips	48	$16,000	$10,000
Pondera	11	-	-
Teton	9	$250,000	-
Toole	5	$10,000	-
Average (per year)	**13**	**$45,538**	**$385**
Total	**183**	**$1,184,000**	**$10,000**

Source: NCEI Storm Events Database

Location: Flood risk is present within all Central Montana's counties along the Missouri River watershed and tributaries
Extent: Can be small (less than 10 acres) with minimal damage, or very large and destructive
Probability: **Likely** throughout the planning area
NFIP:

- According to the National Center of Environmental Information Montana's Central Region has seen 183 flood events between 1996 – 2022
  - Resulting in $1,184,000 in Property Damages and $10,000 crop damage that has been reported.
  - Phillips County has the highest number of recorded events with 49 total
- Montana's Central region has also seen 26 ice jam flood events within the study area.
  - 11 of which have occurred in Chouteau County.
- The Central Region can expect an average of 13 flood events per year that will cause on average $45,538 in property damage and $385 in crop damages.

Flooding – National Flood Insurance Program Policy Data

County	Date Joined	Effective Firm Date	Dollars Paid (Historical)	Flood Claims	Current Policies	Coverage ($)	Repetitive Loss Properties	Repetitive Loss Properties ($ Paid)
Blaine	2/7/1978	9/20/2006	$71,266	53	20	$2,745,200	1	$9,947.34
Cascade	4/15/1980	3/19/2013	$860,925	260	343	$78,188,200	19	$170,515.43
Chouteau	-	-	-	-	5	$1,470,000	-	-
Fergus	4/18/1978	7/22/2010	$243,625	26	31	$8,808,000	5	$135,777.54
Glacier	12/22/1977	1/1/1990	$32,243	8	5	$925,400	-	-
Hill	2/21/1978	6/3/1988	$55,508	17	13	$3,031,300	2	$23,227.41
Judith Basin	-	-	-	-	-	-	-	-
Liberty	-	8/2/1997	$7,075	4	7	$751,000	-	-
Petroleum	-	11/15/2019	-	-	-	-	-	-
Phillips	2/7/1978	5/19/1987	$173,304	50	13	$1,182,900	5	$27,673.46
Pondera	-	-	-	-	6	$4,430,900	-	-
Teton	11/22/1977	7/18/1983	$30,662.44	5	21		-	-
Toole	-	5/21/2009	$415.66	1	-	-	-	-
Total			**$4,758,879**	**424**	**464**	**$143,511,600**	**32**	**$367,141,18**

Source: FEMA Pivot NFIP Data as of August 10th, 2022; FEMA Community Status Book Report

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Flooding – Parcels at Risk to 1% Annual Flood Event

County	Improved Parcels	Improved Value	Content Value	Total Value	Estimated Loss	Population
Blaine	316	$27,223,932	$22,301,097	$49,525,029	$12,381,257	355
Cascade	1,421	$287,997,529	$157,578,850	$445,576,379	$111,394,095	2,960
Chouteau	258	$33,617,442	$20,634,719	$54,252,161	$13,563,040	492
Fergus	594	$72,319,943	$41,169,577	$113,489,520	$28,372,380	1,112
Glacier*	256	$28,213,293	$27,827,976	$56,041,269	$14,010,317	578
Hill	81	$14,098,176	$11,893,088	$25,991,264	$6,497,816	121
Judith Basin	32	$3,747,710	$2,989,425	$6,737,135	$1,684,284	26
Liberty	149	$13,417,517	$8,159,564	$21,577,081	$5,394,270	347
Petroleum	37	$4,671,830	$4,305,745	$8,977,575	$2,244,394	22
Phillips	270	$26,455,836	$19,845,968	$46,301,804	$11,575,451	305
Pondera	75	$10,442,869	$7,594,580	$18,037,449	$4,509,362	132
Teton	221	$29,908,381	$19,066,372	$48,974,753	$12,243,688	422
Toole	245	$24,458,143	$16,849,637	$41,307,780	$10,326,945	513
Total	**3,955**	**$576,572,601**	**$360,216,595**	**$936,789,196**	**$234,197,299**	**7,385**

* Majority of risk is on Blackfeet Tribe Reservation; minor risk to other tribes based on available data

- Cascade County has the highest amount of Estimated Loss Value with $111M
- Fergus County is a distant second in loss values with $28M
- Blaine, Chouteau, Glacier, Phillips, Teton and Toole all have potential for more than $10M in losses
- Overall Montana's Central Region has $937M in total value and a combined estimated loss of $234M for 1% annual chance flooding.
- There are 3,955 parcels located in the floodplain and 7,385 people at risk in Montana's Central Region

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Flooding Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Central Region	Limited	Likely	Limited	Medium
Blackfeet Tribe	Limited	Likely	Catastrophic	High
Blaine County	Limited	Likely	Limited	Medium
Cascade County	Limited	Likely	Catastrophic	High
Chouteau County	Limited	Likely	Limited	Medium
Fergus County	Limited	Likely	Catastrophic	High
Fort Belknap	Limited	Likely	Limited	Low
Glacier County	Limited	Likely	Limited	Medium
Hill County	Limited	Likely	Limited	Medium
Judith Basin County	Limited	Likely	Limited	Medium
Liberty County	Limited	Likely	Limited	Medium
Petroleum County	Limited	Likely	Limited	Low
Phillips County	Limited	Highly Likely	Limited	Medium
Pondera County	Limited	Likely	Limited	Low
Rocky Boys	Limited	Likely	Limited	Low
Teton County	Limited	Likely	Limited	Medium
Toole County	Limited	Likely	Limited	Medium

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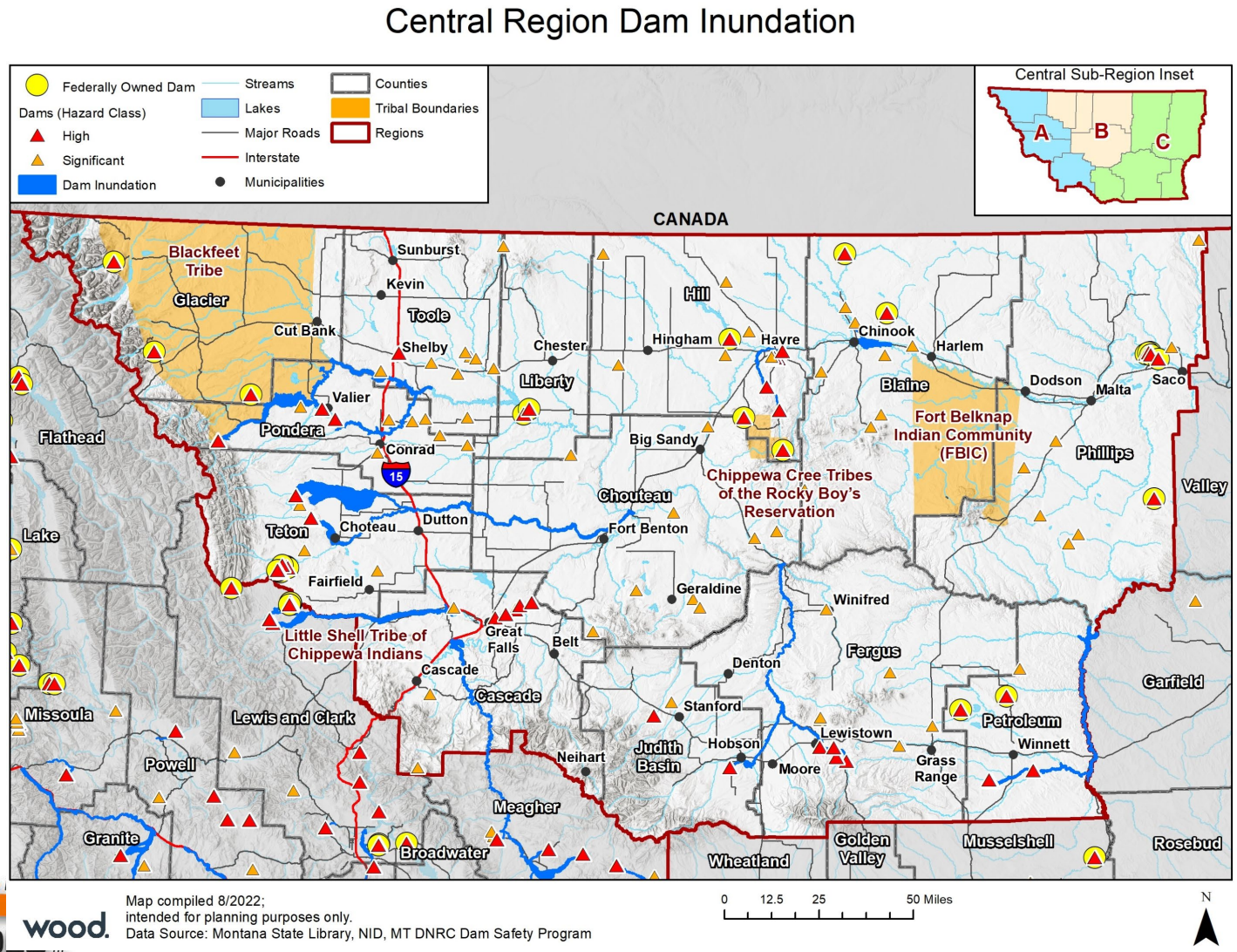
What do you think the significance of flooding is for your jurisdiction?

ⓘ Start presenting to display the poll results on this slide.

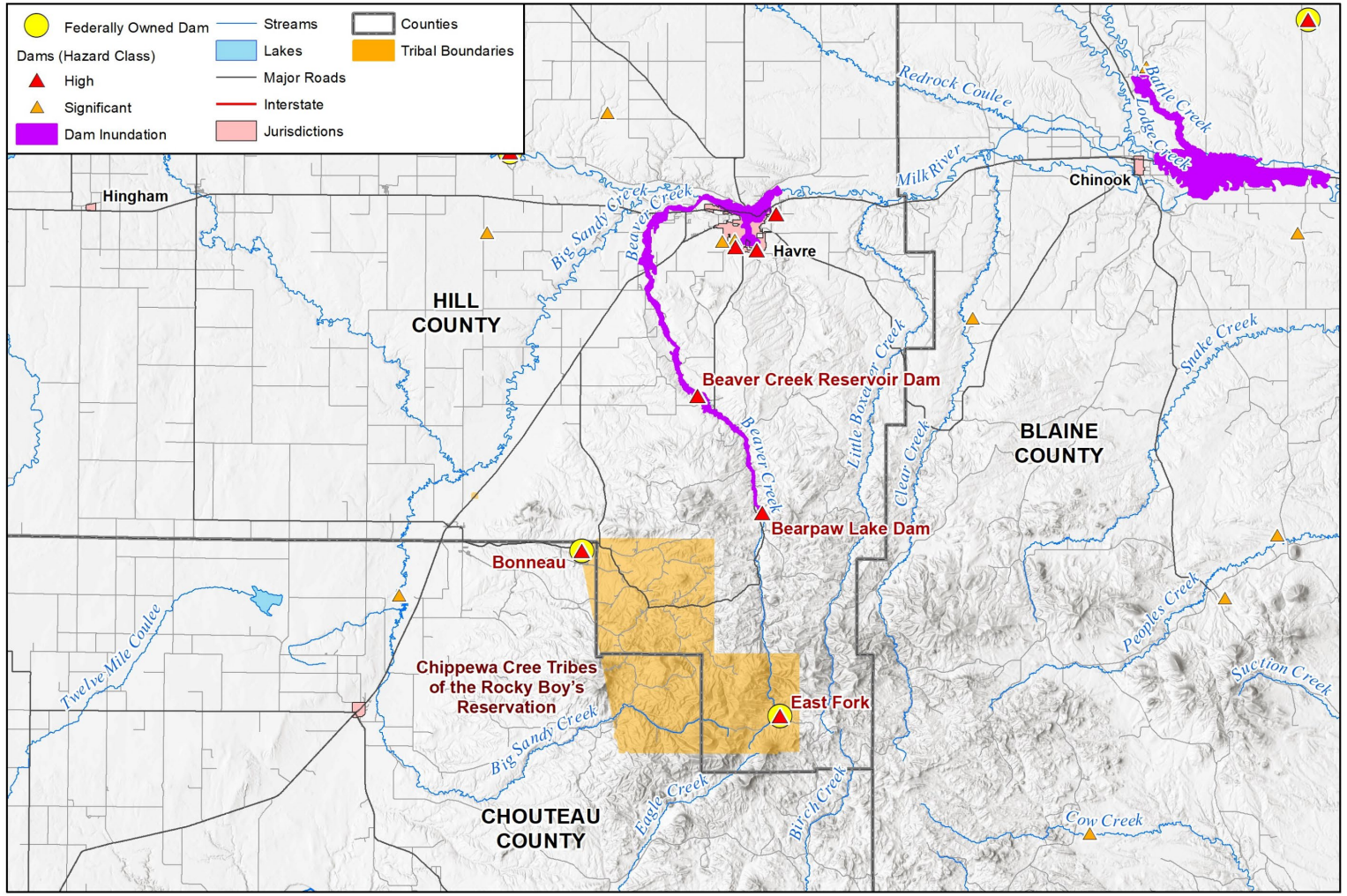
Dam Incidents



- Can be a complete failure, or an unexpected release causing rapid downstream flooding
- Dams classified as:
  - **High Hazard** – failure would likely cause loss of life downstream
  - **Significant Hazard** – failure could result in significant property damage
  - **Low Hazard** – failure would result only in minimal property damage
- According to NID, there are 962 dams throughout the Region
  - 55 High Hazard
  - 65 Significant Hazard
  - 100% of the high hazard dams have EAPs on file

Dam Incidents

Central Region Dam Inundation around Rocky Boy's Reservation



Map compiled 8/2022;
intended for planning purposes only.
Data Source: Montana State Library, NID, MT DNRC Dam Safety Program

Dam Incidents

- 2 past occurrences in the Region, both impacting the Blackfeet Indian Reservation, the Swift Dam and Two Medicine Dams in June of 1964
  - Led to 30 deaths downstream, 265 homes lost, 20,000 acres of hay land, and an estimated $626 million (2022 $) in damage

Central Region Parcels at Risk to Overall Dam Inundation by County

County	Improved Parcels	Improved Value	Content Value	Total Value	Population
Blaine	57	$5,213,584	$4,313,242	$42,688,846	80
Cascade	317	$44,286,131	$28,098,298	$201,488,858	552
Chouteau	94	$6,786,247	$4,865,289	$208,750,075	175
Fergus	1,037	$134,742,186	$72,047,498	$846,650,132	2,117
Glacier	3	$312,030	$312,030	$3,945,200	0
Hill	1,889	$300,713,007	$168,373,317	$1,874,880,516	4,498
Judith Basin	4	$914,070	$765,110	$9,159,880	4
Liberty	-	-	-	-	-
Petroleum	11	$2,862,110	$2,776,045	$12,550,505	7
Phillips	-	-	-	-	-
Pondera	41	$4,585,162	$3,763,531	$63,370,052	47
Teton	1,019	$133,050,780	$80,497,647	$861,563,942	2,121
Toole	464	$60,990,324	$41,462,571	$269,022,489	994
	4,936	**$694,455,631**	**$407,274,577**	**$4,394,070,494**	**10,594**

Dam Incident Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet Nation	Negligible	Occasional	Critical	Medium
Blaine	Limited	Unlikely	Limited	Medium
Cascade	Limited	Unlikely	Limited	Medium
Rocky Boy	Negligible	Unlikely	Negligible	Medium
Chouteau	Significant	Unlikely	Limited	Medium
Fergus	Limited	Unlikely	Critical	Medium
Fort Belknap	Negligible	Unlikely	Negligible	Medium
Glacier	Negligible	Unlikely	Negligible	Medium
Hill	Limited	Unlikely	Critical	Medium
Judith Basin	Limited	Unlikely	Limited	Medium
Liberty	Negligible	Unlikely	Limited	Medium
Petroleum	Limited	Unlikely	Limited	Medium
Phillips	Negligible	Unlikely	Limited	Medium
Pondera	Significant	Unlikely	Limited	Medium
Teton	Significant	Unlikely	Critical	Medium
Toole	Limited	Unlikely	Limited	Medium

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What do you think the significance of dam failure is for your jurisdiction?

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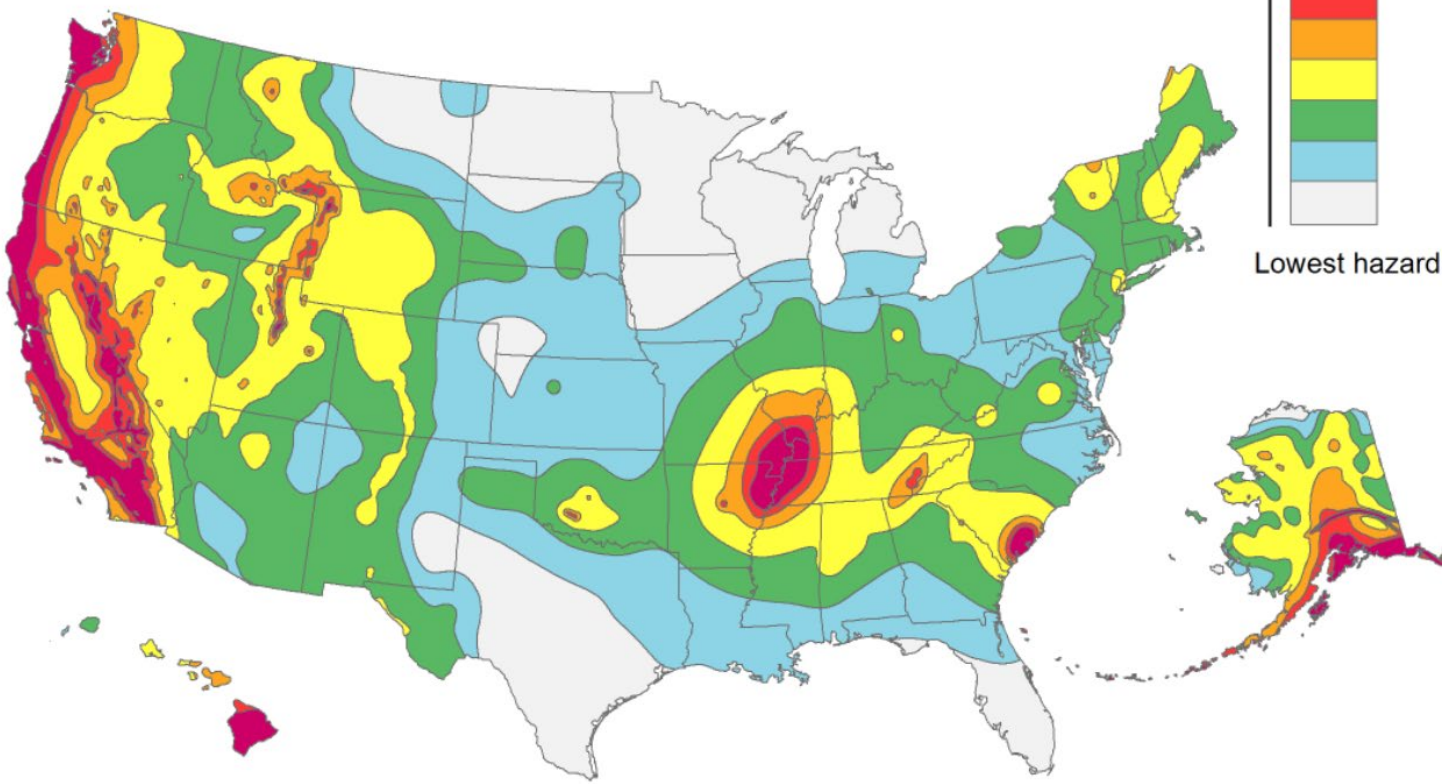
Earthquake

Long Term Probabilistic
Seismic Hazard Map 2018

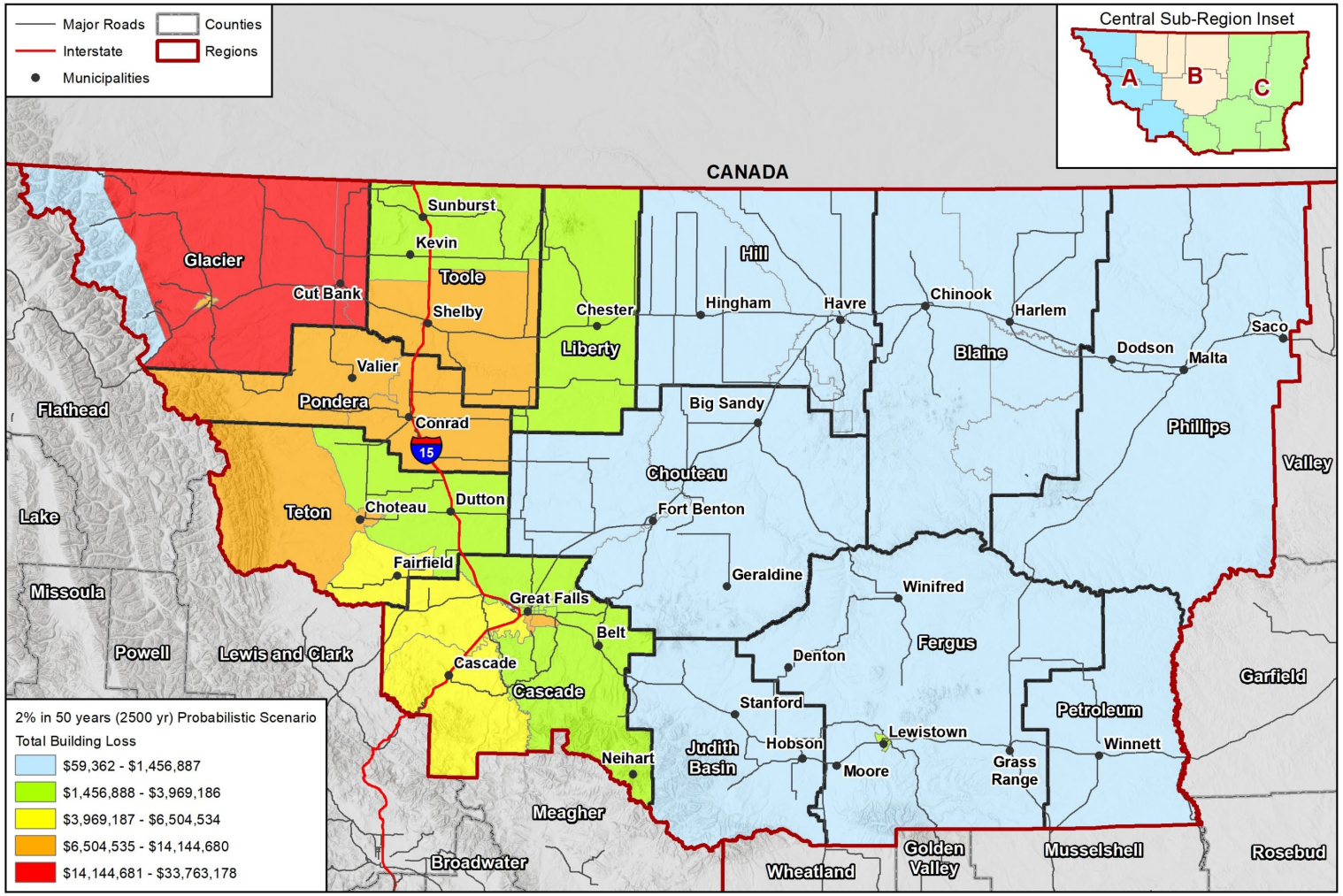


- Montana is one of the most seismically active states in the U.S according to USGS
- Much of this activity has been concentrated in the Intermountain Seismic Belt in the western third of the state
- Largest known event in the state was the M7.2 Hebgen Lake event in 1959
- Likelihood of occurrence is occasional (>1% probability in a given year) but impacts could be significant

Earthquake

- Hazus 2,500-year M5.0 Probabilistic Scenario conducted
- Model uses USGS probabilistic seismic hazard maps to model ground shaking with a 2 percent probability of being exceeded in 50 years
- Region Totals:
  - 56 injuries, 2 fatalities
  - $1.42 billion in total economic losses
  - 8,502 buildings at least slightly damaged, 323 of them extensively damaged and 18 destroyed
  - 81 displaced households
  - 52,000 tons of debris generated
- Several related/cascading hazards: Landslide, Rockfall, Liquefaction, Fire

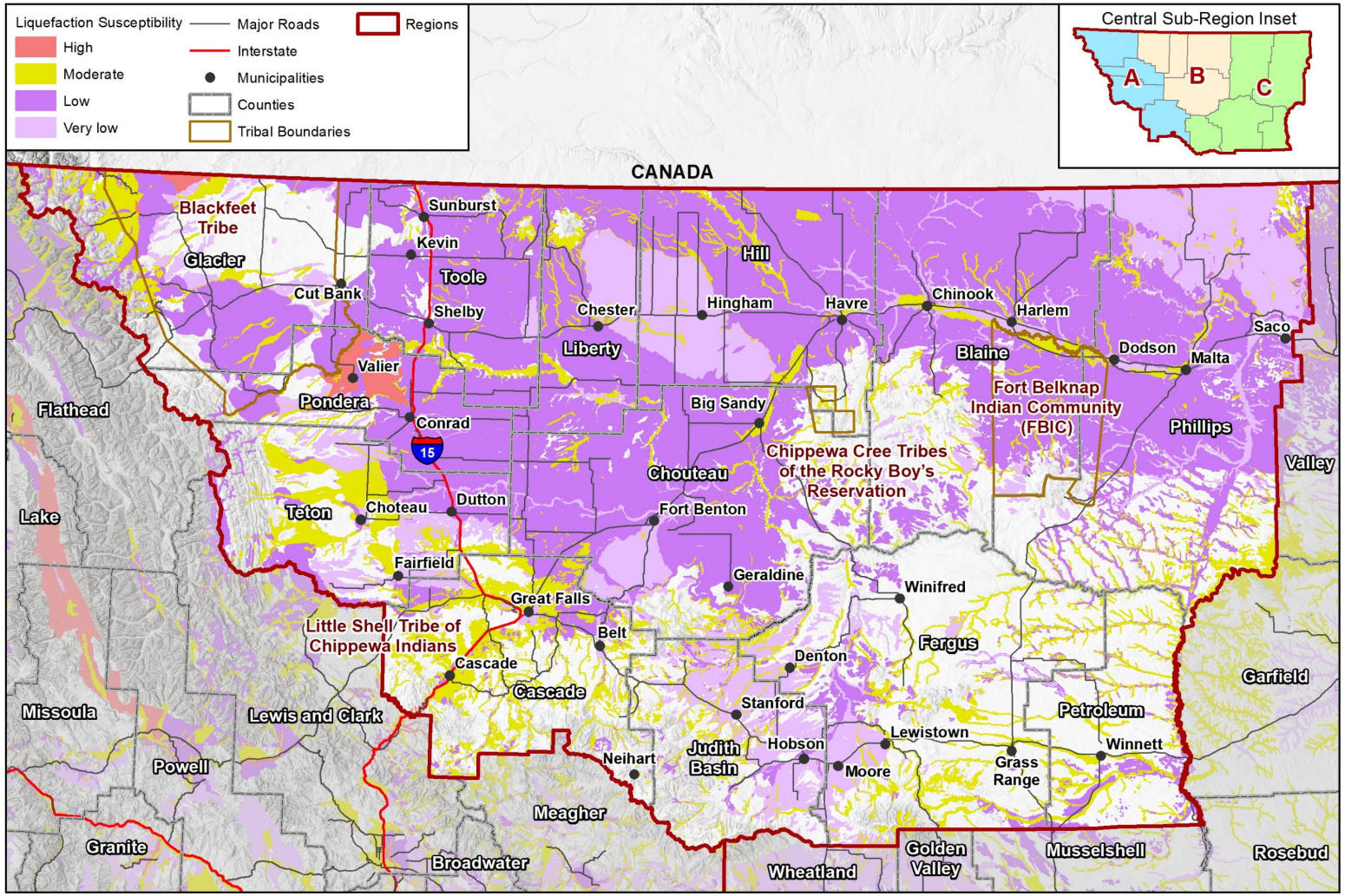
Central Region Hazus 2% in 50 years (2500 yr) as the Probabilistic Scenario
Direct Economic Loss



Map compiled 8/2022;
intended for planning purposes only.
Data Source: Montana State Library, Hazus 5.1

Earthquake

Central Region Liquefaction Susceptibility



Map compiled 8/2022;
intended for planning purposes only.
Data Source: DEM source data from the Montana State Library - Liquefaction susceptibility source data modified from Li, Y., Stickney, M., Sadeghi, M., Yakovlev, P., and Thale, P., 2021, Liquefaction susceptibility in Montana: Montana Bureau of Mines and Geology Digital Publication 4

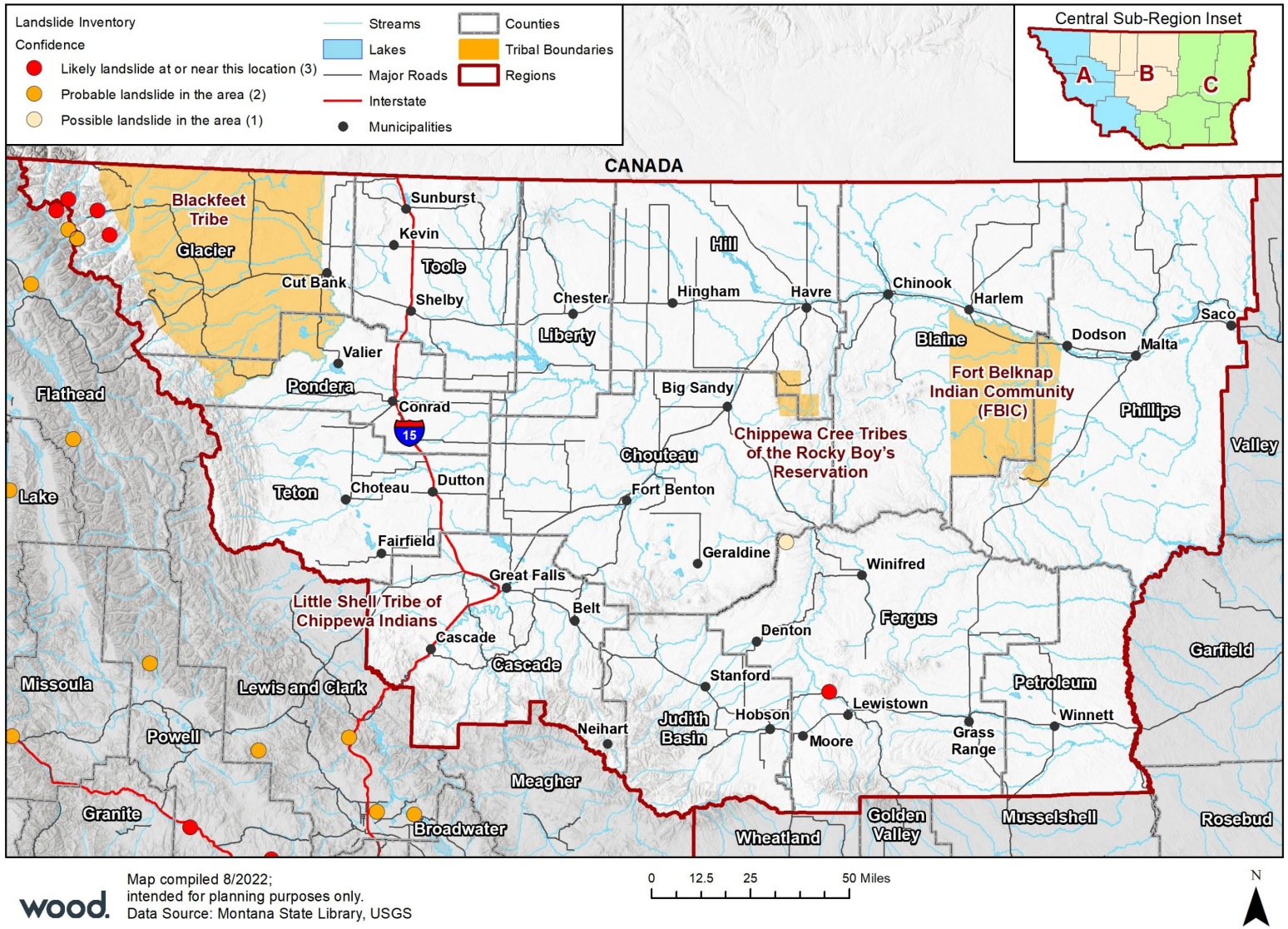
Earthquake Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet Nation	Significant	Occasional	Limited	Low
Blaine	Significant	Unlikely	Negligible	Low
Cascade	Significant	Occasional	Limited	Low
Rocky Boy	Significant	Unlikely	Negligible	Low
Chouteau	Significant	Unlikely	Negligible	Low
Fergus	Significant	Unlikely	Negligible	Low
Fort Belknap	Significant	Unlikely	Negligible	Low
Glacier	Significant	Occasional	Limited	Low
Hill	Significant	Unlikely	Negligible	Low
Judith Basin	Significant	Occasional	Negligible	Low
Liberty	Significant	Unlikely	Negligible	Low
Petroleum	Significant	Unlikely	Negligible	Low
Phillips	Significant	Unlikely	Negligible	Low
Pondera	Significant	Occasional	Limited	Low
Teton	Significant	Occasional	Limited	Low
Toole	Significant	Unlikely	Limited	Low

slido

What do you think the significance of earthquake is for your jurisdiction?

Landslide/Rockfall/Debris Flow



Map compiled 8/2022;
intended for planning purposes only.
Data Source: Montana State Library, USGS

Location: Glacier and Fergus Counties have the highest risk of Landslide. 6 are located in Glacier County, 4 of which are Red/Likely areas and run adjacent to the Blackfeet Tribe Reservation. One likely area is within Fergus County near Lewistown.

Extent: Can be massive or disturb only a few cubic feet

Probability: Highly Likely in Glacier and Likely in Fergus county and low in the other jurisdictions of the Central Region

Impacts:

- Structural Damage
- Road Closure
- Power and Communication Failure
- Damage to Rivers and Streams, reduced water quality
- Erosion and Deposition
- Flooding

Landslide Risk Summary

slido

What do you think the significance of landslide is for your jurisdiction?

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Central Region	Limited	Unlikely	Negligible	Low
Blackfeet Tribe	Limited	Unlikely	Negligible	Low
Blaine County	Limited	Unlikely	Negligible	Low
Cascade County	Limited	Unlikely	Negligible	Low
Chouteau County	Limited	Unlikely	Negligible	Low
Fergus County	Limited	Likely	Limited	Low
Fort Belknap	Limited	Unlikely	Negligible	Low
Glacier County	Limited	Likely	Limited	Medium
Hill County	Limited	Unlikely	Negligible	Low
Judith Basin County	Limited	Unlikely	Negligible	Low
Liberty County	Limited	Unlikely	Negligible	Low
Petroleum County	Limited	Unlikely	Negligible	Low
Phillips County	Limited	Unlikely	Negligible	Low
Pondera County	Limited	Unlikely	Negligible	Low
Rocky Boy	Limited	Unlikely	Negligible	Low
Teton County	Limited	Unlikely	Negligible	Low
Toole County	Limited	Unlikely	Negligible	Low

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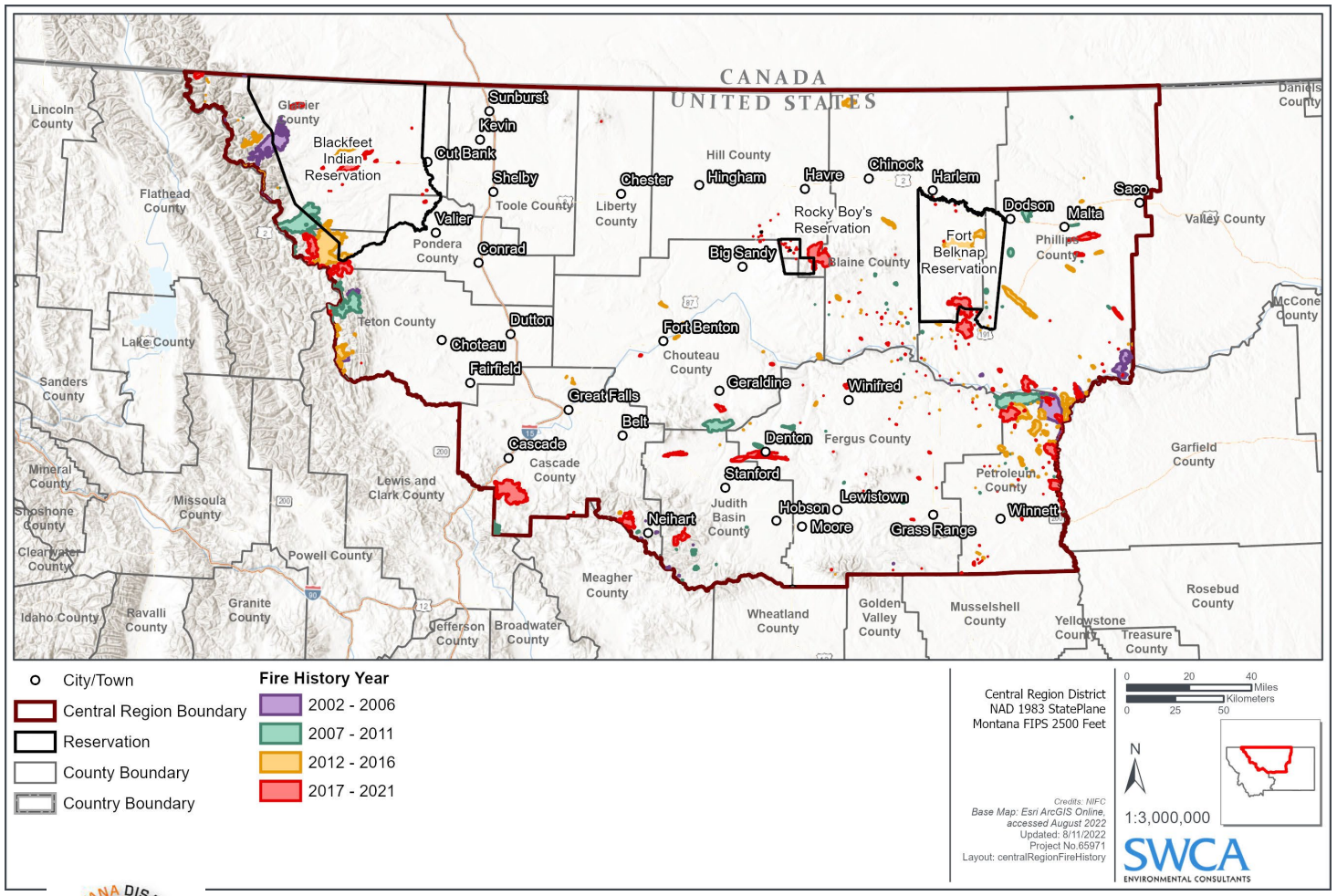
Wildland and Rangeland Fire



Location: Can occur anywhere in the Central in wildland and rangelands.

Extent: Can be small (less than 10 acres) with minimal damage, or very large and destructive (Lodgepole Complex in 2017 burned 270,000 acres)

Probability: Highly Likely throughout the planning area, 435 reported fires (of all size) from 2002-2021 in the Central Region

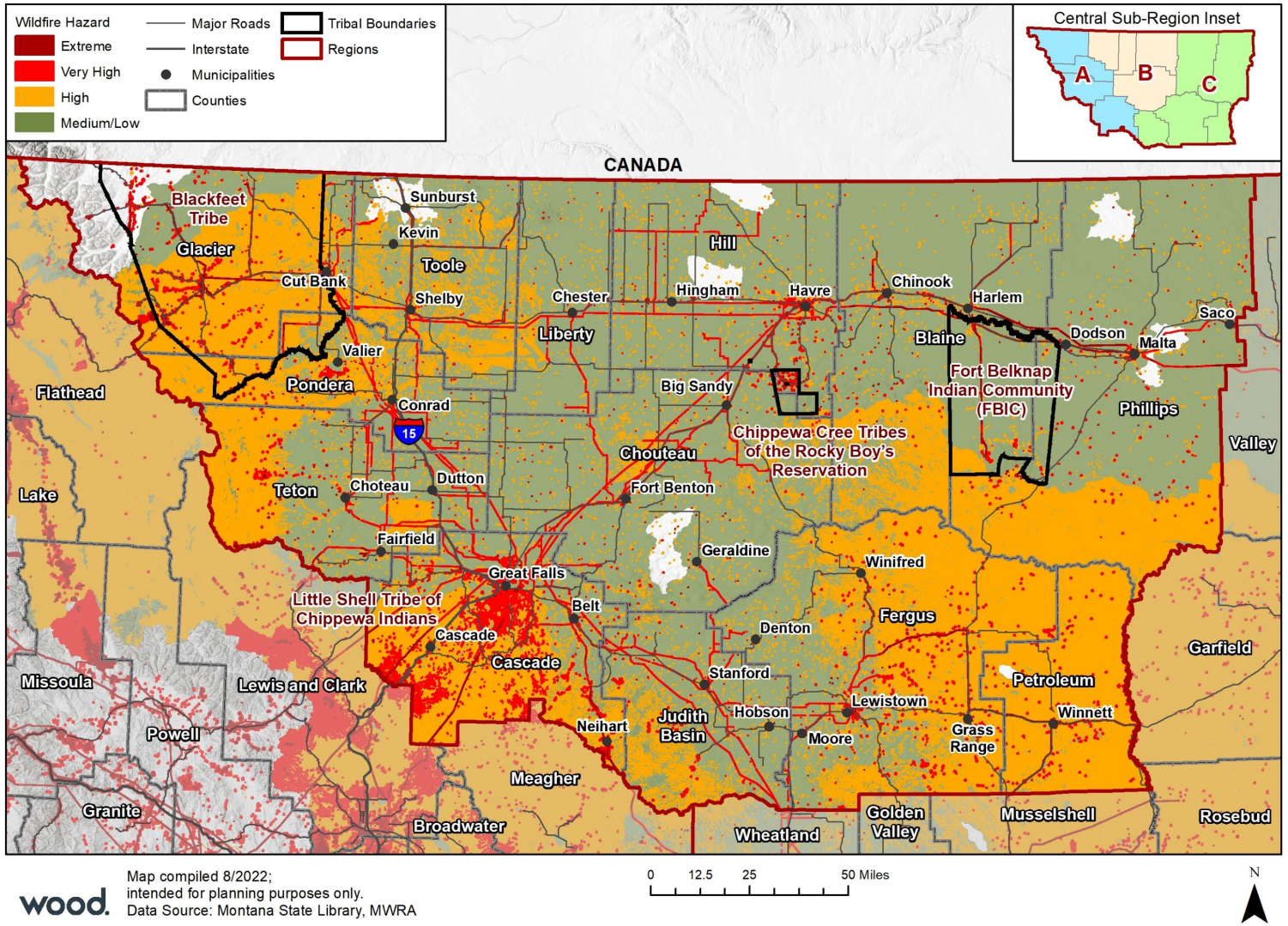
Impacts:

- Health and safety of people
- Large scale structural damage
- Road closures
- Power and communication failure
- Damage to rivers and streams, reduced water quality from ash and debris
- Erosion that can lead to increased flooding
- Significant economic damages from repairs and business interruption
- Loss of biodiversity

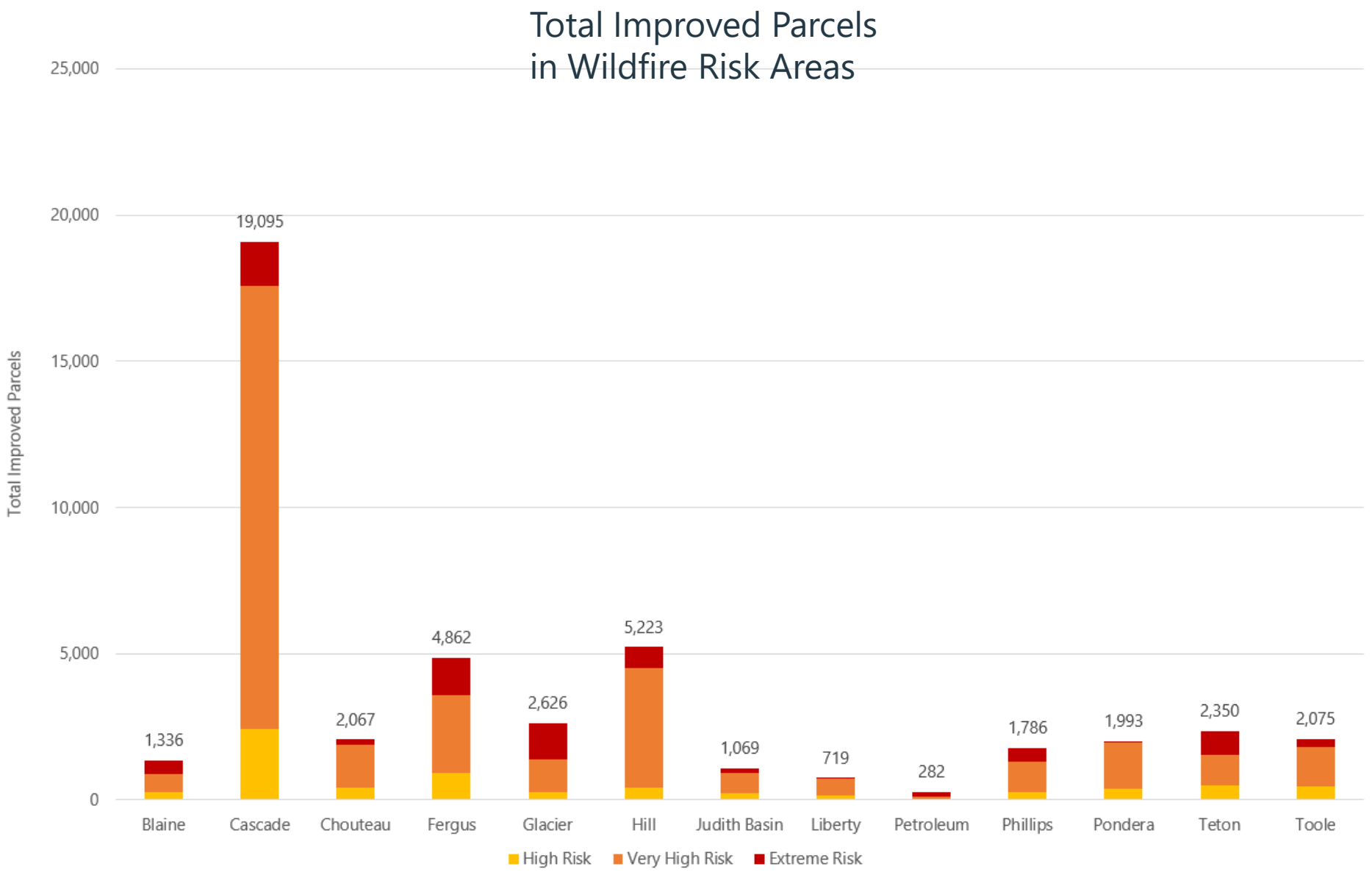
Wildland and Rangeland Fire Risk Assessment

- Maps with latest Montana Wildfire Risk Assessment (MWRA) Wildfire Risk (Hazard + Values)
- Utilizes
  - likelihood of fire burning
  - the intensity of a potential fire
  - the exposure of assets and resources based on their location
  - the susceptibility of those assets and resources
- Updated with wildfire incidents
- Warmer temperatures, drier summers, and longer fire seasons are exacerbating the wildfire risk.
- Invasive species, forest pathogens, and fire suppression have exacerbated hazardous fuel conditions in forests and rangelands

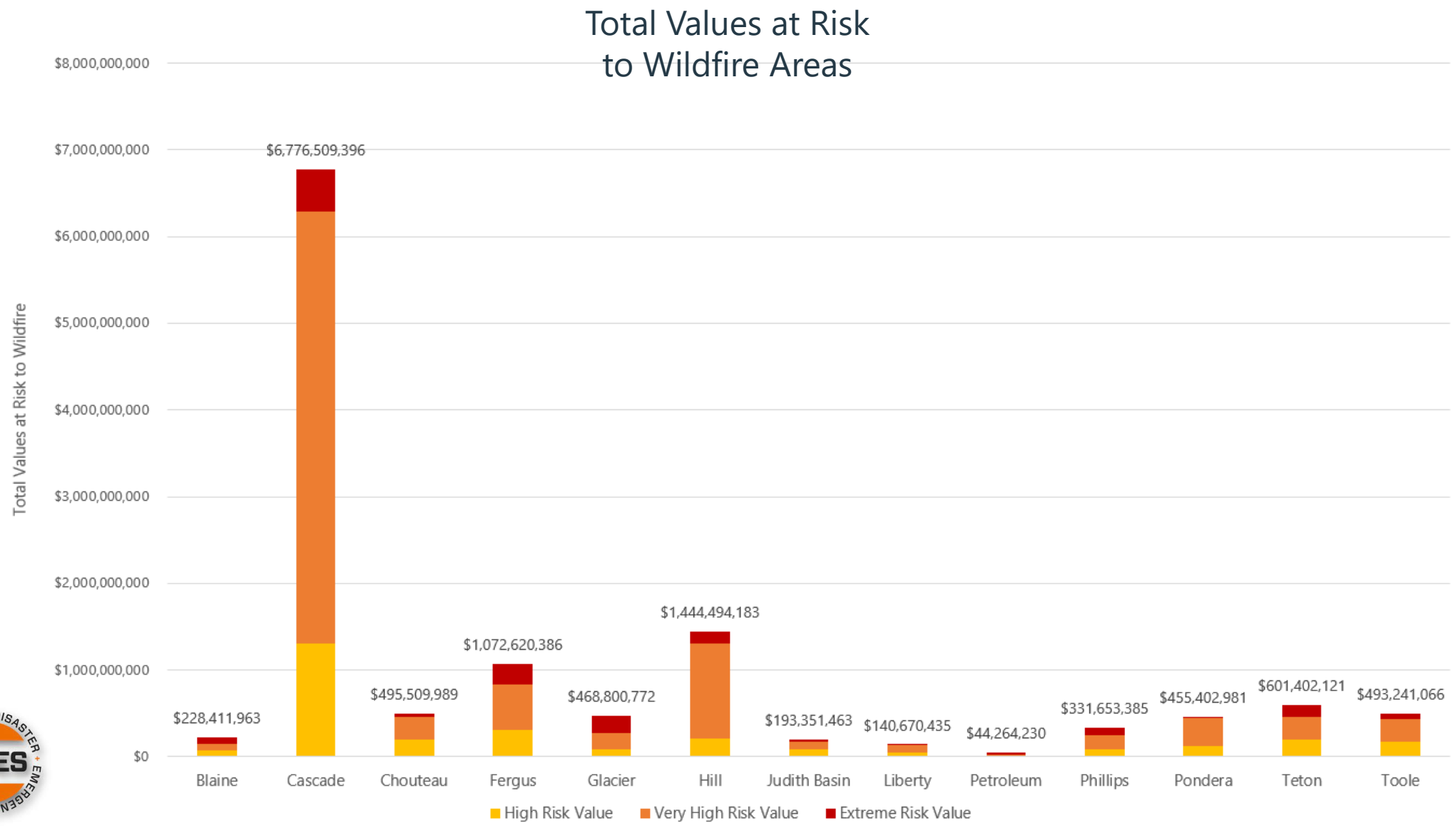
Central Region Wildfire Hazard



Wildland and Rangeland Fire – County Parcel Analysis

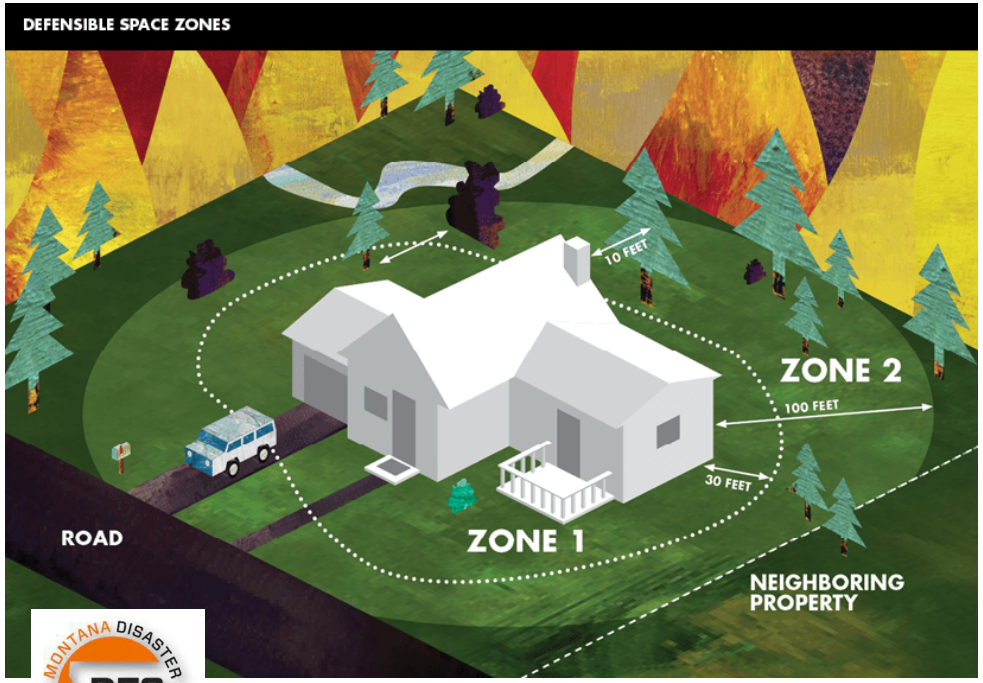


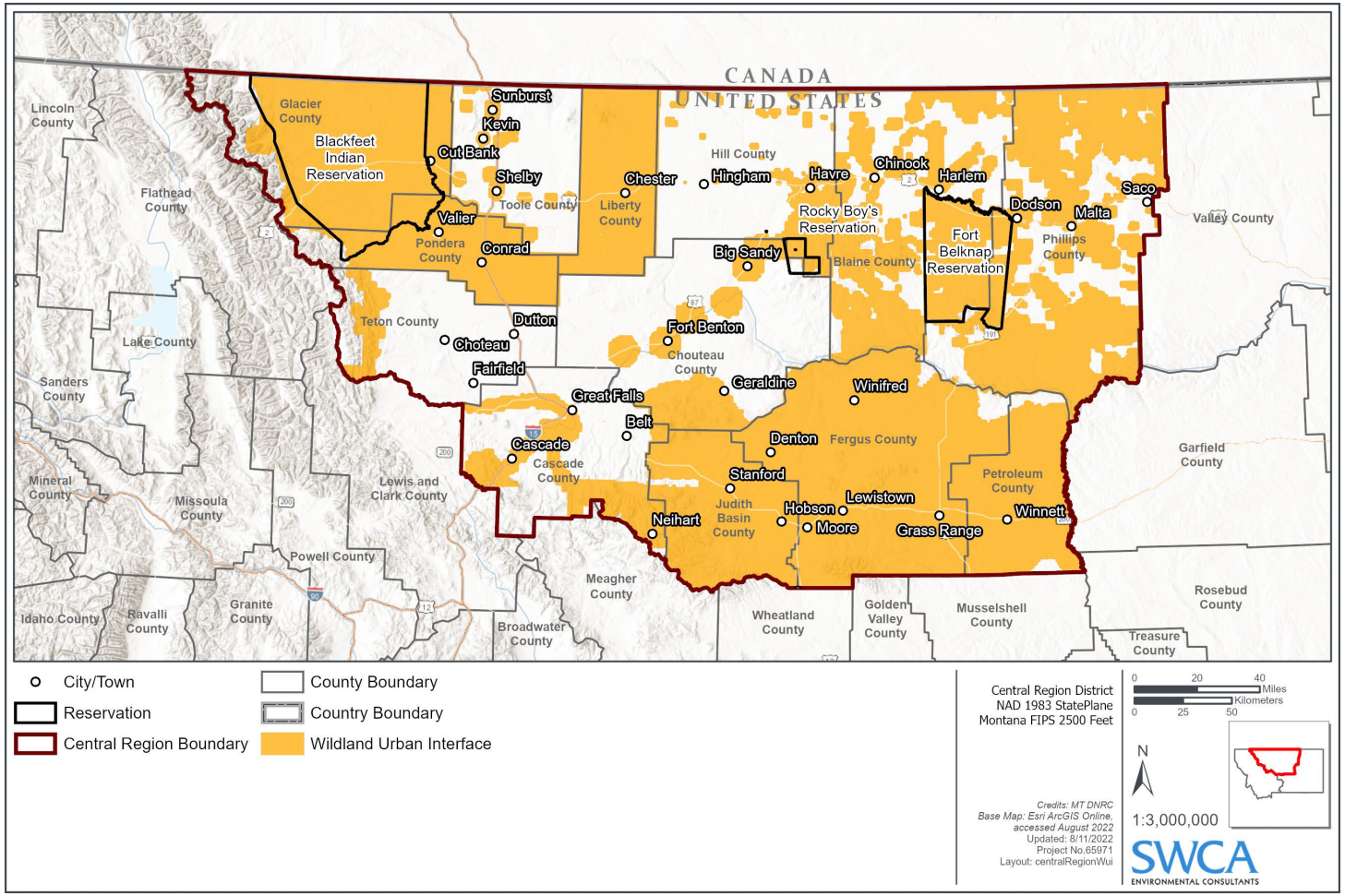
Wildland and Rangeland Fire – County Parcel Analysis



Wildland Fire – Wildland Urban Interface (WUI)

- Zone of transition between wildland and developed land
- Greatest risk in the municipalities of Great Falls, Lewistown, Browning, Shelby, Havre, Rocky Boy's Reservation, East Glacier Park Village, Winnett, and the exurban areas near Lewistown





wood.

Wildfire Risk Summary

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet Tribe	Significant	Highly likely	Critical	High
Blaine County	Limited	Likely	Critical	High
Cascade County	Significant	Likely	Critical	High
Chouteau County	Limited	Likely	Limited	Medium
Fergus County	Significant	Highly likely	Limited	Medium
Fort Belknap	Limited	Likely	Critical	High
Glacier County	Significant	Highly likely	Critical	High
Hill County	Limited	Likely	Limited	Medium
Judith Basin County	Limited	Likely	Limited	Medium
Liberty County	Limited	Likely	Limited	Medium
Petroleum County	Significant	Highly likely	Critical	High
Phillips County	Limited	Highly likely	Limited	Medium
Pondera County	Limited	Highly likely	Limited	Medium
Rocky Boy	Limited	Highly likely	Limited	Medium
Teton County	Limited	Highly likely	Limited	Medium
Toole County	Limited	Unlikely	Limited	Medium

slido

What do you think the significance of wildland and rangeland fire is for your jurisdiction?

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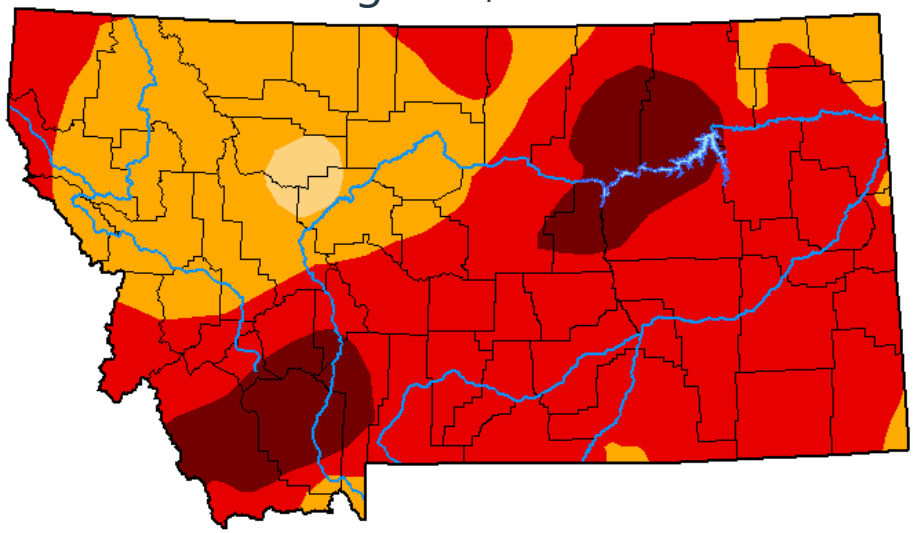
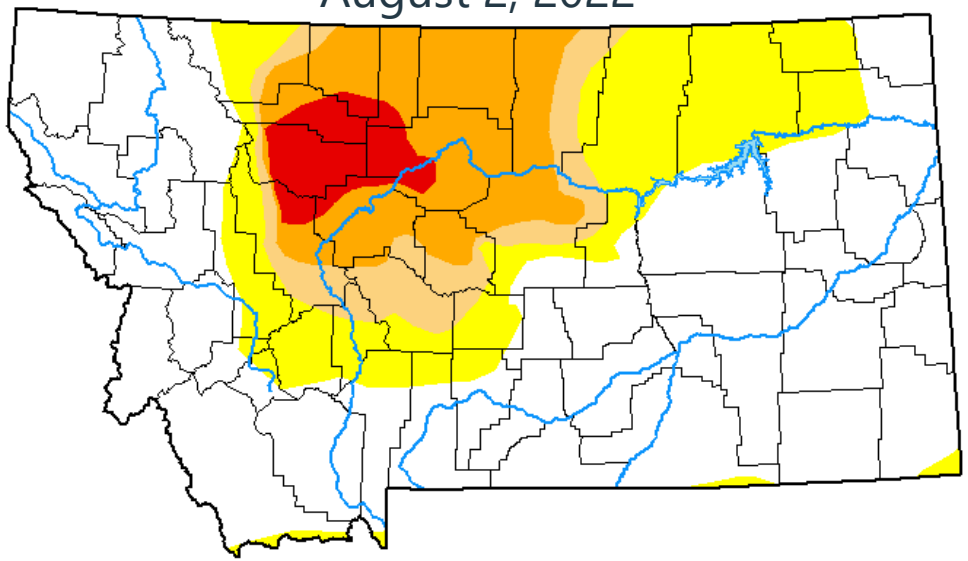
Drought

August 3, 2021



August 2, 2022



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

Curtis Riganti
National Drought Mitigation Center

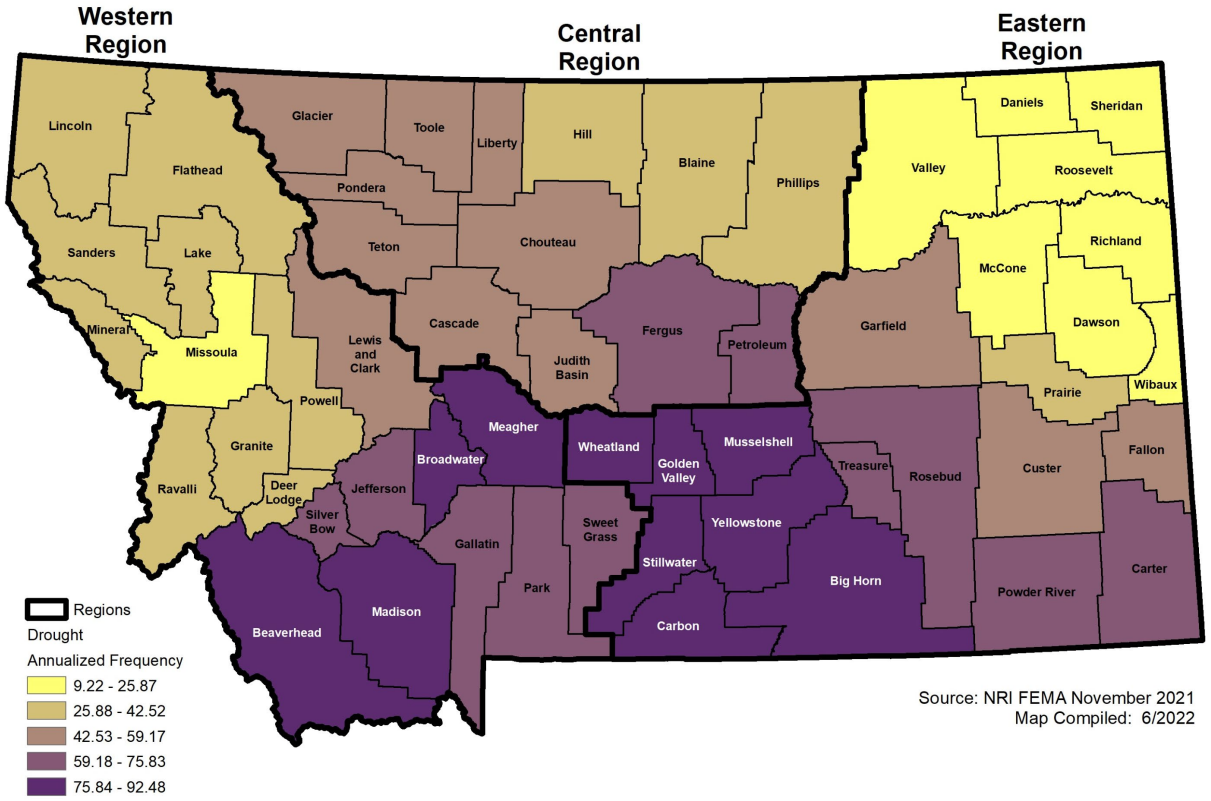
droughtmonitor.unl.edu

- 139 USDA Disaster Designations (2012-2021) regionwide
  - Greatest number of designations in 2021 (51) and 2017 (47)
- USDA RMA records 5,176,232 insured acres lost and $319,751,544 indemnity payments
  - 41% of losses recorded in 2021
  - 13% losses to forage production
- Drought Impact Reporter notes most impacts since 2000:
  - Agriculture
  - Relief, Response & Restrictions
  - Water Supply & Quality
  - Plants & Wildlife
  - Fire
  - Tourism & Recreation

wood.

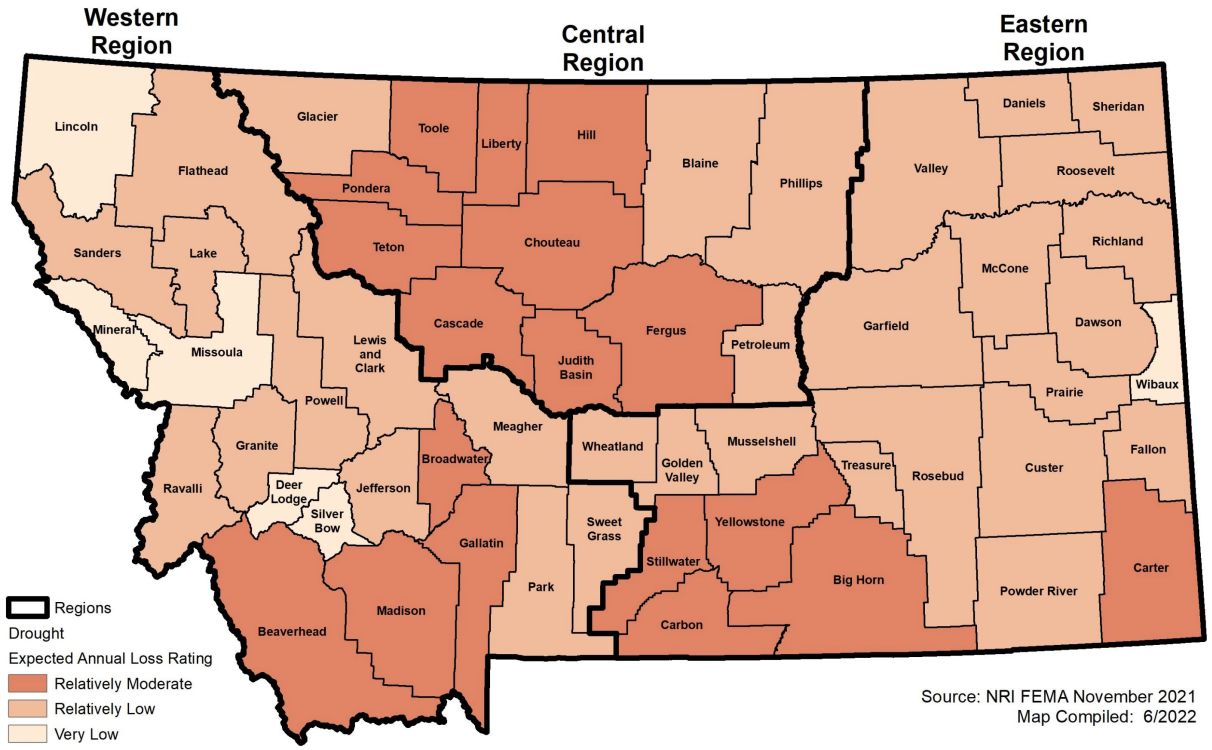
Drought

National Risk Index – Annualized Frequency



Source: NRI FEMA November 2021
Map Compiled: 6/2022

National Risk Index – Expected Annual Loss Rating



Source: NRI FEMA November 2021
Map Compiled: 6/2022

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Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Regionwide	Extensive	Likely	Critical	Medium

What do you think the significance of drought is for your jurisdiction?

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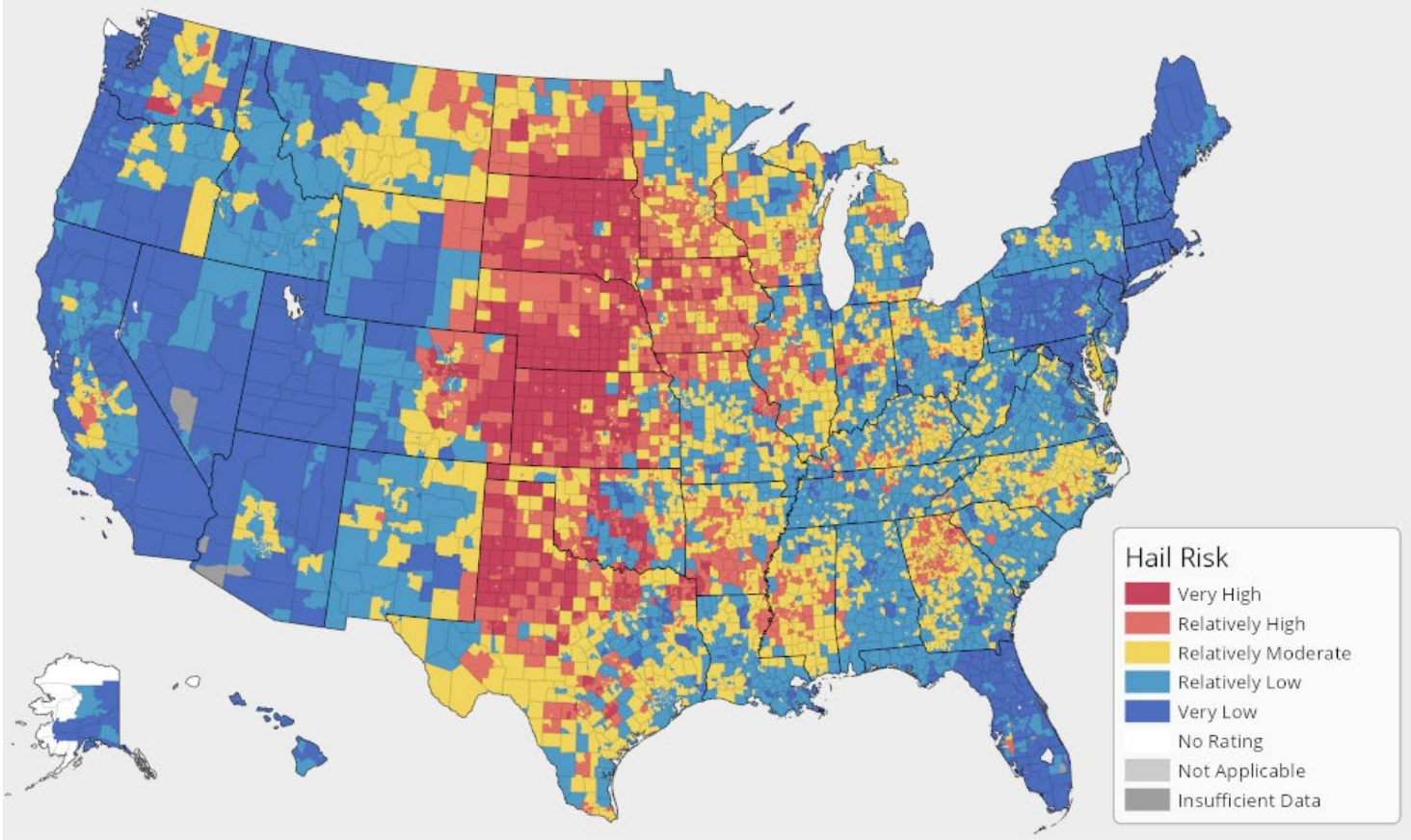
Severe Summer Weather



Source: FEMA

	Deaths	Injuries	Property Loss	Crop Loss	Days with Events	Total Events
Excessive Heat	0	0	$0	$0	3	8
Hail	0	2	$2,565,600	$2,287,000	561	1,598
Heavy Rain	0	0	$0	$0	58	113
Lightning	1	5	$20,000	$0	7	7
Total	**1**	**7**	**$2,585,600**	**$2,287,000**	**629**	**1,726**

Source: NCEI

Location: All counties in the Central Region experience severe summer weather events

Extent: Can cause extensive damage to property and environment, as well as threaten human life. Hail is the most damaging summer event.

Probability: Highly likely in the Central Region, with 629 days with a reported event over 72 years. Hail is most reported event.

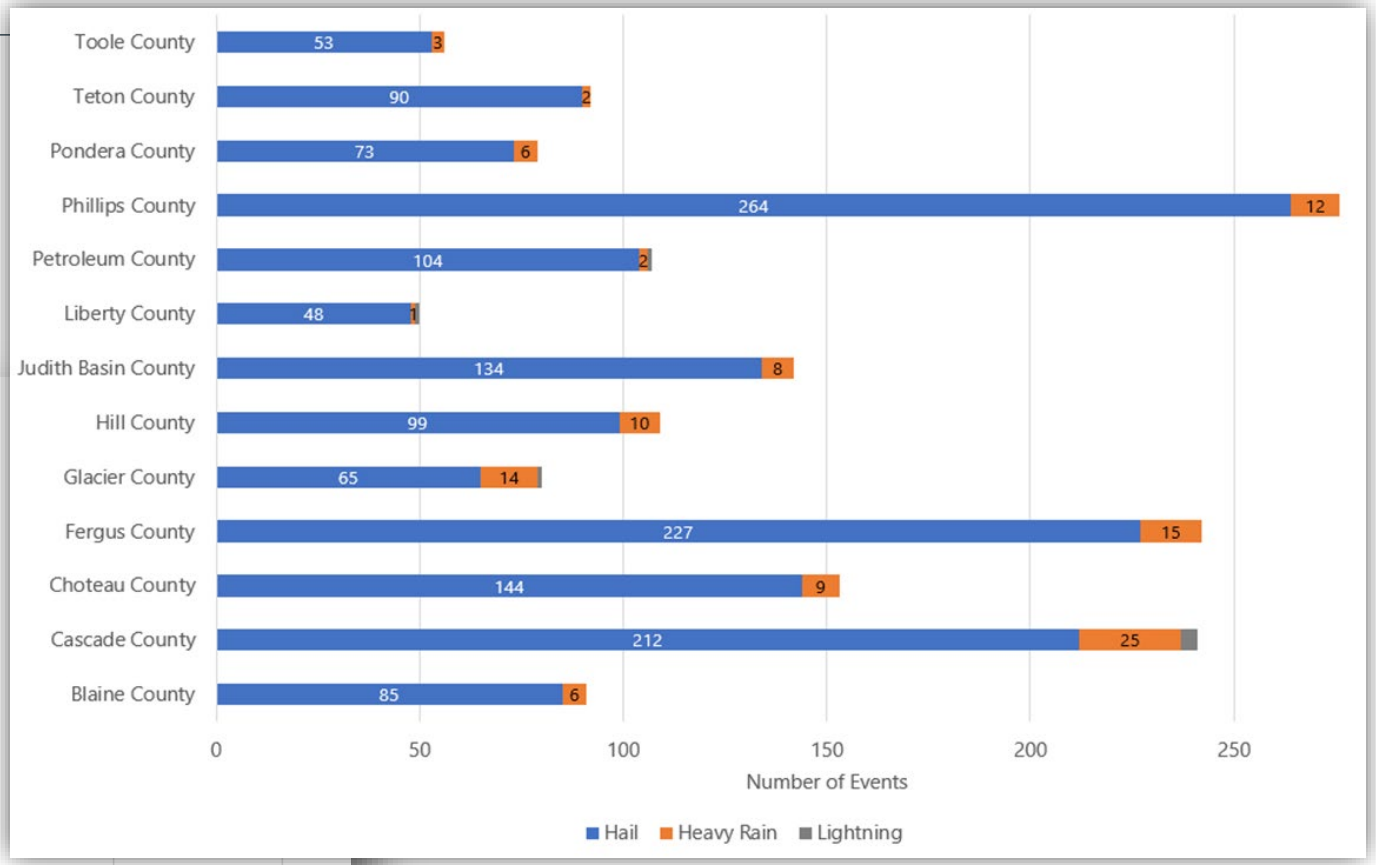
Impacts:

- Injury to people and fatalities
- Property damage (roofs, cars, and windows)
- Road closure and flash flooding due to hail accumulation and heavy rain
- Power and communication failure due to lightning
- Economic losses due to repairs - hail is the costliest insured hazard in the US
- Damaged crops, landscape, and other vegetation
- Structure fires and wildfires ignited by lightning

wood.

Severe Summer Weather

Phillips, Fergus, and Cascade Counties experience the highest frequency of summer weather events



Blaine, Fergus, and Pondera Counties have experienced the greatest losses from severe summer weather

wood.

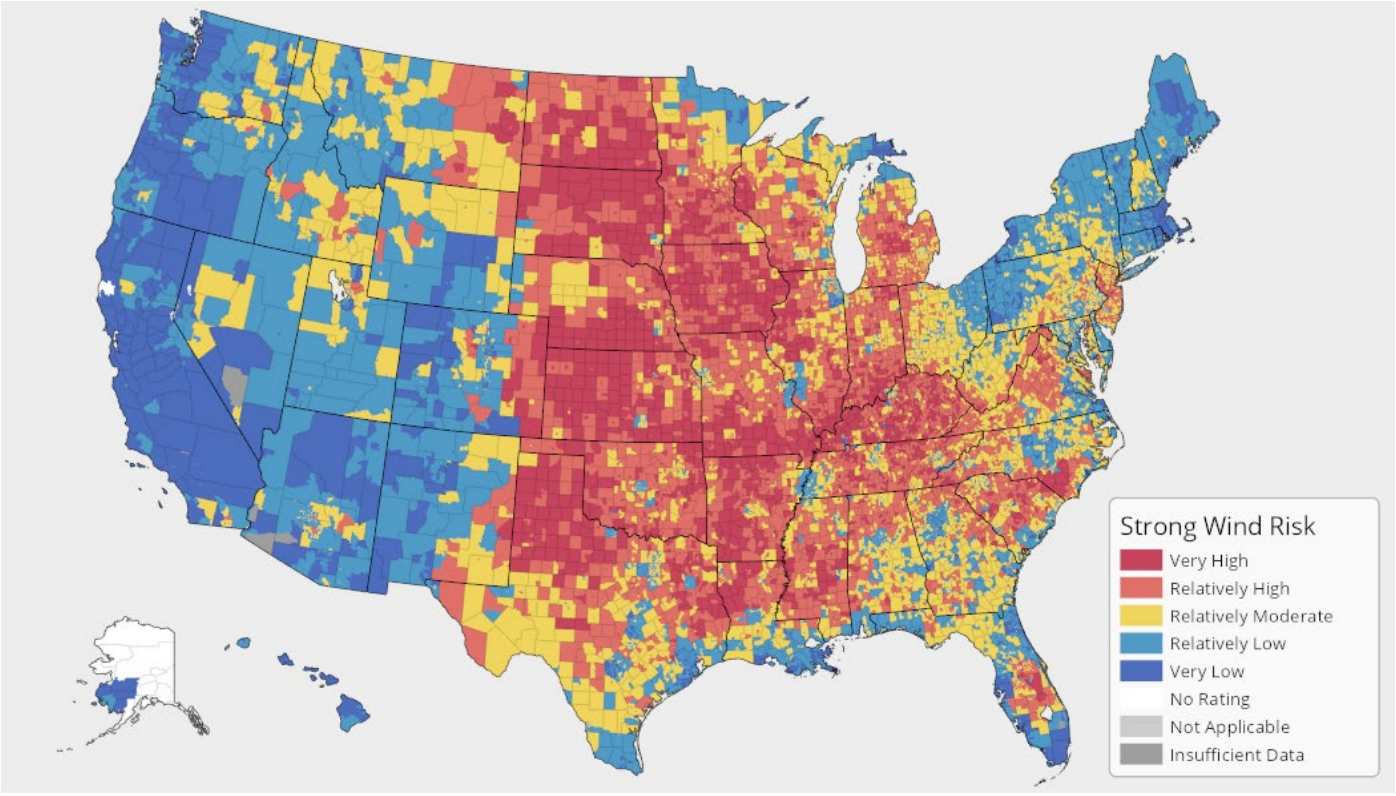
Severe Summer Weather Risk Summary

What do you think the significance of severe summer weather is for your jurisdiction?

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Extensive	Likely	Limited	**Medium**
Blaine	Extensive	Likely	Critical	**High**
Cascade	Extensive	Highly Likely	Limited	**Medium**
Rocky Boy	Extensive	Highly Likely	Limited	**Medium**
Chouteau	Extensive	Highly Likely	Limited	**Medium**
Fergus	Extensive	Highly Likely	Critical	**High**
Fort Belknap	Extensive	Likely	Critical	**High**
Glacier	Extensive	Likely	Limited	**Medium**
Hill	Extensive	Likely	Limited	**Medium**
Judith Basin	Extensive	Likely	Limited	**Medium**
Liberty	Extensive	Likely	Limited	**Medium**
Petroleum	Extensive	Likely	Limited	**Medium**
Phillips	Extensive	Highly Likely	Limited	**Medium**
Pondera	Extensive	Likely	Critical	**High**
Teton	Extensive	Likely	Limited	**Medium**
Toole	Extensive	Likely	Limited	**Medium**

ⓘ Start presenting to display the poll results on this slide.

Tornadoes & Windstorms



Source: FEMA

	Deaths	Injuries	Property Loss	Crop Loss	Days with Events	Total Events
High Wind	2	10	$1,526,000	$0	853	2,838
Strong Wind	0	0	$20,000	$0	5	12
Thunderstorm Wind	0	2	$12,364,700	$1,555,000	467	1,286
Tornadoes	0	11	$10,969,810	$50,000	87	119
Total	**2**	**23**	**$24,880,510**	**$1,605,000**	**1,412**	**4,255**

Source: NCEI

Location: Can occur anywhere in the Central Region. Most reported events in Cascade and Phillips Counties

Extent: Wind/tornadoes can cause extensive damage to property, crops, and threaten human life

Probability: Highly likely that a wind event or tornado event will occur in the Central Region annually, with 1,412 days with recorded events in the past 72 years

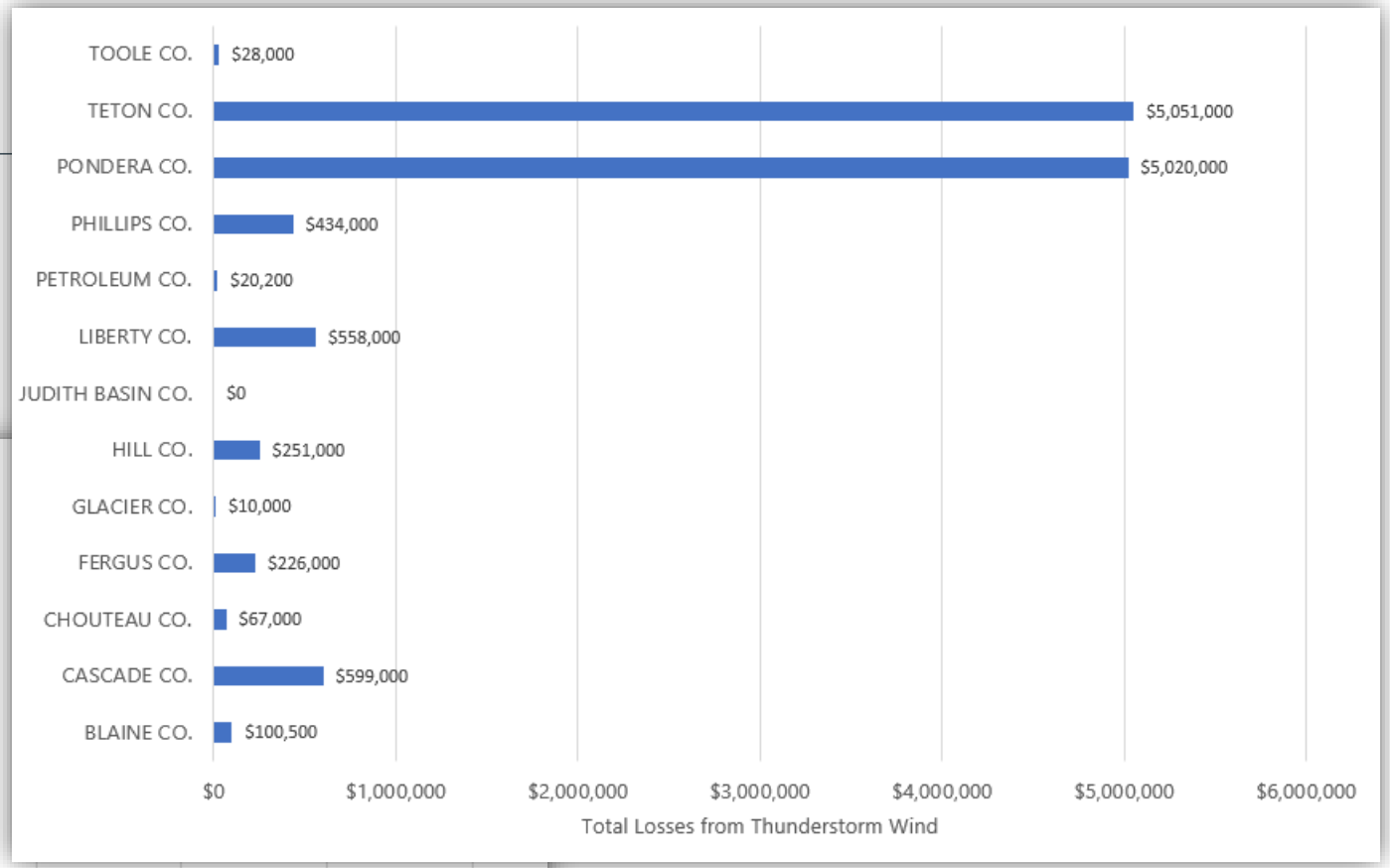
Impacts:

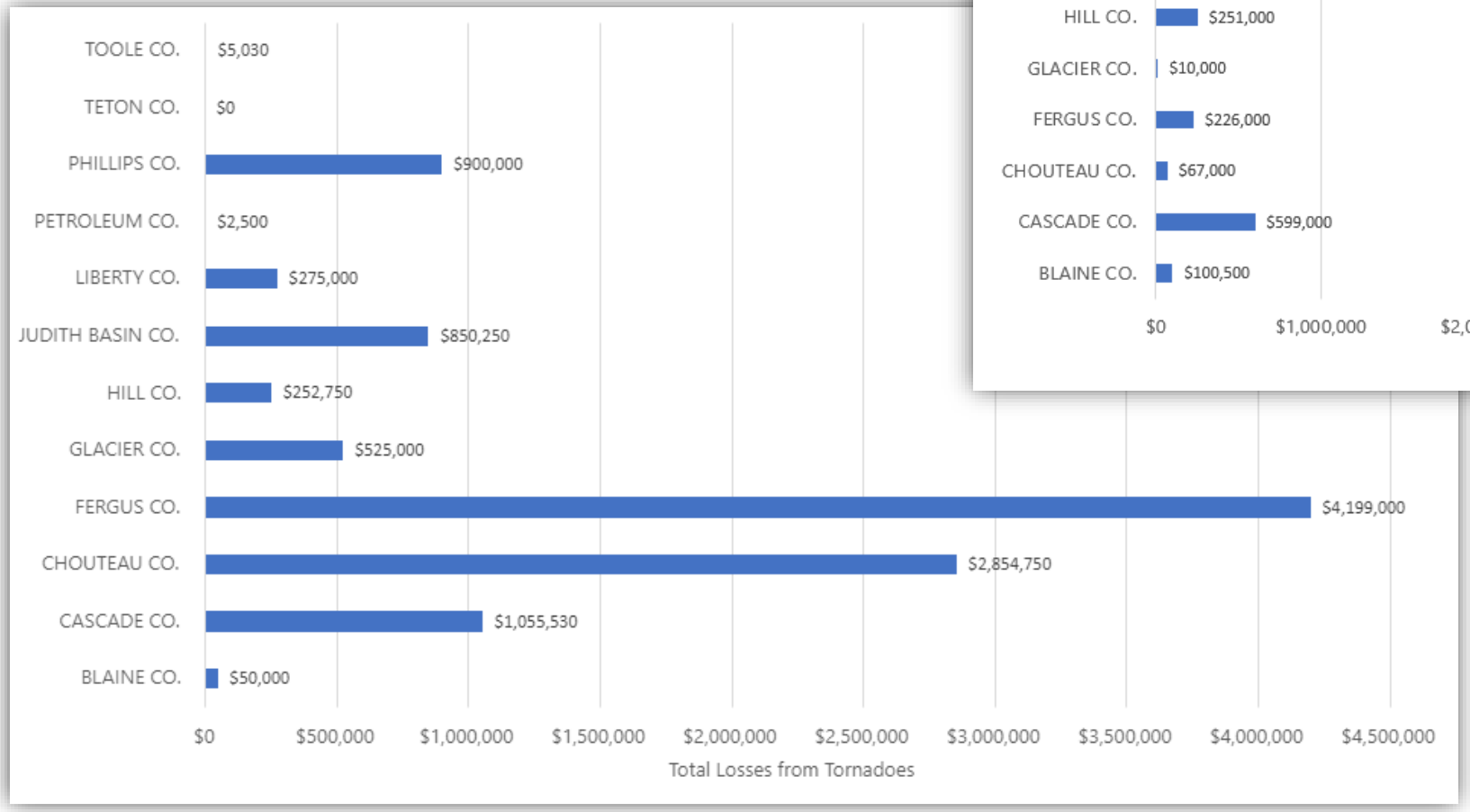
- Threatened life and safety of people
- Structural and property damage
- Road closures from debris
- Power and communication failure
- Damages to critical facilities such as water treatment plants
- Economic losses from repair and business interruptions

wood.

Tornadoes & Windstorms

Greatest losses from thunderstorm winds in Teton County and Pondera County





Greatest losses from tornadoes in Fergus County and Chouteau County

wood.

Tornadoes & Windstorms Risk Summary

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What do you think the significance of tornadoes & windstorms is for your jurisdiction?

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Extensive	Likely	Limited	Medium
Blaine	Extensive	Likely	Limited	Medium
Cascade	Extensive	Highly Likely	Limited	Medium
Rocky Boy	Extensive	Highly Likely	Limited	Medium
Chouteau	Extensive	Likely	Critical	High
Fergus	Extensive	Highly Likely	Critical	High
Fort Belknap	Extensive	Likely	Limited	Medium
Glacier	Extensive	Likely	Limited	Medium
Hill	Extensive	Highly Likely	Limited	Medium
Judith Basin	Extensive	Likely	Limited	Medium
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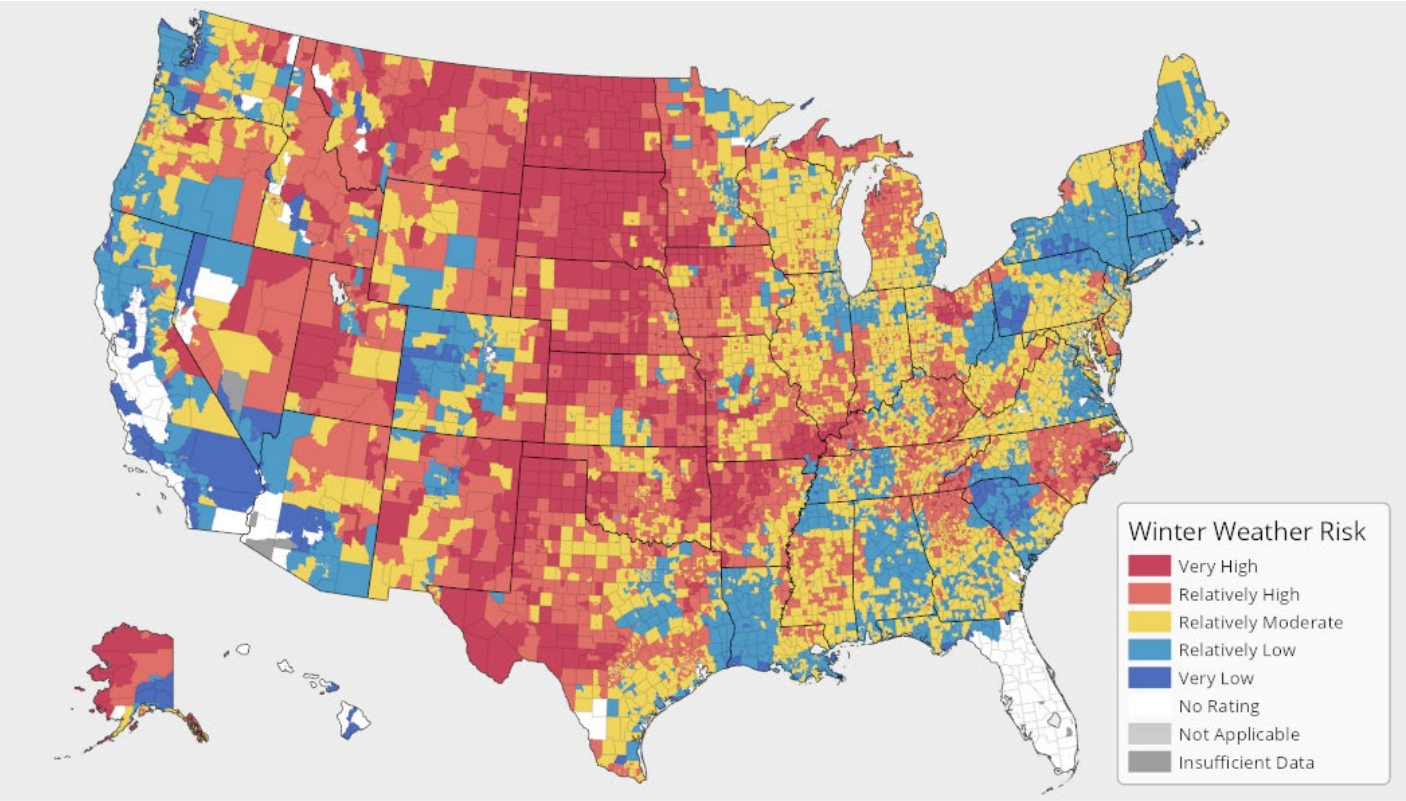
Petroleum	Extensive	Likely	Limited	Medium
Phillips	Extensive	Highly Likely	Limited	Medium
Pondera	Extensive	Likely	Critical	High
Teton	Extensive	Likely	Critical	High
Toole	Extensive	Likely	Limited	Medium

ⓘ Start presenting to display the poll results on this slide.

Severe Winter Storm



Source: FEMA

Location: All counties in the Central Region experience severe winter storm events

Extent: Can cause significant property losses, injuries, and fatalities.

Probability: Highly likely to occur every year in the Central Region, with 882 days with events reported over 26 years

Impacts:

- Structural damage from snow and ice accumulation
- Isolation due to road closures and increased car accidents/pileups
- Power and communication failure
- Threatens health and safety of humans, livestock, and animals caught outside
- Tree and vegetation damages

	Deaths	Injuries	Property Loss	Days with Events	Total Events
Blizzard	1	7	$50,000	60	170
Cold/Wind Chill	0	0	$0	52	196
Heavy Snow	0	0	$1,000	380	760
Ice Storm	0	0	$0	6	12
Winter Storm	0	0	$8,249,000	316	855
Winter Weather	0	3	$0	65	105
Total	**1**	**10**	**$8,300,000**	**882**	**2,098**

Source: NCEI

Severe Winter Storm

Home buried in snow in Great Falls, Montana, Source: Electroverse, Sept. 2019

Major winter storm hits north-central Montana, Source: NWS, 2021

Hazard Risk Summary Table

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Extensive	Highly Likely	Limited	**Medium**
Blaine	Extensive	Highly Likely	Limited	**Medium**
Cascade	Extensive	Highly Likely	Limited	**Medium**
Rocky Boy's	Extensive	Highly Likely	Limited	**Medium**
Chouteau	Extensive	Highly Likely	Critical	**High**
Fergus	Extensive	Highly Likely	Critical	**High**
Fort Belknap	Extensive	Highly Likely	Limited	**Medium**
Glacier	Extensive	Highly Likely	Limited	**Medium**
Hill	Extensive	Highly Likely	Limited	**Medium**
Judith Basin	Extensive	Highly Likely	Limited	**Medium**
Liberty	Extensive	Highly Likely	Limited	**Medium**
Petroleum	Extensive	Highly Likely	Limited	**Medium**
Phillips	Extensive	Highly Likely	Limited	**Medium**
Pondera	Extensive	Highly Likely	Critical	**High**
Teton	Extensive	Highly Likely	Critical	**High**
Toole	Extensive	Highly Likely	Limited	**Medium**

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What do you think the significance of severe winter weather is for your jurisdiction?

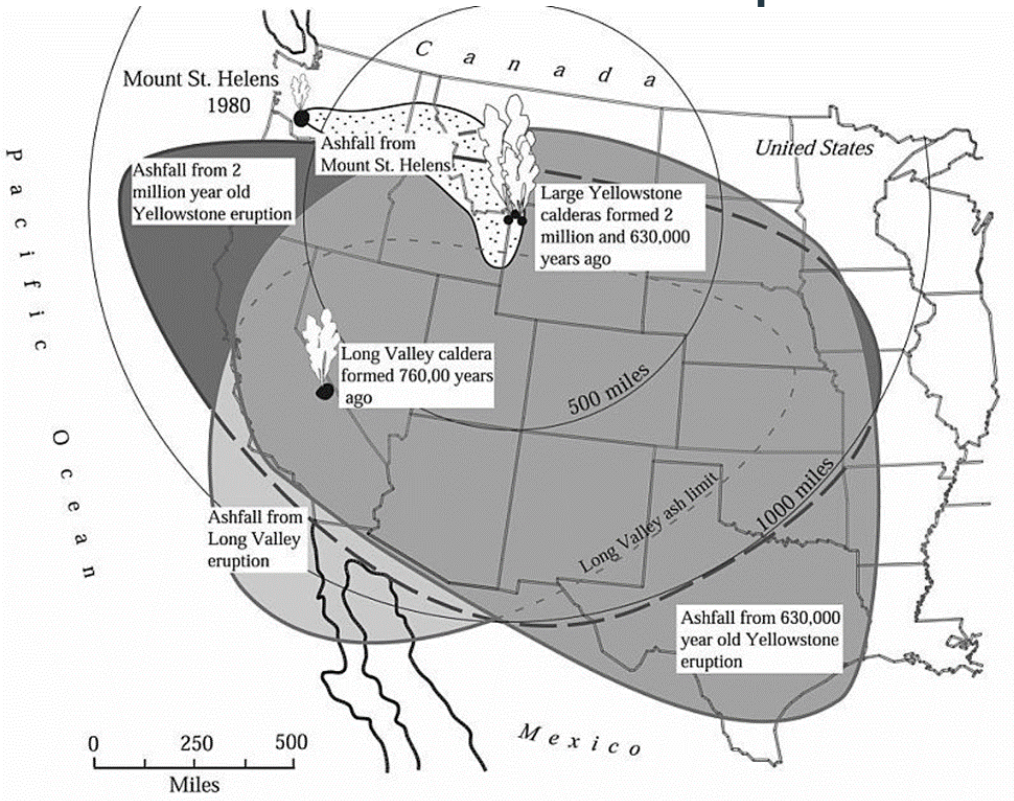
Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Extensive	Highly Likely	Limited	Medium
Blaine	Extensive	Highly Likely	Limited	Medium
Cascade	Extensive	Highly Likely	Limited	Medium
Rocky Boy's	Extensive	Highly Likely	Limited	Medium
Choteau	Extensive	Highly Likely	Critical	High
Fergus	Extensive	Highly Likely	Critical	High
Glacier	Extensive	Highly Likely	Limited	Medium
Hill	Extensive	Highly Likely	Limited	Medium
Judith Basin	Extensive	Highly Likely	Limited	Medium
Liberty	Extensive	Highly Likely	Limited	Medium
Petroleum	Extensive	Highly Likely	Limited	Medium
Phillips	Extensive	Highly Likely	Limited	Medium
Pondera	Extensive	Highly Likely	Critical	High
Teton	Extensive	Highly Likely	Critical	High
Toole	Extensive	Highly Likely	Limited	Medium

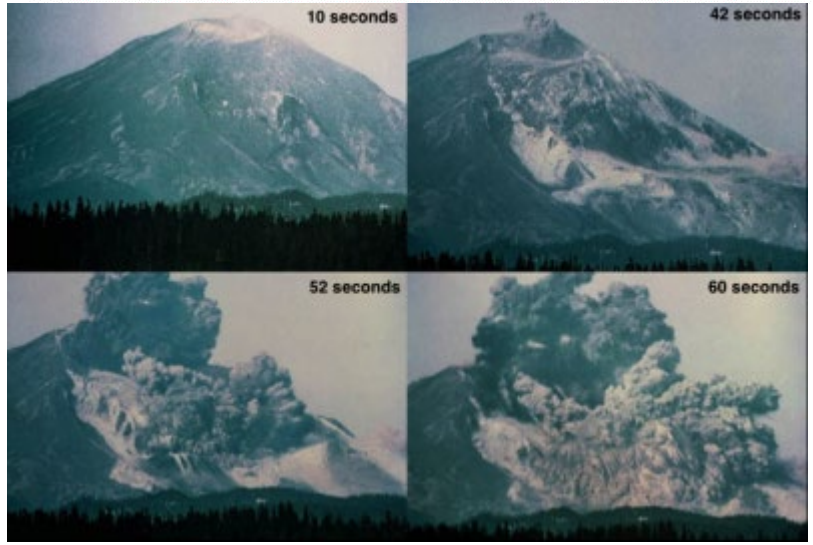
ⓘ Start presenting to display the poll results on this slide.

Volcanic Ash

- Major concern for Montana is ashfall after an eruption, most likely from the Cascades in WA, OR, and CA
  - Yellowstone Caldera in WY and ID presents some risk, although much less likely based on the geologic record
  - 1980 Mt. St Helens eruption is best recent example
- Unlike ash from fires, volcanic ash is hard, does not dissolve in water, is extremely abrasive, and can conduct electricity when wet
  - Leads to massive damage to machinery
  - Can scratch skin and eyes; create a cement-like mixture in the lungs if inhaled
  - Massive cleanup costs, as ash must be collected and trucked away
  - Can collapse roofs under weight if too much accumulates
  - Large scale ejections of ash can even alter the global climate

Areas of US with volcanic ash deposits





Volcanic Ash

Hazard Risk Summary Table

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Regionwide	Extensive	Unlikely	Limited	**Low**

slido

What do you think the significance of volcanic ash is for your jurisdiction?

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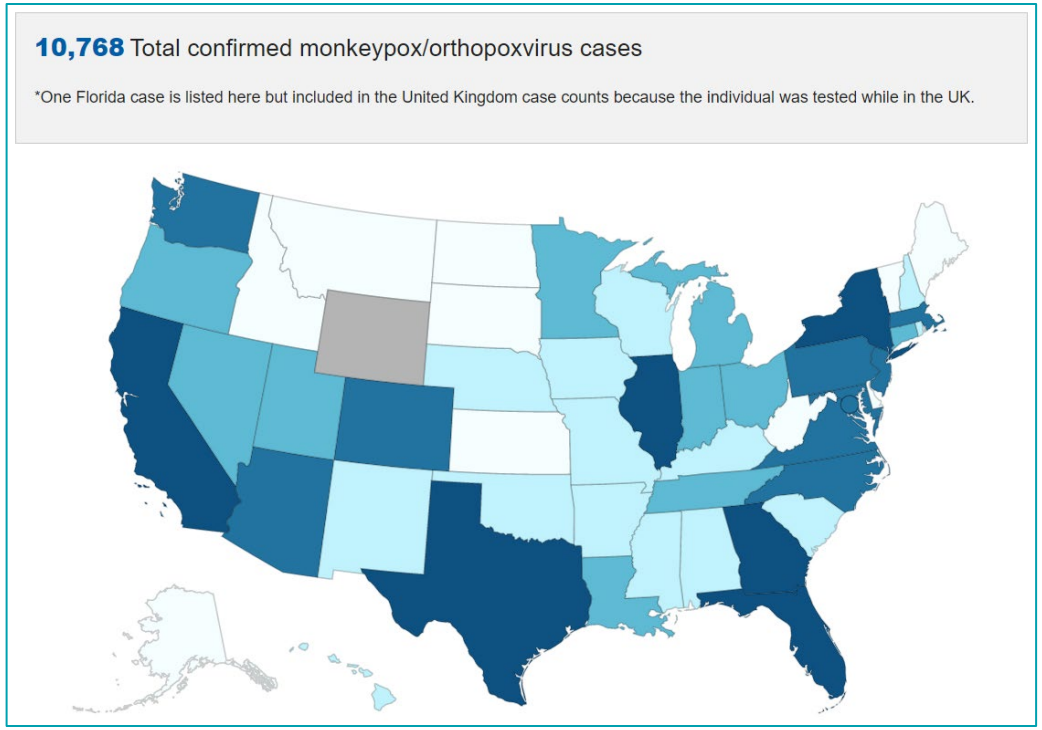
Communicable Disease

- Five pandemic in the last ~100 years
  - 1918-1919 Spanish Flu (H1N1) – 17 to 100 million deaths
  - 1957-1958 Asian Flu (H2N2) – 1 to 4 million deaths
  - 1968-1969 Hong Kong Flu (H3N2) – 1 to 4 million deaths
  - 2009 H1N1 Flu – 18,000 deaths
  - 2020-Current COVID-19
    - Worldwide: 568 million cases, 6.38 million deaths as of 7/22/22
    - United States: 90.2 million cases, 1.02 million deaths as of 7/22/22
    - State of Montana: 294,340 cases, 3,467 deaths as of 7/22/2022
    - Montana Central Region: 47,463 cases, 698 deaths as of 7/22/22
- Other major/popular communicable diseases in the State of Montana
  - Hantavirus Pulmonary Syndrome (deer mouse as the virus reservoir)
  - STDs, Hepatitis, Food & Water borne Diseases (according to Montana DPHHS

- 2022 US Monkeypox Outbreak
  - United States: 10,768 confirmed cases as of 8/11/22
  - Montana: 2 confirmed cases as of 8/11/22



wood.

Communicable Disease

Hazard Risk Summary Table

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Extensive	Occasional	Critical	**Medium**
Blaine	Extensive	Occasional	Critical	**Medium**
Cascade	Extensive	Occasional	Critical	**Medium**
Rocky Boy's	Extensive	Occasional	Critical	**Medium**
Chouteau	Extensive	Occasional	Critical	**Medium**
Fergus	Extensive	Occasional	Critical	**Medium**
Glacier	Extensive	Occasional	Critical	**Medium**
Hill	Extensive	Occasional	Critical	**Medium**
Judith Basin	Extensive	Occasional	Critical	**Medium**
Liberty	Extensive	Occasional	Critical	**Medium**
Petroleum	Extensive	Occasional	Critical	**Medium**
Phillips	Extensive	Occasional	Critical	**Medium**
Pondera	Extensive	Occasional	Critical	**Medium**
Teton	Extensive	Occasional	Critical	**Medium**
Toole	Extensive	Occasional	Critical	**Medium**

- A pandemic occurs on average roughly every 20 years
- There is a 5% chance that a pandemic that affects the entire US will occur in any given year
- New study finds climate change could spark the next pandemic
- Effects on people will vary, while the elderly, people with underlying medical conditions, and young children are usually at higher risk
- Ongoing mitigation activities should focus on disease prevention, especially during flu season
- Pre-season community outreach campaigns to educate the public about risks and available support; establish convenient vaccination centers; reach out to vulnerable populations and caregivers; and issuing advisories and warnings.

wood.

slido

What do you think the significance of communicable disease is for your jurisdiction?

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Extensive	Occasional	Critical	Medium
Blaine	Extensive	Occasional	Critical	Medium
Cascade	Extensive	Occasional	Critical	Medium
Rocky Boy's	Extensive	Occasional	Critical	Medium
Choteau	Extensive	Occasional	Critical	Medium
Fergus	Extensive	Occasional	Critical	Medium
Glacier	Extensive	Occasional	Critical	Medium
Hill	Extensive	Occasional	Critical	Medium
Judith Basin	Extensive	Occasional	Critical	Medium
Liberty	Extensive	Occasional	Critical	Medium
Petroleum	Extensive	Occasional	Critical	Medium
Phillips	Extensive	Occasional	Critical	Medium
Pondera	Extensive	Occasional	Critical	Medium
Teton	Extensive	Occasional	Critical	Medium
Toole	Extensive	Occasional	Critical	Medium

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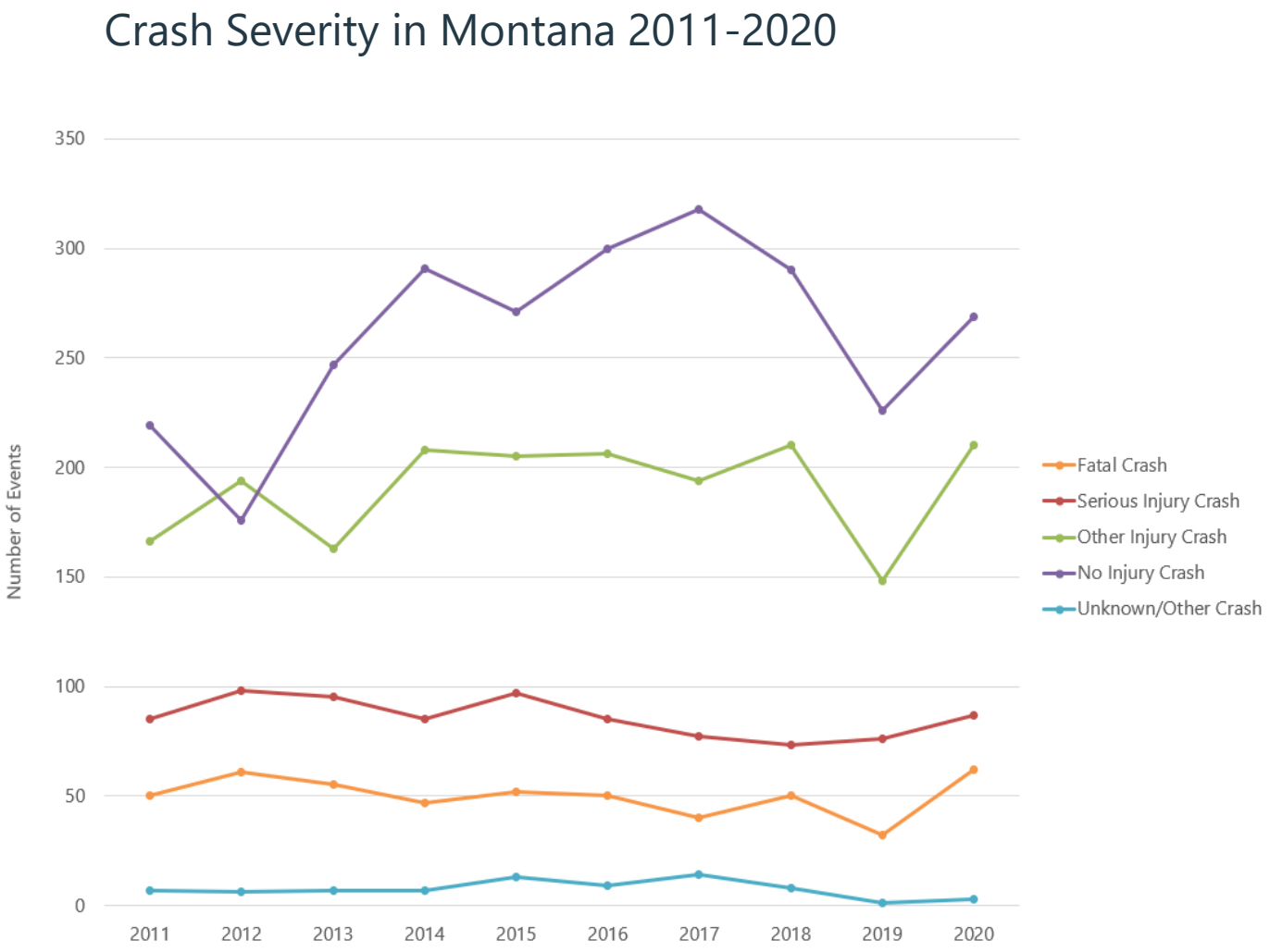
Transportation Accidents



Source: MT DOT

Location: All counties in the Central Region can experience transportation accidents, often along U.S. Highway 2, U.S. Route 191, U.S. Route 87, and Interstate 15.

Extent: Can cause significant property losses, injuries, and fatalities to those involved in the accident.

Probability: Highly likely

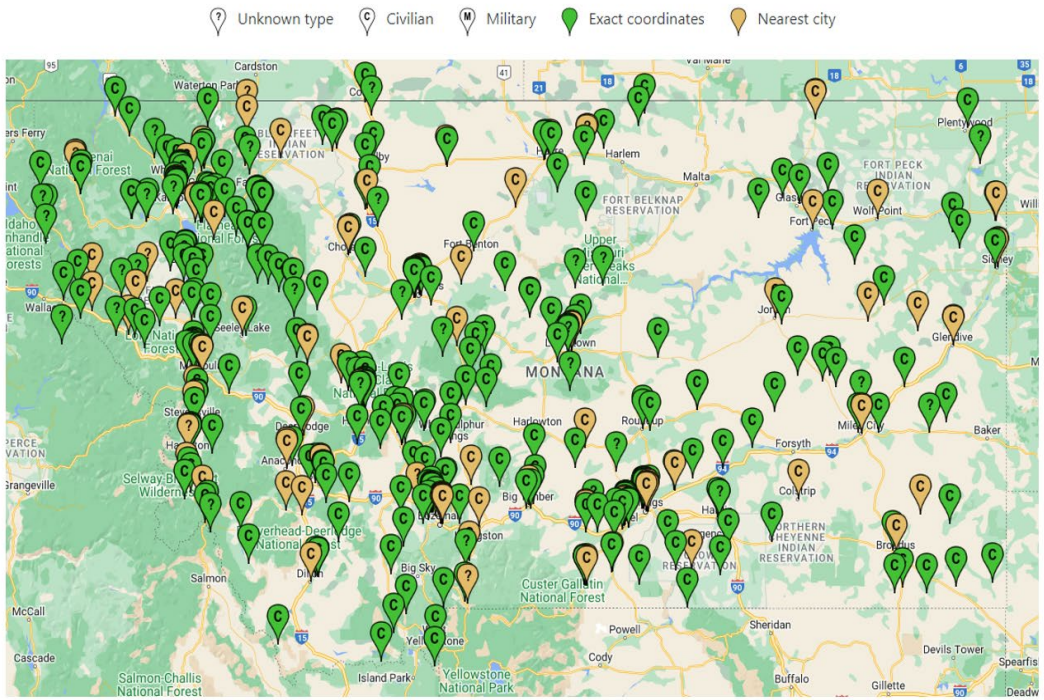
- 9 aircraft accidents per year in the state
- 4,240 annual average roadway crashes from 2016-2020 in the Central Region
- 7,163 annual average roadway crashes due to wildlife in the state (most often caused by white-tailed deer in the month of Nov.)
- 82 boating accidents from 2017-2021 in the state
- 37 reported train accidents in the Central Region from 2017-2021

Impacts:

  - Isolation/delayed emergency response due to road closure
  - Property damage
  - Threaten to life and safety

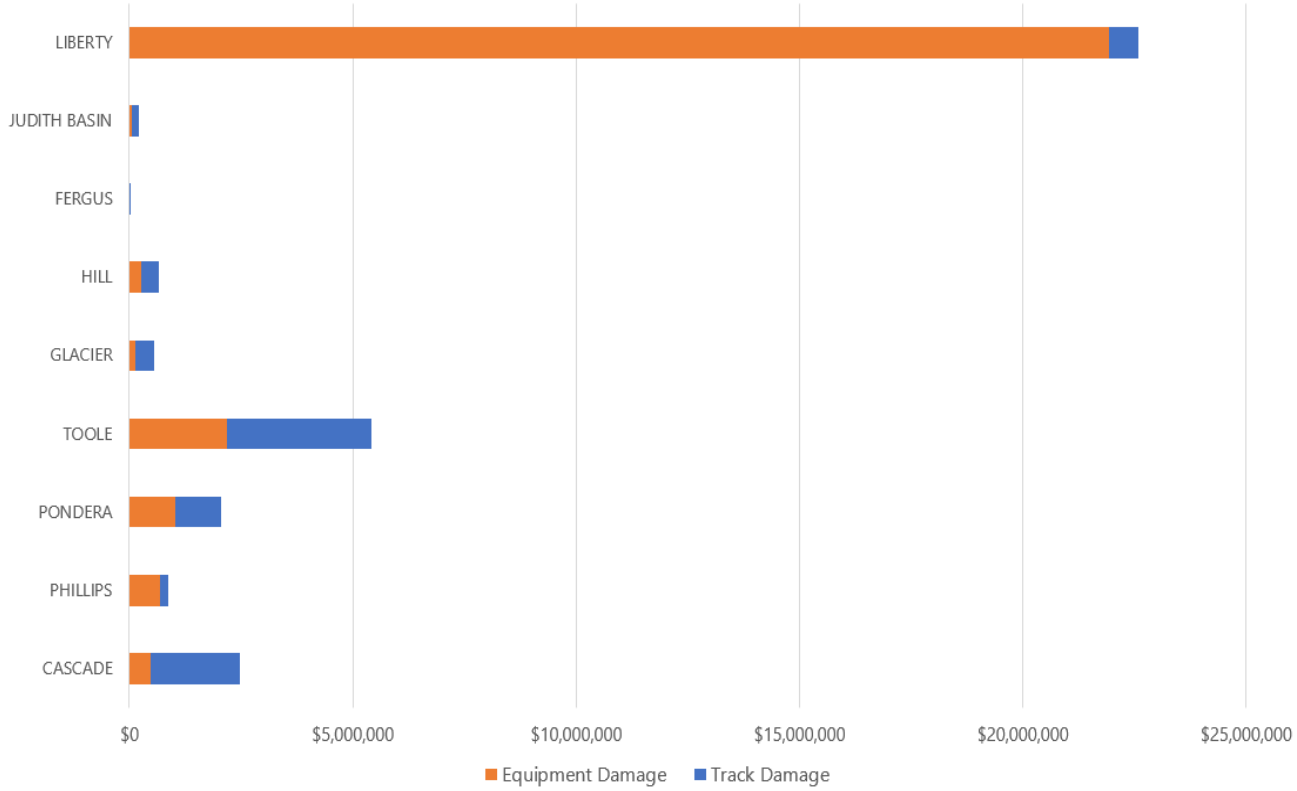
Transportation Accidents

Montana Aircraft Crashes 1964-2018



Source: National Transportation Safety Board (map compiled by: Lee C. Baker / Crosswind Software, LLC)

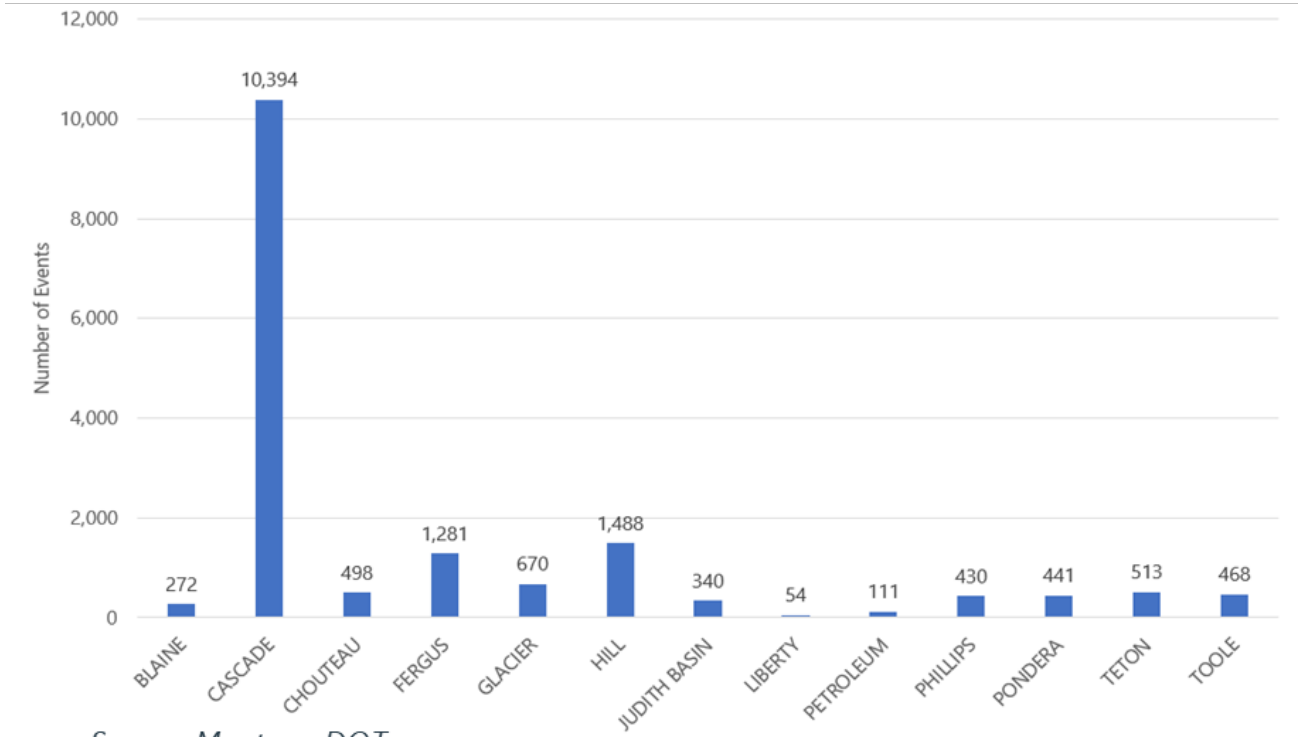
Central Region Railway Accidents 2017-2021



Source: Federal Railway Administration

Transportation Accidents

Roadway Crashes by County 2016-2020



Source: Montana DOT

Hazard Risk Summary Table

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Significant	Highly Likely	Negligible	**Low**
Blaine	Significant	Highly Likely	Negligible	**Low**
Cascade	Significant	Highly Likely	Limited	**Medium**
Rocky Boy's	Significant	Highly Likely	Negligible	**Low**
Chouteau	Significant	Highly Likely	Negligible	**Low**
Fergus	Significant	Highly Likely	Negligible	**Low**
Fort Belknap	Significant	Highly Likely	Negligible	**Low**
Glacier	Significant	Highly Likely	Negligible	**Low**
Hill	Significant	Highly Likely	Negligible	**Low**
Judith Basin	Significant	Highly Likely	Negligible	**Low**
Liberty	Significant	Highly Likely	Limited	**Medium**
Petroleum	Significant	Highly Likely	Negligible	**Low**
Phillips	Significant	Highly Likely	Negligible	**Low**
Pondera	Significant	Highly Likely	Negligible	**Low**
Teton	Significant	Highly Likely	Negligible	**Low**
Toole	Significant	Highly Likely	Limited	**Medium**

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What do you think the significance of transportation accidents is for your jurisdiction?

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Significant	Highly Likely	Negligible	Low
Blaine	Significant	Highly Likely	Negligible	Low
Cascade	Significant	Highly Likely	Limited	Medium
Rocky Boy's	Significant	Highly Likely	Negligible	Low
Choteau	Significant	Highly Likely	Negligible	Low
Fergus	Significant	Highly Likely	Negligible	Low
Glacier	Significant	Highly Likely	Negligible	Low
Hill	Significant	Highly Likely	Negligible	Low
Judith Basin	Significant	Highly Likely	Negligible	Low
Liberty	Significant	Highly Likely	Limited	Medium
Petroleum	Significant	Highly Likely	Negligible	Low
Phillips	Significant	Highly Likely	Negligible	Low
Pondera	Significant	Highly Likely	Negligible	Low
Teton	Significant	Highly Likely	Negligible	Low
Toole	Significant	Highly Likely	Limited	Medium

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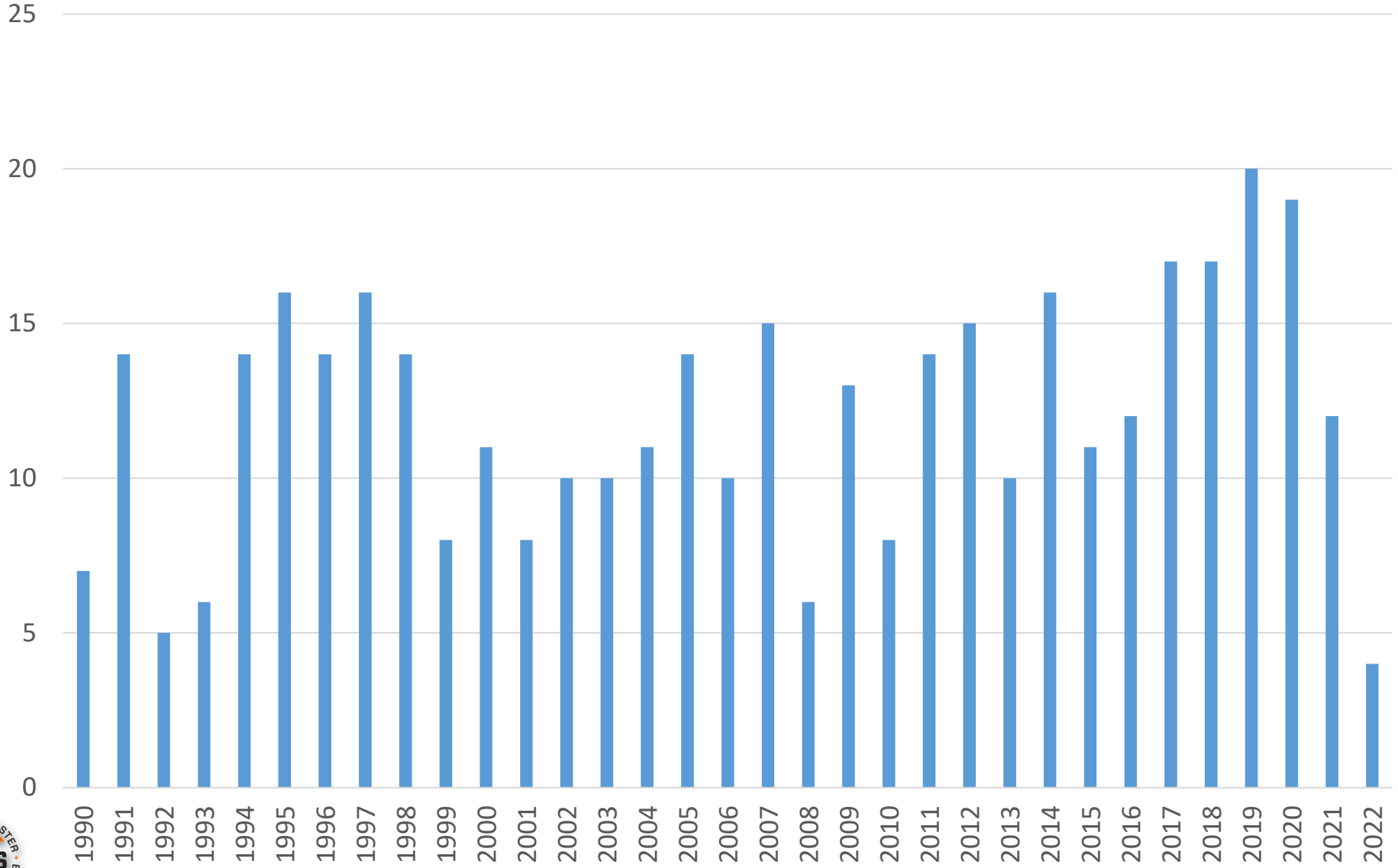
Hazardous Materials - Spills/ Accidents Reported to the NRC Central Region 1990-2022

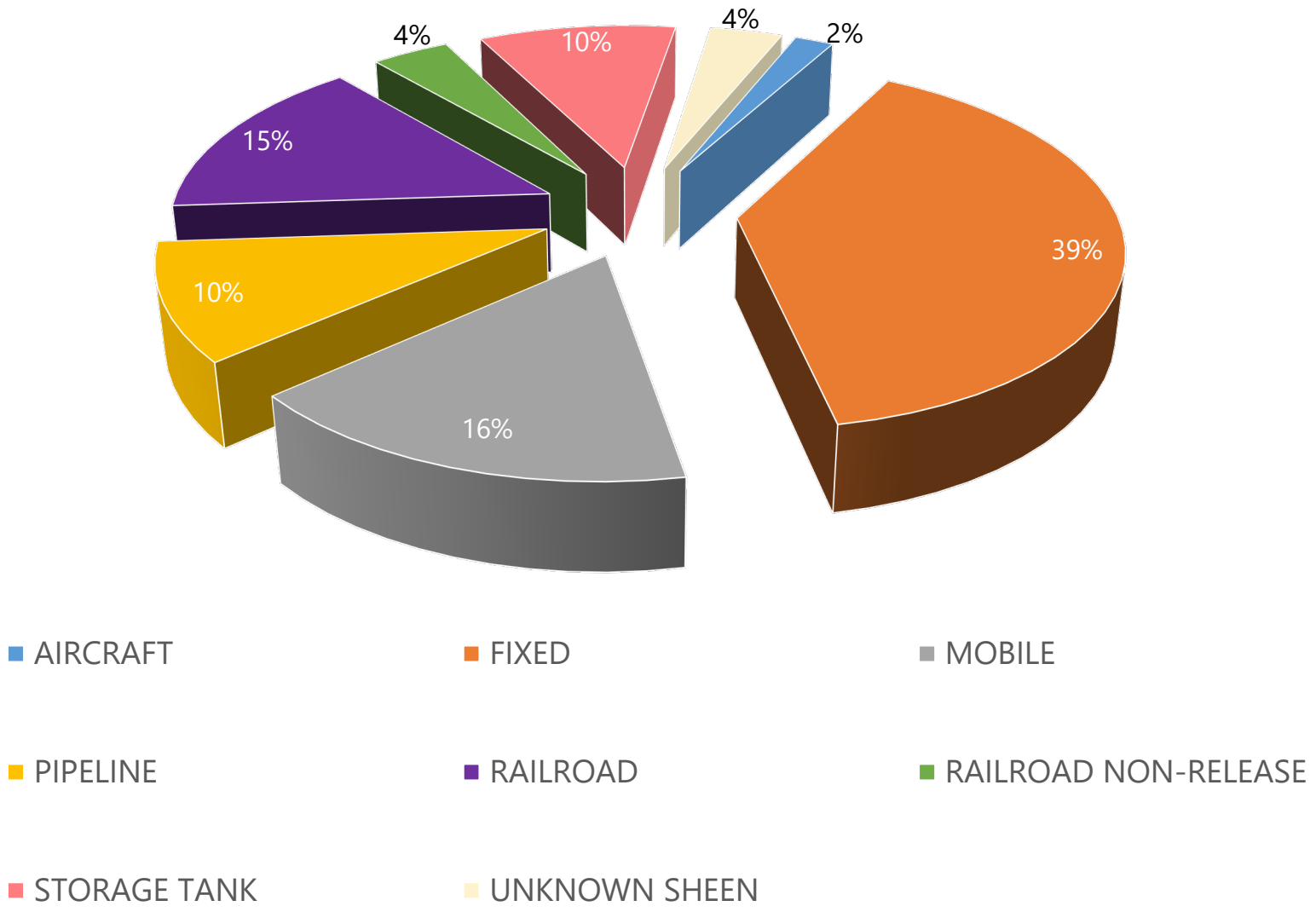


Location: Hazmat incidents can occur at a fixed facility or during transportation. Hazardous materials facilities are identified and mapped by the counties they reside in, along with the types of materials stored there; facilities generally reside in and around communities.

Probability: Likely throughout the planning area

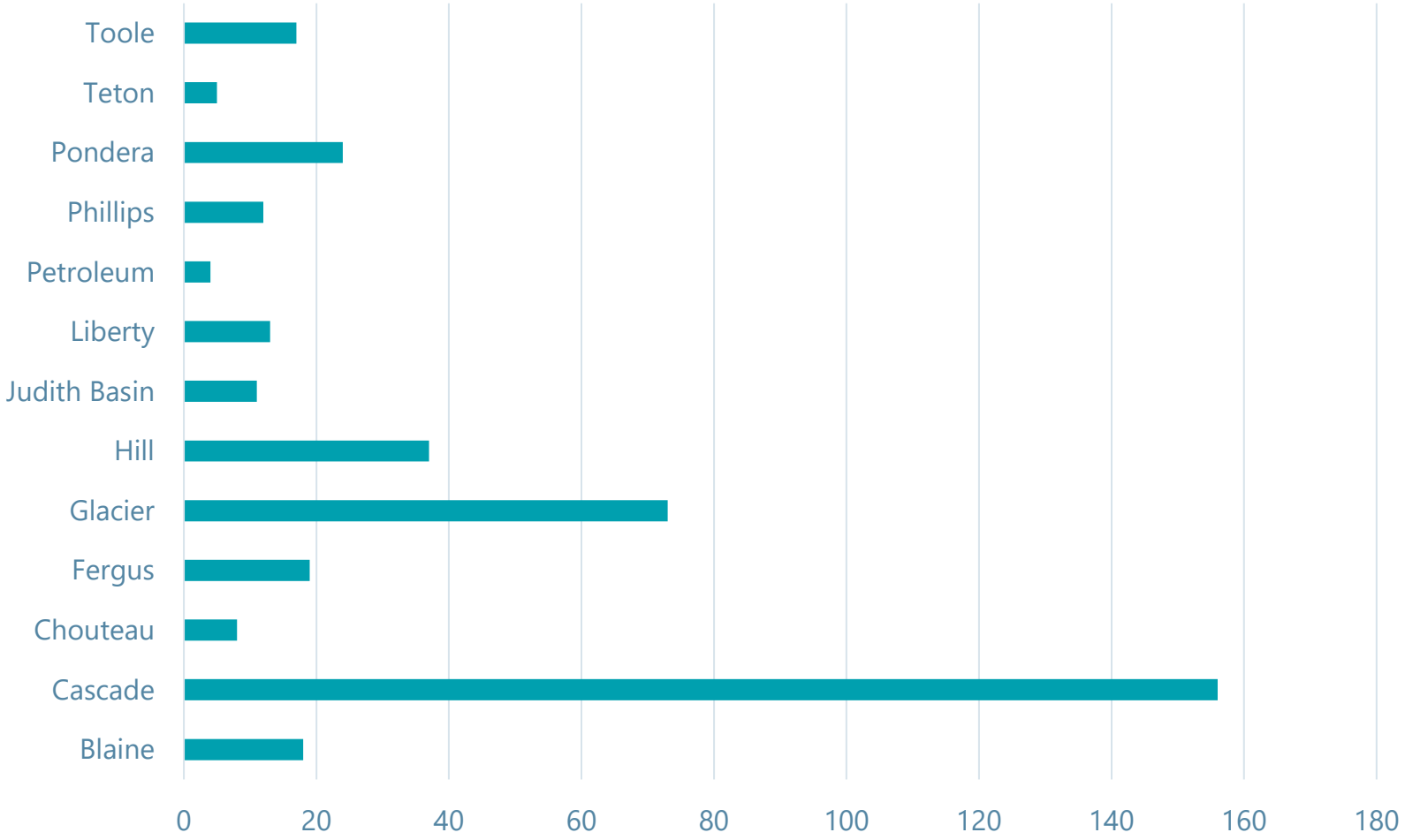
- Montana's Central Region has had 397 Hazmat Spill incidents in 32 years.
- 2017 – 2020 saw some of the highest amounts in this timeframe.

Hazardous Materials – Incidents Reported to the NRC by Type



- The largest amount of Hazardous Material Incidents reported to the NRC by type are Fixed with 39% of the 397 events reported.
  - Fixed Facilities such as Tier II and RMP facilities are common places where hazardous material incidents occur.
- The second largest amount are mobile incidents with 16%. When Hazardous Materials are being transported and accidents occur.
- The third largest amount is Railroad incidents with 15% which again involves transporting Hazardous Materials.

Hazardous Materials - Spills/ Accidents Reported to the NRC Central Region by County



- Between 1990 and 2022 the Central Region has seen an average of 12 NRC-reported incidents per year
- Cascade, Glacier and Hill counties have had the highest amount of hazmat incidents and spills.

wood.

Hazardous Materials – Risk Summary Table

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Central Region	Limited	Likely	Limited	Low
Blackfeet Tribe	Limited	Unlikely	Limited	Low
Blaine County	Limited	Likely	Limited	Low
Cascade County	Limited	Likely	Limited	High
Chouteau County	Limited	Unlikely	Limited	Low
Fergus County	Limited	Unlikely	Limited	Low
Fort Belknap Indian Community	Limited	Unlikely	Limited	Low
Glacier County	Limited	Likely	Limited	Medium
Hill County	Limited	Likely	Limited	Low
Judith Basin County	Limited	Unlikely	Limited	Low
Liberty County	Limited	Unlikely	Limited	Low
Petroleum County	Limited	Unlikely	Limited	Low
Phillips County	Limited	Unlikely	Limited	Low
Pondera County	Limited	Unlikely	Limited	Low
Rocky Boy Montana (Chippewa Cree Tribes)	Limited	Unlikely	Limited	Low
Teton County	Limited	Unlikely	Limited	Low
Toole County	Limited	Unlikely	Limited	Low

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What do you think the significance of hazardous material incidents is for your jurisdiction?

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Central Region	Limited	Likely	Limited	Low
Blackfeet Tribe	Limited	Unlikely	Limited	Low
Blaine County	Limited	Likely	Limited	Low
Cascade County	Limited	Likely	Limited	High
Chouteau County	Limited	Unlikely	Limited	Low
Fergus County	Limited	Unlikely	Limited	Low
Fort Belknap Indian Community	Limited	Unlikely	Limited	Low
Glacier County	Limited	Likely	Limited	Medium
Hill County	Limited	Likely	Limited	Low
Judith Basin County	Limited	Unlikely	Limited	Low
Liberty County	Limited	Unlikely	Limited	Low
Petroleum County	Limited	Unlikely	Limited	Low
Phillips County	Limited	Unlikely	Limited	Low
Pondera County	Limited	Unlikely	Limited	Low
Rocky Boy Montana (Chippewa Cree Tribes)	Limited	Unlikely	Limited	Low
Teton County	Limited	Unlikely	Limited	Low
Toole County	Limited	Unlikely	Limited	Low

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Cyber Attack

- **DDoS attacks**: frequent, minimal impacts
- **Data breaches:** 9,741 in U.S. 2005-2019
  - 35 in Montana
- **Malware:** 1 in 131 emails contains malware
  - **Supply Chain Attack**: Solar Winds
- **Ransomware:** attacks on gov't servers are increasing
  - CDOT 2018
  - Atlanta 2018
  - Lafayette 2020
  - Baltimore 2019
  - Orange County NC 2019
  - Colonial Pipeline 2021
  - JBS 2021
- **Cyber espionage:** primarily by foreign gov'ts
- **Cyber crime:** motivated by financial gain
- **Cyber terrorism:** developing threat Olympic Destroyer 2018

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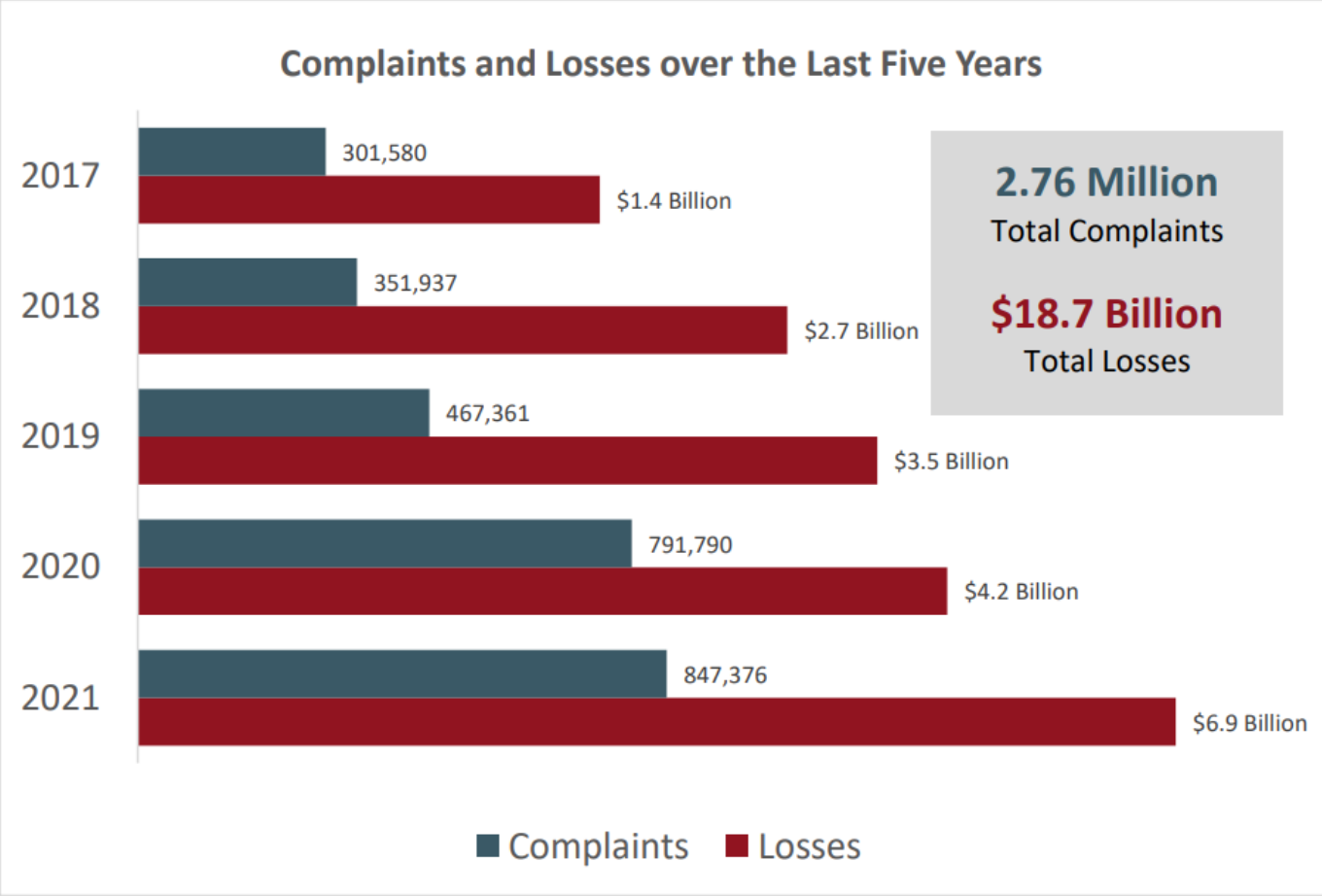
Cyber Attack



Source: The FBI Internet Crime Report 2021

Location: Can occur on anywhere in the Central Region, both to private and government servers

Extent: Can range from personal email scams to large scale theft of confidential information or interruption of critical services with a required ransom.

- Montana ranked as 49th state in U.S. for victim losses, with $10,107,283 in losses and 48th for number of victims per state, with 1,188 victims.

Probability: Growing rapidly in frequency every year, but difficult to predict due to high variability

Impacts:

- Power failure and blackouts
- Communication/emergency response failure (9-1-1 attacks)
- Personal monetary losses. Populations 60+ experience the greatest losses from cyber-attacks
- Leaked confidential information from government serves
- Potential attacks on electric vehicles and self-driving cars

wood.

Cyber Attack

Hazard Risk Summary Table

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Significant	Occasional	Critical	**Medium**
Blaine	Significant	Occasional	Critical	**Medium**
Cascade	Significant	Occasional	Critical	**Medium**
Rocky Boy's	Significant	Occasional	Critical	**Medium**
Chouteau	Significant	Occasional	Critical	**Medium**
Fergus	Significant	Occasional	Critical	**Medium**
Glacier	Significant	Occasional	Critical	**Medium**
Hill	Significant	Occasional	Critical	**Medium**
Judith Basin	Significant	Occasional	Critical	**Medium**
Liberty	Significant	Occasional	Critical	**Medium**
Petroleum	Significant	Occasional	Critical	**Medium**
Phillips	Significant	Occasional	Critical	**Medium**
Pondera	Significant	Occasional	Critical	**Medium**
Teton	Significant	Occasional	Critical	**Medium**
Toole	Significant	Occasional	Critical	**Medium**

Source: The FBI Internet Crime Report 2021

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What do you think the significance of cyber-attack is for your jurisdiction?

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Significant	Occasional	Critical	Medium
Blaine	Significant	Occasional	Critical	Medium
Cascade	Significant	Occasional	Critical	Medium
Rocky Boy's	Significant	Occasional	Critical	Medium
Choteau	Significant	Occasional	Critical	Medium
Fergus	Significant	Occasional	Critical	Medium
Glacier	Significant	Occasional	Critical	Medium
Hill	Significant	Occasional	Critical	Medium
Judith Basin	Significant	Occasional	Critical	Medium
Liberty	Significant	Occasional	Critical	Medium
Petroleum	Significant	Occasional	Critical	Medium
Phillips	Significant	Occasional	Critical	Medium
Pondera	Significant	Occasional	Critical	Medium
Teton	Significant	Occasional	Critical	Medium
Toole	Significant	Occasional	Critical	Medium

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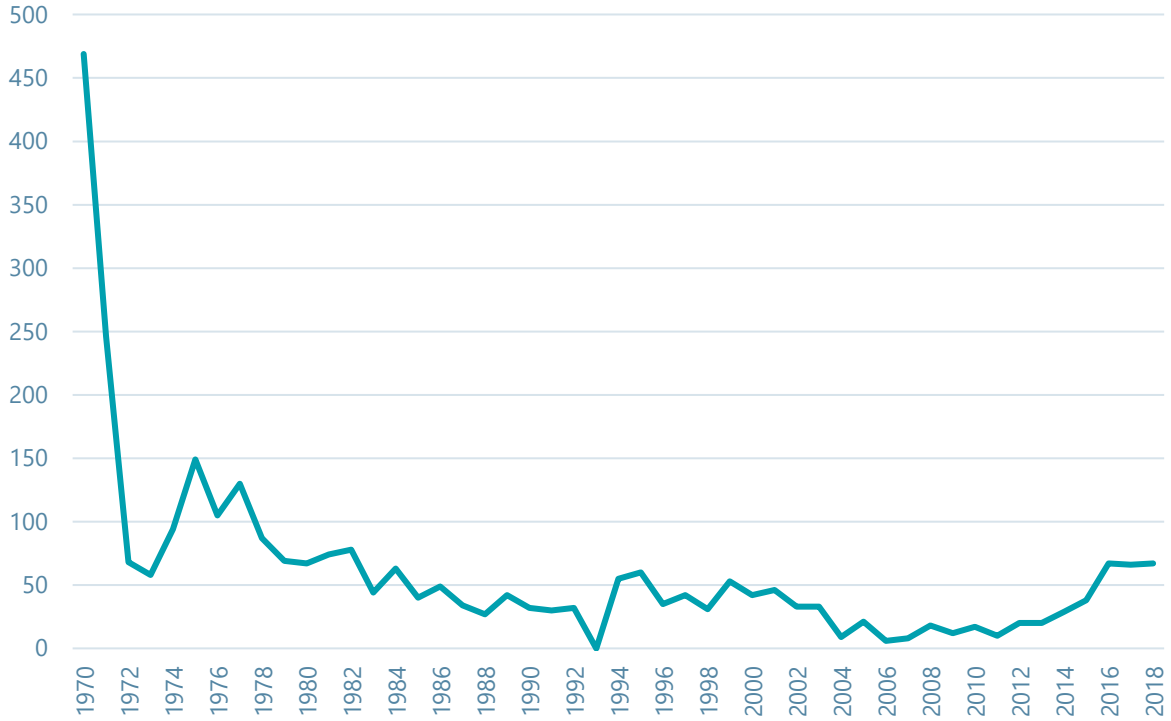
Human Conflict (Terrorism)

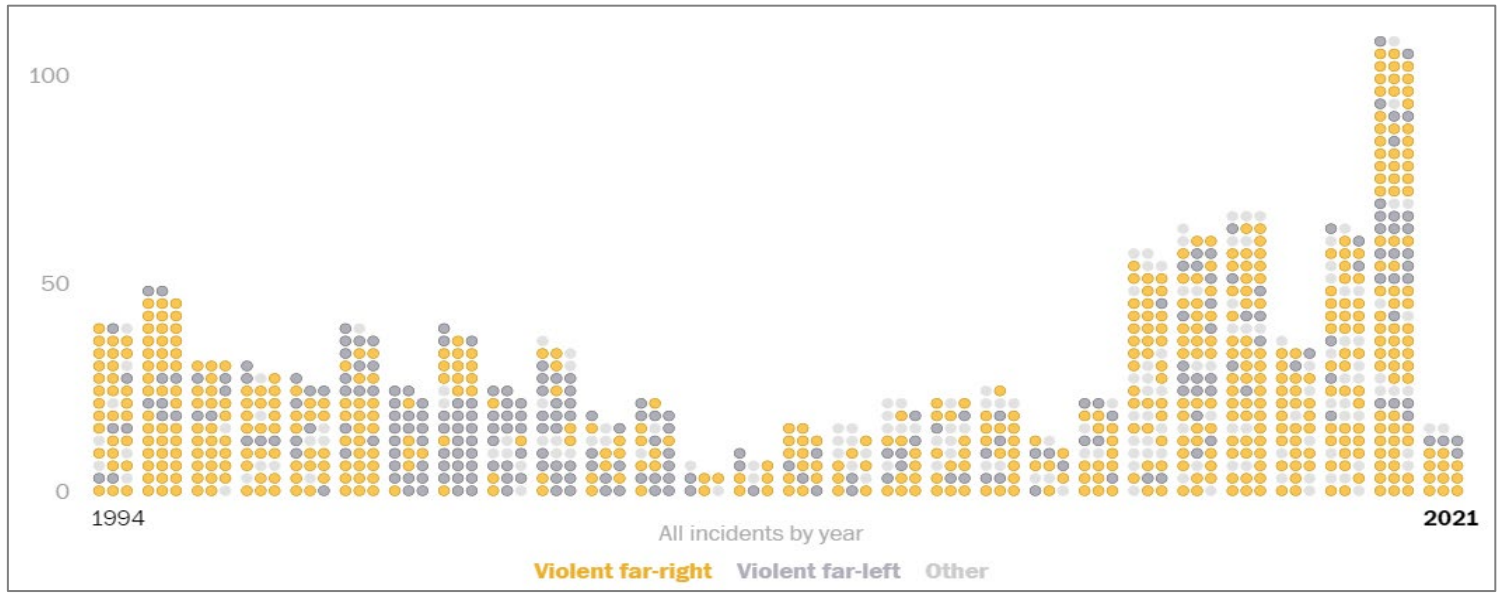
Terrorist Attacks in the U.S. 1970-2018



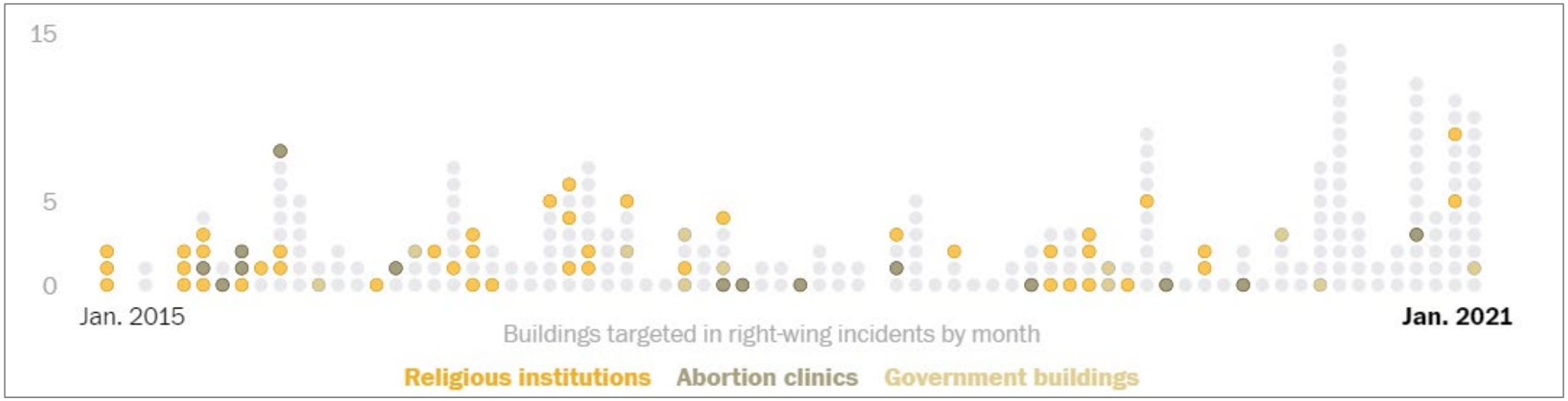
Most common targets

- Businesses: 27%
- Government: 17%
- Private Citizens & Property: 13%
- Abortion-related: 9%
- Military: 6%
- Police: 6%
- Religious: 5%

Human Conflict (Terrorism)

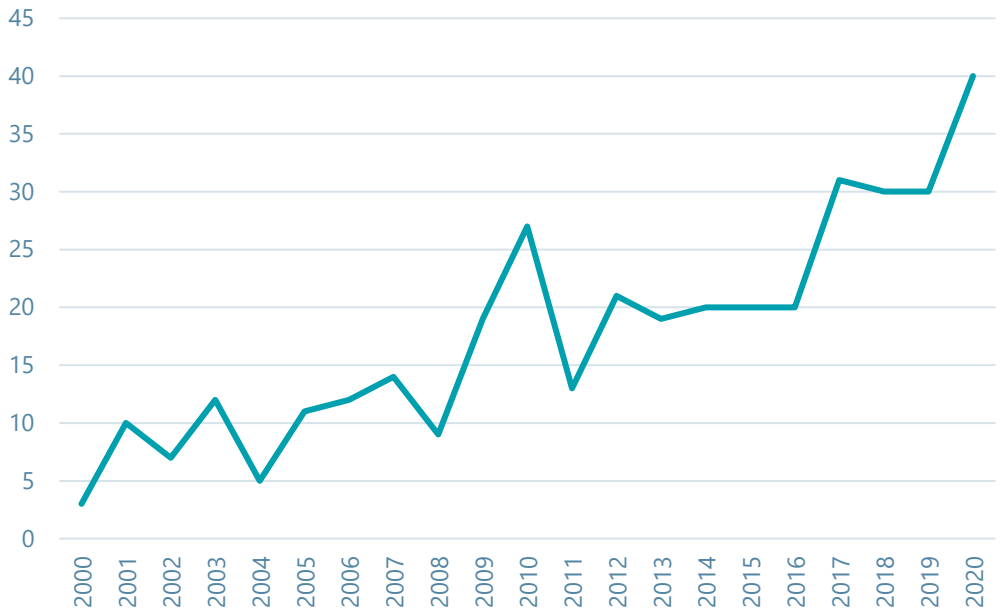


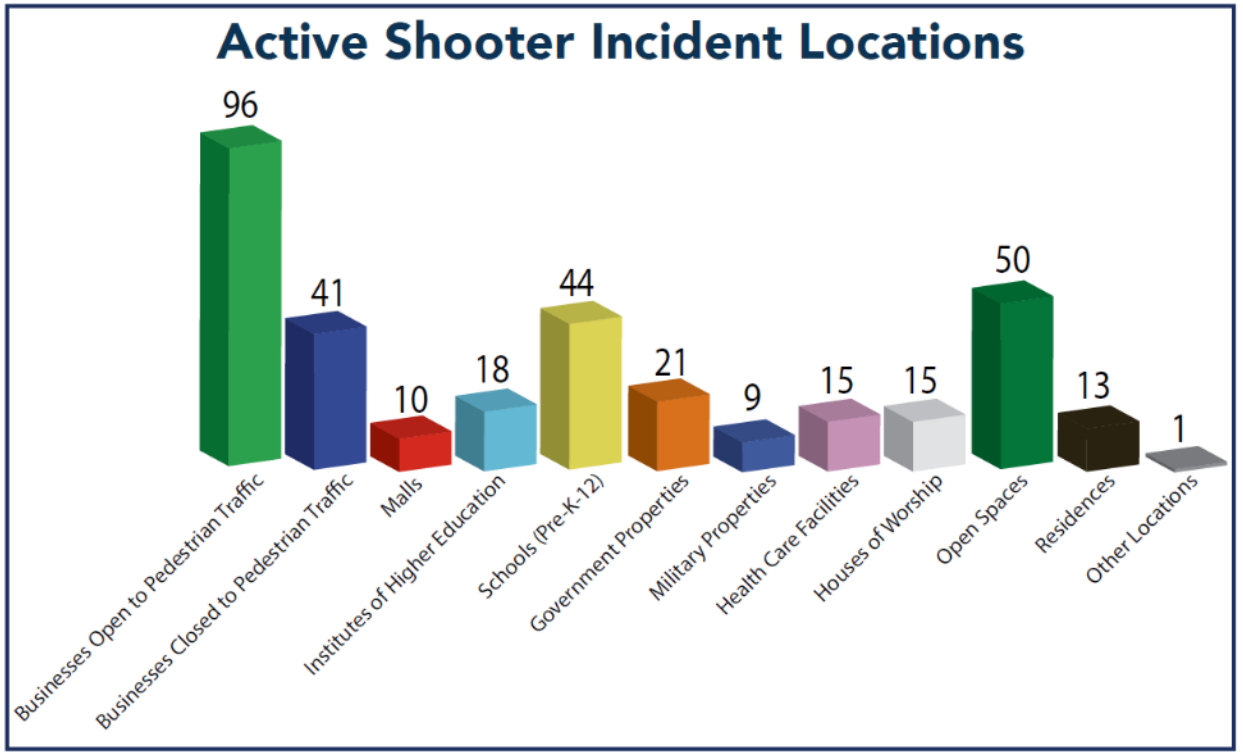
- The Center for Strategic & International Studies records 980 domestic terrorist attacks in the US since 1994, with sharp growth over the last 10-15 years.



Human Conflict (Active Shooter Incidents)

Active Shooter Incidents in the U.S. 2000-2020



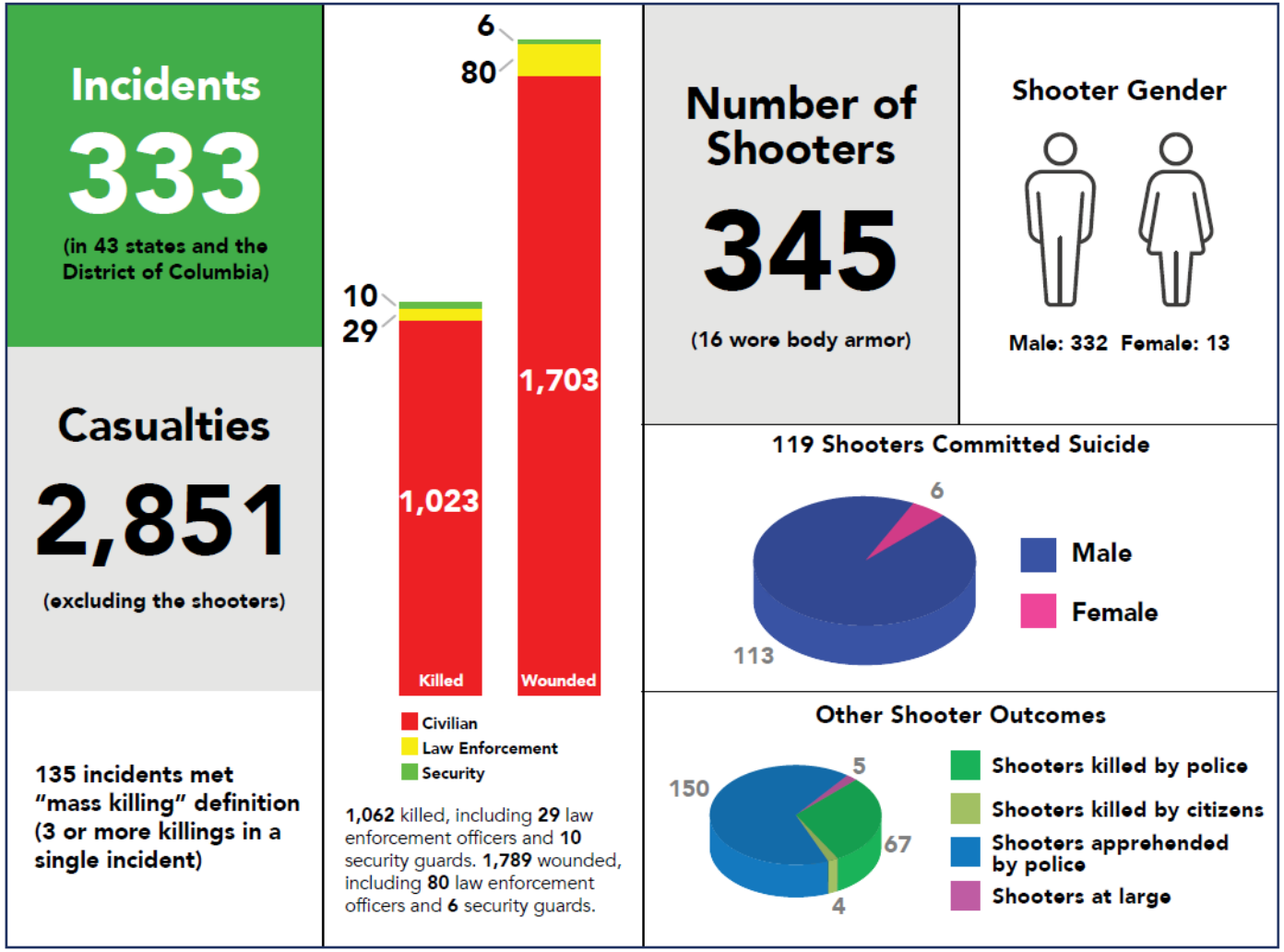


Sources:

- FBI Active Shooter Incidents, 20-Year Review 2000-2019
- FBI Active Shooter Incidents in the United States 2020

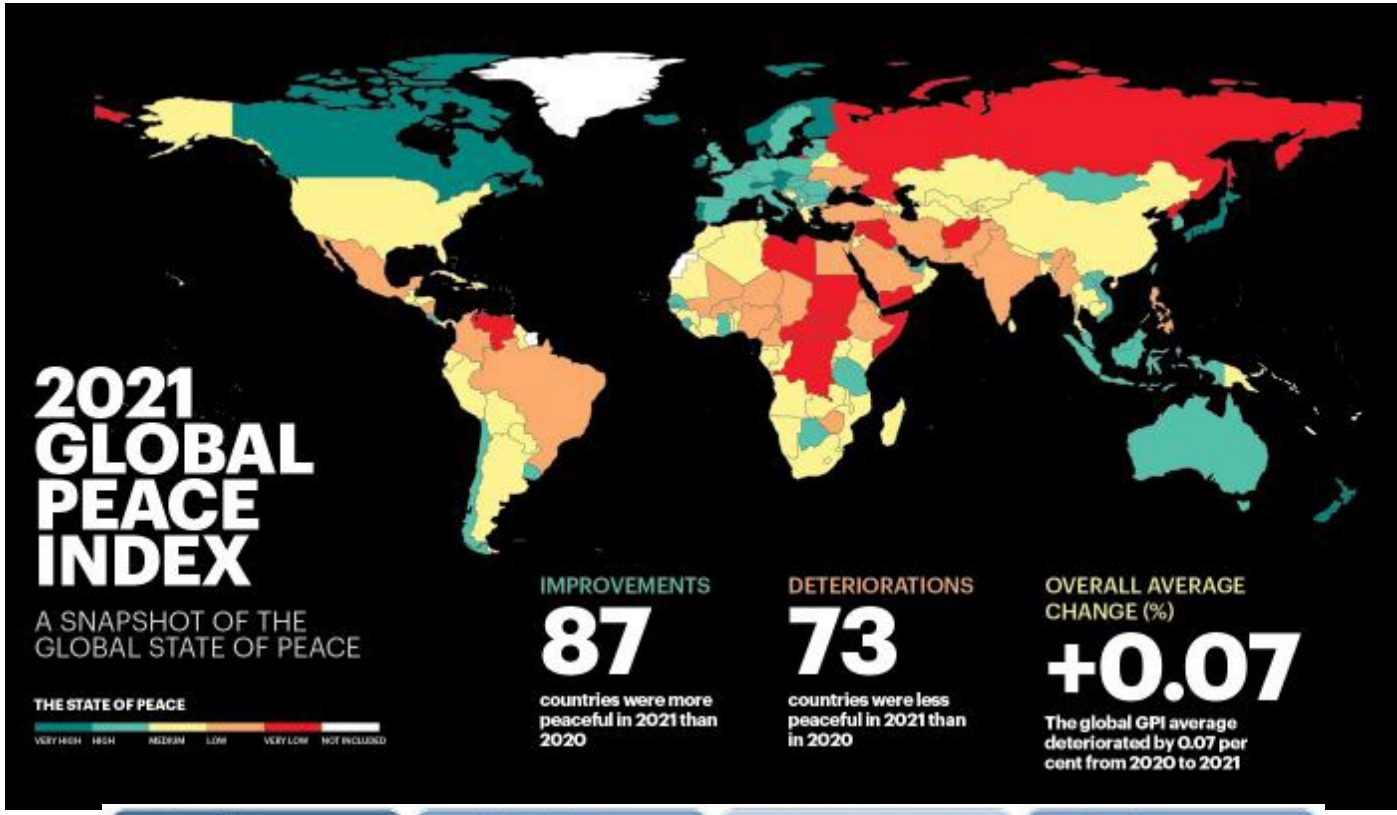
Human Conflict (Active Shooter Incidents)

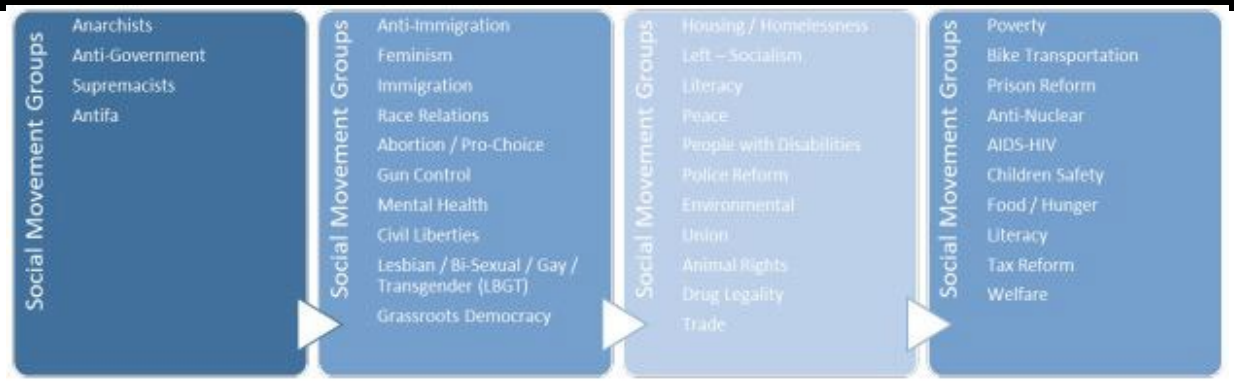
20-Year Active Shooter Summary (through 2019)



Human Conflict (Civil Unrest)

- Defined as any public disturbance involving acts of violence by assemblages of three or more persons, which causes an immediate danger of or results in damage or injury to the property or person of any other individual.
- Can include riots, demonstrations, threatening individuals, or assemblies that have become disruptive and may cause harm to others.
- There can be many cascading affects of social unrest, including continuity of operations and loss of confidence in government.





Human Conflict (Terrorism, Civil Unrest, etc.)

Hazard Risk Summary Table

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Significant	Unlikely	Critical	**Medium**
Blaine	Significant	Unlikely	Critical	**Medium**
Cascade	Significant	Unlikely	Critical	**Medium**
Rocky Boy's	Significant	Unlikely	Critical	**Medium**
Chouteau	Significant	Unlikely	Critical	**Medium**
Fergus	Significant	Unlikely	Critical	**Medium**
Glacier	Significant	Unlikely	Critical	**Medium**
Hill	Significant	Unlikely	Critical	**Medium**
Judith Basin	Significant	Unlikely	Critical	**Medium**
Liberty	Significant	Unlikely	Critical	**Medium**
Petroleum	Significant	Unlikely	Critical	**Medium**
Phillips	Significant	Unlikely	Critical	**Medium**
Pondera	Significant	Unlikely	Critical	**Medium**
Teton	Significant	Unlikely	Critical	**Medium**
Toole	Significant	Unlikely	Critical	**Medium**

Location: Can occur anywhere in the Central Region.

Extent: Can result in significant damage to property and infrastructure, as well as result in injuries and fatalities at a small local scale or across the entire planning area.

Probability: Occasional, 4 active hate groups reported in Montana in 2021 by the Southern Poverty Law Center, in addition to growing numbers of protests across the world in recent years.

Impacts:

- Property damage and personal injuries possible
- Continuity of operations may be impacted
- Economic disruptions
- Public confidence in government can be affected

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What do you think the significance of human conflict is for your jurisdiction?

Jurisdiction	Geographic Extent	Probability of Future Occurrence	Potential Magnitude/ Severity	Overall Significance
Blackfeet	Significant	Unlikely	Critical	Medium
Blaine	Significant	Unlikely	Critical	Medium
Cascade	Significant	Unlikely	Critical	Medium
Rocky Boy's	Significant	Unlikely	Critical	Medium
Choteau	Significant	Unlikely	Critical	Medium
Fergus	Significant	Unlikely	Critical	Medium
Glacier	Significant	Unlikely	Critical	Medium
Hill	Significant	Unlikely	Critical	Medium
Judith Basin	Significant	Unlikely	Critical	Medium
Liberty	Significant	Unlikely	Critical	Medium
Petroleum	Significant	Unlikely	Critical	Medium
Phillips	Significant	Unlikely	Critical	Medium
Pondera	Significant	Unlikely	Critical	Medium
Teton	Significant	Unlikely	Critical	Medium
Toole	Significant	Unlikely	Critical	Medium

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MT Central Region Hazard Significance Summary Table : Subregion A

Hazard	Blackfeet Tribe	Cascade	Glacier	Pondera	Teton
Communicable Disease	Medium	Medium	Medium	Medium	Medium
Cyber-Attack	Medium	Medium	Medium	Medium	Medium
Dam Failure	Medium	Medium	Medium	Medium	Medium
Drought	Medium	Medium	Medium	Medium	Medium
Earthquake	Low	Low	Low	Low	Low
Flooding	High	High	Medium	Low	Medium
Hazardous Material Incidents	Low	High	Medium	Low	Low
Human Conflict (Terrorism, Civil Unrest, etc.)	Medium	Medium	Medium	Medium	Medium
Landslide	Low	Low	Medium	Low	Low
Severe Summer Weather	Medium	Medium	Medium	High	Medium
Severe Winter Weather	Medium	Medium	Medium	Medium	High
Tornadoes & Windstorms	Medium	Medium	Medium	High	High
Transportation Accidents	Low	Medium	Low	Low	Low
Volcanic Ash	Low	Low	Low	Low	Low
Wildland and Rangeland Fire	High	Medium	High	Medium	Medium

MT Central Region Hazard Significance Summary Table : Subregion B

Hazard	Rocky Boy's	Chouteau	Hill	Liberty	Toole
Communicable Disease	Medium	Medium	Medium	Medium	Medium
Cyber-Attack	Medium	Medium	Medium	Medium	Medium
Dam Failure	Medium	Medium	Medium	Medium	Medium
Drought	Medium	Medium	Medium	Medium	Medium
Earthquake	Low	Low	Low	Low	Low
Flooding	Low	Medium	Medium	Medium	Medium
Hazardous Material Incidents	Low	Low	Low	Low	Low
Human Conflict (Terrorism, Civil Unrest, etc.)	Medium	Medium	Medium	Medium	Medium
Landslide	Low	Low	Low	Low	Low
Severe Summer Weather	Medium	Medium	Medium	Medium	Medium
Severe Winter Weather	Medium	High	Medium	High	Medium
Tornadoes & Windstorms	Medium	High	Medium	Medium	Medium
Transportation Accidents	Low	Low	Low	Medium	Medium
Volcanic Ash	Low	Low	Low	Low	Low
Wildland and Rangeland Fire	Medium	Medium	Medium	Medium	Medium

MT Central Region Hazard Significance Summary Table : Subregion C

Hazard	Blaine	Fergus	Fort Belknap	Judith Basin	Petroleum	Phillips
Communicable Disease	Medium	Medium	Medium	Medium	Medium	Medium
Cyber-Attack	Medium	Medium	Medium	Medium	Medium	Medium
Dam Failure	Medium	Medium	Medium	Medium	Medium	Medium
Drought	Medium	Medium	Medium	Medium	Medium	Medium
Earthquake	Low	Low	Low	Low	Low	Low
Flooding	Medium	High	Low	Medium	Low	Medium
Hazardous Material Incidents	Low	Low	Low	Low	Low	Low
Human Conflict (Terrorism, Civil Unrest, etc.)	Medium	Medium	Medium	Medium	Medium	Medium
Landslide	Low	Low	Low	Low	Low	Low
Severe Summer Weather	High	High	Medium	Medium	Medium	Medium
Severe Winter Weather	Medium	High	Medium	Medium	High	Medium
Tornadoes & Windstorms	Medium	High	Medium	Medium	Medium	Medium
Transportation Accidents	Low	Low	Low	Low	Low	Low
Volcanic Ash	Low	Low	Low	Low	Low	Low
Wildland and Rangeland Fire	High	Medium	High	Medium	High	Medium

Mitigation Strategy Update

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Mitigation Strategy Update

Goals

- General guidelines that explain what you want to achieve
- Usually broad policy/vision statements

Objectives (optional)

- Define strategies or implementation steps to attain goals
- Specific and measurable

Actions

- Specific projects/activities to achieve goals & objectives

Mitigation Goals – 2018 Montana SHMP

Goal	Objectives
Goal 1 - Reduce Impacts from All Hazards	
	Objective 1.1 - Implement Property Protection Projects to Reduce Impacts from All Hazards
	Objective 1.2 - Implement Public Education and Awareness Projects to Reduce Impacts from All Hazards
	Objective 1.3 - Support Planning/Mapping/Analysis Projects to Reduce Impacts from All Hazards
	Objective 1.4 - Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards
	Objective 1.5 - Implement Regulatory Projects to Reduce Impacts from All Hazards
	Objective 1.6 - Suggest Legislative Changes to Reduce Impacts from All Hazards
Goal 2 - Reduce Impacts of Wildland and Rangeland Fires	
	Objective 2.1 - Implement Property Protection Projects to Reduce Impacts from Wildfire
	Objective 2.2 - Support Planning/Mapping/Analysis Projects to Reduce Impacts from Wildfire
	Objective 2.3 - Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire
	Objective 2.4 - Implement Natural Resource Protection Projects to Reduce Impacts from Wildfire
	Objective 2.5 - Implement Regulatory Projects to Reduce Impacts from Wildfire
	Objective 2.6 - Enhance Emergency Service Capabilities to Reduce Impacts from Wildfire
Goal 3: Mitigate the Potential Loss of Life and Property from Flooding	
	Objective 3.1 - Implement Property Protection Projects to Reduce Impacts from Flooding
	Objective 3.2 - Support Planning/Mapping/Analysis Projects to Reduce Impacts from Flooding
	Objective 3.3 - Implement Natural Resource Protection Projects to Reduce Impacts from Flooding
	Objective 3.4 - Implement Structural Projects to Reduce Impacts from Flooding
	Objective 3.5 - Implement Public Education and Awareness Projects to Reduce Impacts from Flooding
	Objective 3.6 - Enhance Emergency Service Capabilities to Reduce Impacts from Flooding

(etc.)

Mitigation Goals

Cascade County HMP Goals:

1. Reduce the Impacts from Hazardous Material Incidents
2. Reduce Impacts from Wildfires
3. Reduce the Impacts from Severe Weather & Drought

(etc.)

Toole County HMP Goals:

1. Mitigate natural hazards to reduce the potential for property loss or damage, injury and loss of life in the City of Shelby.
2. Mitigate natural hazards to reduce the potential for property loss or damage, injury and loss of life in the Town of Sunburst.
3. Mitigate natural hazards to reduce the potential for property loss or damage, injury and loss of life in the Town of Kevin.

(etc)

Mitigation Goals

Fort Belknap HMP Goals:

1. Protect the lives, health, and safety of the citizens of the Fort Belknap Reservation before, during, and after a disaster.
2. Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.
3. Enhance and protect the communication and warning/notification systems on the reservation.
4. Promote education and awareness programs, campaigns, and efforts designed to encourage citizens and private and public entities to mitigate and become more resilient to disasters.
5. Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.
6. Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the reservation.
7. Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.

Prior Mitigation Actions

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	JURISDICTION	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Enhance Communication Systems	Obtain digital radios for fire fighters.	Fire	Phillips County	High	High	Low	High
Enhance Communication Systems	Provide radios to farmers and ranchers who respond to rural grass fires.	Fire	Phillips County	High	High	Low	High
Enhance Early Warning Capabilities	Obtain NOAA weather radios for critical facilities.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Phillips County	High	High	Low	High
Enhance Early Warning Capabilities	Obtain/upgrade sirens for all communities and include a public awareness campaign, along with installation of new sirens.	Fire, Flooding, Technological, Tornadoes	Phillips County	High	High	Low	High
Enhance Emergency Response Systems	Develop map of ranch roads to enhance response efforts.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Phillips County	High	High	Low	High
Improve Fire Fighting Capabilities	Develop GPS database of water sources for fighting fires.	Fire	Zortman	High	High	Low	High
Improve Fire Fighting Capabilities	Identify appropriate locations for the installation of dry hydrants in the County.	Fire	Phillips County	High	High	Medium	High
Improve Fire Fighting Capabilities	Coordinate with State Regional DES and Federal partners for scheduling and attendance at Incident Command System (ICS) 100/200 and/or IS 700 or State of Montana DES training requirement.	Fire	Phillips County/DES	High	High	Low	High
Improve Fire Fighting Capabilities	Develop Type III Incident Management Team table of organization utilizing expertise within the county and adjacent counties within the MT State DES Region. Utilize the National Incident Management System (NIMS) as structure to identify Incident Commander(s), Safety, Information and Liaison Officers, and Operations, Planning, Logistics, Finance Section Chiefs. All Risk and Wildland Fire Type III teams may require separate specialists in operations, plans and logistics.	Fire	Phillips County/DES	High	High	Low	High
Improve Fire Fighting Capabilities	With cooperators, provide classroom or video fire suppression training for rural area citizens and County employees who will response to wildland fires.	Fire	Phillips County	High	High	Low	High
Improve Fire Fighting Capabilities	Locate and identify roads that have wooden bridges within the County. Plan protection measures and alternate routes in the event of a wildfire compromising or burning these bridges.	Fire	Phillips County	High	High	Low	High

Prior Mitigation Actions

- **Not Started:** Work has not begun
- **In Progress:** Work has begun but is not completed
- **Completed:** The action has been finished
- **Annual Implementation:** Ongoing with no specific end date
- **Deleted:** The action is no longer relevant or cancelled due to changing priorities, lack of funds, etc.

There is no requirement or expectation to have completed any/all previous actions.

Mitigation Actions Update – New Actions

- Begin thinking of new action ideas
- Each jurisdiction will need **at least one NEW action per hazard**,
- A breadth of actions that cover priority hazards
- Use updated risk assessment as basis
  - Possible new actions will be suggested e.g.:
    - Critical facility protection
    - Outdoor warning
    - Mitigation capability improvements
- Will be the focus of next meeting

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Please indicate which weeks work for you to attend the mitigation workshops

ⓘ Start presenting to display the poll results on this slide.

Next Steps

Next Steps

- Please return plan update guide input where outstanding
- Provide input on mitigation action status on form
- Start thinking of ideas for new mitigation actions
- Stay informed by email of upcoming meetings (TBD)
- Review results public survey results
- Review draft HIRA section of plan when available
    - For yellow highlighted gaps where applicable
    - Review for jurisdiction specifics, mitigation ideas

Project Tasks and Schedule

Project Milestones	Anticipated Timeline
Meeting #2 HIRA review	August
HIRA Draft for HMPC review	September
Meeting #3 Mitigation Strategy	October
HMPC Review Draft	November
Public Review Draft	December
DHSEM Review Draft	January – February 2023
Final Plan for FEMA Review (estimated)	March – April 2023
Final Approved HMP for local adoption	May-July 2023

Don't Leave without Typing Your Name, Title, and Affiliation in Chat Box!

Questions?

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