National Cohesive Wildland Fire Management Strategy: Management and Policy Options

Northeast RSC/NSAT Meeting

February 19-20, 2014

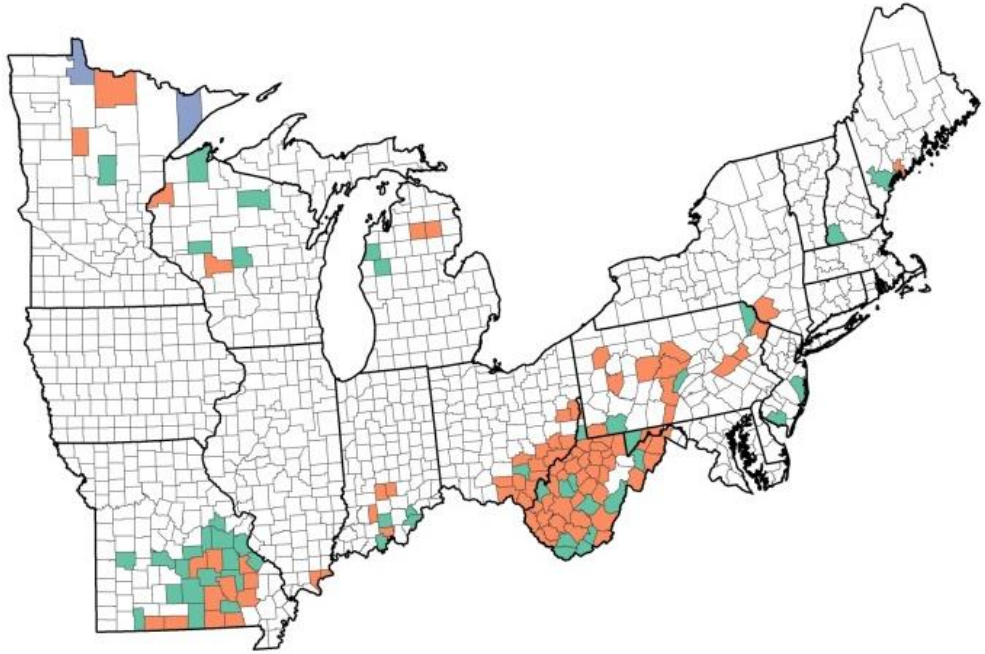
National Goals	National Challenges	Management Options*
Restore and Maintain Landscapes **Fire-adapted Communities**	Vegetation and Fuels	Prescribed Fire: Expand or maintain in areas of current use Prescribed Fire: Expand into areas of limited current use Prescribed Fire: Utilize on a limited basis Manage wildfires for resource objectives: In forested systems Manage wildfires for resource objectives: In non-forested systems Manage wildfires for resource objectives: In areas where increased awareness of community risk is necessary. Non-fire Treatments: Supported by forest products industry Non-fire Fuels Treatments: In non-forest areas Non-fire Fuels Treatment: In areas with limited economic markets Fuels Treatments as a precursor to prescribed fire or managed wildfire.
	Homes, Communities, & Values At Risk	Focus on home defensive actions Focus on combination of home and community actions Adjust building and construction codes, municipal areas Adjust building and construction codes, non-municipal areas
Respond to Wildfires	Human-caused Ignitions	Reduce accidental human-caused ignitions Reduce human-caused incendiary ignitions (e.g., arson)
	Effective and Efficient Wildfire Response	Prepare for large, long-duration wildfires Protect structures and target landscape fuels Protect structures and target prevention of ignitions

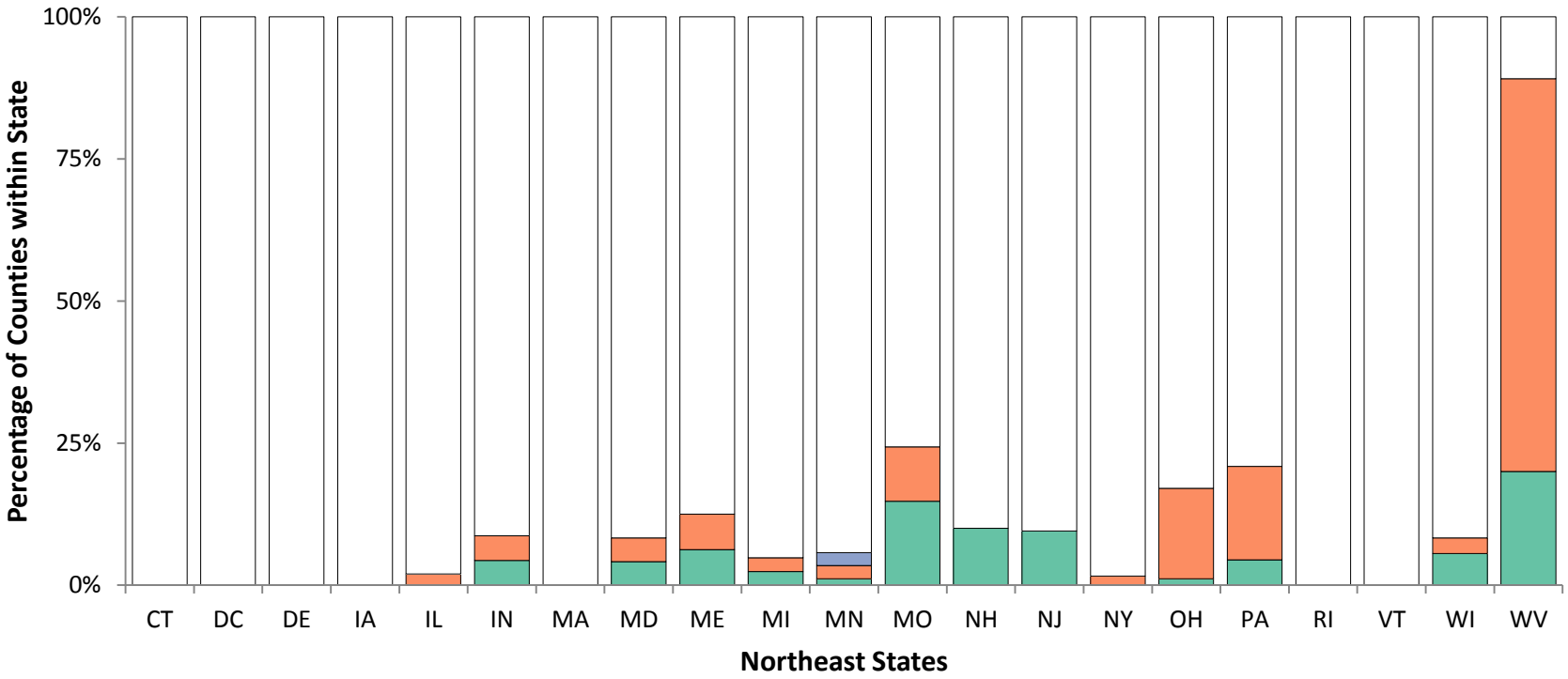
***As related to addressing national challenges and in support of the three Cohesive Strategy goals. The three national goals are both related and interdependent upon each other, making management options supportive of achieving progress in all three goal areas but to varying degrees.**

Cohesive Wildland Fire Management Strategy

Prescribed Fire

- A – Use prescribed fire to manage fuels where it is already being used
- B – Consider expanding use of prescribed fire
- C – Consider prescribed fire, but on a limited basis
- Local prescribed fire opportunities may exist





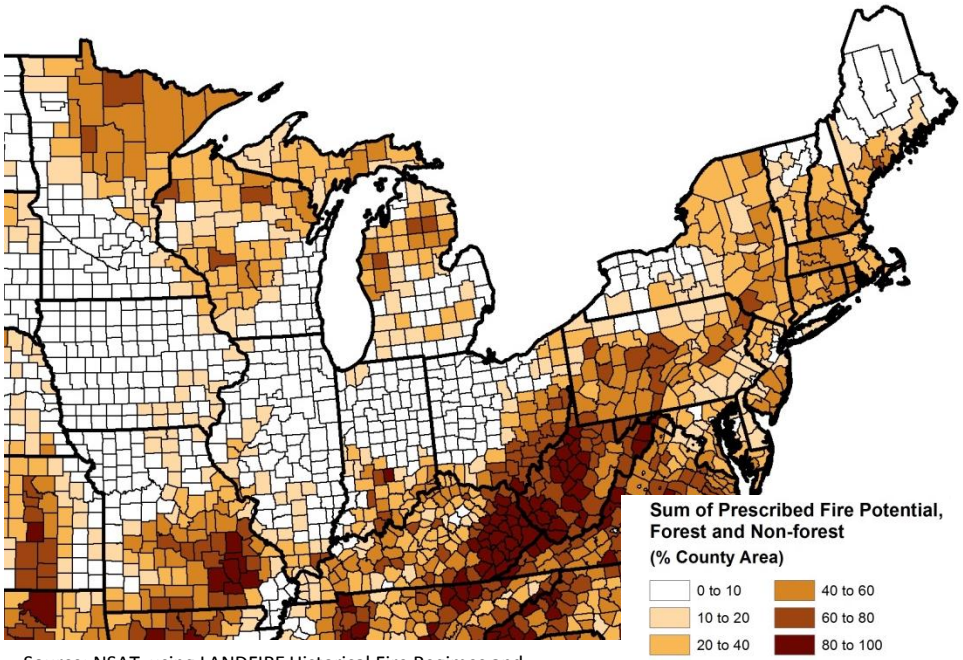
Cohesive Wildland Fire Management Strategy

Prescribed Fire

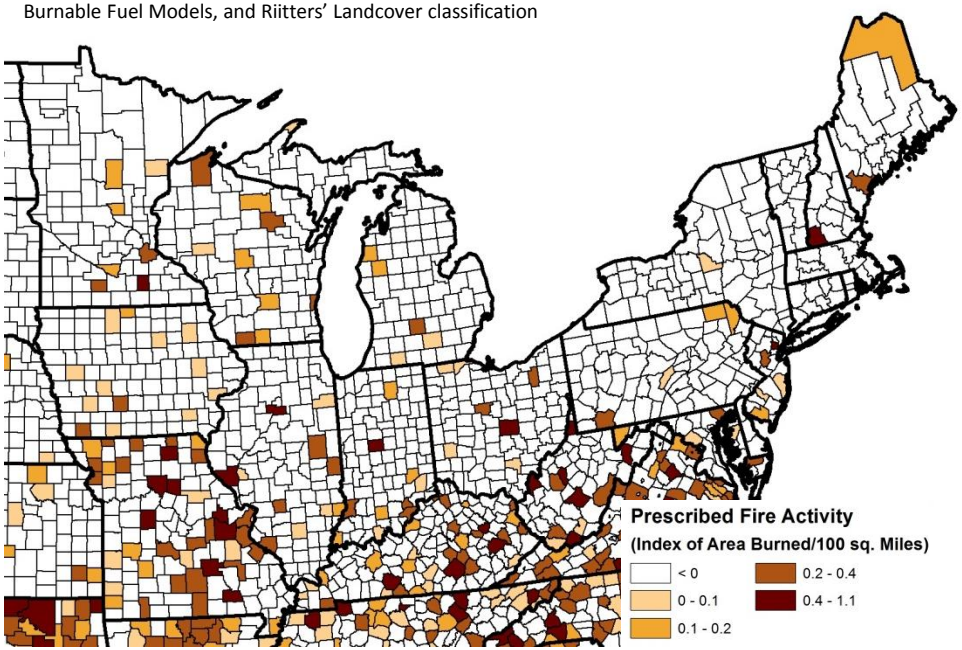
Short Explanation:

National maps of potential for prescribed fire use were developed in both forested and non-forested systems based on vegetation, historical fire regime, and land cover (the map of both forest and non-forest prescribed fire potential is shown top right). These maps provide a baseline from which further opportunities for use were explored. Emphasis is on broad-scale application of prescribed fire, focusing on counties where a significant portion of each county has the potential for prescribed fire use.

One management opportunity for prescribed fire use is to maintain or expand its application in areas where it currently is used. A second opportunity is to expand into areas with prescribed fire potential, yet evidence of current, widespread application is lacking. The analysis of probable areas of prescribed fire use based (bottom right) on remotely sensed data and other reports indicate that many counties are substantively using prescribed fire.



Source: NSAT, using LANDFIRE Historical Fire Regimes and Burnable Fuel Models, and Riitters' Landcover classification



Source: NSAT, using Combined Reporting Systems, MTBS, and MODIS Hotspot Detections

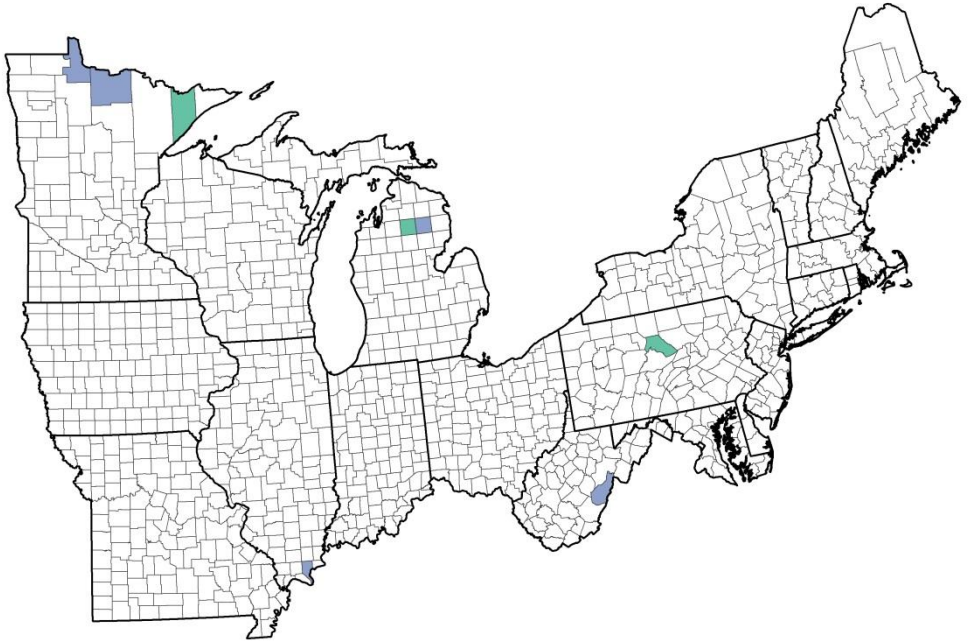
Cohesive Wildland Fire Management Strategy

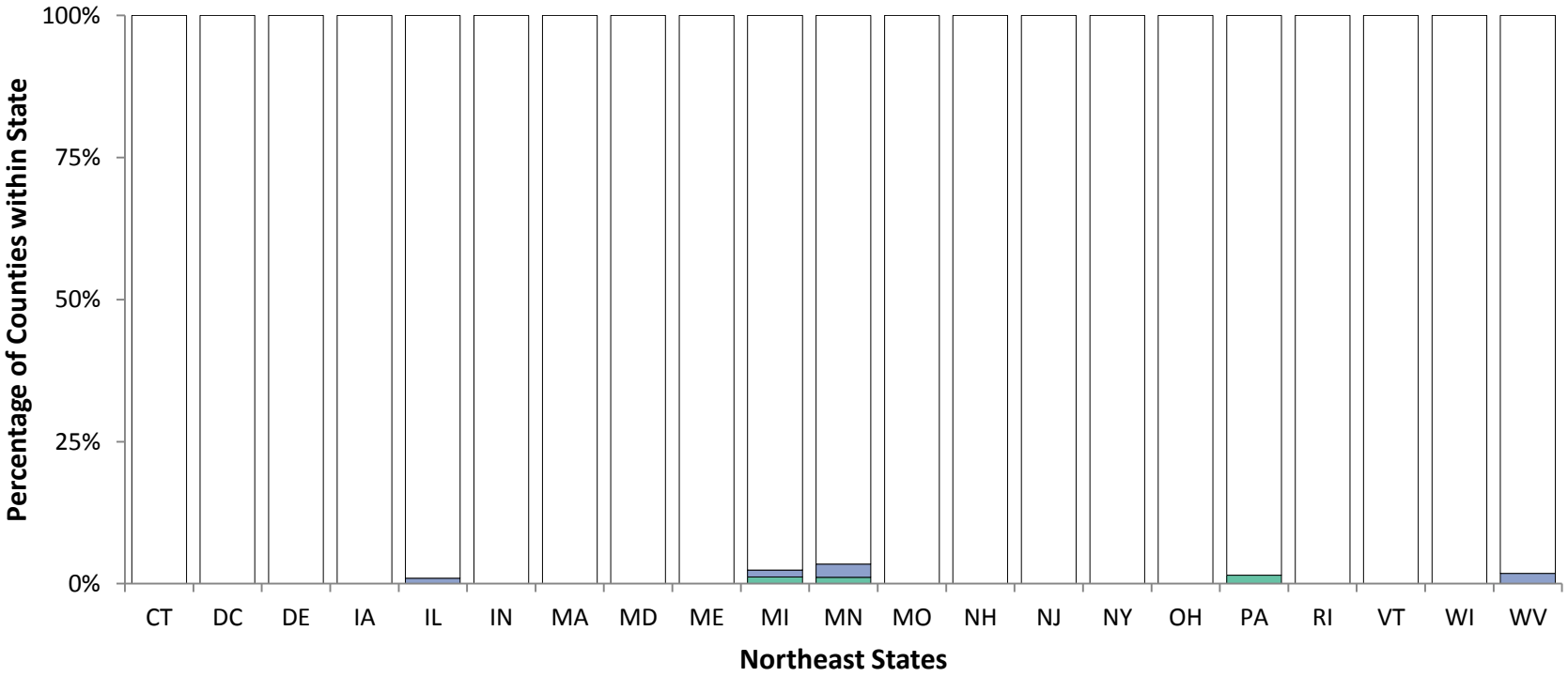
Manage Wildfires for Resource Objectives

WFRB in forested landscapes

WFRB in non-forested landscapes

WFRB, but with more conflicts with communities





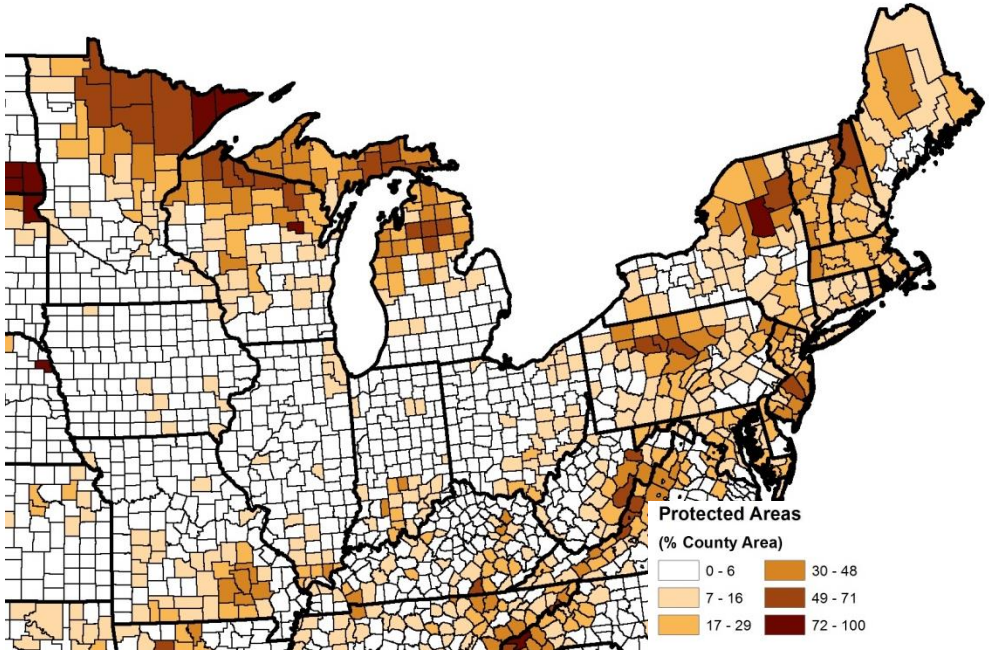
Cohesive Wildland Fire Management Strategy
Manage Wildfires for Resource Objectives

Short Explanation:

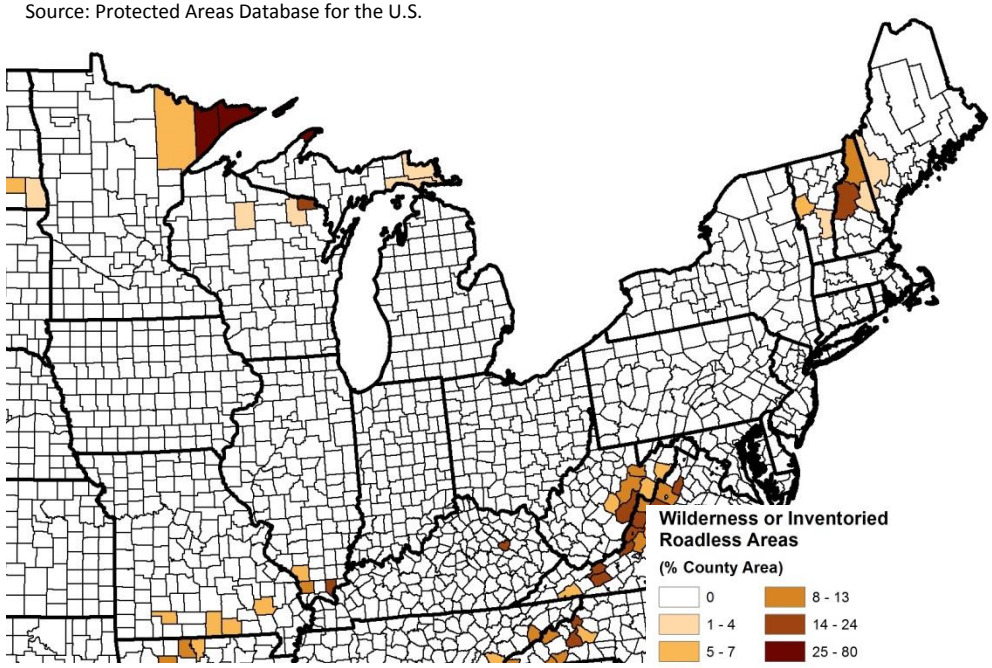
Managing wildfire for resource objectives and ecological purposes refers to a strategic choice to use unplanned ignitions to achieve resource management objectives. Like prescribed fire, allowing wildfires to burn for the purposes of ecosystem restoration or hazard reduction has inherent risk. These risks must be balanced with the potential benefits on an individual incident basis, which requires both pre-incident planning at the landscape scale and sophisticated incident management.

Wildfire for Resource Benefits in forested landscapes. Opportunities for managing wildfire for resource objectives were identified by first looking at those areas where prescribed fire was deemed suitable. This option is associated with rural areas with few roads, low numbers of ignitions (mostly natural), moderate flame intensities, and large contiguous blocks of natural vegetation. The forested areas tend to have a high percentage of Federal ownership and a mix of FRGs I, II, and IV. The maps to the right show percentage of county area within protected conservation areas and Wilderness or Inventoried Roadless areas.

WFRB, but with more conflicts with communities. Another set of counties was highlighted where the landscape characteristics suggest potential ecological benefits from managing wildfire for resource objectives, but the community attributes suggest a higher potential for conflicts



Source: Protected Areas Database for the U.S.



Source: WFDSS, Protected Areas Database for the U.S.

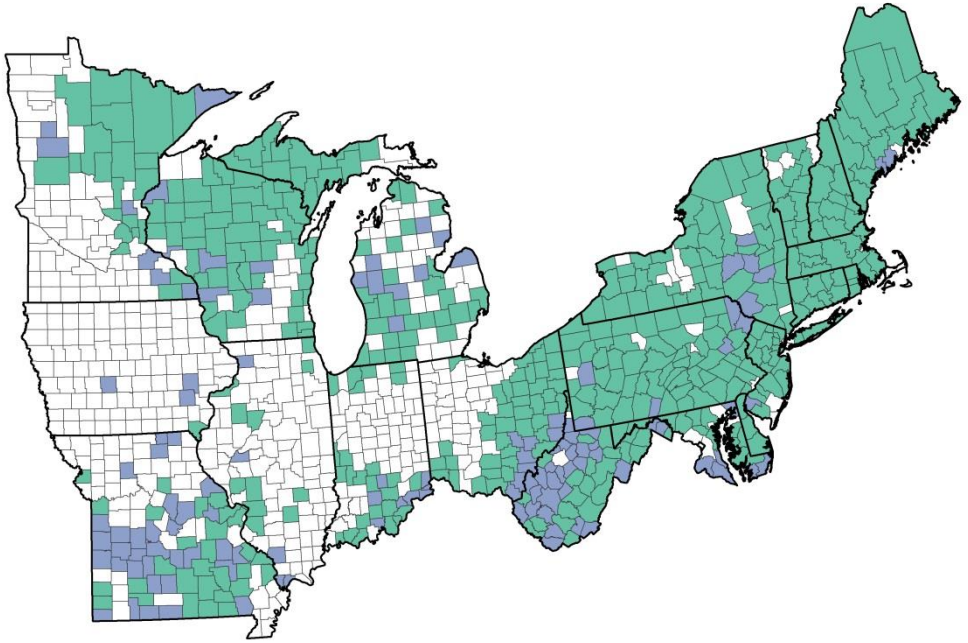
Cohesive Wildland Fire Management Strategy

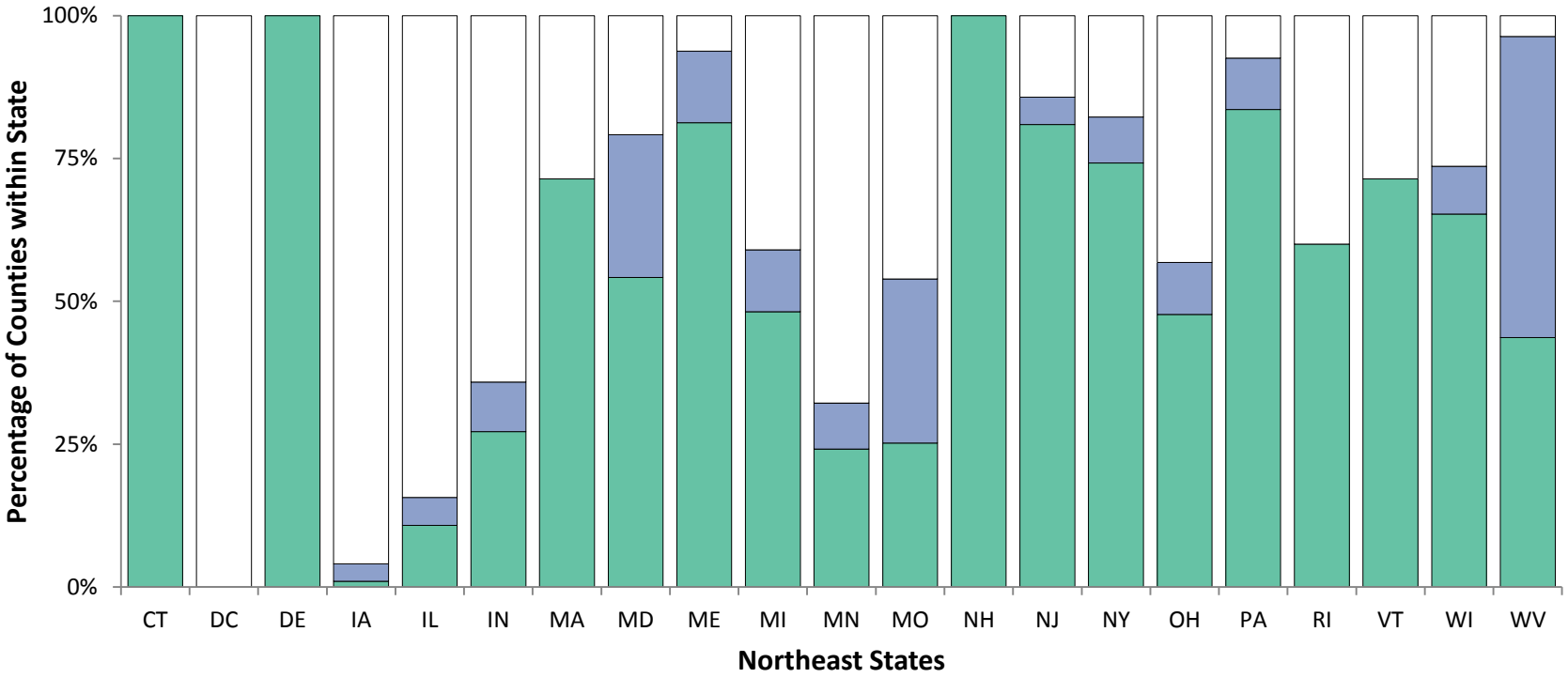
Non-fire Fuel Treatments

Non-fire fuel treatments supported by active timber industry

Non-fire fuel treatments in non-forested areas supported by grazing or mowing

Non-fire fuel treatments are preferred option but supporting markets are weak





Cohesive Wildland Fire Management Strategy

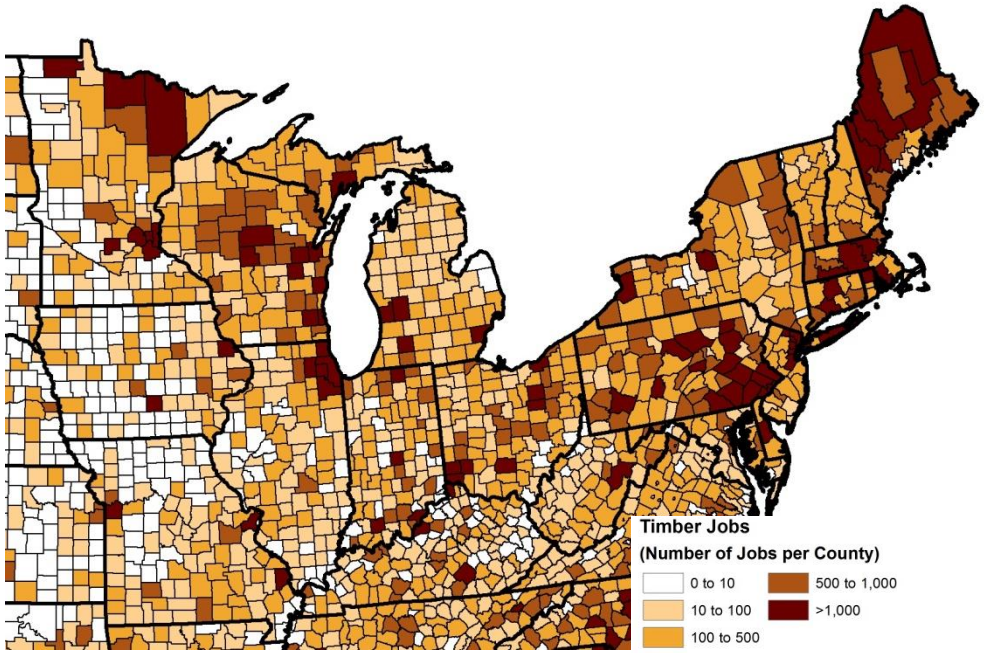
Non-fire Fuel Treatments

Short Explanation:

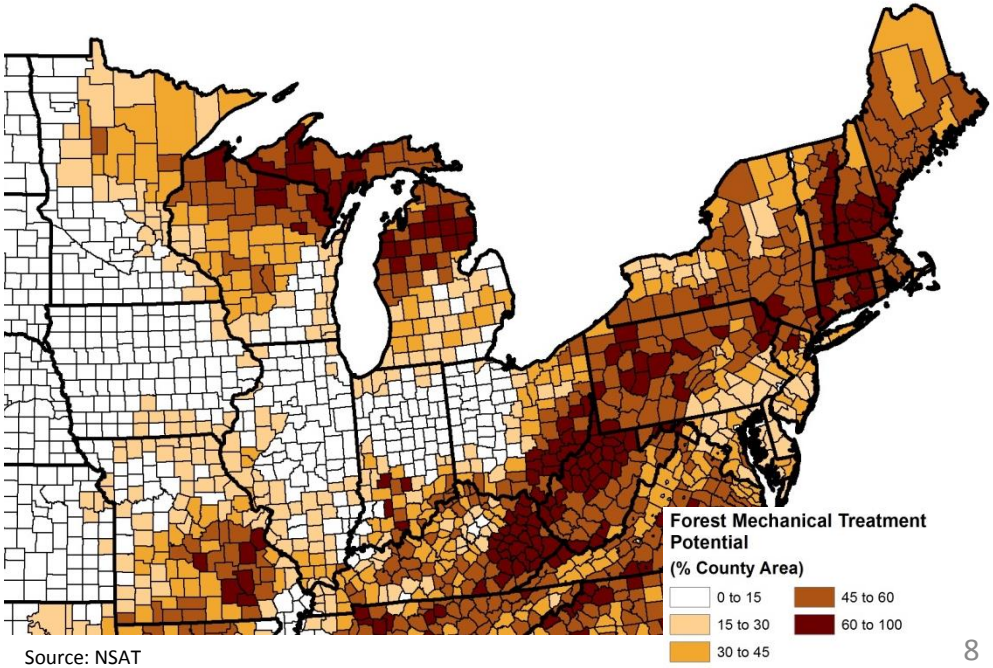
A variety of methods that do not directly involve fire often are used to change vegetation composition and structure and alter fuels to reduce hazard. These include product utilization along with various mechanical thinning and debris disposal techniques. Non-mechanical methods can involve livestock grazing to reduce fine fuels in rangeland systems, or using herbicides to eradicate or suppress unwanted vegetation.

A - Non-fire fuel treatments supported by active timber industry. Opportunities for using active timber markets to offset costs of mechanical fuels treatments in forests were identified by using data about timber jobs (top right), mill production, and forested area available for mechanical treatment (bottom right). These counties occur throughout the Northeast.

C - Non-fire fuel treatments are preferred option but supporting markets are weak. This opportunity includes counties where mechanical treatment in forests offers considerable benefit, but where evidence of economic value or markets to support such activities is weak. These include scattered counties throughout the Northeast.



Source: FPA

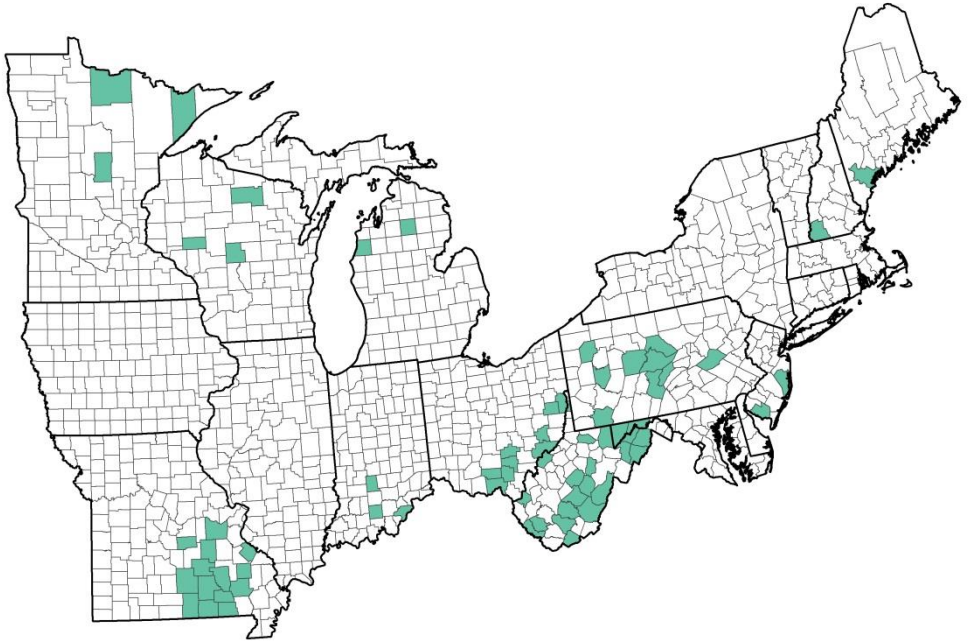


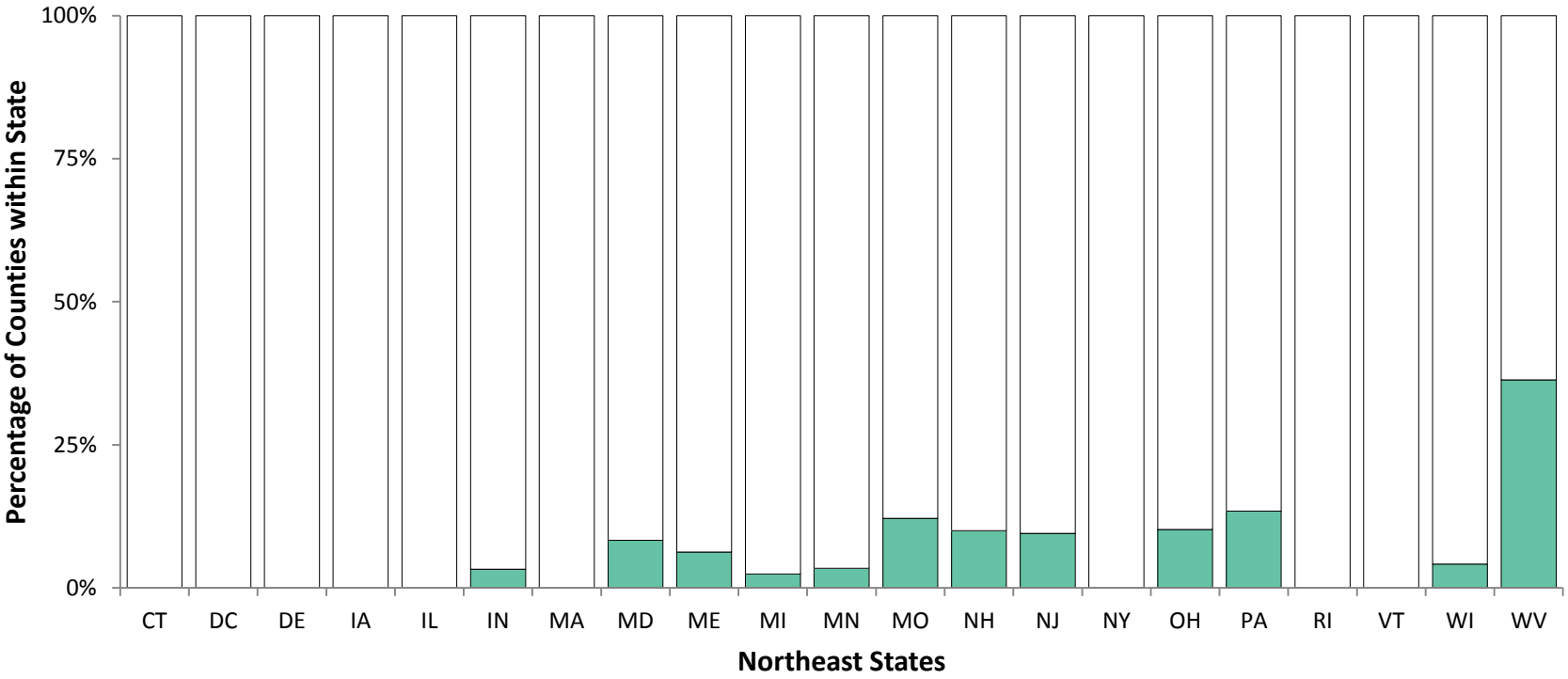
Source: NSAT

Cohesive Wildland Fire Management Strategy

Fuel Treatments as a Precursor to Prescribed Fire or Managed Wildfire

Treatments are economical as a precursor to managed fire





Cohesive Wildland Fire Management Strategy

Fuel Treatments as a Precursor to Prescribed Fire or Managed Wildfire

Short Explanation:

A variant on the theme of non-fire fuel treatments highlights areas where economically sustainable mechanical treatment could be used as a precursor to, and combined with, safer and more expanded use of wildland fire.

The intent is to use mechanical treatments strategically to reduce the risks from wildland fire use across a broader landscape. Essentially, this involves an intersection of the “Prescribed Fire” and “Non-fire fuel treatments supported by active timber industry” Options.

Cohesive Wildland Fire Management Strategy

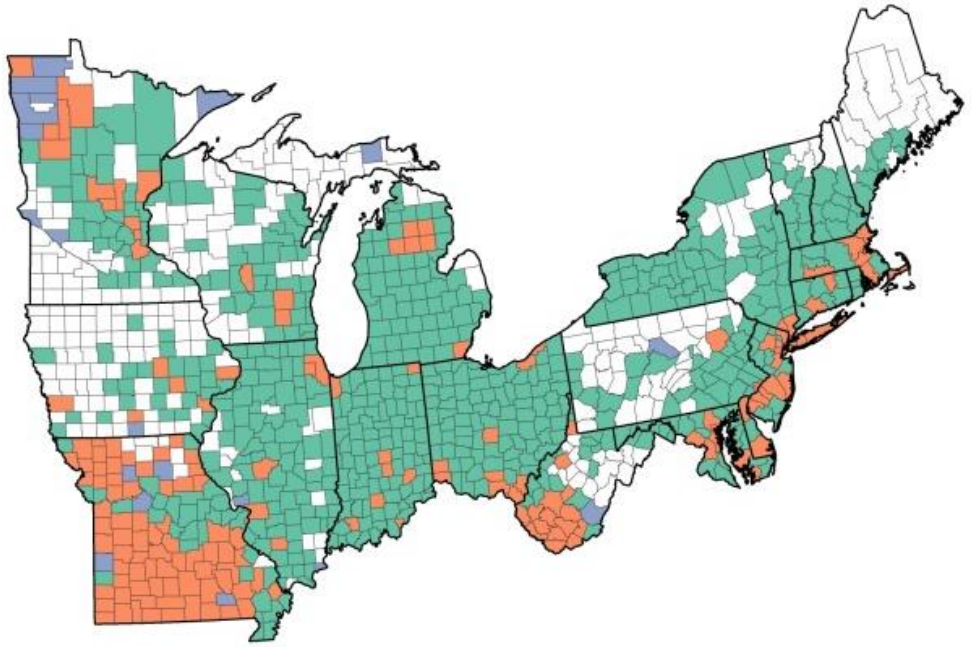
Reduce Accidental Ignitions

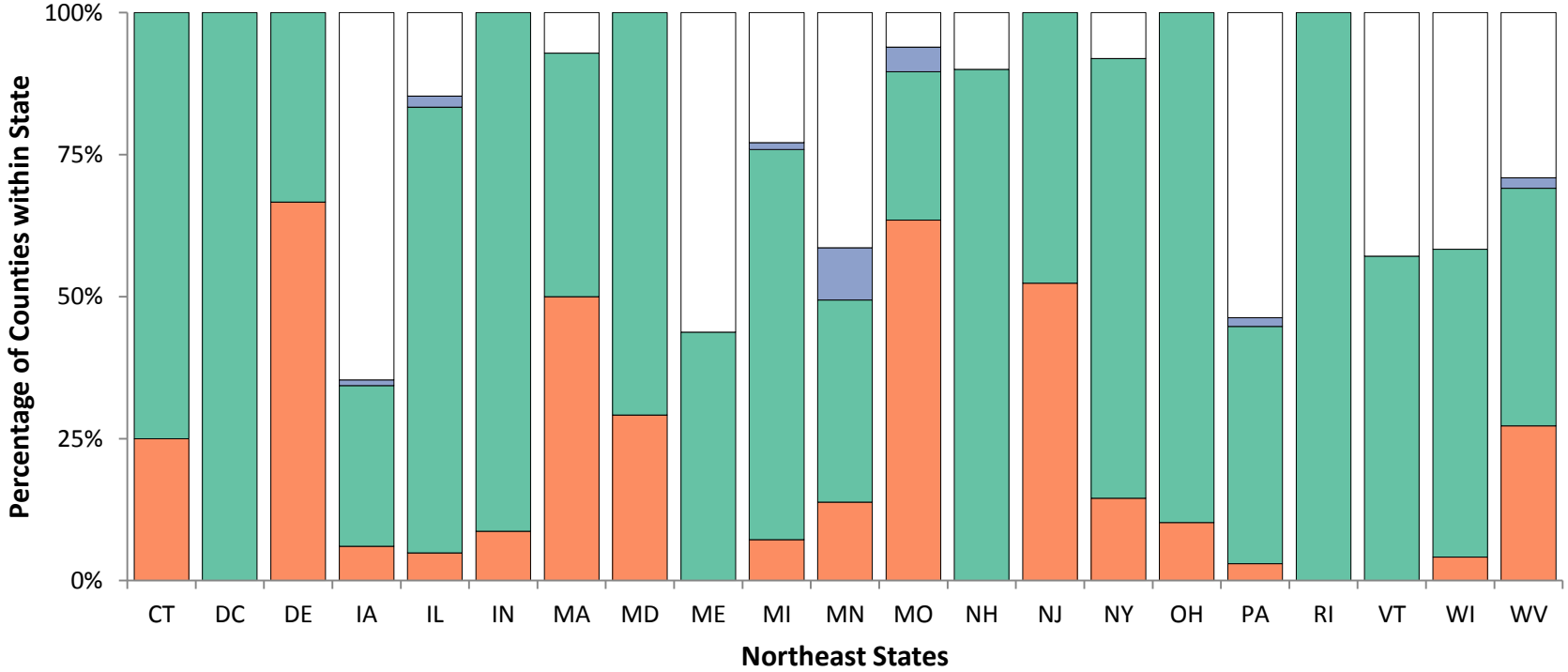
High Ignitions, High Area Burned

High Ignitions, Low Area Burned

Low Ignitions, High Area Burned

Low Ignitions, Low Area Burned





Cohesive Wildland Fire Management Strategy

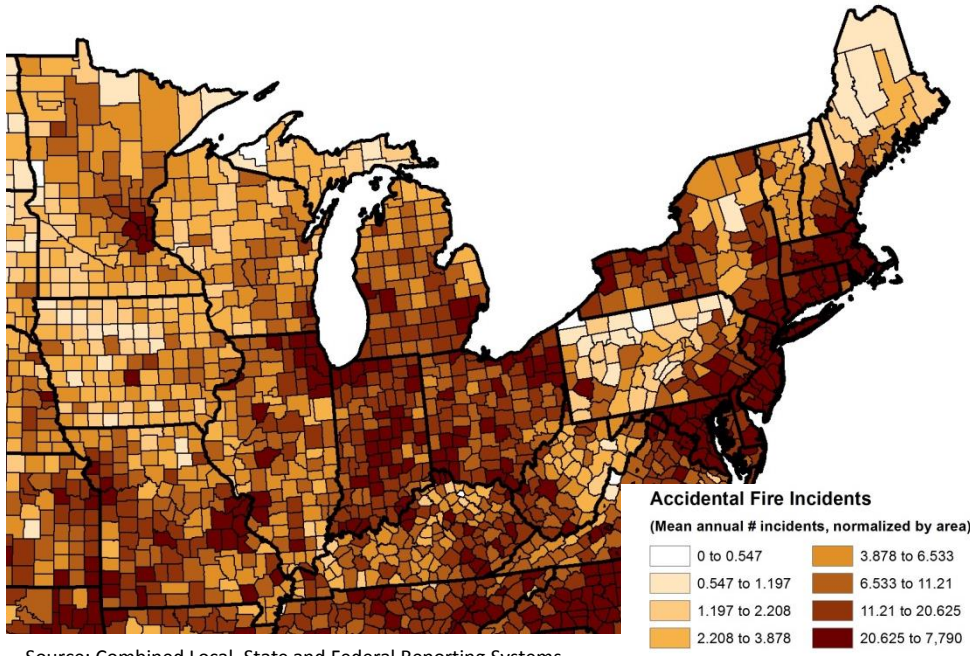
Reduce Accidental Ignitions

Short Explanation:

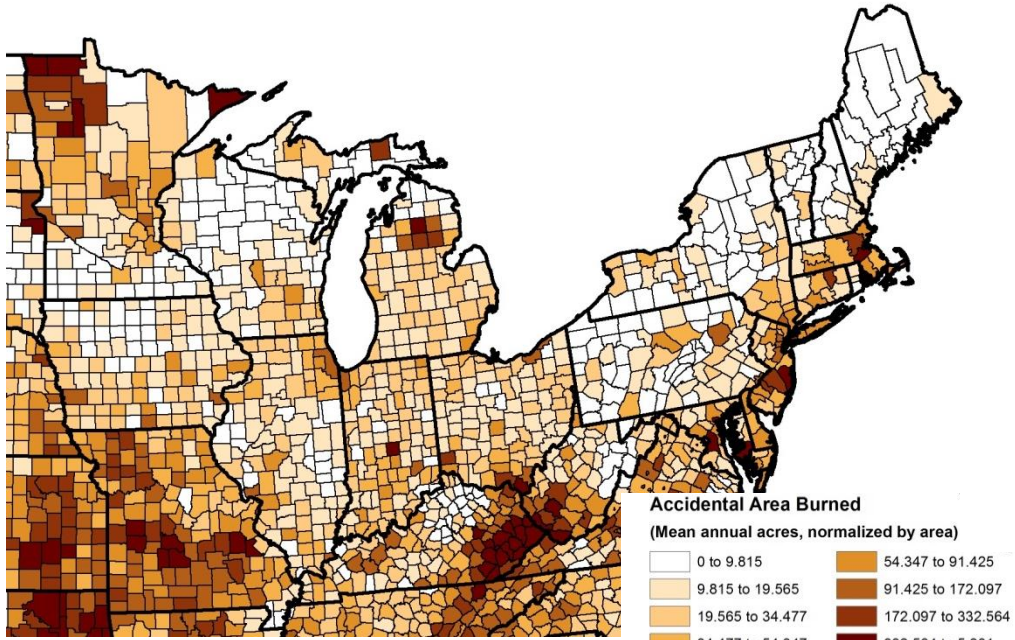
Counties were divided into two classes based on ignitions: those with either higher or lower than normal numbers of accidental incidents (Higher or Lower than 3.878 Mean Annual Reports/Area, map top right).

Similarly, counties were split based on the area burned by accidental incidents relative to the national median (Higher or Lower than 54.347 Mean Annual Acres/Area, map bottom right).

Combinations of these two divisions were used to create the four-color map of the Nation. The Northeast has a high percentage of the high-ignition-density, low-area-burned counties.



Source: Combined Local, State and Federal Reporting Systems

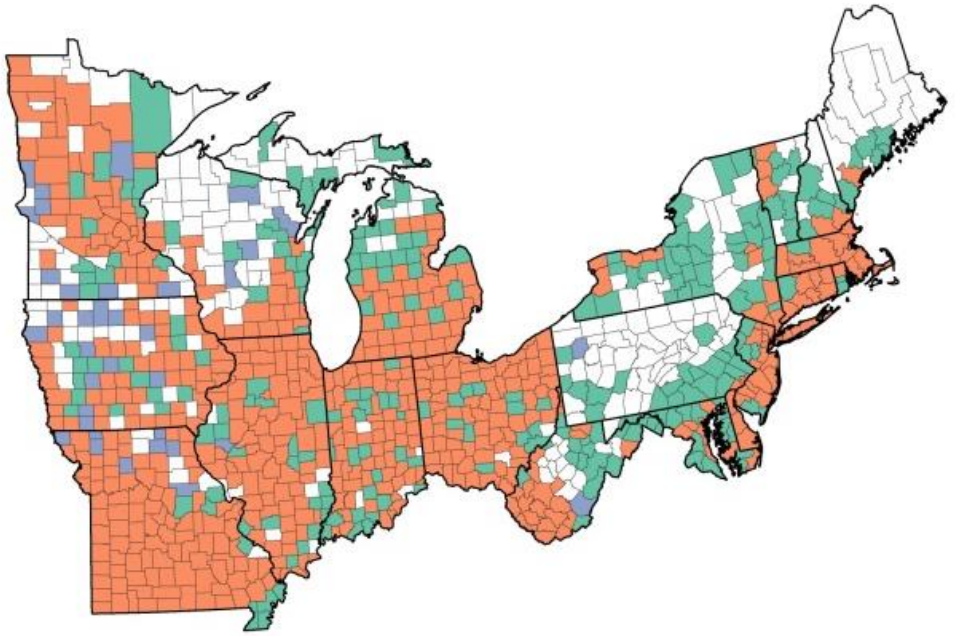


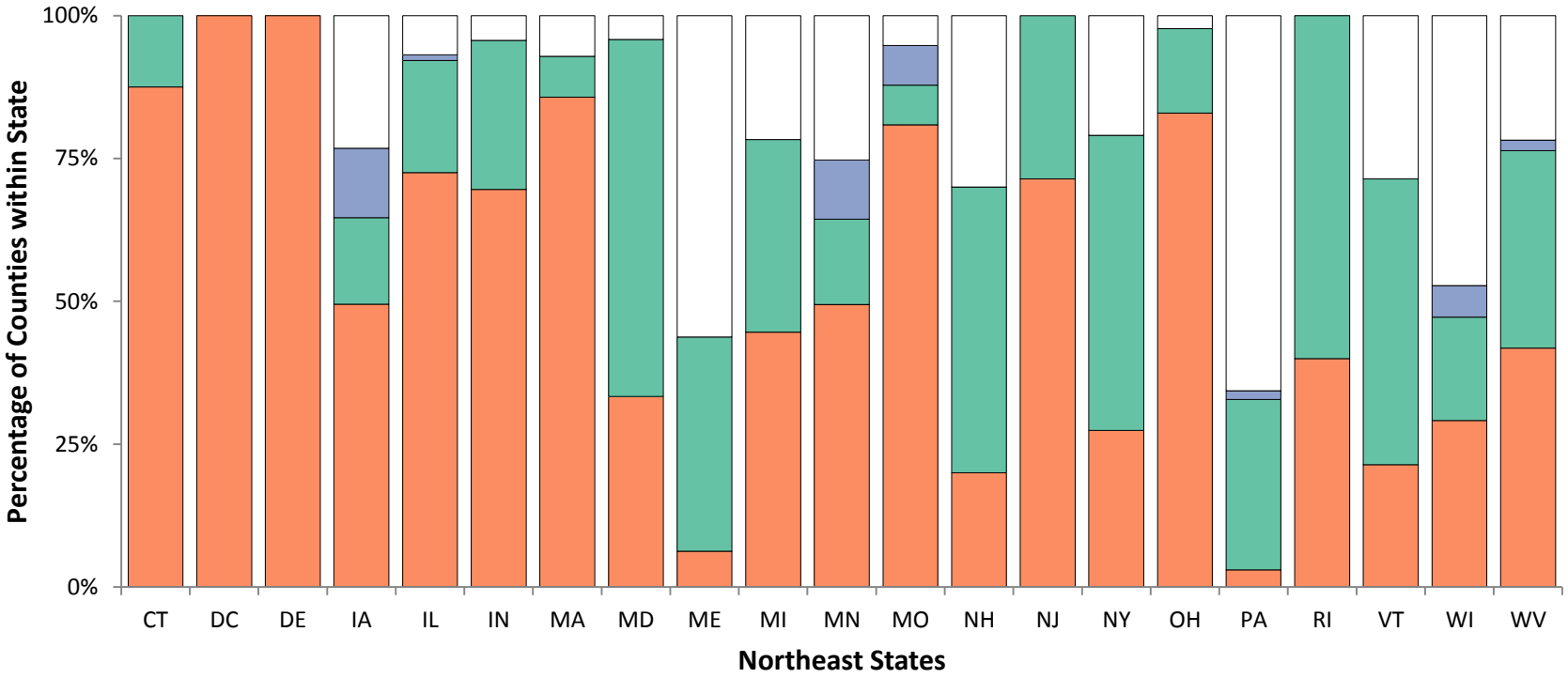
Source: Combined Local, State and Federal Reporting Systems

Cohesive Wildland Fire Management Strategy

Reduce Intentional Ignitions

- High Ignitions, High Area Burned
- High Ignitions, Low Area Burned
- Low Ignitions, High Area Burned
- Low Ignitions, Low Area Burned





Cohesive Wildland Fire Management Strategy

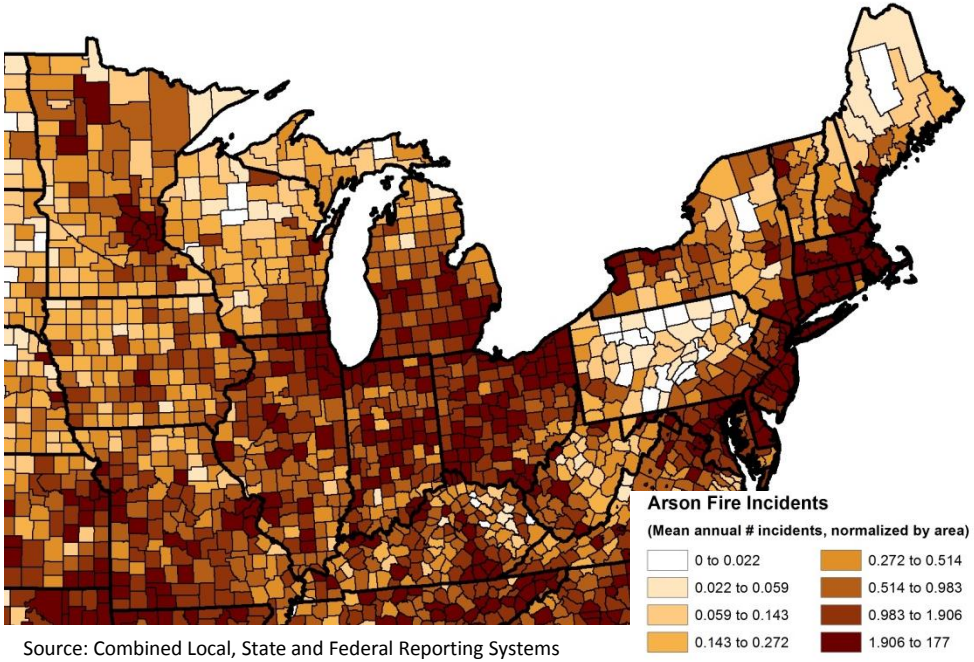
Reduce Intentional Ignitions

Short Explanation:

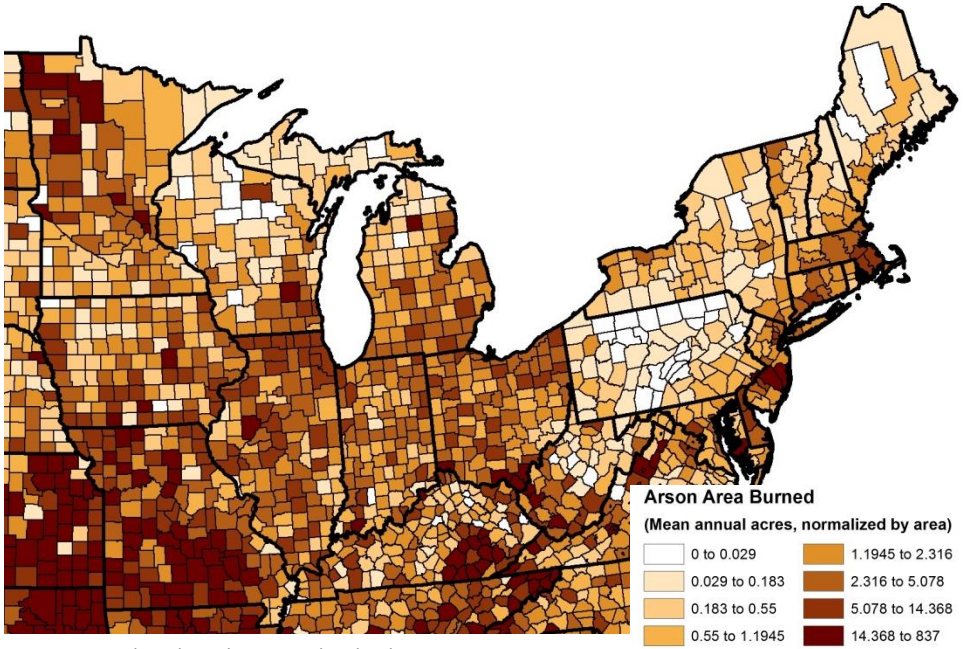
Counties were divided into two classes based on ignitions: those with either higher or lower than normal numbers of intentional incidents (Higher or Lower than 0.272 Mean Annual Reports/Area, map top right).

Similarly, counties were split based on the area burned by intentional incidents relative to the national median (Higher or Lower than 51.995 Mean Annual Acres/Area, map bottom right).

Combinations of these two divisions were used to create the four-color map of the Nation. Large portions of the East exhibit a combination of both high incendiary ignitions and high area burned.



Source: Combined Local, State and Federal Reporting Systems



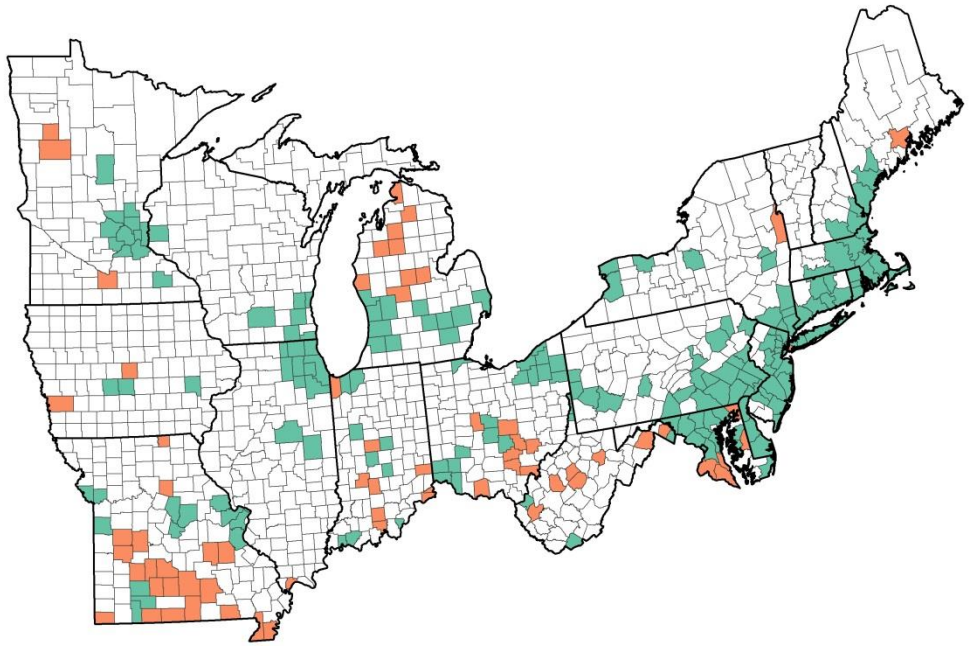
Source: Combined Local, State and Federal Reporting Systems

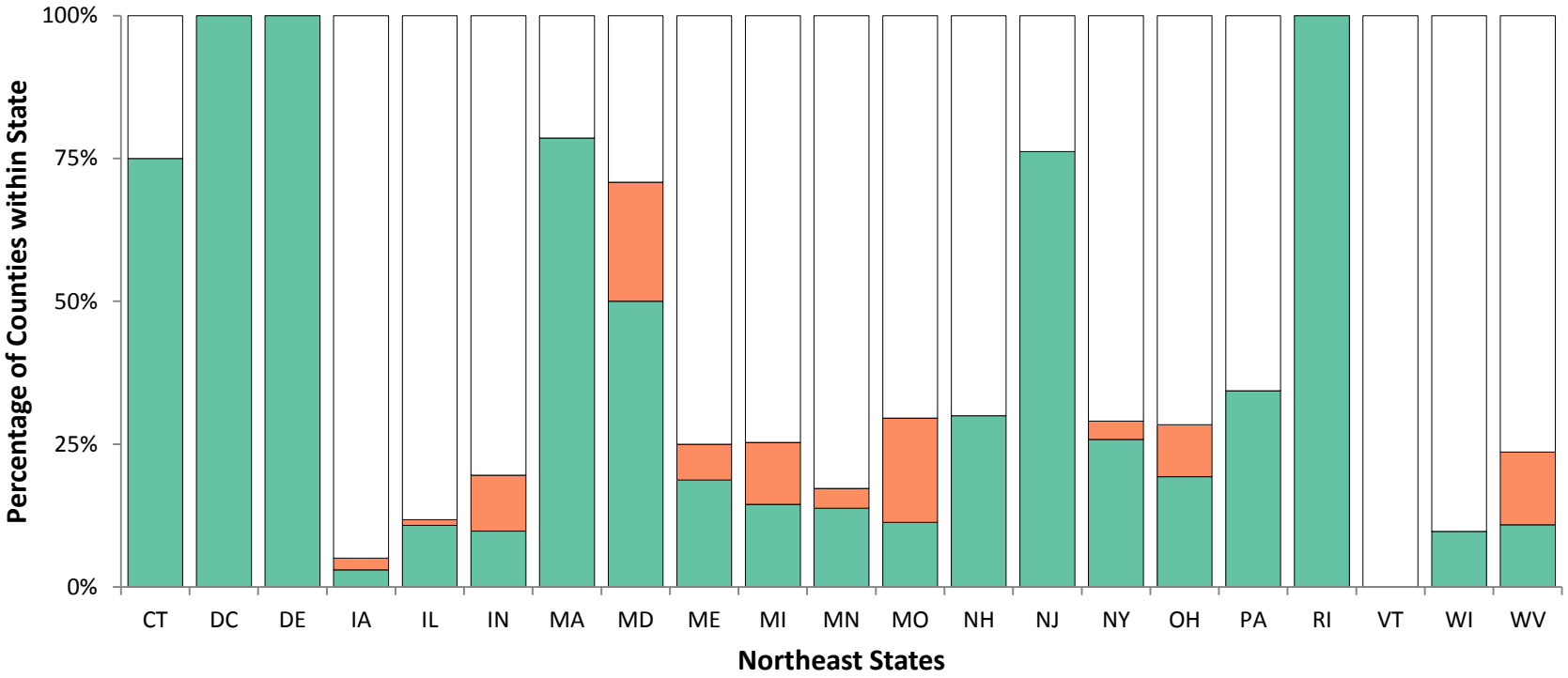
Cohesive Wildland Fire Management Strategy

Building Codes

A – Adjust building and construction codes, municipal areas

B – Adjust building and construction codes, non-municipal areas





Cohesive Wildland Fire Management Strategy

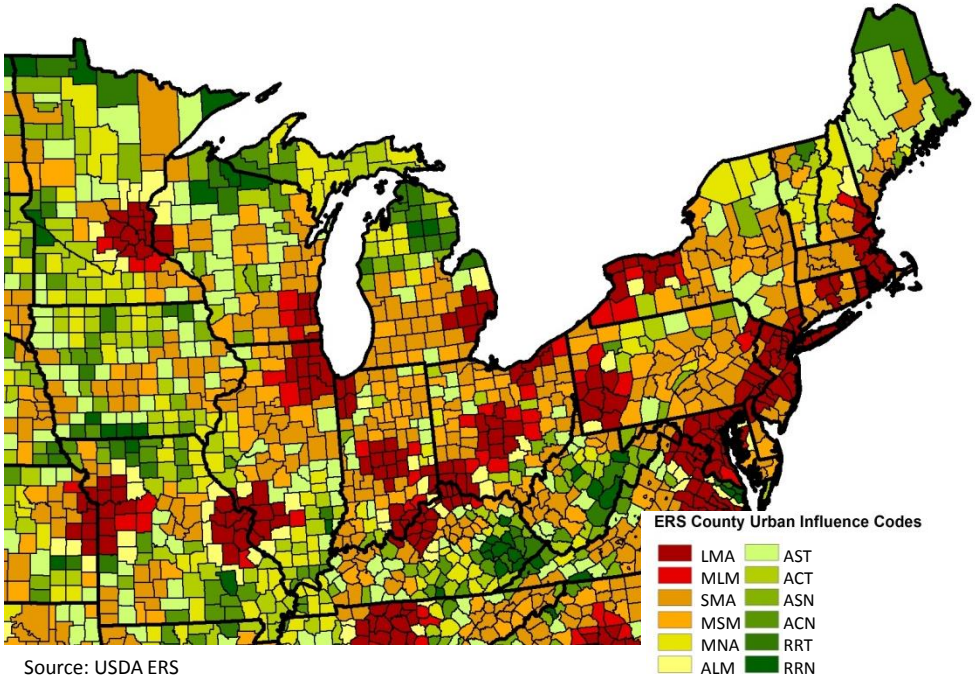
Building Codes

Short Explanation:

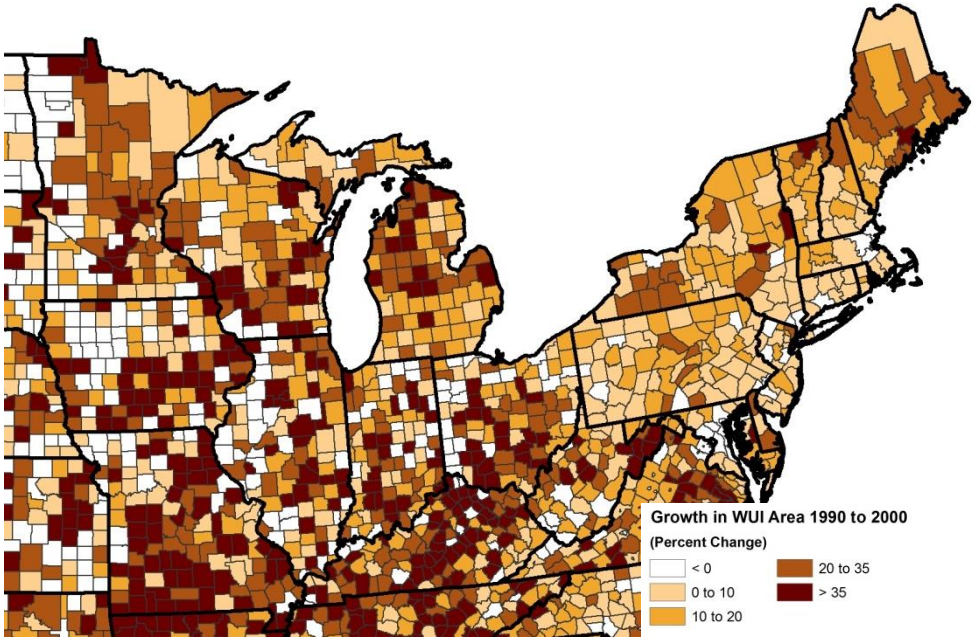
One approach to making homes and other buildings more resistant to ignition is to focus on building materials and construction standards. Because municipal and non-municipal areas tend to exhibit varying levels of ability to implement building standards, these are mapped separately

A - Adjust building and construction codes, municipal areas. These are advantaged suburban or urban and suburban counties, or eastern areas that experience prescribed fire, or private forested urban or suburban areas

B - Adjust building and construction codes, non-municipal areas. These counties have high Wildland Urban Interface areas or experience housing growth, and are not agricultural nor experience low amounts of fire, and they are not suburban or urban areas



Source: USDA ERS



Source: Silvis, Univ. of Wisconsin

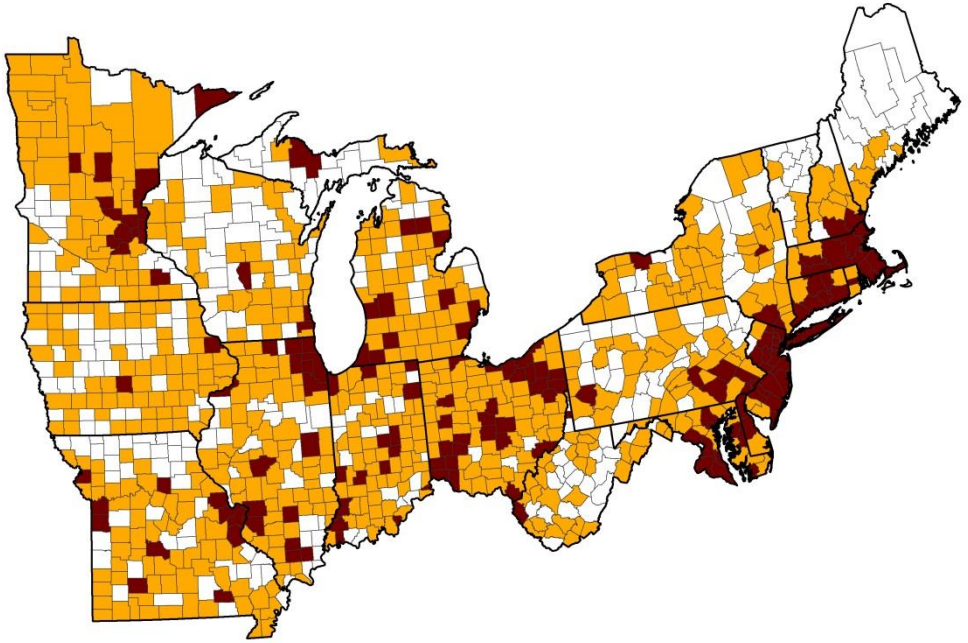
Cohesive Wildland Fire Management Strategy

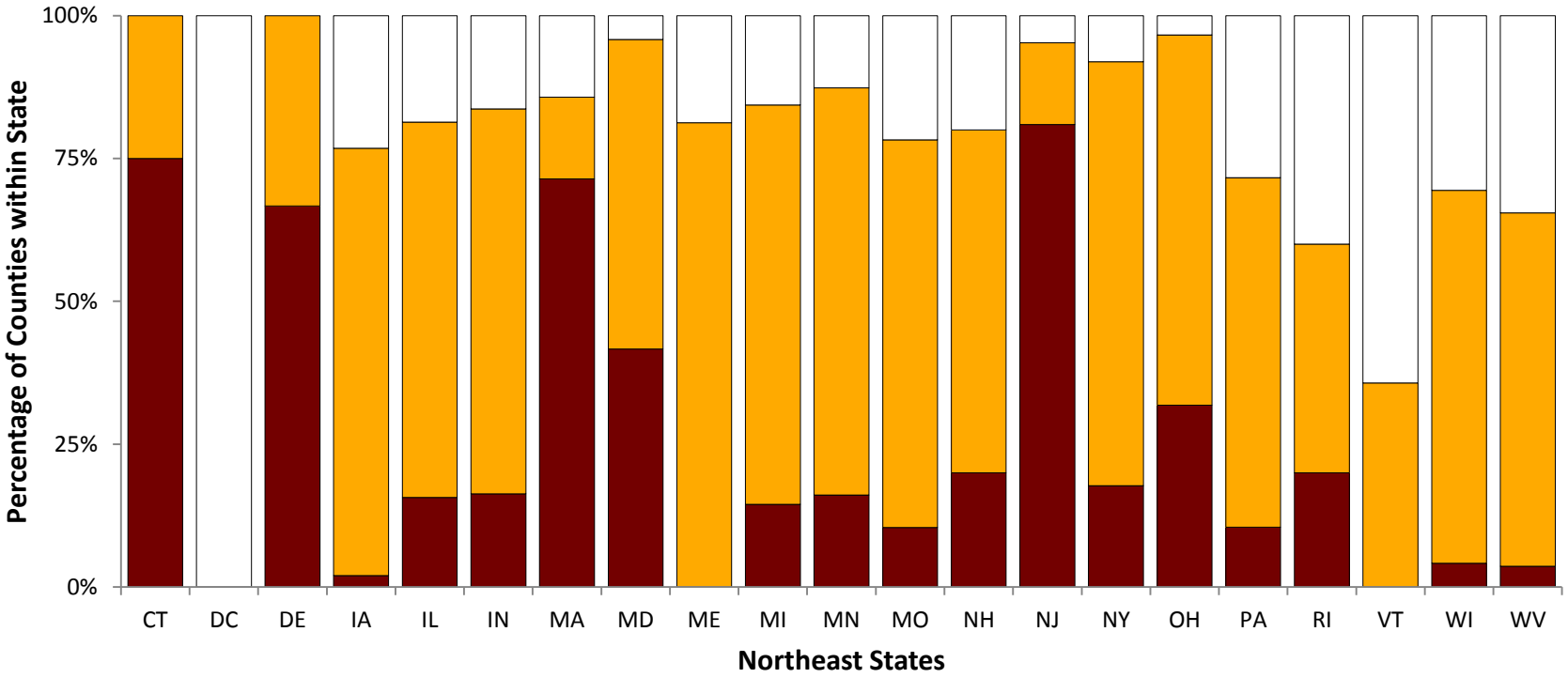
Focus on Home Defensive Actions

High

Moderate

Low





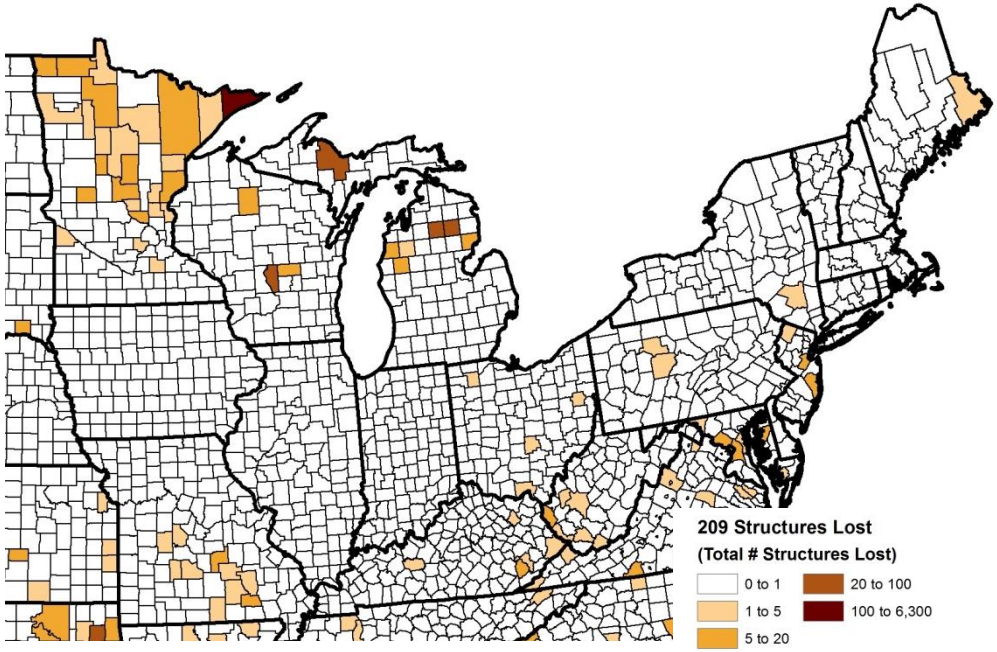
Cohesive Wildland Fire Management Strategy

Focus on Home Defensive Actions

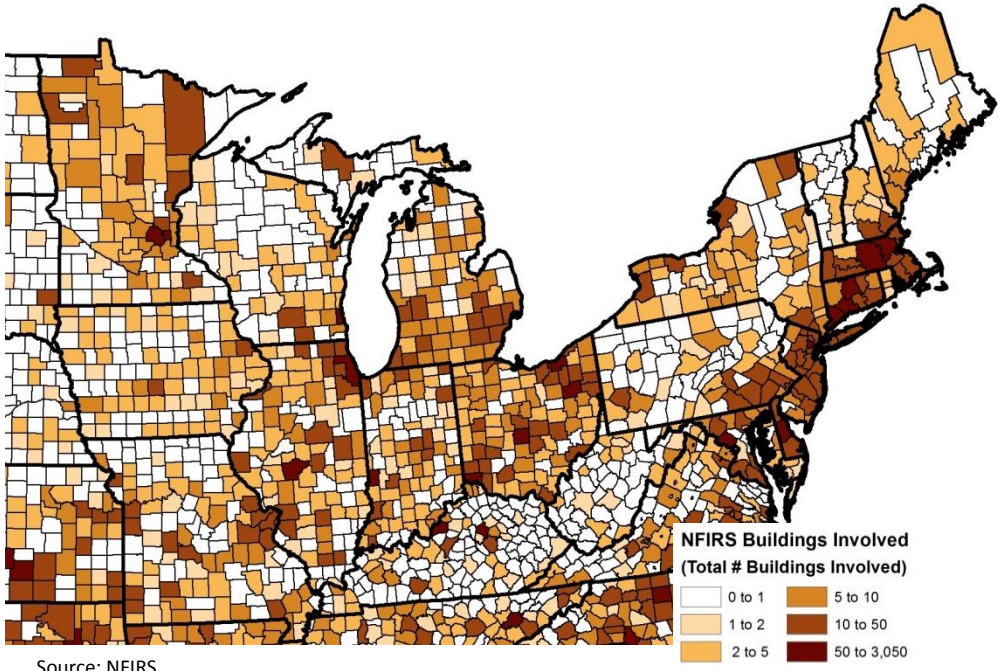
Short Explanation:

Looking at the density of structures lost (map top right) or buildings involved (map bottom right) in wildfires highlights opportunities across the United States where homes are affected by wildfire and would substantively benefit from greater individual home protection efforts.

Counties were categorized according to the density of structures lost and buildings involved into High, Moderate, and Low.



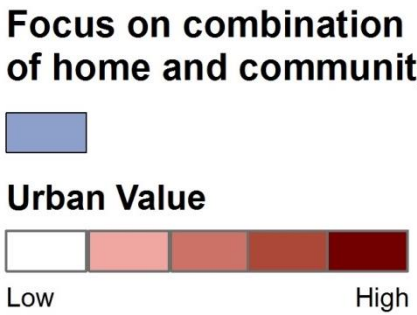
Source: 209 incident reporting system

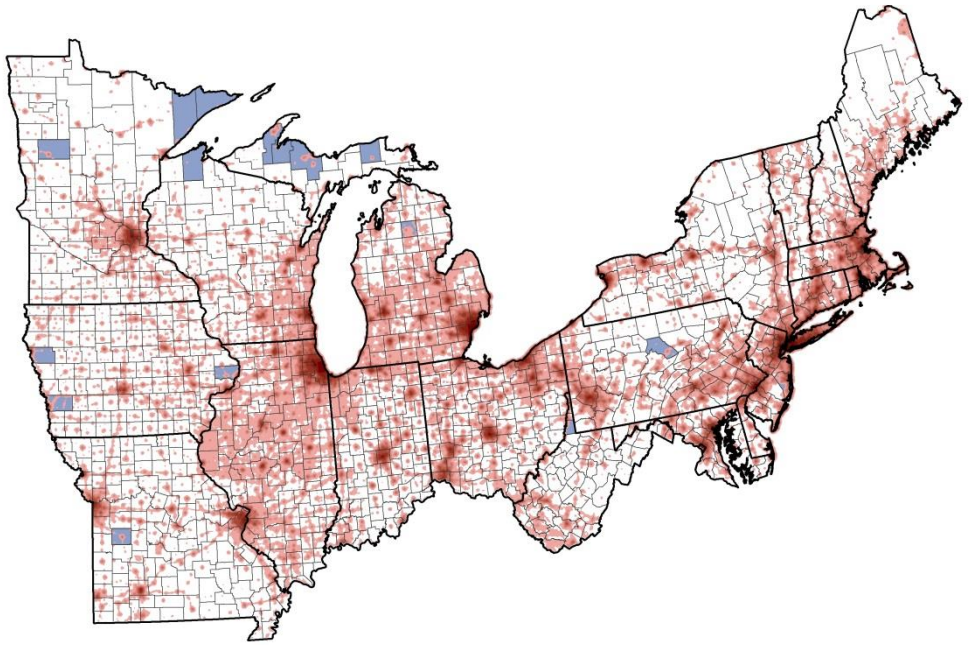


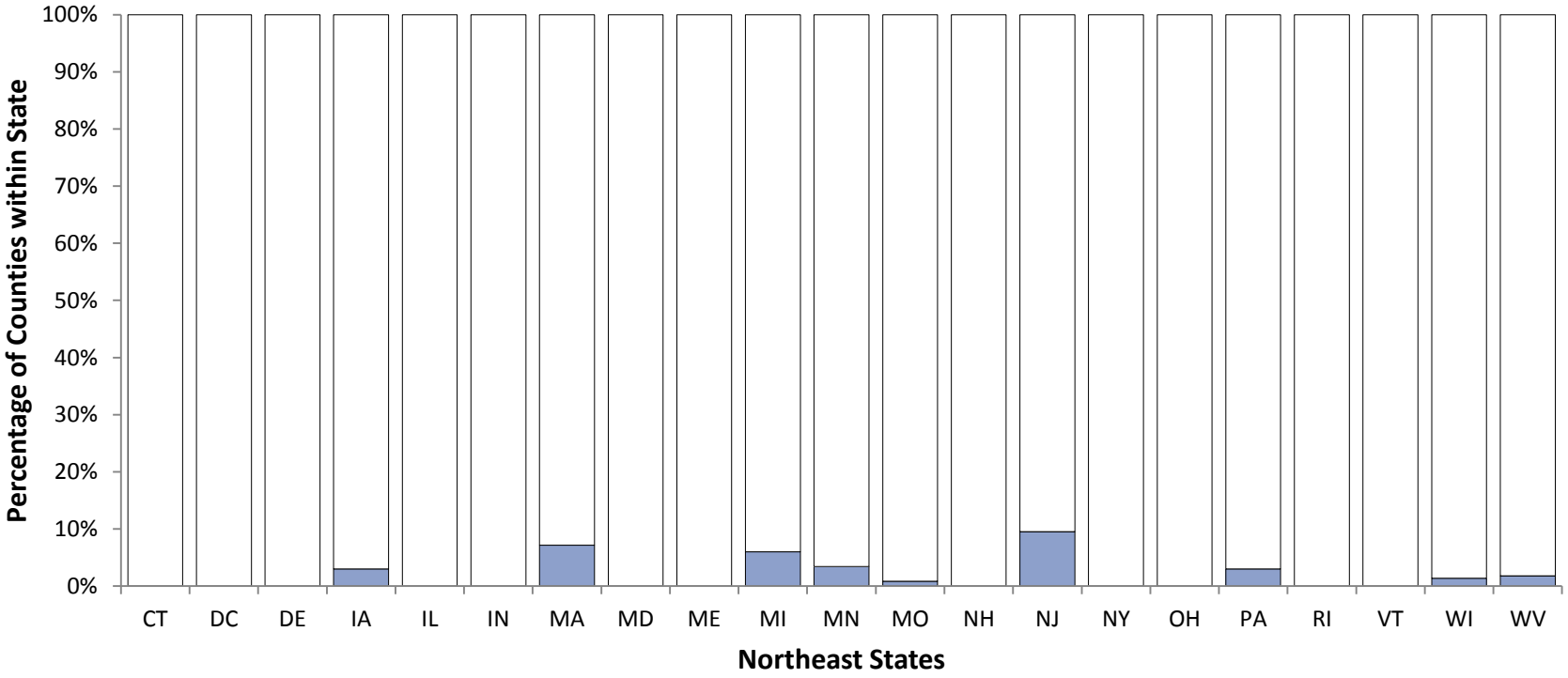
Source: NFIRS

Cohesive Wildland Fire Management Strategy

Focus on Combination of Home and Community Actions







Cohesive Wildland Fire Management Strategy

Focus on Combination of Home and Community Actions

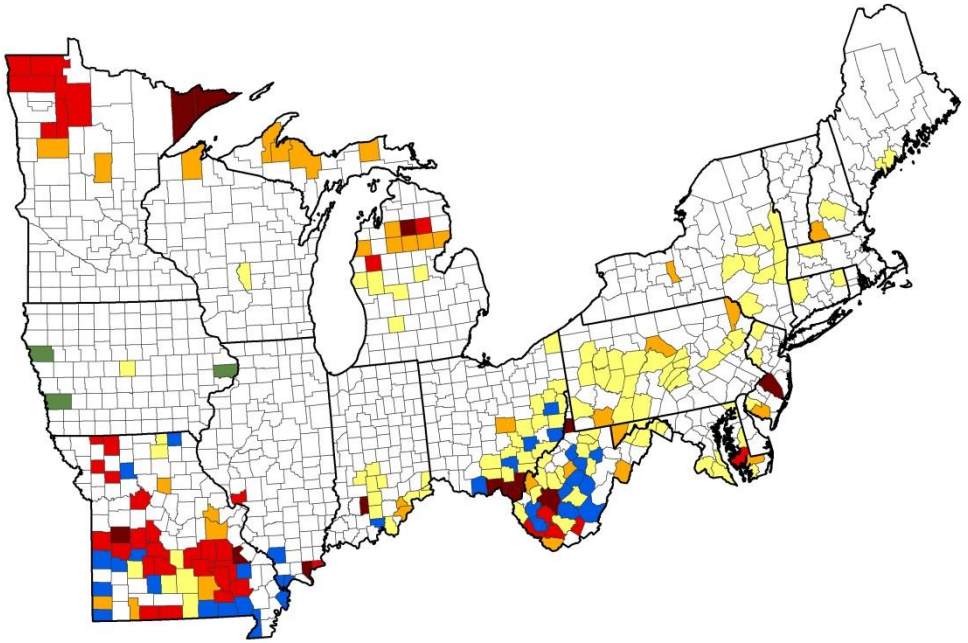
Short Explanation:

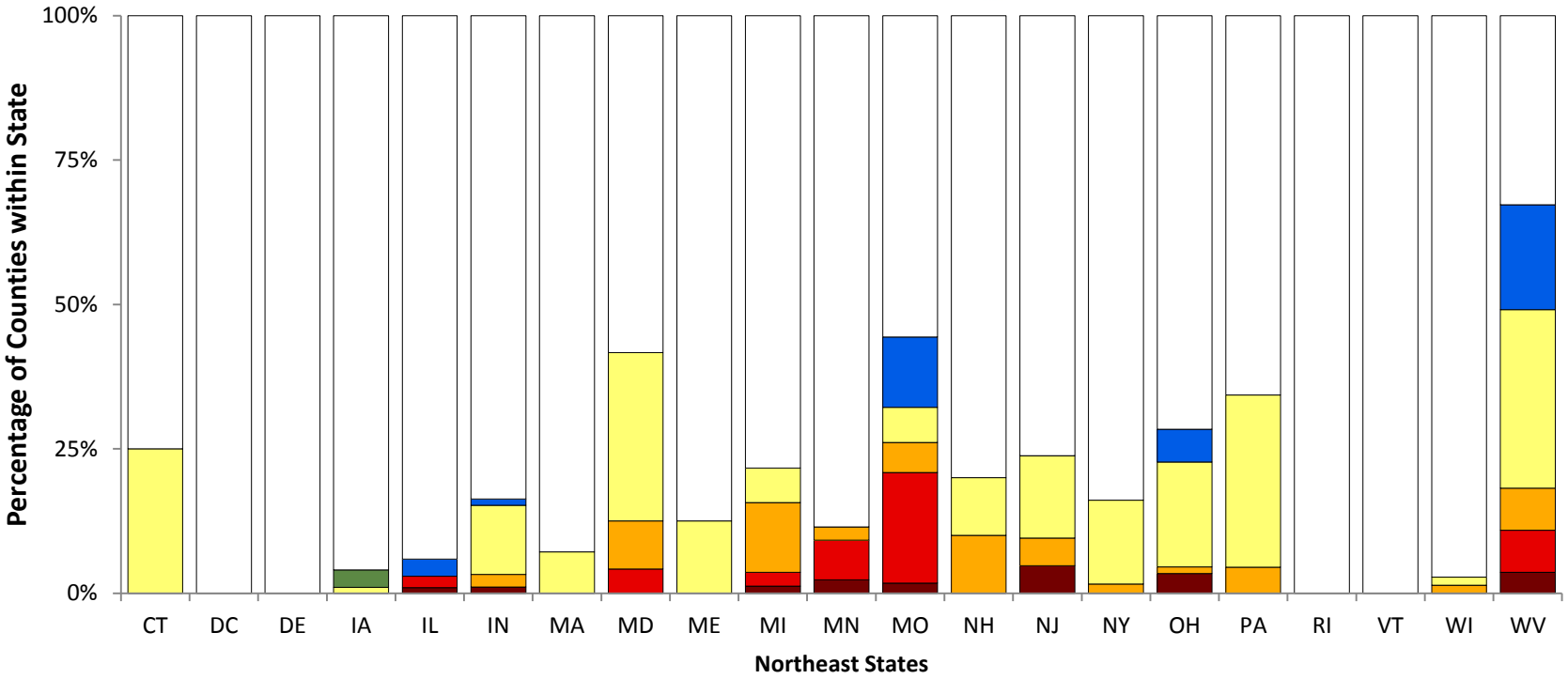
Based on Community clusters 2, 3, 4, and 6 include counties where community planning and coordinated action in combination with individual actions by property owners should be highly encouraged.

These are counties that tend to be in rural areas or are disadvantaged communities with public lands.

Cohesive Wildland Fire Management Strategy

Prepare for Large, Long Duration Wildfires



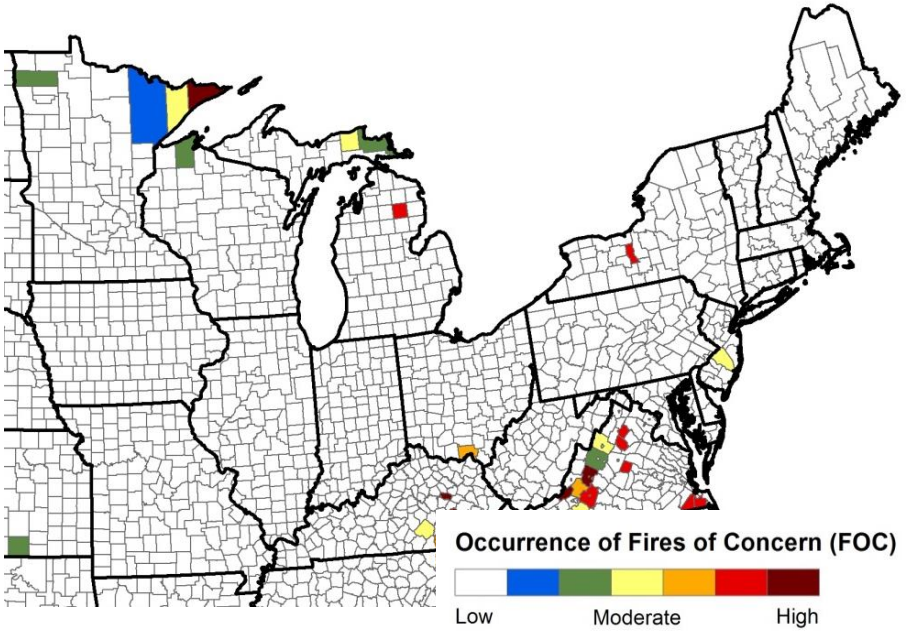


Cohesive Wildland Fire Management Strategy

Prepare for Large, Long Duration Wildfires

Short Explanation:

Because large wildfires cause significant challenges, it is important to know where large, long-duration wildfires are likely to occur and plan accordingly. Normative terms like “large” and “long-duration” are context-dependent. For analysis purposes, we defined an index of fires of concern (FOC) as being greater than 1 square mile in extent and at least two weeks in duration (from report to containment). The map to the right shows the number of events in a 10-year period (2002-2011) per 100 square miles.

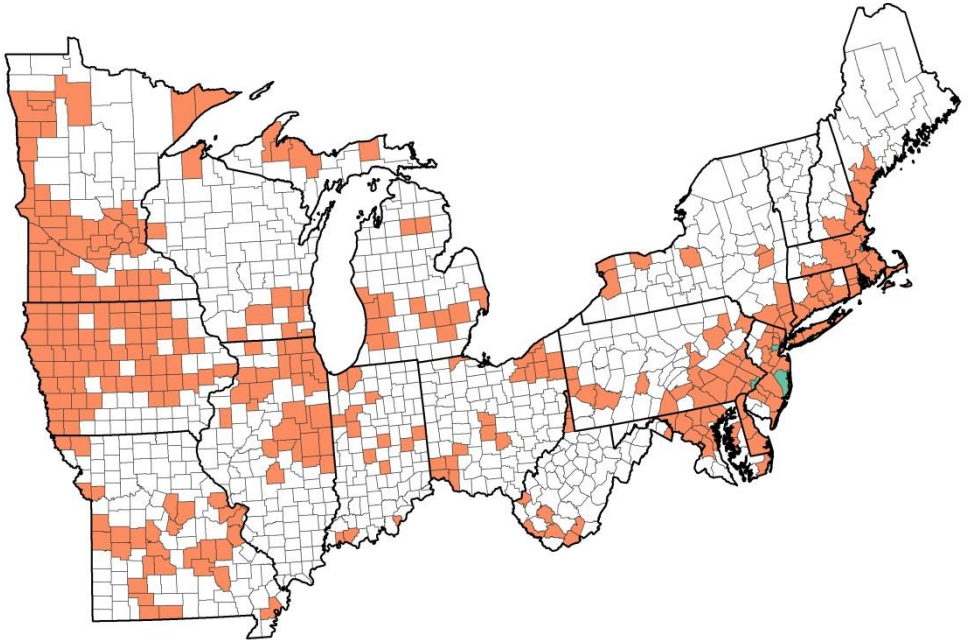


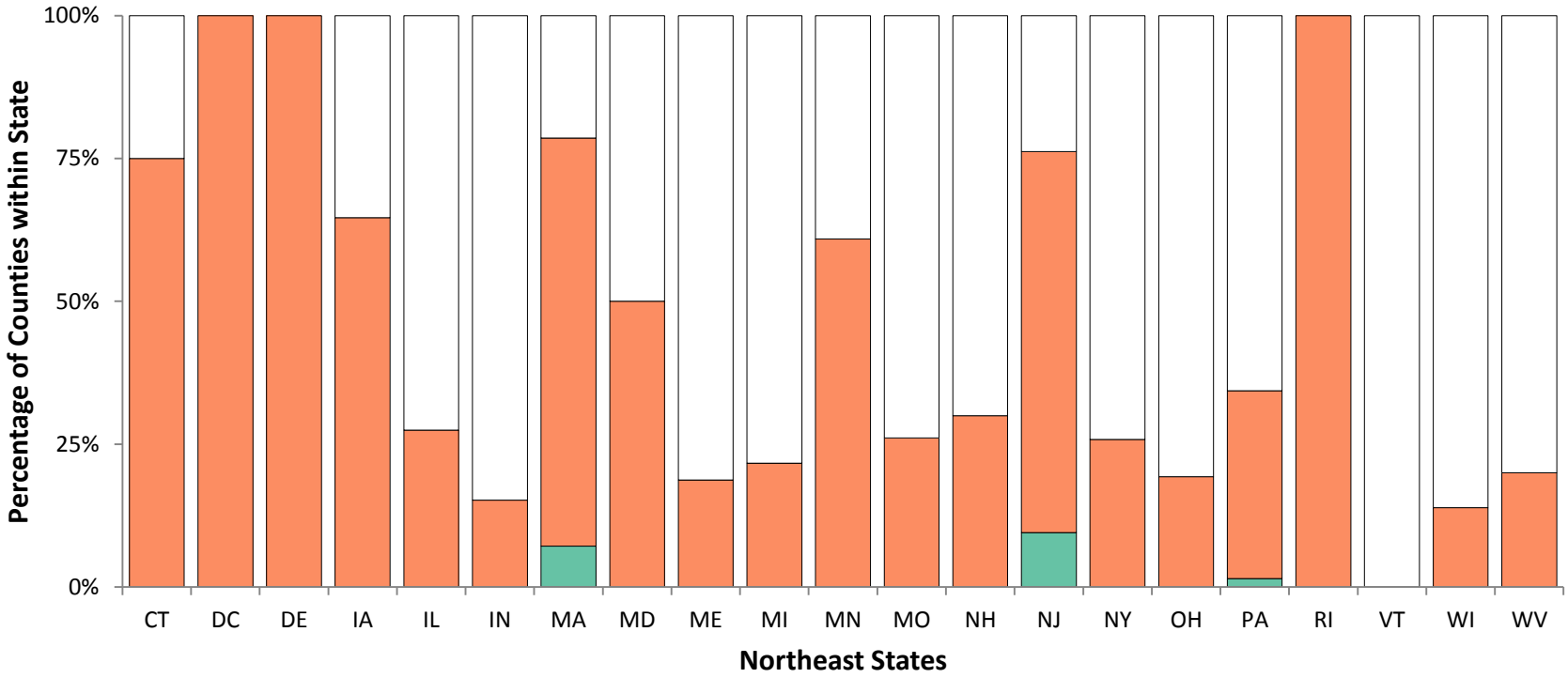
An inclusive estimate of where larger, longer-duration fires might occur in the future is obtained by extrapolating a 10-year sample to all combinations of resiliency classes and community clusters. The resulting map (Policy Option map) indicates that areas in the mid-Atlantic region display areas of relatively higher probability for fires of concern, as well as scattered counties of the upper Midwest. In these areas, preparing for large, long-duration wildfires is presented as a national response opportunity and management option.

Cohesive Wildland Fire Management Strategy

Protect Structures and Target Landscape Fuels

- High Structures Lost, High Area Burned
- High Structures Lost, Low Area Burned
- Low Structures Lost, High Area Burned
- Low Structures Lost, Low Area Burned





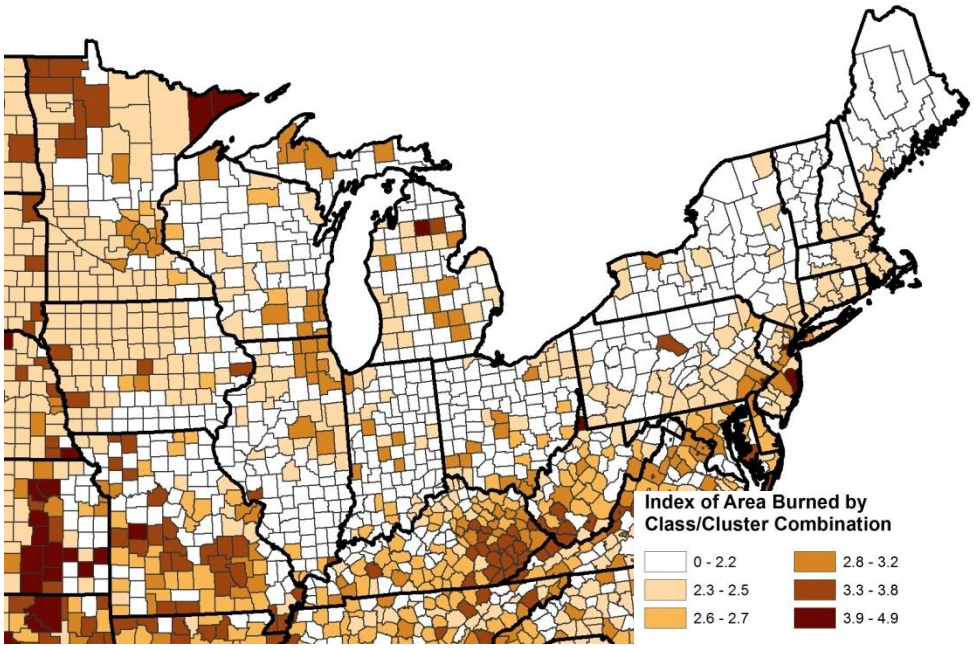
Cohesive Wildland Fire Management Strategy

Protect Structures and Target Landscape Fuels

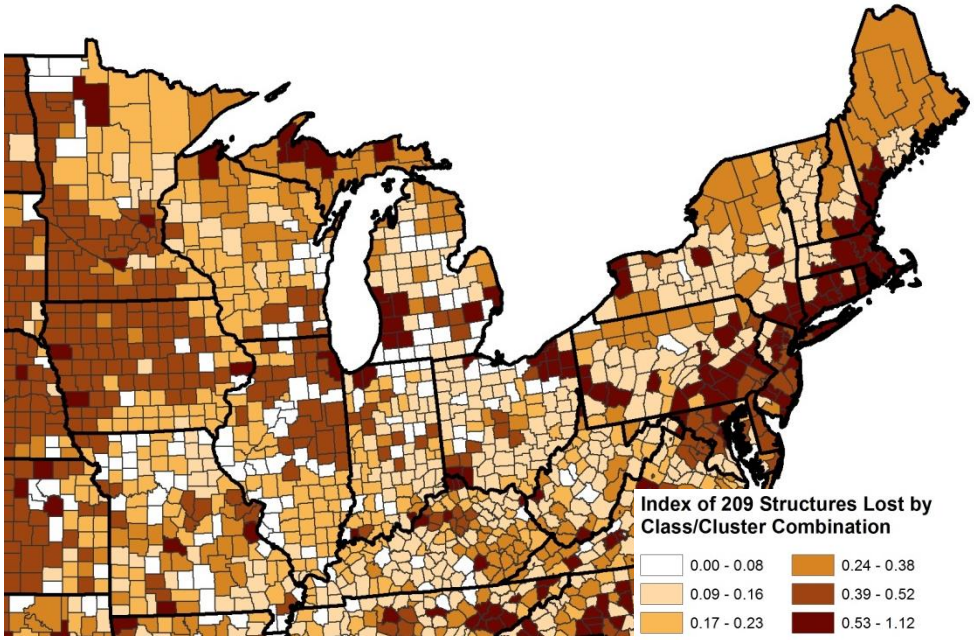
Short Explanation:

An opportunity related to larger fires focuses on the relationship between area burned (as reported in Federal and state records) and structures lost (as reported in the nationwide ICS-209 incident reporting system). An index of the rate at which structures are lost relative to the area burned was created and compared to the area burned itself. Indices for Area Burned (map top right) and rate of 209 Structures Lost (map bottom right) were calculated for each combination of class and cluster. The four-color map reflecting the intersection of those two indices reveals an interesting pattern.

Counties with the combination of high rates of structure loss with low area burned (shown as orange in the Policy Option Map) are throughout the Northeast region.



Source: State and Federal reporting systems

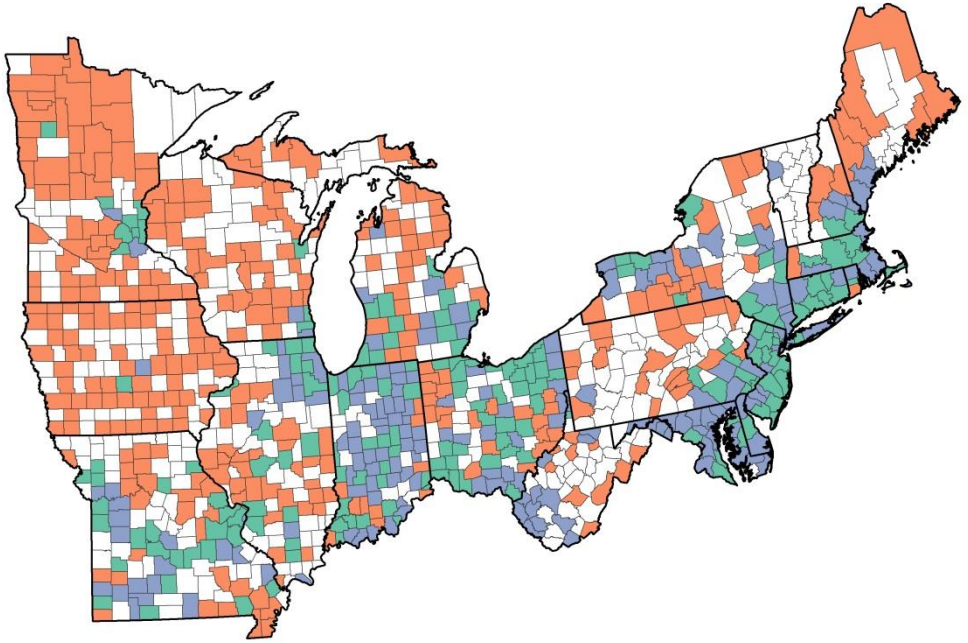


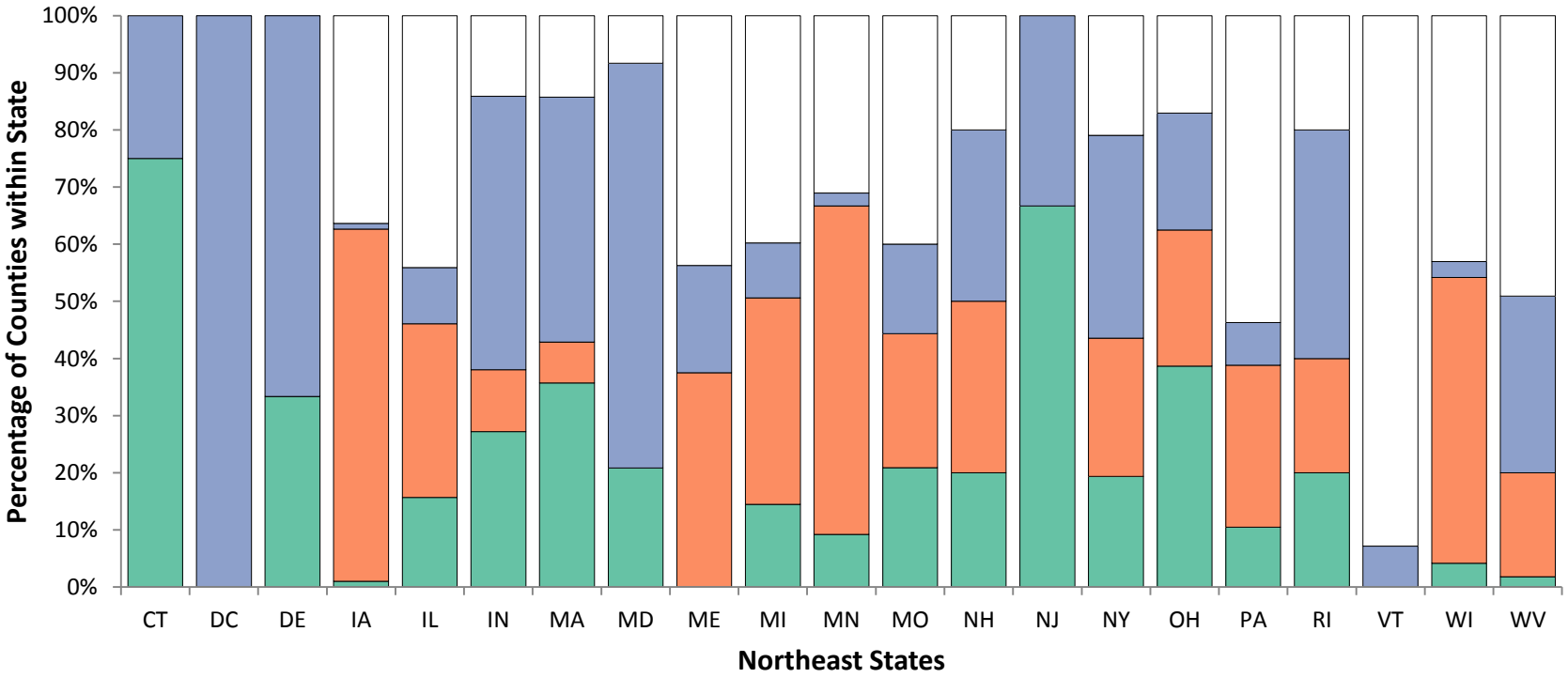
Source: 209 incident reporting system

Cohesive Wildland Fire Management Strategy

Protect Structures and Target Ignition Prevention

- High Buildings Involved, High Accidental Ignitions
- High Buildings Involved, Low Accidental Ignitions
- Low Buildings Involved, High Accidental Ignitions
- Low Buildings Involved, Low Accidental Ignitions





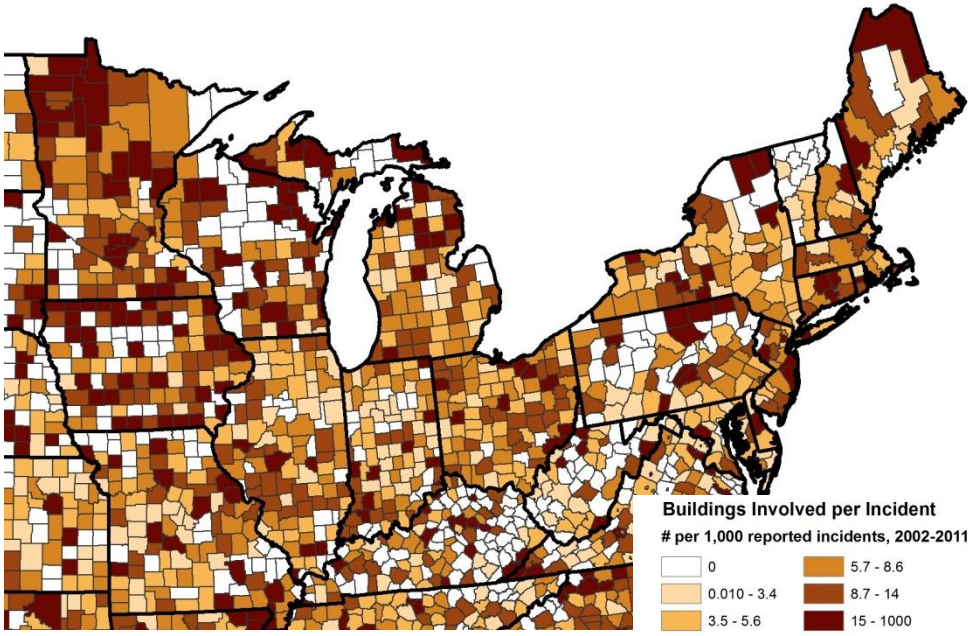
Cohesive Wildland Fire Management Strategy

Protect Structures and Target Ignition Prevention

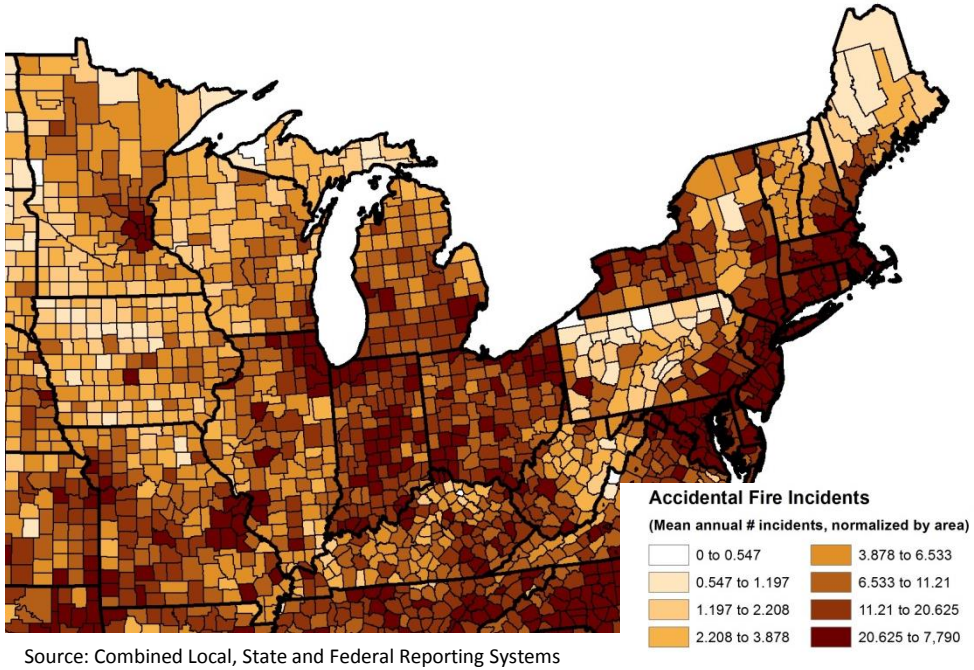
Short Explanation:

This response opportunity is most relevant to initial response, which often is the responsibility of a local fire department or agency. Data from NFIRS were examined and indices computed of the numbers of buildings involved per incident (map top right) and the relative frequency of reported accidental human-caused ignitions (see map bottom right showing mean annual accidental incidents).

The intersection of higher-than-normal values for these variables indicates that the number of buildings involved per reported incidents is one of the few variables lacking a strong geographical pattern. In contrast, the relative frequency of accidental ignitions tends to be higher in the East. The intersection of these two variables has an interesting pattern that illustrates the widespread extent of the challenges in managing wildfire risk and offers a guide to matching structure protection with prevention efforts.



Source: NFIRS



Source: Combined Local, State and Federal Reporting Systems