Plan Integration for Resilience Scorecard™

PIRS™ SUPPLEMENTAL PRIMER

FOR FIRE DEPARTMENTS

PRIMER OVERVIEW

The Plan Integration for Resilience Scorecard (PIRS™) guidebook details how communities can understand and discuss inconsistencies in resilience planning across their network of planning documents. Through the spatial evaluation of community planning documents and the creation of a resilience scorecard, PIRS™ enables communities to increase their awareness of connections between plans and natural hazard vulnerability. The resulting cross-entity collaborations and conversations helps reduce a community's vulnerability to hazard events and improves its resilience if such events were to happen.

This supplemental primer is developed specifically for fire departments to customize the PIRS™ process to mitigating fire hazards. This primer provides fire departments the tools they need to:

- Prepare specific fire-related hazard and vulnerability maps.
- Identify policy tools that could support emergency management plans.
- Understand a range of emergency management conflicts that might be encountered in planning documents and how amendments ought to be proposed.

COMMUNITY RISK REDUCTION AND PLAN INTEGRATION: A COMPLIMENTARY RELATIONSHIP

Community risk reduction activities are initiatives where fire departments work towards fire prevention code adoption and enforcement, public safety education and fire investigation. Fire departments that engage in these activities are awarded points through the Fire Suppression Rating Schedule (FSRS) that can be used towards increasing the community's Public Protection Classification (PPC®) and ultimately producing community-wide reductions in fire insurance premiums.

Plan integration for fire risk reduction are initiatives where fire departments ensure consistency between community fire risk reduction initiatives and local plans developed by other departments and entities. These would include comprehensive plans, economic development plans, transportation plans, parks and facility plans among others. By integrating fire and emergency services risk reduction priorities into other community planning documents, fire departments can have more influence shaping local ordinances and developing capital project funding requests. Plan integration also enables fire departments to flag and discuss potential planning initiatives that would be detrimental to fire risk reduction priorities.

As stated below, this process is meant as an important complementary piece to the FSRS community risk reduction efforts to extend these prevention efforts into economic, land use, and transportation planning efforts that often fail to take fire prevention actions into account.

FSRS Manual	Plan Integration Resilience Scorecard (PIRS™)
Details how fire departments can reduce community risk through code adoption and enforcement, fire safety education, and fire investigation.	Details how fire departments can reduce community risk by identifying supportive and concerning policies planned to be led by other departments and entities.

WHAT MAP LAYERS SHOULD FIRE DEPARTMENTS USE TO MEASURE ITS HAZARD AREA?

For fire departments, hazard area maps are maps that display **areas that are at risk to fire events.** In the PIRS™ Guidebook Prepare Maps Section[1], the floodplain is used to designate the natural hazards areas related to flooding. Beyond the special flood hazard area maps from the PIRS™ guidebook, fire departments can customize their PIRS™ experience with additional maps and data below.

- Areas that have a history of repeated fire incidents
- Areas with structures not up to the most recently adopted fire codes.
- Areas that are beyond the recommended response time distance
- Areas without fire hydrants/adequate fire flow.
- Any other physical item that is especially concerning from a mitigation, event, response or recovery standpoint.

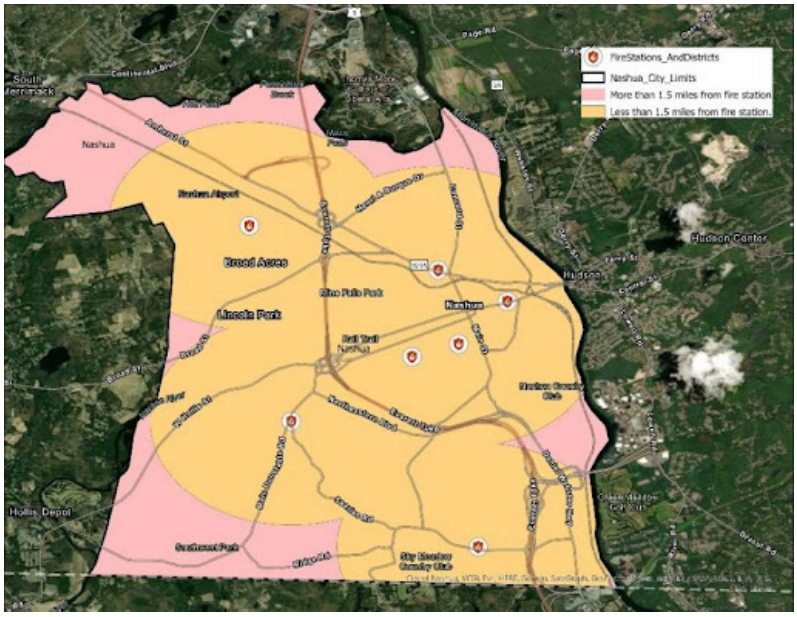
HOW COULD A HAZARD AREA FOR FIRE RESPONSE BE MAPPED?

Supplementing the Prepare Maps Section of the PIRS™ Guidebook[2], the following is an example of how a fire mitigation hazard area could be mapped using GIS.

[1] See PIRS™ Guidebook, Version 2.0 (2019), Prepare Maps, p. 33-39 for how to detail physical and social vulnerability.

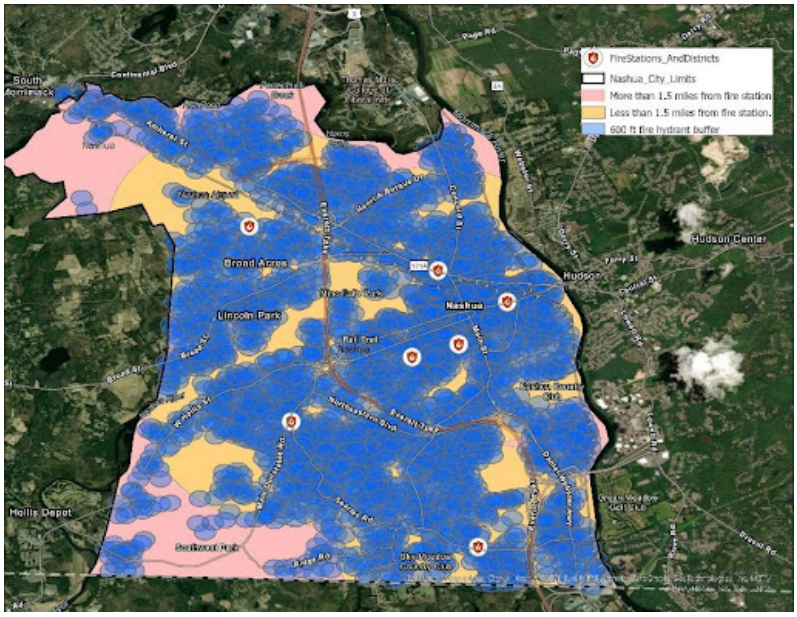
[2] See PIRS™ Guidebook, Version 2.0 (2019), Prepare Maps, p. 33-39 for how to detail physical and social vulnerability.

Areas that are not within the recommended distance or response time of a fire station: According to the FSRS, credit is given to the percentage of the community within specified distance of pumpers (1.5 miles) and ladder/service apparatus (2.5 miles) or may use the results of a systematic performance evaluation such as a road network analysis that calculates response time response times.



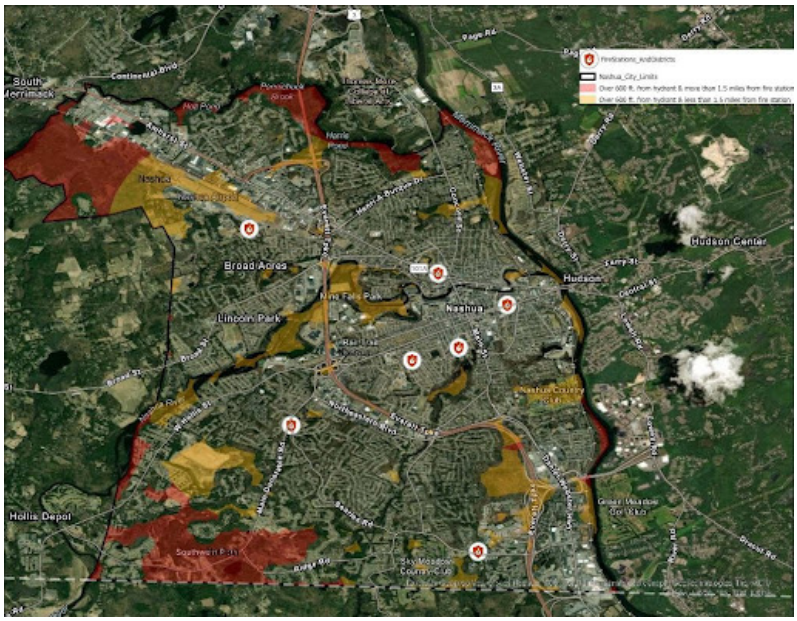
This above example map indicates areas within and outside of a radius of 1.5 miles of a fire station and was created in GIS using the buffers and erase tools.

Areas without access to an adequate water supply and fire hydrant: The FSRS system awards 30 points when communities provide the necessary fire hydrants and fire flows. Those fire hydrants with a specified hose length radius can also be mapped in GIS (in the image below, it's 600 feet).

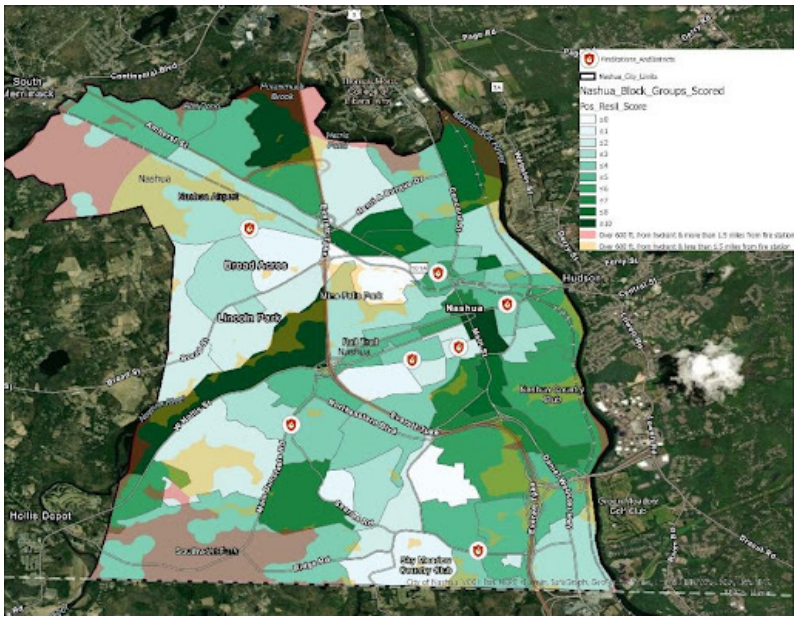


This above example map indicates areas within a 500 foot buffer of a fire hydrant (blue circles) and areas inside (yellow) and outside (pink) of a 1.5 mile radius of a fire station.

Combining the two maps on page 4 and utilizing the GIS erase tool, one can designate hazard areas that are vulnerable to fires as areas outside the radius of a fire hydrant and/or areas outside of the recommended distance or time from a fire station. Fire departments can use a layering of maps for analysis and scoring purposes as shown below.



This above example map indicates areas that are beyond a 500 foot buffer of a fire hydrant and areas inside (yellow) and outside (red) of a 1.5 mile radius of a fire station.



This example map shows census block group scored for resilience using PIRS™ (in green and white) overlaid by areas that are beyond a 500 foot buffer of a fire hydrant and areas inside (yellow) and outside (red) of a 1.5 mile radius of a fire station (as previously described).

This example map indicates resilience scores in shades of white and green by census block group derived by the analysis of action statements utilizing PIRS™ clipped in GIS to areas beyond a 500 foot buffer of a fire hydrant and areas inside (yellow) and outside (red) of a 1.5 mile radius of a fire station as previously described. These maps can be used to supplement similar floodplain maps that are described in the PIRS™ guidebook.

POLICY CONFLICTS & POLICY TOOLS RECOMMENDATIONS FOR FIRE DEPARTMENTS

The PIRS™ tool provides an overview of the policy tools available to fire departments as they analyze the results of the PIRS™ process. For fire departments, there are three main planning areas that PIRS™ could help identify conflicts in:

- Planning & development policies for increased development activity that do not have sufficient fire station coverage (in regards to distance or response time).
- Planning & development policies for increased development activity in areas that do not have sufficient fire flow water pressures and do not have adequate hydrant coverage.
- Transportation policies that do not provide adequate street connections.

	Fire Department Planning Issue for Areas with Inadequate:		
Policy Tool[3]	**Fire Station Coverage**	**Water Pressures / Fire Hydrant Coverage**	**Street Connectivity**
Development Regulations			
Permitted Land Use	X	X	
Density of Land Use	X	X	
Subdivision Regulations		X	X
Zoning Overlays	X	X	
Land Acquisition			
Acquire Land & Property			X
Financial Incentives & Penalties			
Density Bonuses	X	X	
Tax Abatements			X
Impact / Special Study / Protection Fees	X		X
Land Use Analysis & Permitting Processes			
Land Suitability	X	X	X
Site Review		X	X
Design / Construction Guidelines / Requirements		X	X
Public Facilities (including public housing)			
Siting	X	X	X
Sizing & Capacity	X	X	X
Post-Disaster Reconstruction Decisions			
Development Moratorium	X	X	
Capital Improvements			
Infrastructure Improvements		X	X

[3] See PIRS™ Guidebook, Version 2.0 (2021), Policy Tools, p. 27 for definitions of each of the listed policy tools.

EXPLORATORY CONVERSATIONS WITH THE POLICY TOOLBOX

Having explored the policy statements themselves and within the context of physical and social vulnerability[4], the next step is to have conversations about the policy tools and solutions that can strengthen the supportive policy statements and address the concerning action statements. Below are some examples of how to apply the policy toolkit to the concerns fire departments may have. These conversations often involve multiple administrative departments and relate to a number of public policy issues and therefore it is highly recommended that these conversations happen collaboratively and transparently as a response to the lessons learned from PIRS™ on how to improve your community's resilience. Please note, a complete list of policy tools is provided in the appendix.

Potential Conflict	Potential Policy Tool	Conversational Questions
Plans for increased development activity in areas without sufficient fire station coverage	Limiting Development activity through Zoning or Zoning Overlays	• Are there mutual aid agreements in place sufficient to cover these areas within acceptable times? • What is the distance from a fire station or additional response time that would be cause for concern enough to limit new development activity? • Should the density or type of development be limited in certain areas because of fire station distance/response time concerns?
	Developing an impact fee to fund future fire stations made necessary by the location of new development.	• Are we anticipating development to continue in a direction that will require the siting of a future fire station? • If a future fire station area can be defined, is there political will to establish an impact fee for new development to pay a proportional share of this new cost.

[4] See PIRS™ Guidebook, Version 2.0 (2021), Analysis - Assessing Vulnerability, p. 55-62 for how to detail physical and social vulnerability.

Potential Conflict	Potential Policy Tool	Conversational Questions
Plans for increased development activity in areas without sufficient fire flow/ hydrant coverage.	Ensuring design/ construction guidelines/ requirements ensure adequate water pressure and, fire hydrants.	• Are developers required to bear the cost of installing all on-site and off-site fire infrastructure and ensuring required water pressure?
Plans for density bonuses & economic development incentives	Ensuring economic development density bonuses & tax abatements account for fire safety infrastructure.	• Do policies that encourage density and incentivize development require developments to occur where there is or will be sufficient fire station and hydrant coverage? • If not, are impact fees in-place to off-set the cost of this additional fire safety infrastructure?
Plans for improving transportation connectivity	Ensuring fire department priorities are in line with subdivision requirements.	• Are street connectivity requirements outlined in the IFC part of the subdivision review process? • Outside of these requirements are sufficient external street connections made between subdivisions to maximize fire service coverage?
	Acquire land & property to better connect streets and maximize fire coverage area.	• Could strategic land or easement purchases be made to connect streets that allow fire departments to improve response times and increase their coverage area?