



A Chicago Regional Climate Plan

Regional Climate Adaptation Planning & Prioritization

Adaptation Webinar 4

June 12, 2020





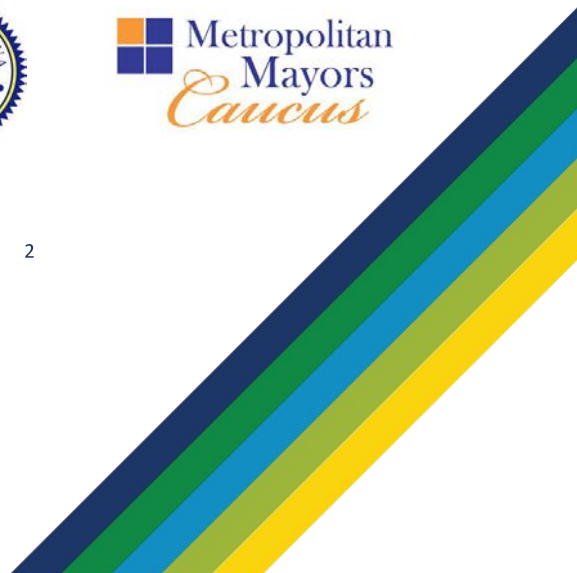
Welcome

Kevin Burns, Mayor, City of Geneva

Chairman, Metropolitan Mayors Caucus Environment
Committee and Energy Sub Committee



 Metropolitan
Mayors
Caucus





Ned Gardiner, PhD

Engagement Manager
NOAA Climate Program Office
& U.S. Climate Resilience Toolkit
ned.gardiner@noaa.gov



Jim Fox

Sr. Resilience Analyst
NEMAC-Fernleaf & U.S.
Climate Resilience Toolkit
jfox@nemacfernleaf.com



Speakers



Edith Makra
Director of Environmental Initiatives



Jared Patton, AICP
Associate Planner



Introduction



CMAP



U.S. Climate
Resilience Toolkit

- Agenda
 - Intro
 - Review Steps to Resilience, highlighting steps we've addressed in past webinars
 - Identify Options
 - Prioritize & Plan
 - Take Action
 - Conclusion
- Objectives
 - Familiarize decision makers with Steps to Resilience (StR), e.g., terms, prioritization, getting to decision
 - Orient technical staff (GRC, CMAP, County & Muni staff) to applying the StR
 - Orient County and Municipal staff and decision makers to GRC and CMAP resources
 - Highlight skills & resources already present
 - Identify relevant strategies
 - Apply StR to develop tactics and next steps



The Steps to Resilience

1 Explore Hazards

2 Assess Vulnerability & Risks

3 Investigate Options

4 Prioritize & Plan

5 Take Action

Addressing
Climate Risk

Traditional
Decision Making



Explore Hazards

- Gather a team of people who want to protect local assets.
- Check past weather events and future climate trends.
- List the things you value that could be damaged.

After this exploration, you'll discover if weather and climate represent a hazard to things you value.

- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 Prioritize & Plan
- 5 Take Action



Step 1 in GRC context



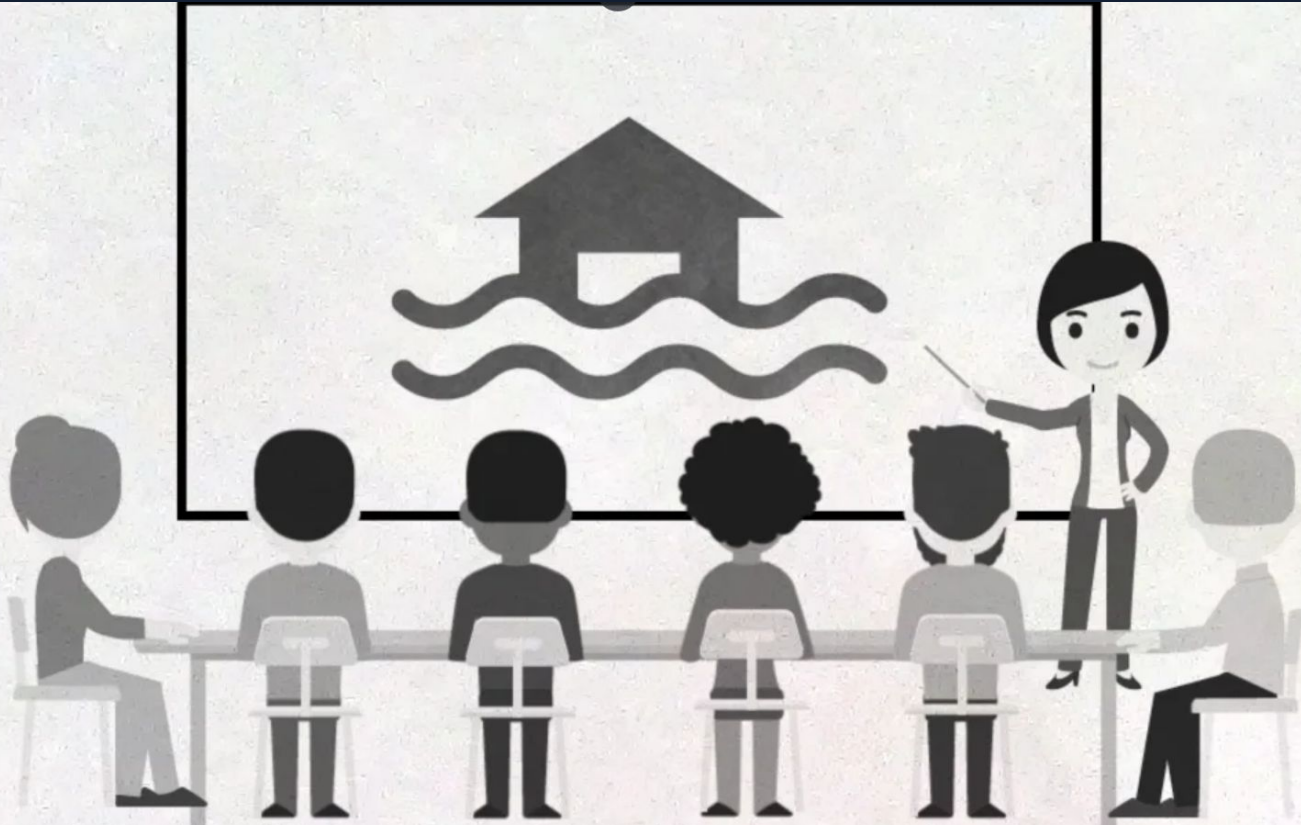
- Gather a team of people who want to protect local assets.
 - Municipal Operations (MO1) Support or create an interdisciplinary team to coordinate internal sustainability and resiliency efforts
- Check past weather events and future climate trends.
 - (MO+) Collaborate to share and analyze data about climate related health impacts
- List the things you value that could be damaged.

In many GRC categories

- (L9) natural assets; (L16) open space plan; (L20/ 21) tree canopy;
- (MO13) muni assets;
- (SC1) historic & cultural; (SC) new vulnerable residents;
- (W10) aquifer recharge; (W12) septic; (W16b) water infrastructure; (W45) watershed plan; (W55) private wells;




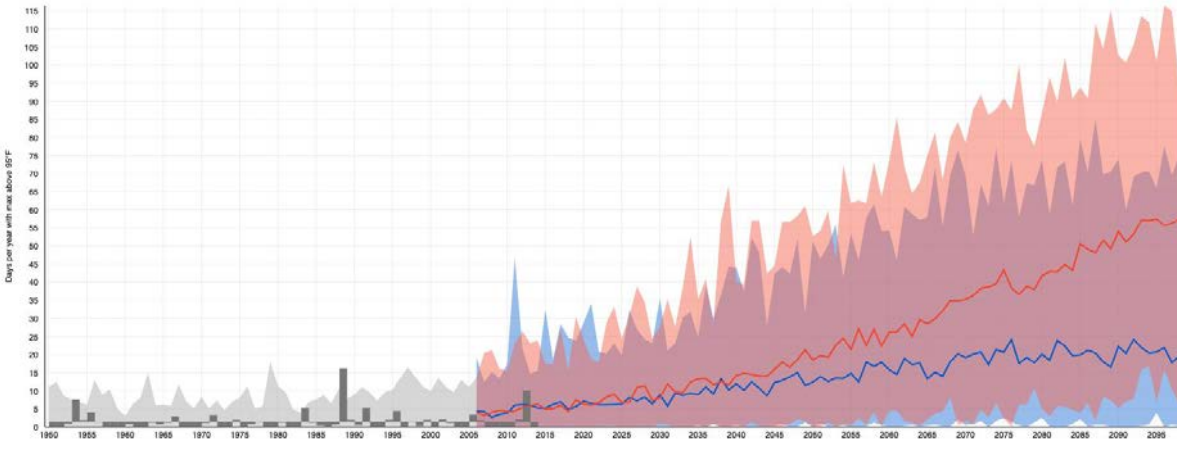
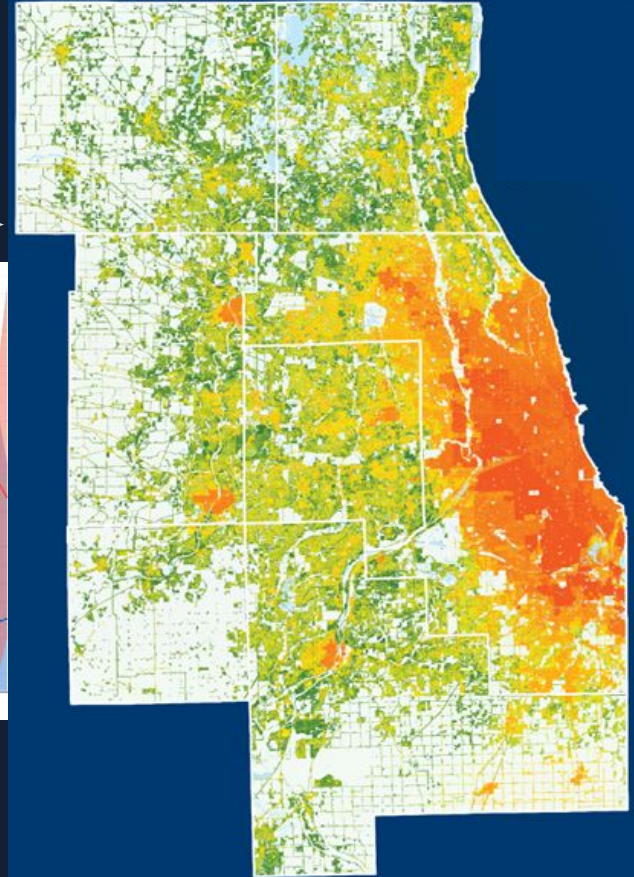

Establish a team





Climate and non-climate stressors

**Flood Susceptibility Index:
Events, Terrain, Infrastructure**



**Climate Explorer:
Days/year temperature > 95°F**



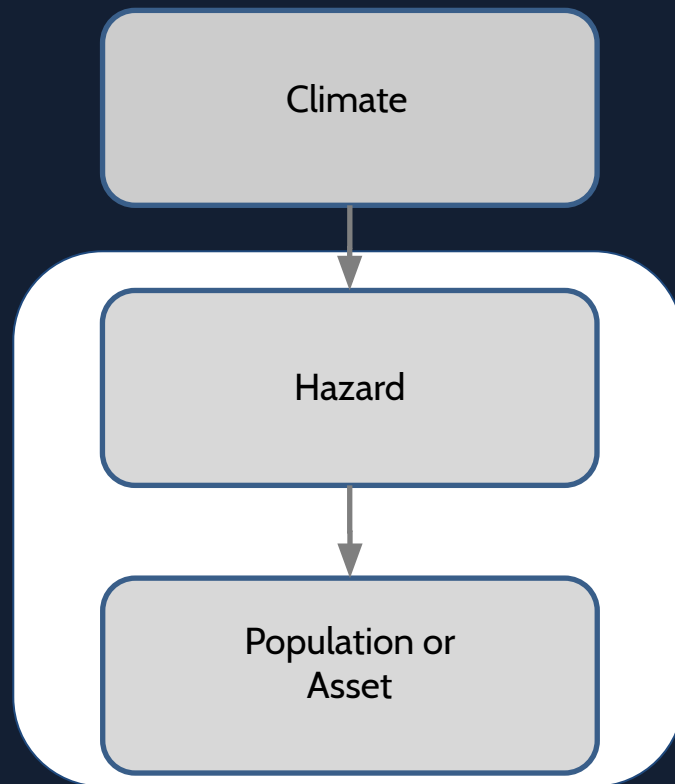
Impacts involve both a **hazard** and an **asset**

Heat and Health

Flooding and Homes

Flooding and Transportation

Flooding and Infrastructure





Decision point

Can you accept the vulnerability and risk to your assets?



Assess Vulnerability and Risk

- . Determine which of your assets are exposed to harm
- . Assess each asset's vulnerability
- . Estimate the risk to each asset

When your assessment is complete, decide if you can accept the risk that climate presents to your assets.

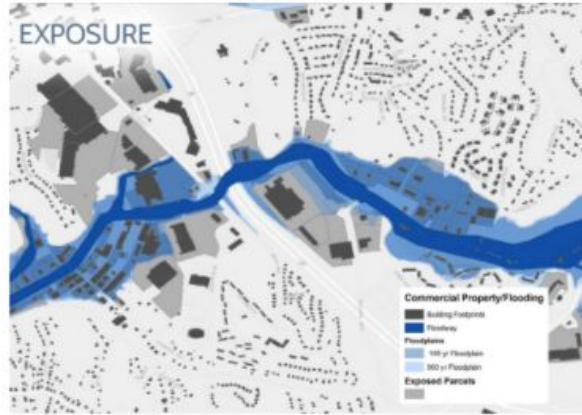
- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 Prioritize & Plan
- 5 Take Action

A *quantifiable* assessment of exposure, sensitivity, adaptive capacity, vulnerability, and risk.

EXPOSURE:

The presence of societal assets, including people, infrastructure, property, or services, that are adversely impacted by a potential threat.

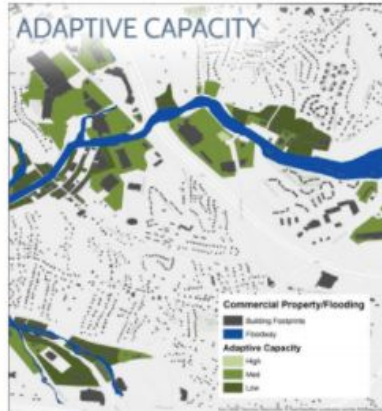
EXPOSURE



ADAPTIVE CAPACITY:

The ability that people, assets, or services have to cope with a climate-related impact.

ADAPTIVE CAPACITY



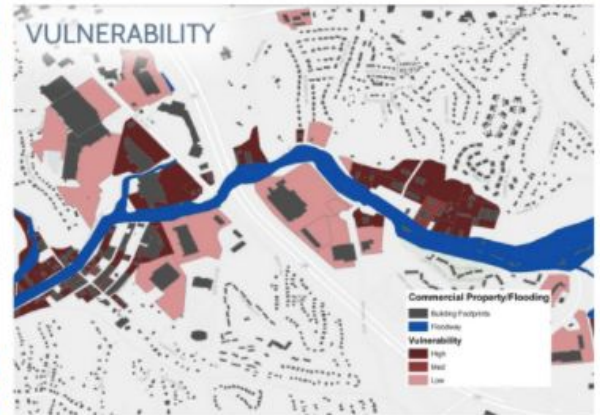
POTENTIAL IMPACT



POTENTIAL IMPACT:

The degree to which societal assets are adversely impacted by a potential threat.

VULNERABILITY

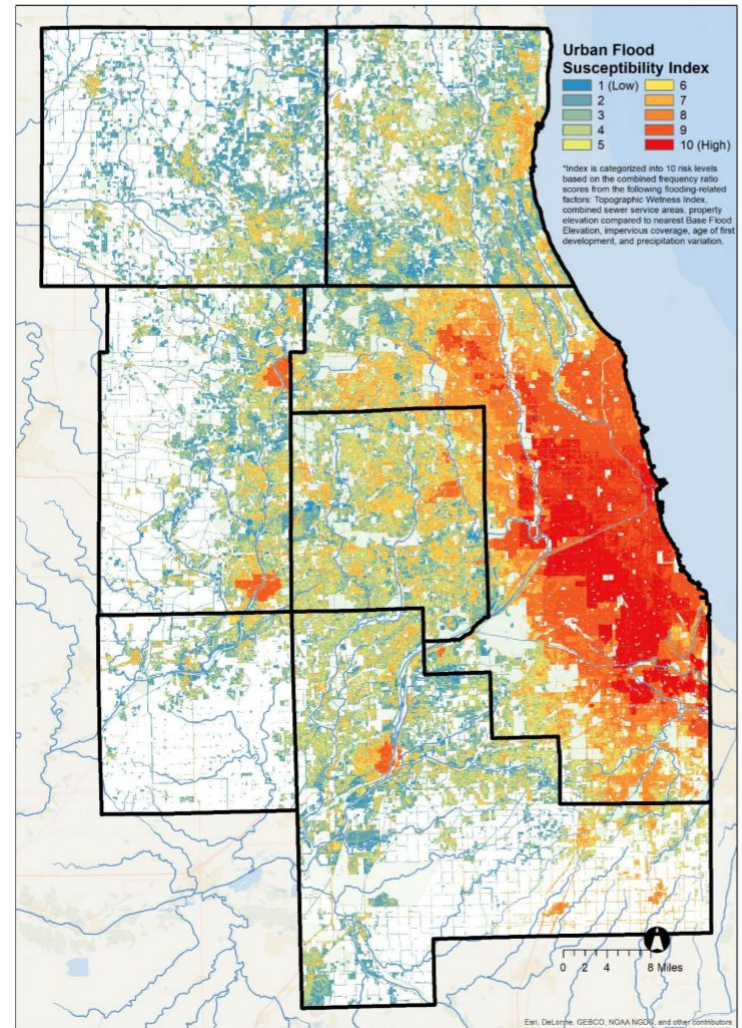


VULNERABILITY:

The susceptibility of assets based on their level of potential impact and adaptive capacity.

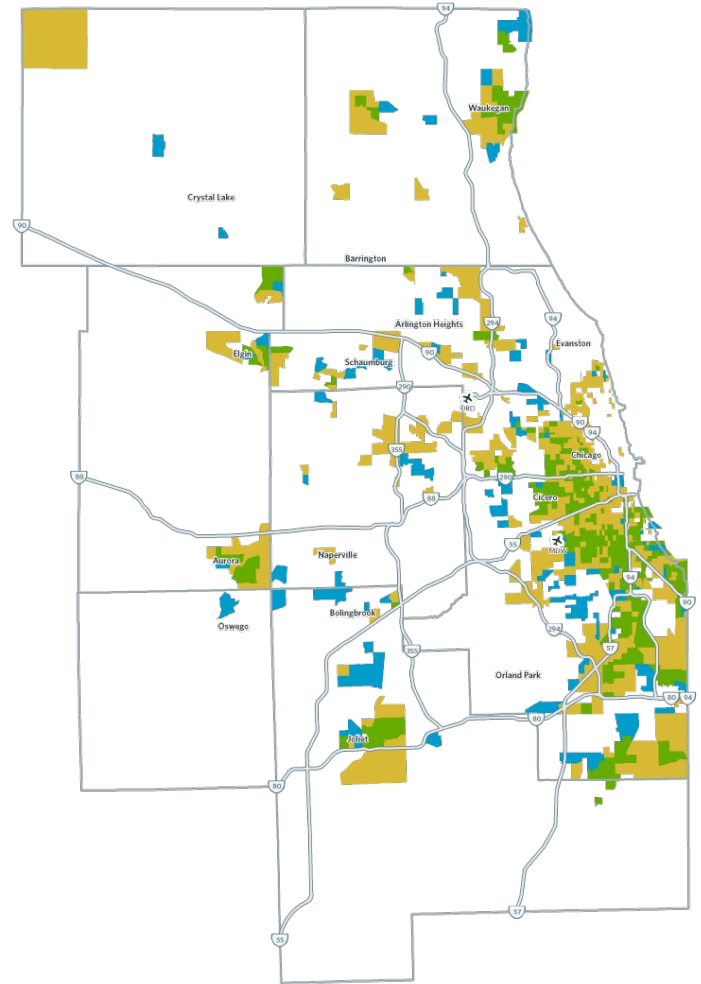
Flood Susceptibility Index: regional

- Data-driven effort to identify areas at risk of flooding



Flood Susceptibility Index: regional

- Data-driven effort to identify areas at risk of flooding

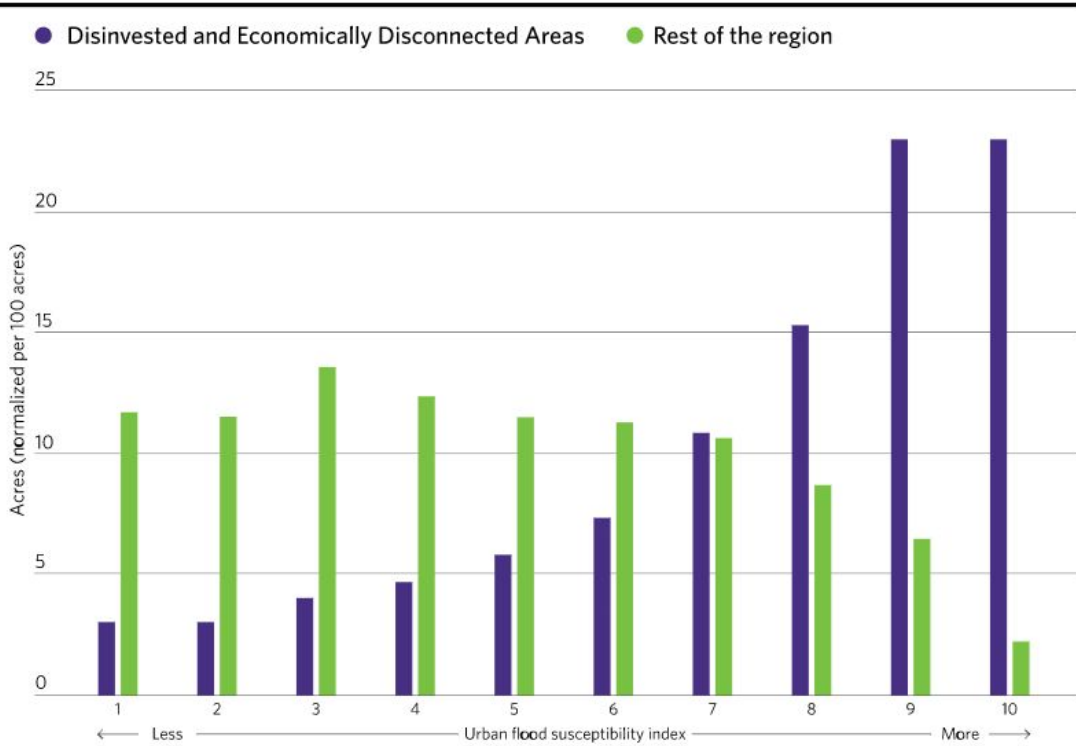


Flood Susceptibility Index: regional

Urban flood susceptibility per 100 acres in Economically Disconnected and Disinvested areas compared with the remainder of the region

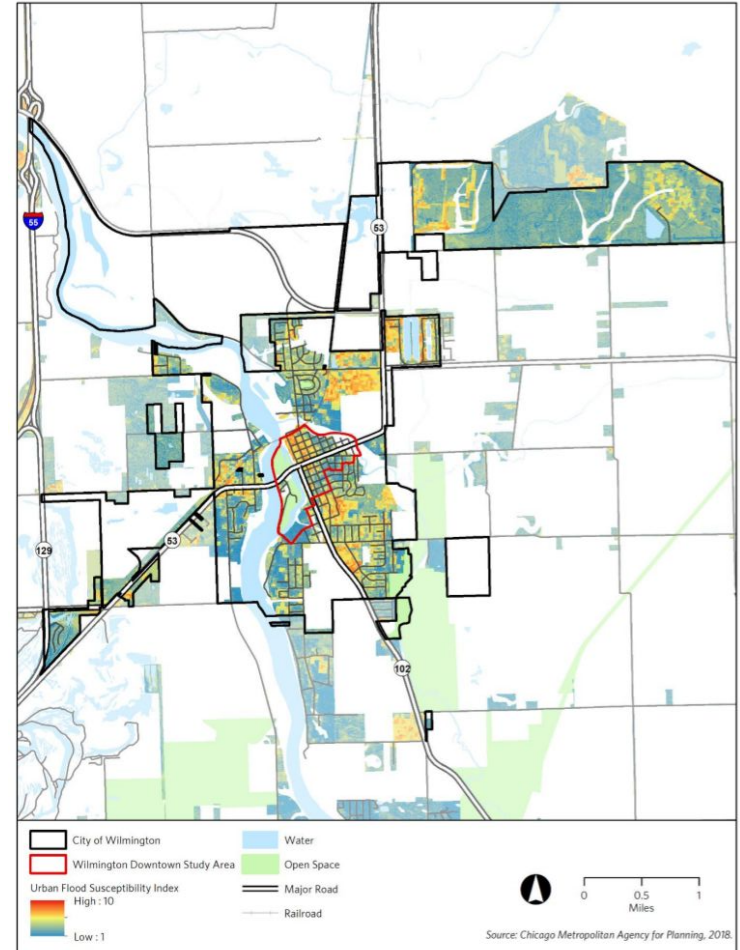
Note: Economically Disconnected and Disinvested areas are more likely to be in flood susceptible locations. However, this varies by county and is most significant in Cook, Kane, and Lake.

Source: Chicago Metropolitan Agency for Planning, 2018.



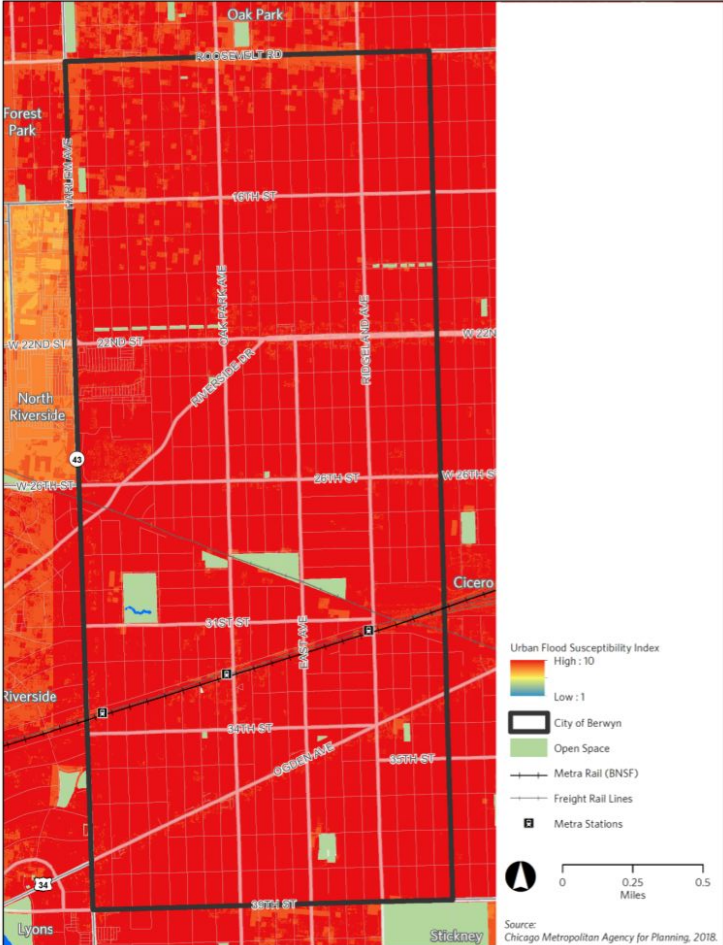
Flood Susceptibility Index: municipal

- Data-driven effort to identify areas at risk of flooding



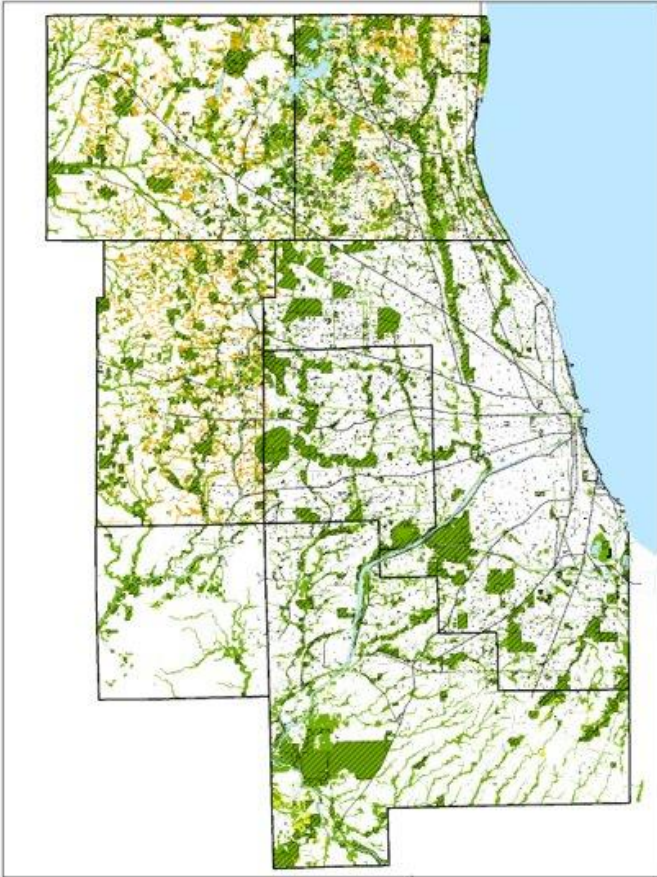
Flood Susceptibility Index: municipal

- Data-driven effort to identify areas at risk of flooding



Other resources

- Conservation areas



CMAP Conservation Areas Layer (Draft - February 2018)

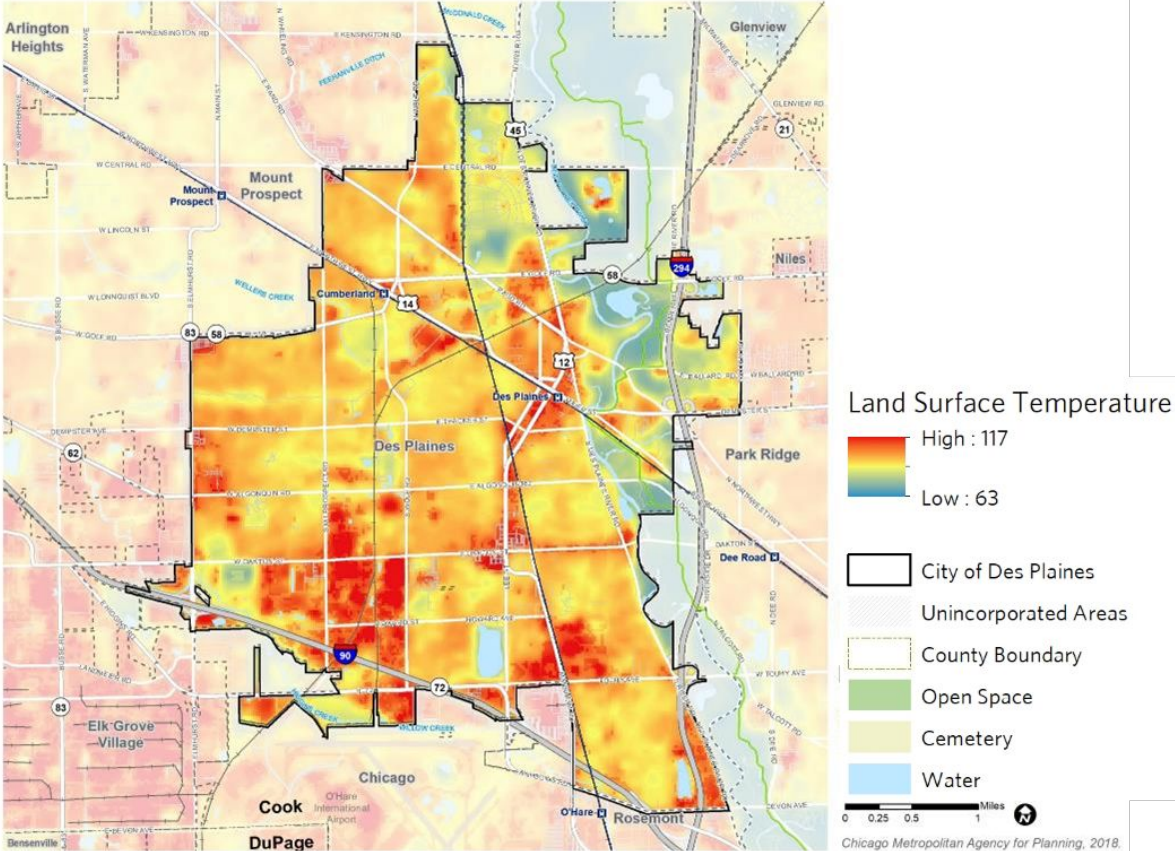
- Regional Conservation Priorities
- Local Conservation Priorities
- Conservation Opportunities
- Protected Open Space
- Interstates
- Metra Lines

0 3.75 7.5 15 Miles

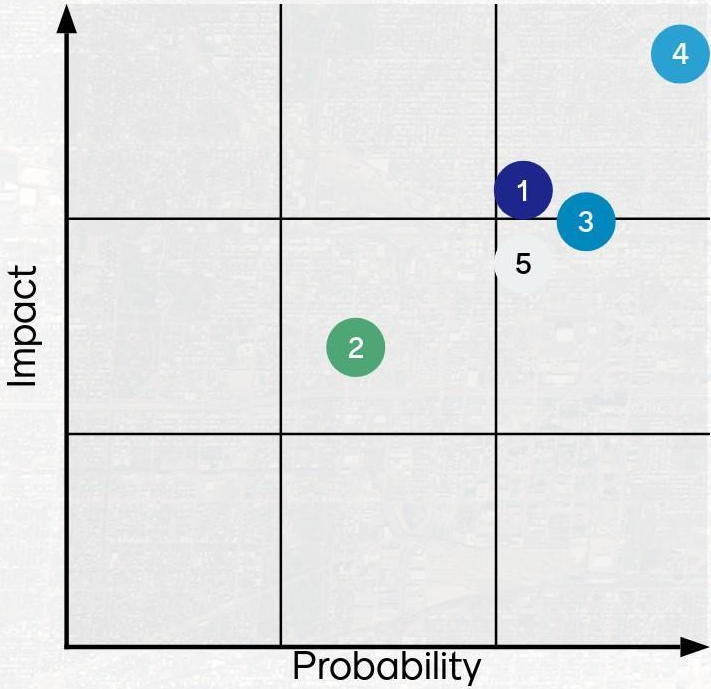


Other resources

- Heat Vulnerability Index (coming soon)

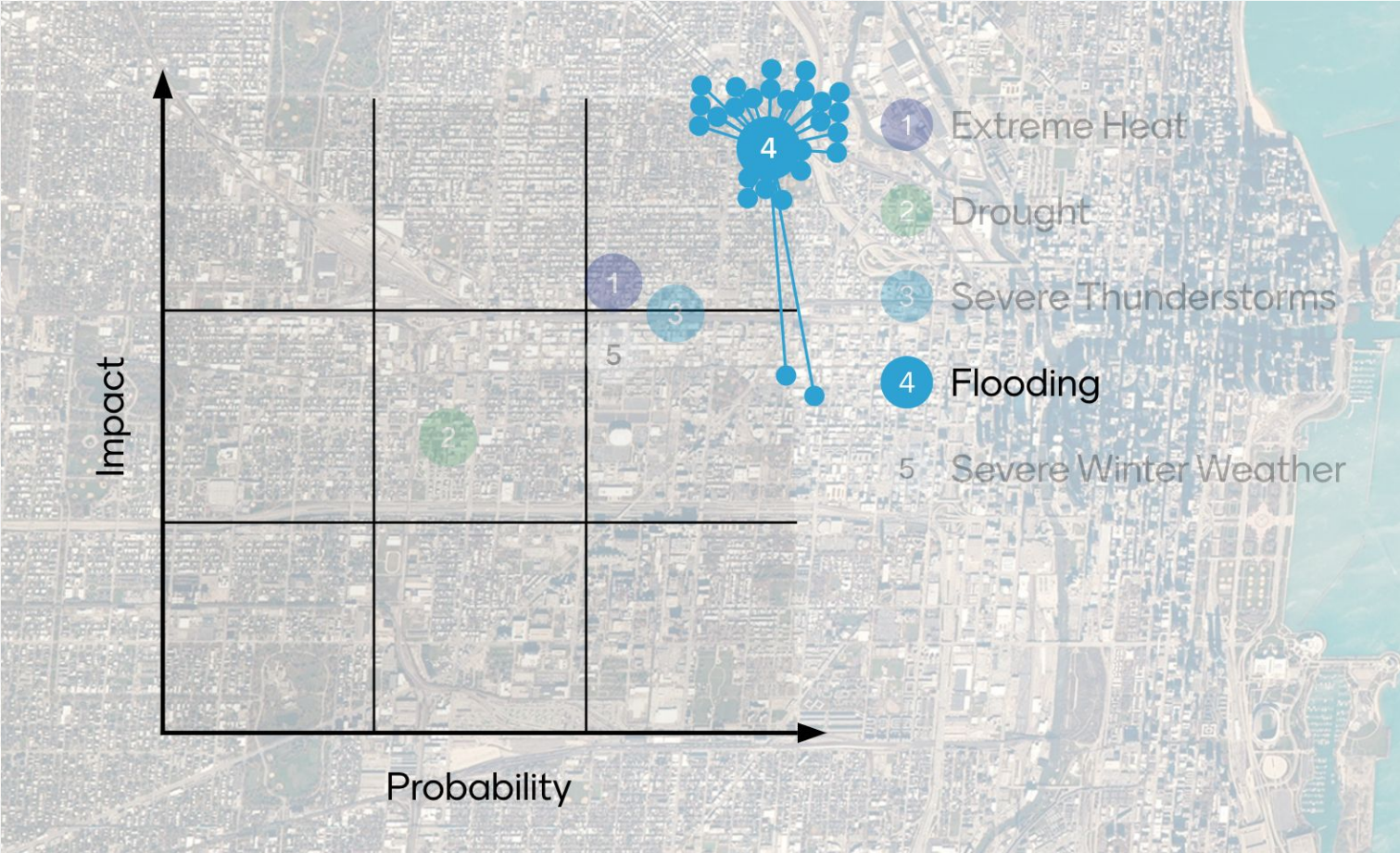


Evaluate Risk

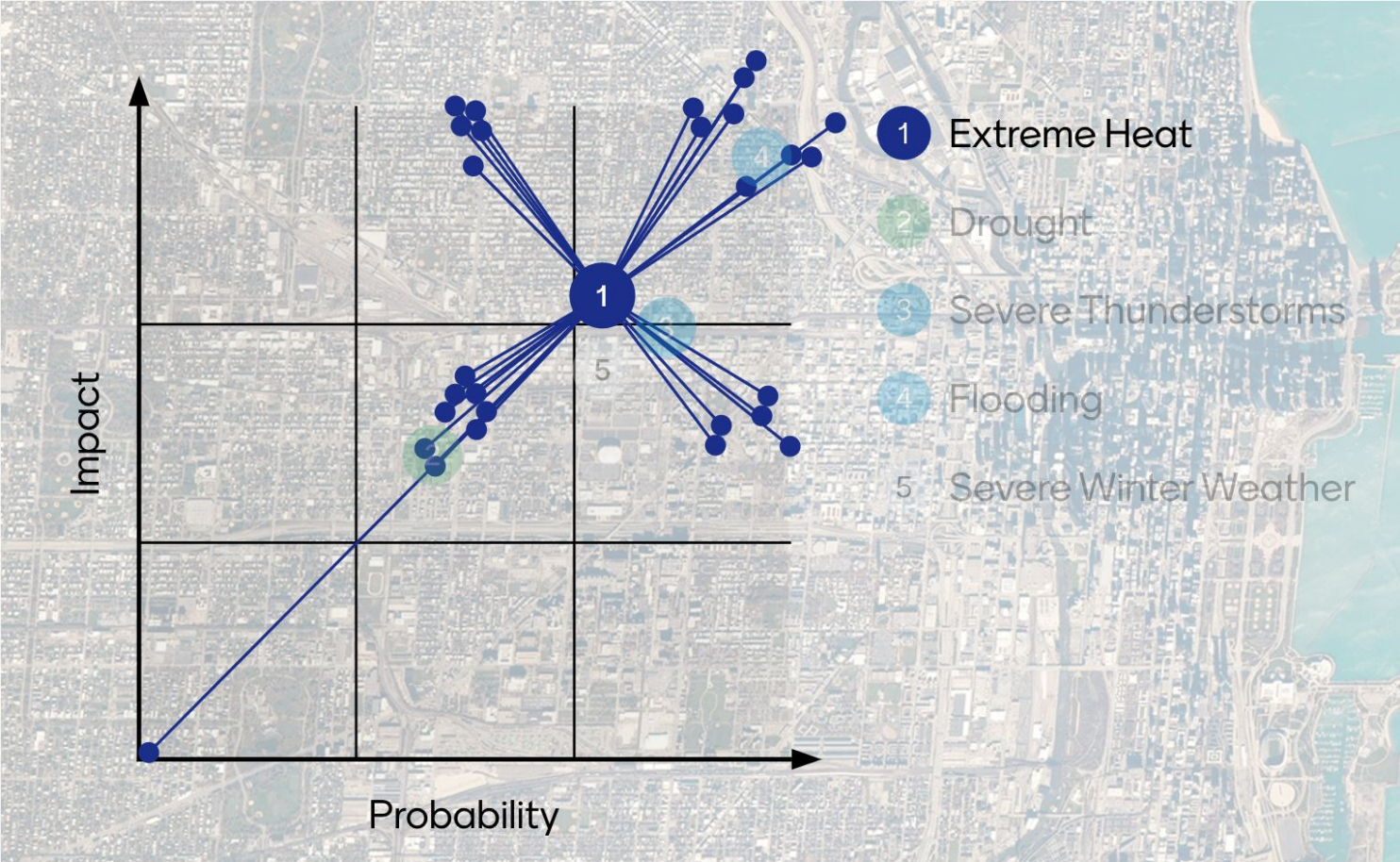


- 1 Extreme Heat
- 2 Drought
- 3 Severe Thunderstorms
- 4 Flooding
- 5 Severe Winter Weather

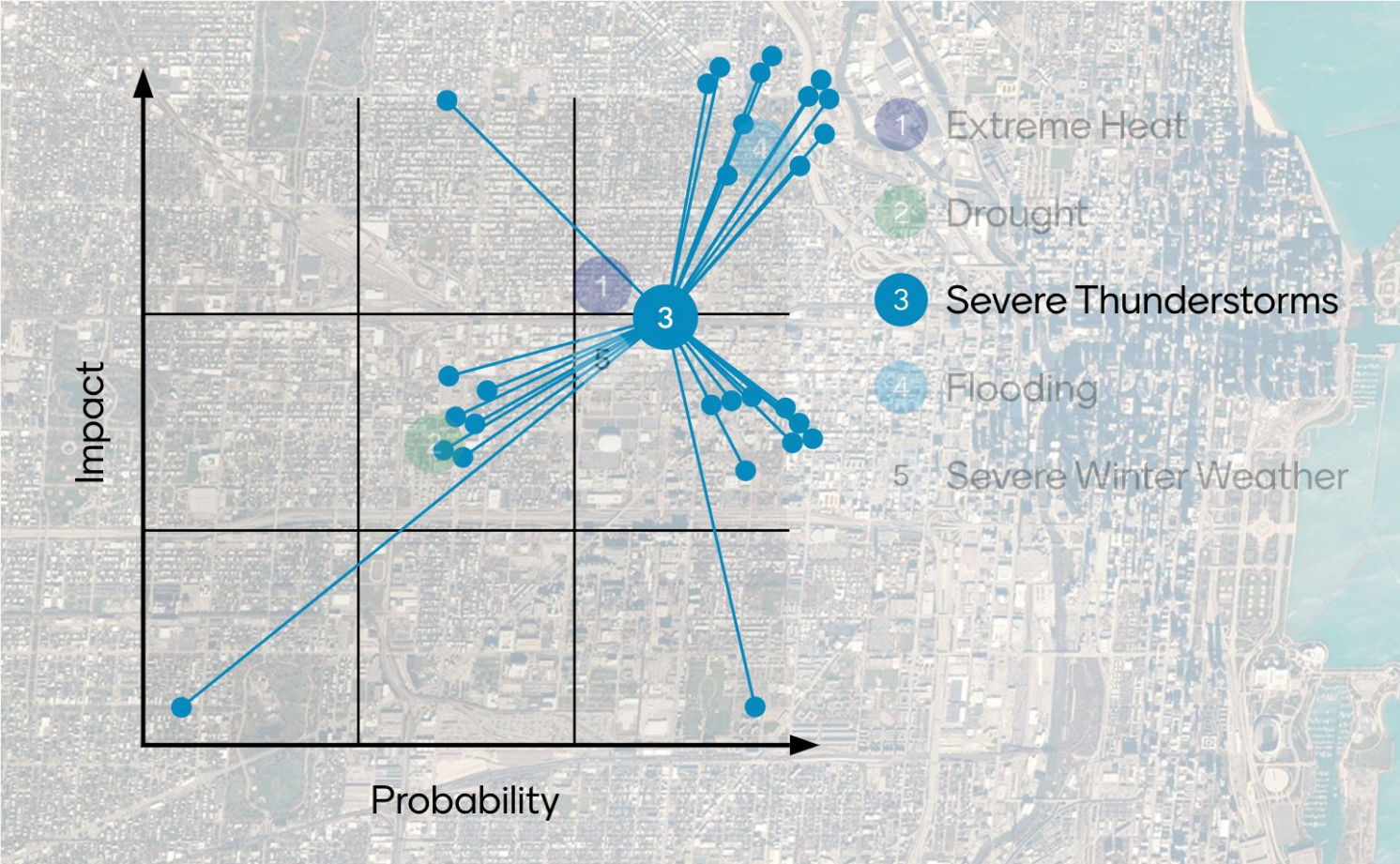
Evaluate Risk



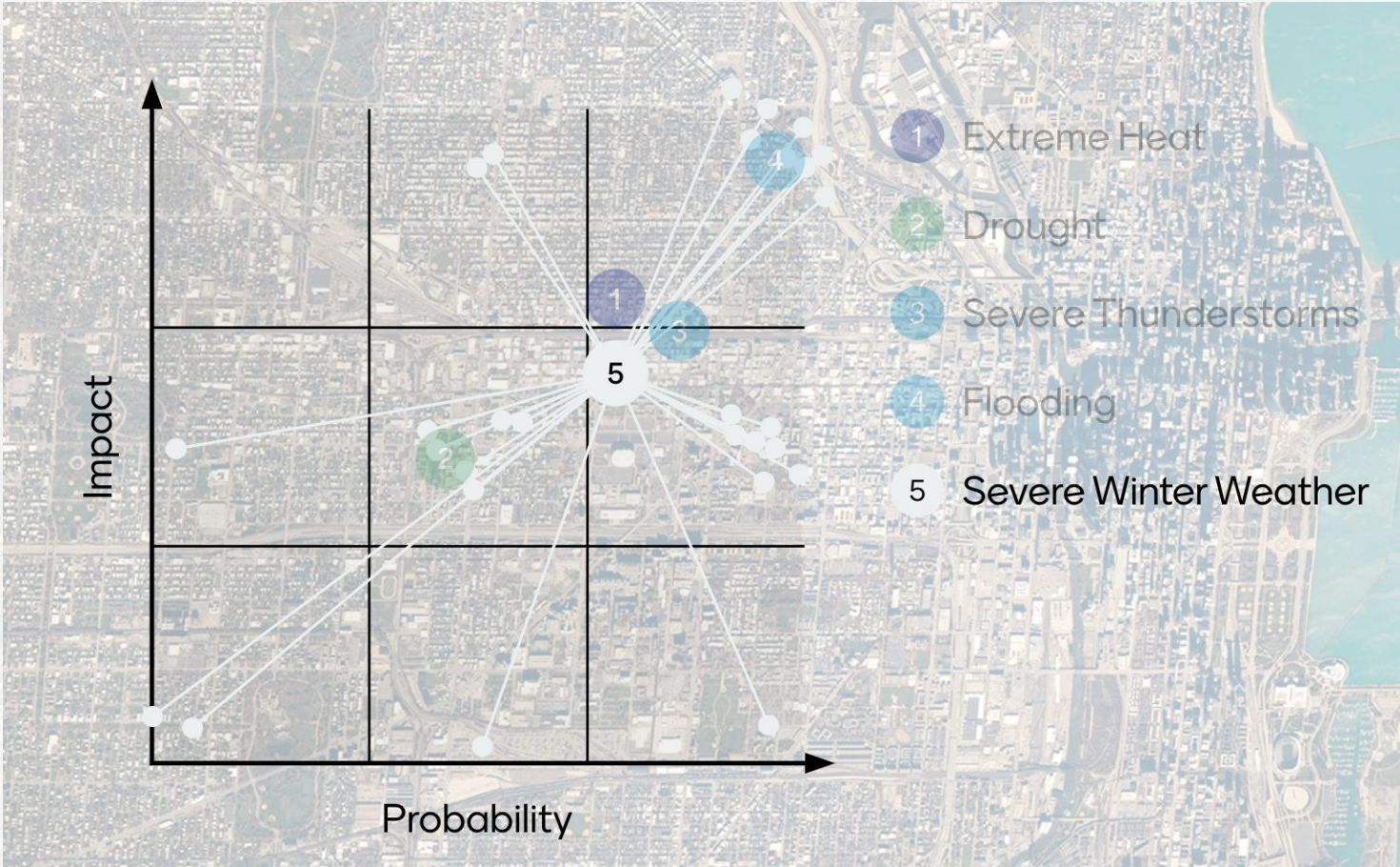
Evaluate Risk



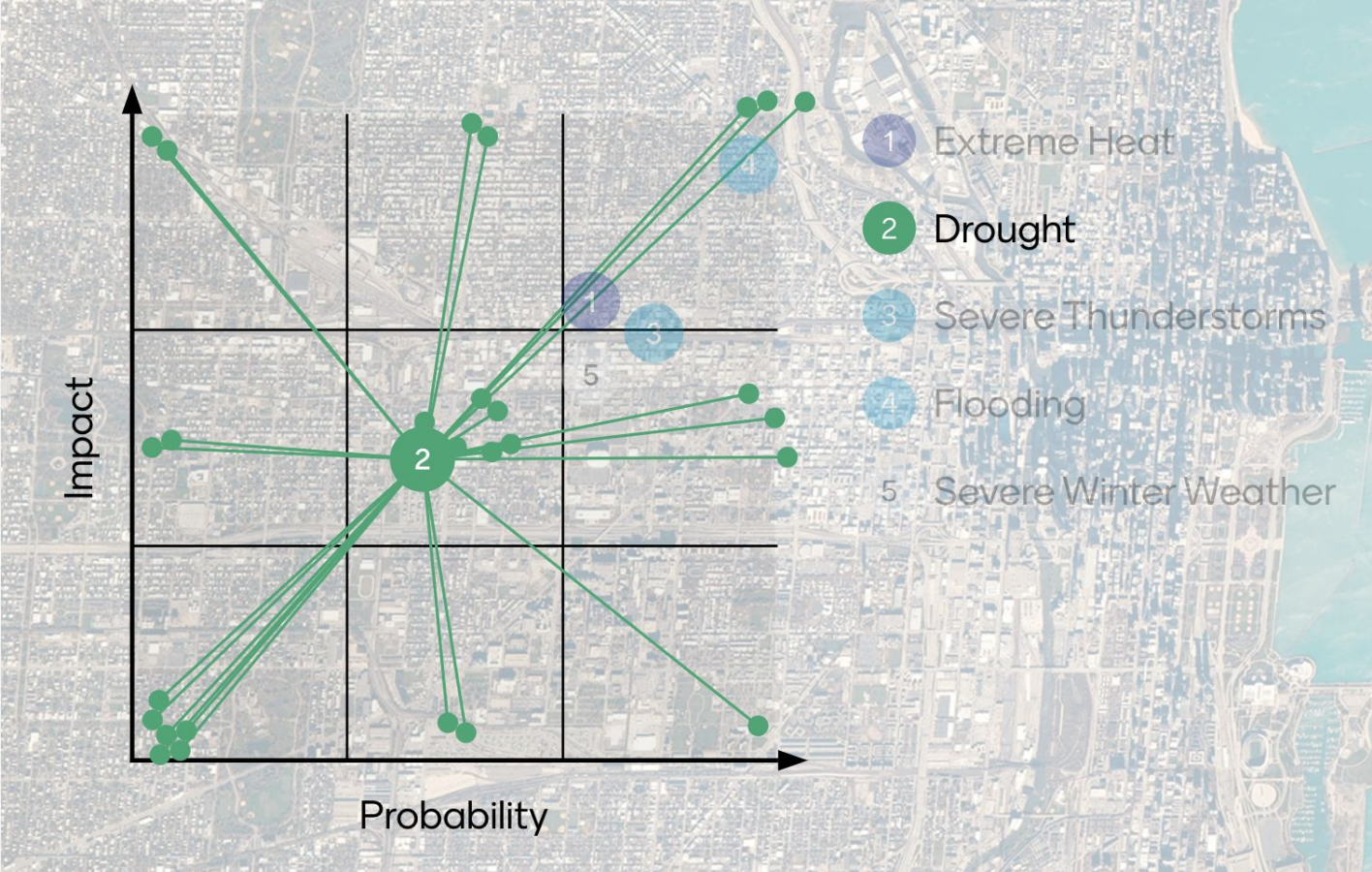
Evaluate Risk



Evaluate Risk



Evaluate Risk





Risk due to Climate-Related Hazards

	Probability	Consequence	Risk
Extreme Heat	3	3	9
Drought	2	3	6
Severe Thunderstorms	2	2	4
Flooding	3	3	9
Severe Winter Weather	2	2	4



Investigate Options

- Consider possible solutions for your highest risks.
- Check how others have responded to similar issues.

At the end of your investigation, you'll have a list of solutions stakeholders are willing to support.

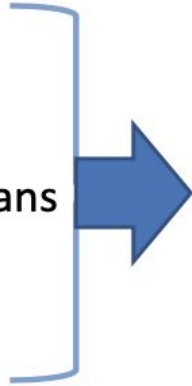
- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 Prioritize & Plan
- 5 Take Action

Creating the



Source of Sustainability Goals

- 30 local plans
- 9 regional/national plans
- 1149 specific goals



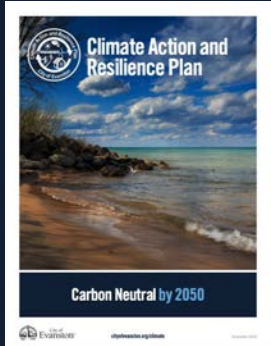
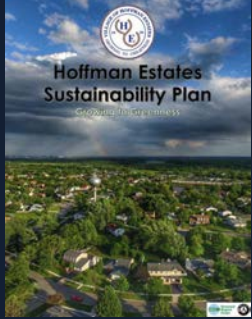
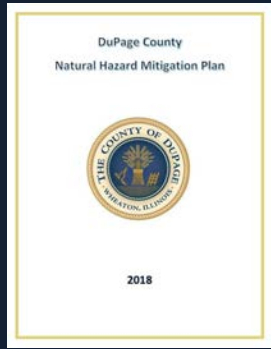
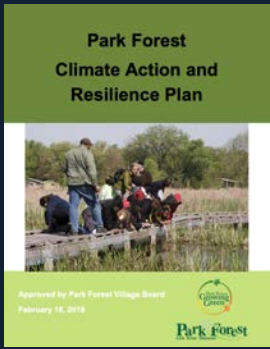
Consensus GRC Goals





49 GRC Goals in 10 Categories

-  Climate
-  Economic Development
-  Energy
-  Land
-  Leadership
-  Mobility
-  Municipal Operations
-  Sustainable Communities
-  Water
-  Waste



12 adaptation plans
196 strategies

GRC Framework
Adaptation
Update



GRC Resilience Goals - a subset

 Develop resilience to climate change impacts

 Conserve, restore and enhance natural features and ecosystems

 Sustain beautiful landscapes that provide ecosystem services

 Integrate sustainability into transportation policies and programs

 Collect and manage data to advance sustainability

 Foster a culture of health, safety, and wellness

 Optimize the use of natural and built systems to manage stormwater



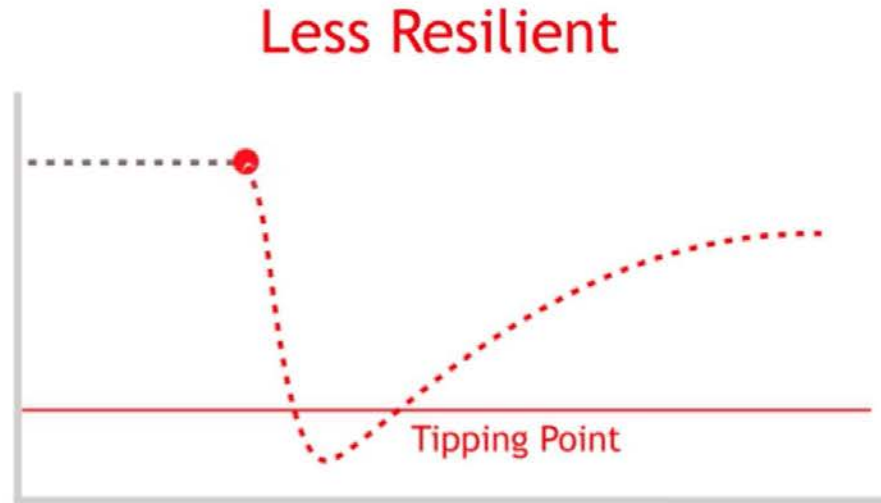
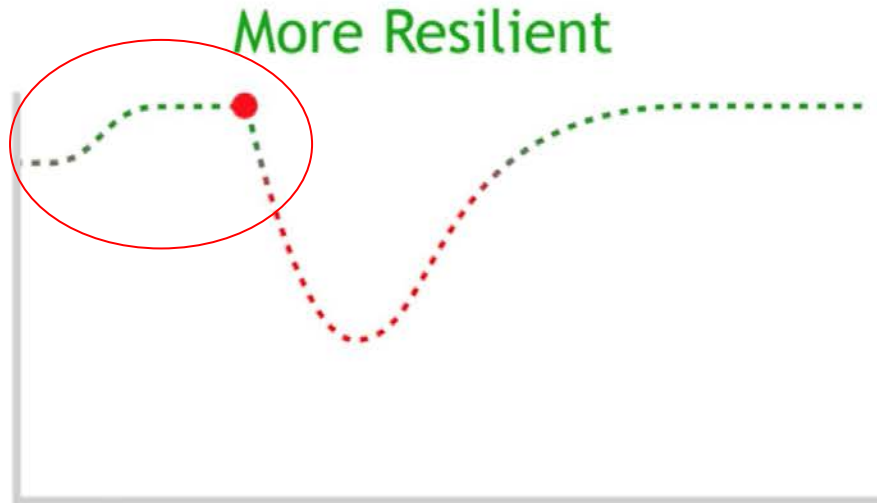
Many GRC sustainability recommendations apply to climate resilience

 GOAL	STRATEGY	Already achieved	In Progress	Planned	Not planned	Not relevant
<div style="border: 1px solid black; border-radius: 50%; padding: 10px; width: fit-content; margin: auto;"> <i>Conserve restore and enhance natural features and ecosystems</i> </div>	Using data such as watershed plans to identify key natural assets, landscape features, parcels with high value for connectivity and ecosystem function					
	Conserve key natural assets and open space					
	Guide future development to conserve natural topography, views, drainage patterns, existing vegetation, and historic or cultural assets					
	Prioritize acquisition of lands to protect groundwater recharge areas					
	Manage public and private landscapes to optimize ecosystem services, resilience to climate change, and support biodiversity					



Resilience options: a subset of sustainability options

Actions that increase level of service so that when a hazard occurs, community does not cross a tipping point





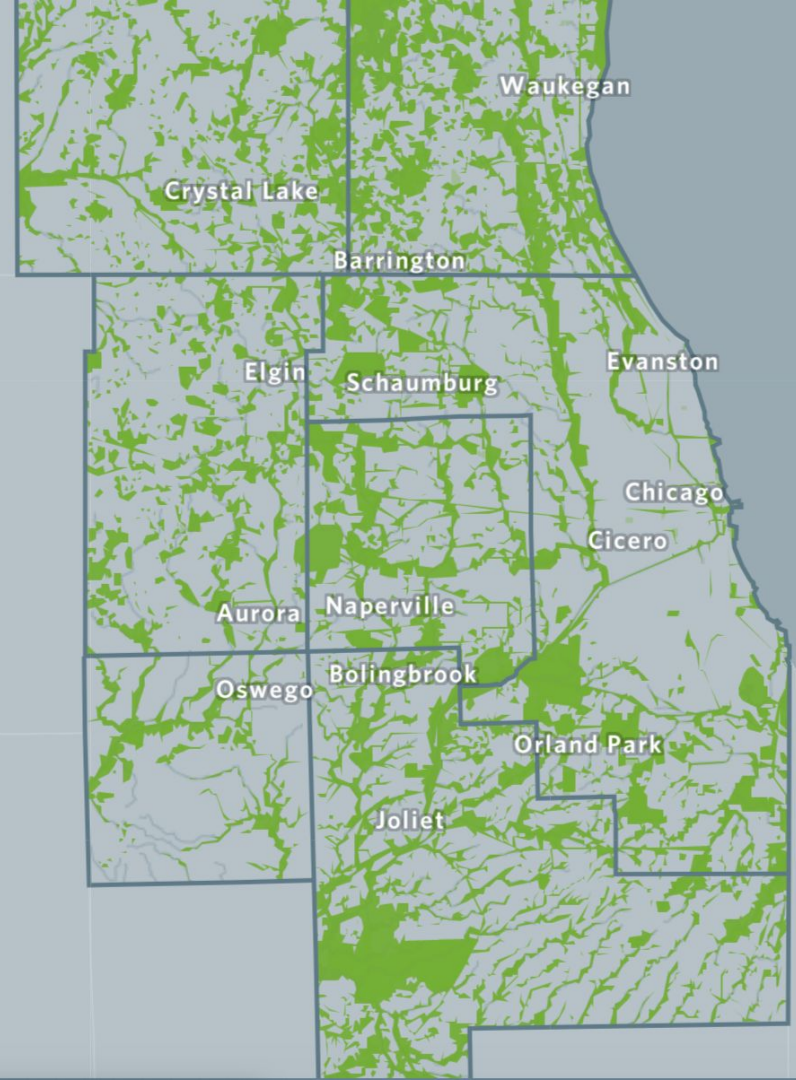
Identify options that target different aspects of vulnerability and risk (brainstorm)





Local concerns - flooding

Coordinated regional
action - priority
conservation areas





Options for building resilience

Develop resiliency to climate change impacts



Develop a resiliency plan to protect assets, public health, and provide essential services through natural and man-made disasters

Strengthen emergency response skills among staff, civic leaders, and allied organizations

Already achieved	In Progress	Planned for next 12-18	Interested in pursuing	Not relevant



Options for building resilience

Engage the community in climate change mitigation and adaptation



Share information and resources to support residents and businesses to adapt to climate change impacts and recover from disaster

Already achieved	In Progress	Planned for next 12-18	Interested in pursuing	Not relevant



Options for building resilience

Achieve greater livability through sustainable land use and housing policies

- >Enact and enforce land-use policies that preserve open space
- >Enact and enforce a tree preservation ordinance to protect valuable trees on private property
- Integrate resiliency strategies into development policies and plans

Already achieved

In Progress

Planned for next 12-18 months

Interested in pursuing

Not relevant

Go to www.menti.com and use the code 62 82 85

Are you implementing Heat/Health resilience?

Not interested

Strengthen emergency response skills among staff, civic leaders, and allied organizations

Enact and enforce land-use policies that preserve open space

Integrate resilience strategies into development policies and plans

Already Achieved



Options for building resilience

- **Develop a resilience plan to protect assets, public health, and provide essential services through natural and man-made disasters**
 - **Support and utilize data about vulnerability to climate impacts to build resilience**



Check how others have responded

Flooding & homes

Flooding & homes (indoor air quality)

Flooding & mobility

Flooding & infrastructure

Heat & health (esp. seniors)



Photo credit:
Center for Neighborhood Technology, Flickr



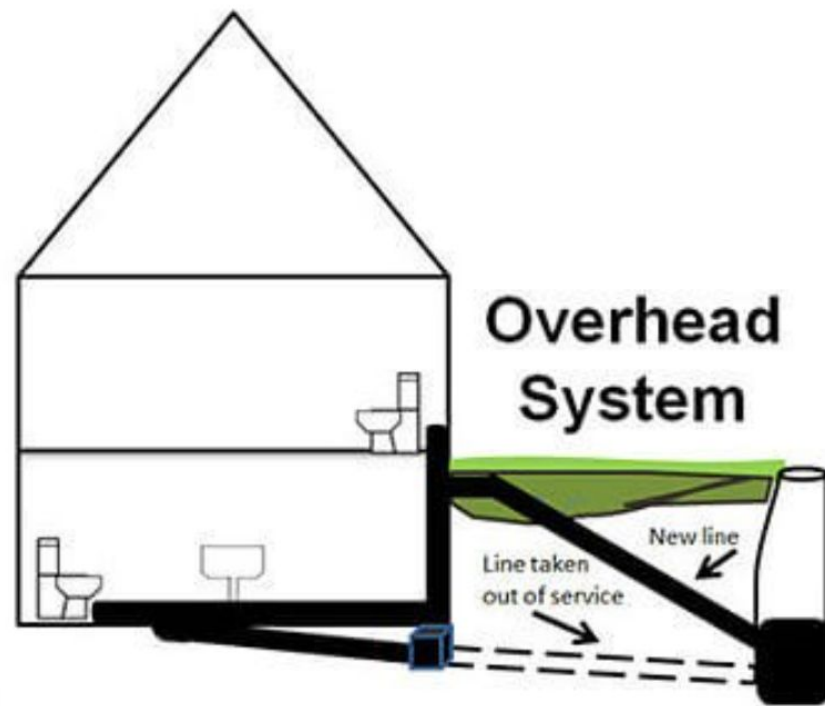
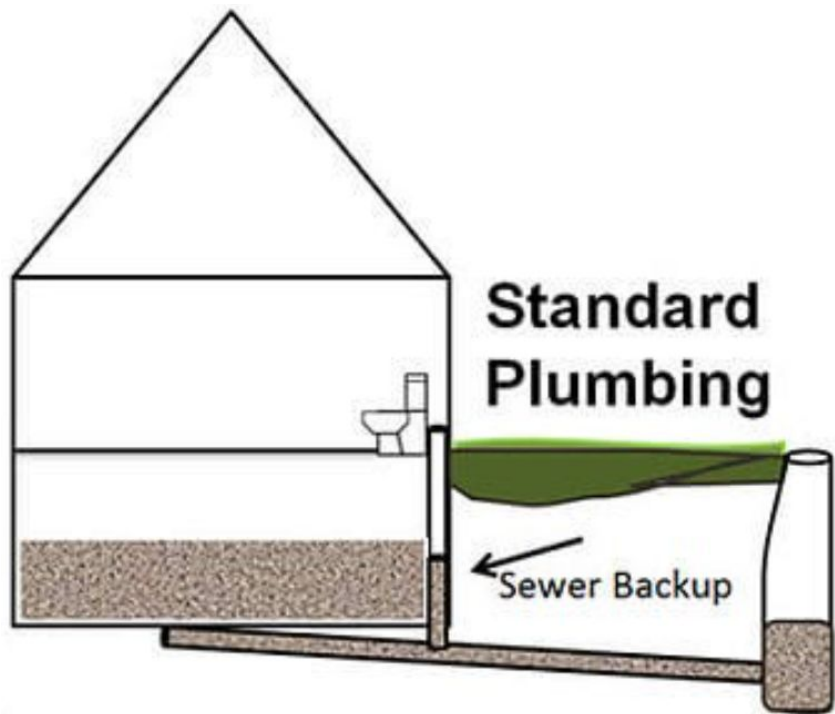
Photo credit:
Center for Neighborhood Technology, Flickr



Photo credit:
Center for Neighborhood Technology, Flickr



Photo credit:
Center for Neighborhood Technology, Flickr





Flooding & homes (indoor air quality)



U.S. Climate
Resilience
Toolkit

[Steps to Resilience](#) [Case Studies](#) [Tools](#) [Expertise](#) [Regions](#) [Topics](#)

Search



People and Communities

Public health risks will increase as temperatures warm due to increased intensity and frequency of heat waves, higher humidity, degraded air quality, reduced water quality, and new opportunities for vector-borne disease. At-risk communities are becoming more vulnerable to climate change impacts; tribal nations are especially vulnerable because of their reliance on threatened natural resources for their cultural, subsistence, and economic needs.

[Home](#) > [Regions](#) > [Great Lakes](#) > [People and Communities](#) >



FEMA

Fact Sheet: Mold: Problems and Solutions

<https://www.fema.gov/news-release/2017/10/24/4339/fact-sheet-mold-problems-and-solutions>

Public health

Great Lakes

- [People and Communities](#)
- [Infrastructure and the Built Environment](#)
- [Agriculture, Forests, and](#)



Flooding & mobility



U.S. Climate
Resilience
Toolkit

[Steps to Resilience](#)

[Case Studies](#)

[Tools](#)

[Expertise](#)

[Regions](#)

[Topics](#)

Search



Extreme Rainfall Analyses Can Point to Right Size for Culverts

Across most of the United States, the heaviest rainfall events have become heavier and more frequent. New tools can help decision makers choose culverts with appropriate capacities for the future.

[Case Studies](#) > [Extreme Rainfall Analyses Can Point to Right Size for Culverts](#) >



SHARE



TWEET



PRINT

Considering culverts

Laura Sager is the Executive Director of the Soil and Water Conservation District in Columbia County, New York.

Among a range of important topics that occupy her days, Sager spends an increasing amount of time on a topic that many people consider mundane: she's thinking about culverts.



Steps to Resilience

This content supports the highlighted step.

- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 **Prioritize & Plan**
- 5 Take Action



Heat & health (esp. seniors)



U.S. Climate
Resilience
Toolkit

[Steps to Resilience](#) [Case Studies](#) [Tools](#) [Expertise](#) [Regions](#) [Topics](#)

Search



Bracing for Heat

Heat waves bring some level of discomfort to nearly everyone. When excessive heat catches vulnerable populations off guard, though, discomfort can advance to illness and even death. Learn about strategies taken in Minnesota that help protect people in both rural and urban settings.

[Case Studies](#) > [Bracing for Heat](#) >



SHARE



TWEET



PRINT

The long, hot days of summer come with outdoor activities and much needed vacation for many Americans. Public health officials, however, remain on high alert during the warm days: they are increasingly aware of the increased exposure to extreme heat that accompanies summertime activities and the threats faced by residents of buildings without air conditioning. They're also mindful of the need for extra protection of vulnerable populations during heat waves.

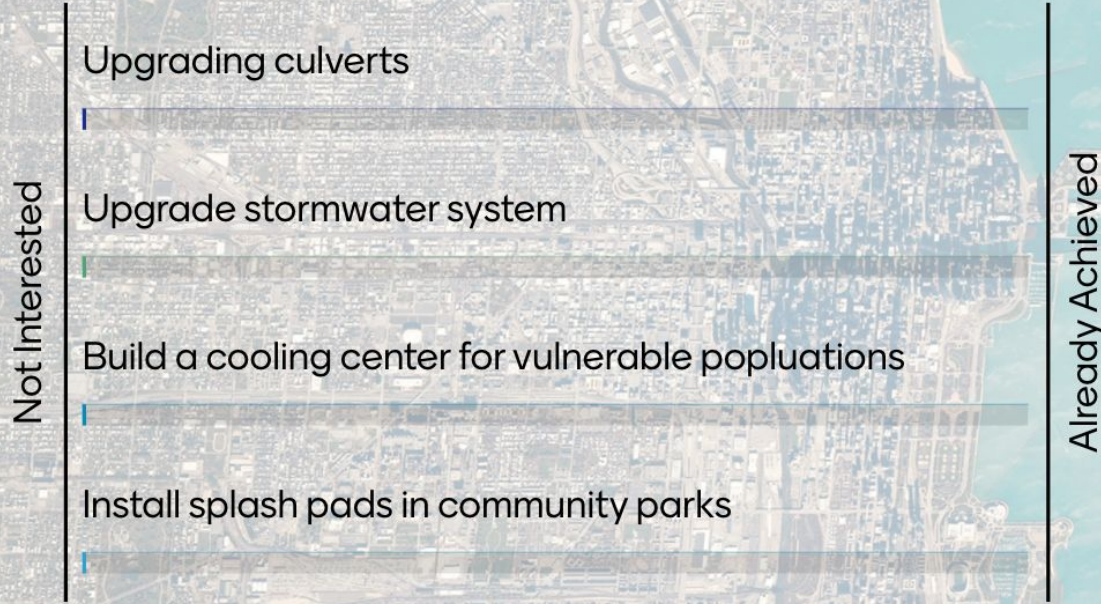


Steps to Resilience

This content supports the highlighted step.

- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 Prioritize & Plan
- 5 Take Action

Which of these options would you support?





Do you have a list of
actions stakeholders are
willing to support?





Prioritize and Plan

- Evaluate costs, benefits, and your team's capacity to accomplish each action.
- Rank the expected value of each action.
- Integrate the highest-value actions into a stepwise plan.

The result will be a comprehensive plan to implement your favored solutions.





Category	Option	Action reduces measurable impact	ON TO 2050 Alignment	Feasibility
Education and Outreach	Share information and resources to support residents and businesses to adapt to climate change impacts and recover from disaster			?

Finance, cost, resources



Governance, coordination

Go to *Menti.com*
Enter 62 82 85

Category	Option	Action reduces measurable impact	ON TO 2050 Alignment	Feasibility
Education and Outreach	Share information and resources to support residents and businesses to adapt to climate change impacts and recover from disaster			

Go to *Menti.com*
Enter 62 82 85



Category	Option	Action reduces measurable impact	ON TO 2050 Alignment	Feasibility
Response and Recovery	Strengthen emergency response skills among staff, civic leaders, and allied organizations			?

Finance, cost, resources



Governance, coordination

Go to *Menti.com*
Enter 62 82 85

Category	Option	Action reduces measurable impact	ON TO 2050 Alignment	Feasibility
Response and Recovery	Strengthen emergency response skills among staff, civic leaders, and allied organizations	●	●	



Go to *Menti.com*
 Enter 62 82 85



Category	Option	Action reduces measurable impact	ON TO 2050 Alignment	Feasibility
Planning	Develop a climate resilience plan		?	



Go to *Menti.com*
Enter 62 82 85

On To 2050:
Community
Prosperity
Environment
Governance
Mobility

Category	Option	Action reduces measurable impact	ON TO 2050 Alignment	Feasibility
Planning	Develop a climate resilience plan			

Go to *Menti.com*
Enter 62 82 85





Category	Option	Action reduces measurable impact	ON TO 2050 Alignment	Feasibility
Land	Enact and enforce land-use policies that preserve open space			

Finance, cost,
resources

Governance,
coordination

Go to *Menti.com*
Enter 62 82 85

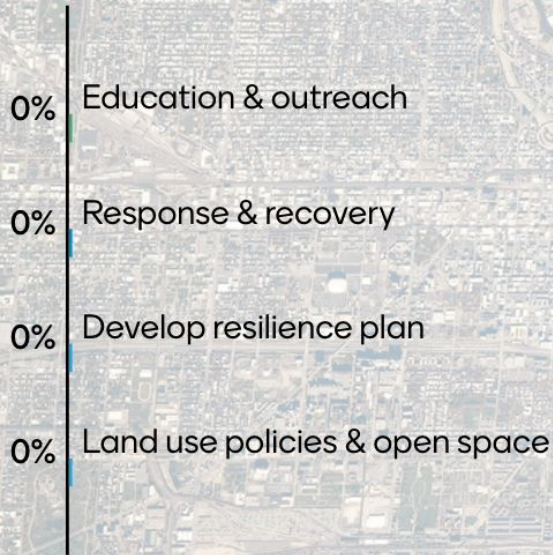
Category	Option	Action reduces measurable impact	ON TO 2050 Alignment	Feasibility
Land	Enact and enforce land-use policies that preserve open space			

Go to *Menti.com*
Enter 62 82 85



Go to www.menti.com and use the code 62 82 85

Allocate a budget of 100 points to these options





Does your plan describe the group's best actions to protect what you value?



Take Action

- Move forward with stakeholders who accept responsibility and bring resources to take action.
- Check to see if your actions are increasing resilience.

As you move forward, you'll monitor, review, and report on your project.

1 Explore Hazards

2 Assess Vulnerability & Risks

3 Investigate Options

4 Prioritize & Plan

5 Take Action



Monitor, Evaluate, Communicate



Marsha Hilmes-Robinson
Floodplain Administrator
City of Fort Collins, Colorado



Conclusions

- You are already taking action and have good stakeholder support
- Steps to Resilience framework can help you
 - Working across scale (region, county, municipality)
 - Issuing or responding to RFPs; working with contractors
 - Terminology for mayors & staff, engineers, analysts
- Use the U.S. Climate Resilience Toolkit to support the Steps to Resilience

noaa.toolkit@noaa.gov



QUESTIONS?

<https://mayorscaucus.org/climatewebinars/>



Next Steps

- Partnerships and Collaboration
- Municipal capacity and GRC
- ON TO 2050 implementation

Chicago Metropolitan Regional Climate Action



CMAP



Mayor Kevin Burns kburns@geneva.il.us
Ned Gardiner ned.gardiner@noaa.gov
Jim Fox jfox@nemacfernleaf.com
Edith Makra emakra@mayorscaucus.org
Jared Patton jpatton@cmap.illinois.gov