

Climate Change: **Leadership that creates pathways forward through action and collaboration**

Metropolitan Council

October 9, 2019



Why are we here?

- Minnesota's climate is changing
- Climate change affects everyone
- It is our responsibility to act now
- Our efforts are making a difference
- It will take all of us to build a better future

What will we discuss today?

- Climate change in Minnesota
- Policy direction from Thrive MSP 2040
- Mitigation, adaptation, resilience
- Council's work to date
- Next steps



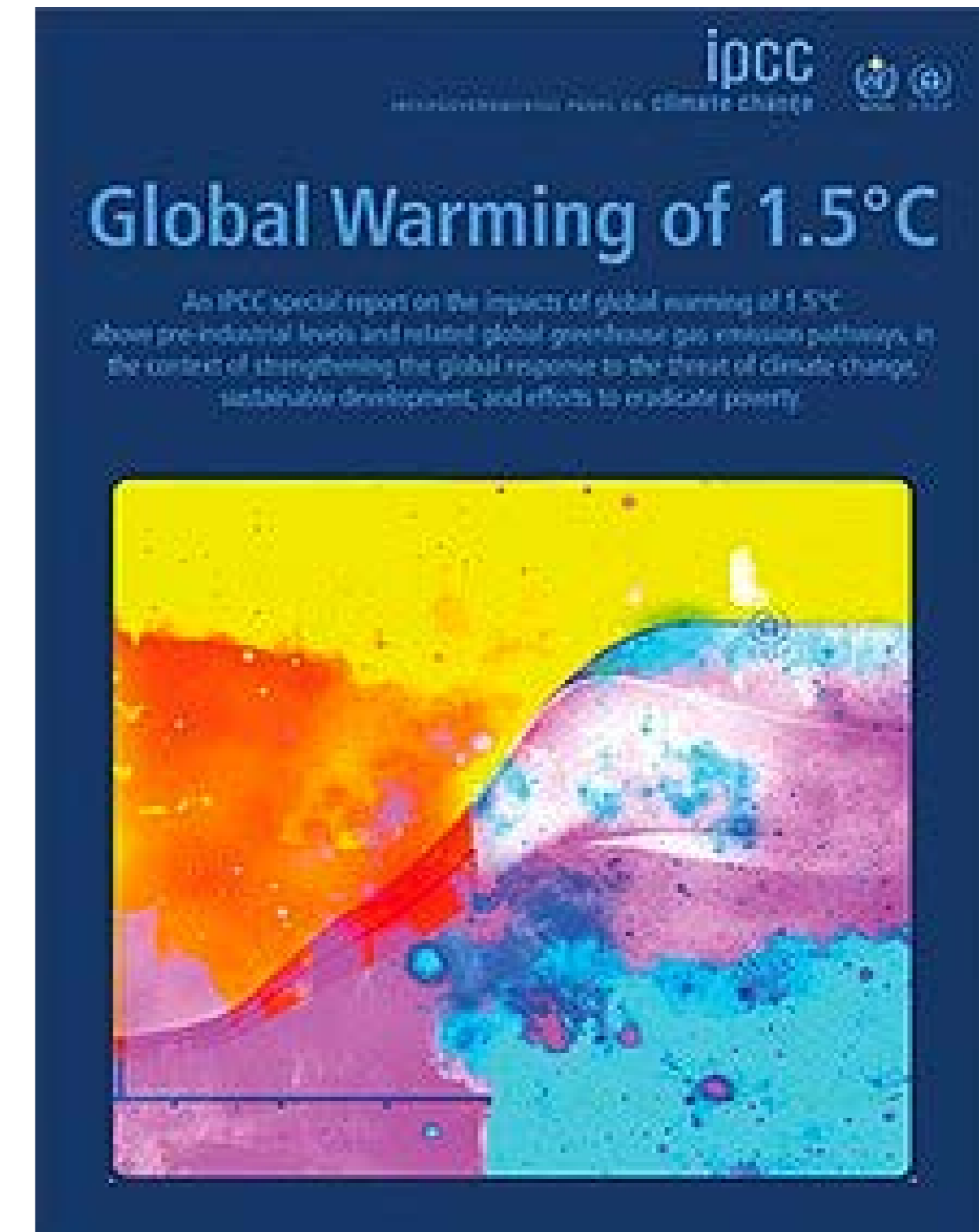
Urgent action needed for mitigation

Global climate crisis

To keep global warming below 1.5 degrees Celsius, the world will need to cut emissions by 50% within 10 years.

"The report shows that limiting global warming to 1.5 degrees can have many benefits, including those for human health and natural habitats. We can still choose the kind of future we want, but we have to act now."

(Heleen de Coninck, Climate Scientist and Lead Author of IPCC Report "Global Warming of 1.5 Degrees Celsius", 2018)



Climate change impacts

Anticipated climate change trends in Minnesota through 2099

<i>Hazard</i>	<i>Projections Through 2099</i>	<i>Confidence in Projected Changes</i>
Warming winters	Continued loss of cold extremes and dramatic warming of coldest conditions	Highest
Extreme rainfall	Continued increase in frequency and magnitude; unprecedented flash-floods	
Heat waves	More hot days with increases in severity, coverage, and duration of heat waves	High
Drought	More days between precipitation events, leading to increased drought severity, coverage, and duration	Moderately High
Heavy snowfall	Large events less frequent as winter warms, but occasional very large snowfalls	Moderately Low
Severe thunderstorms & tornadoes	More “super events” possible, even if frequency decreases	

“The region has gotten much wetter and warmer, driven by more frequent heavy precipitation and warmer winters.”

(K. Blumenfeld, Senior Climatologist MN, Department of Natural Resources)

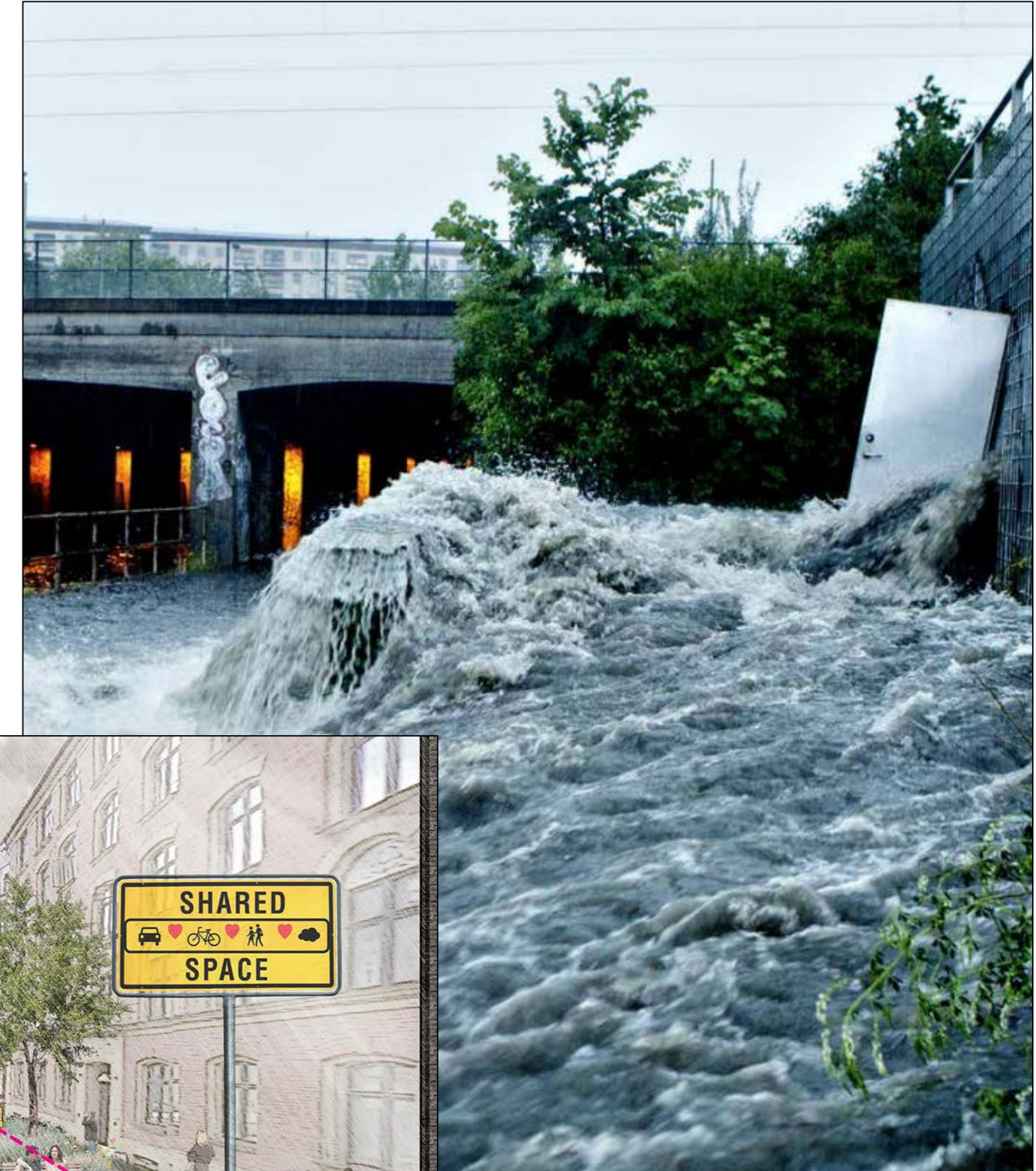


Climate change impacts outside of Minnesota

National
The deadliest, most destructive wildfire in California's history has finally been contained



Amid 19-Year Drought, States Sign Deal to Conserve Colorado River Water



20 dead in Bahamas as Hurricane Dorian pushes toward South Carolina

The Bahamian health minister said that the death toll from Dorian had risen from seven to 20 on the islands and that the number was expected to rise.

Hurricane Dorian causes widespread devastation in Bahamas

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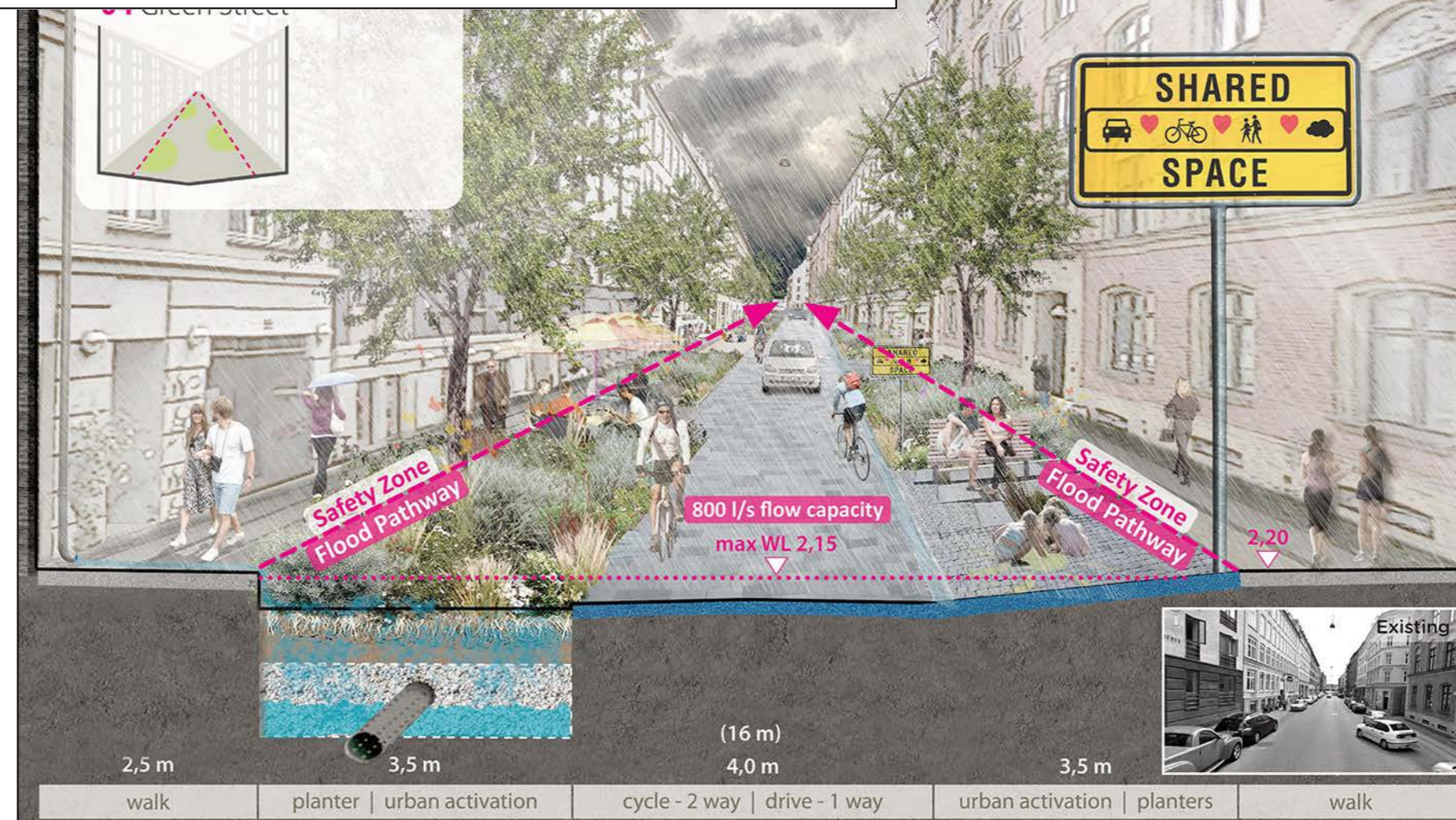
BRANDON CLEMENT/LSM



BREAKING OVERNIGHT
DORIAN'S DEVASTATION REVEALED
AREAS OF BAHAMAS LEVELED AS DEATH TOLL RISES



...r formed by the Hoover Dam, is at its lowest levels since the 1940s.



Policy direction – regional plans

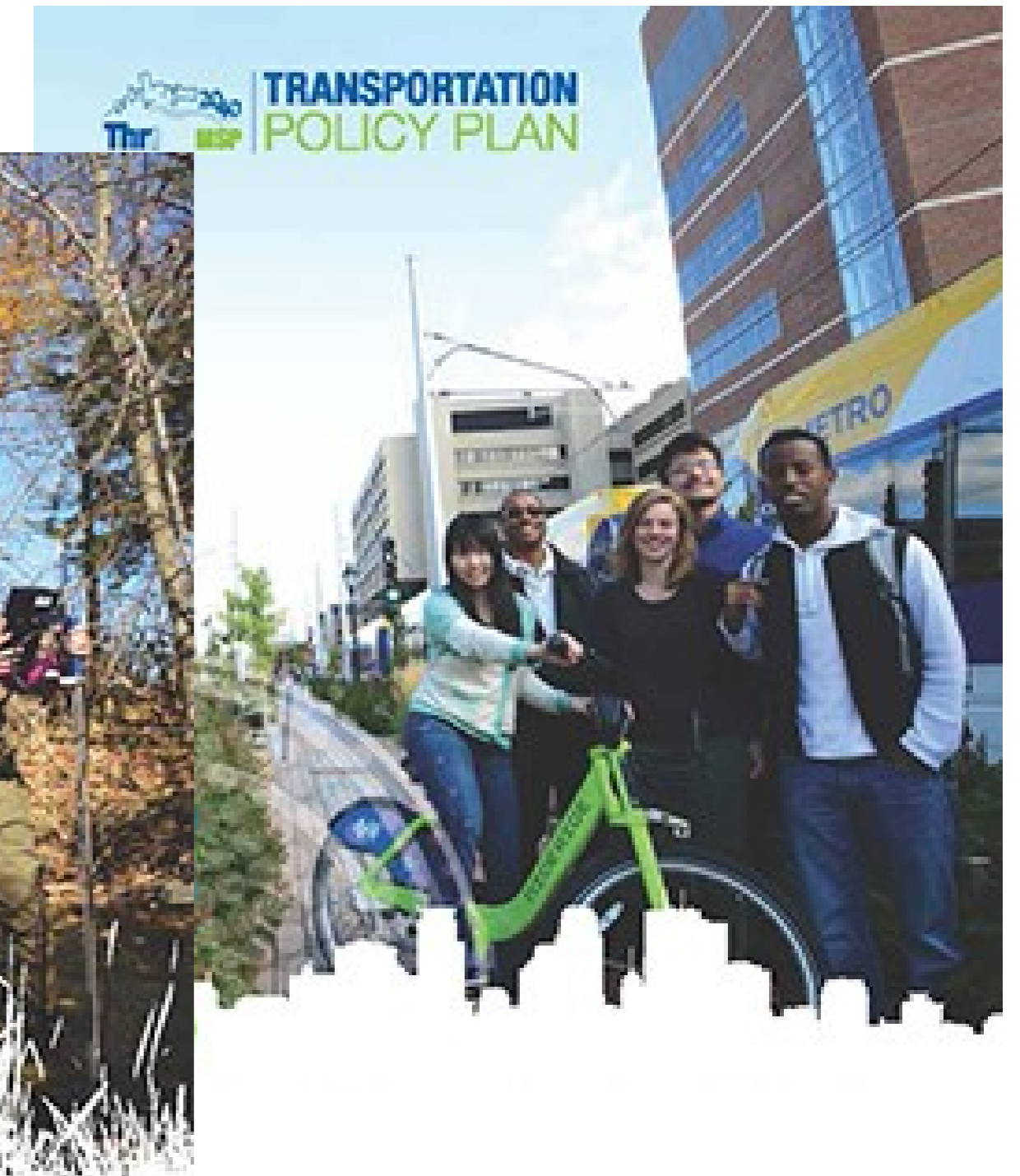
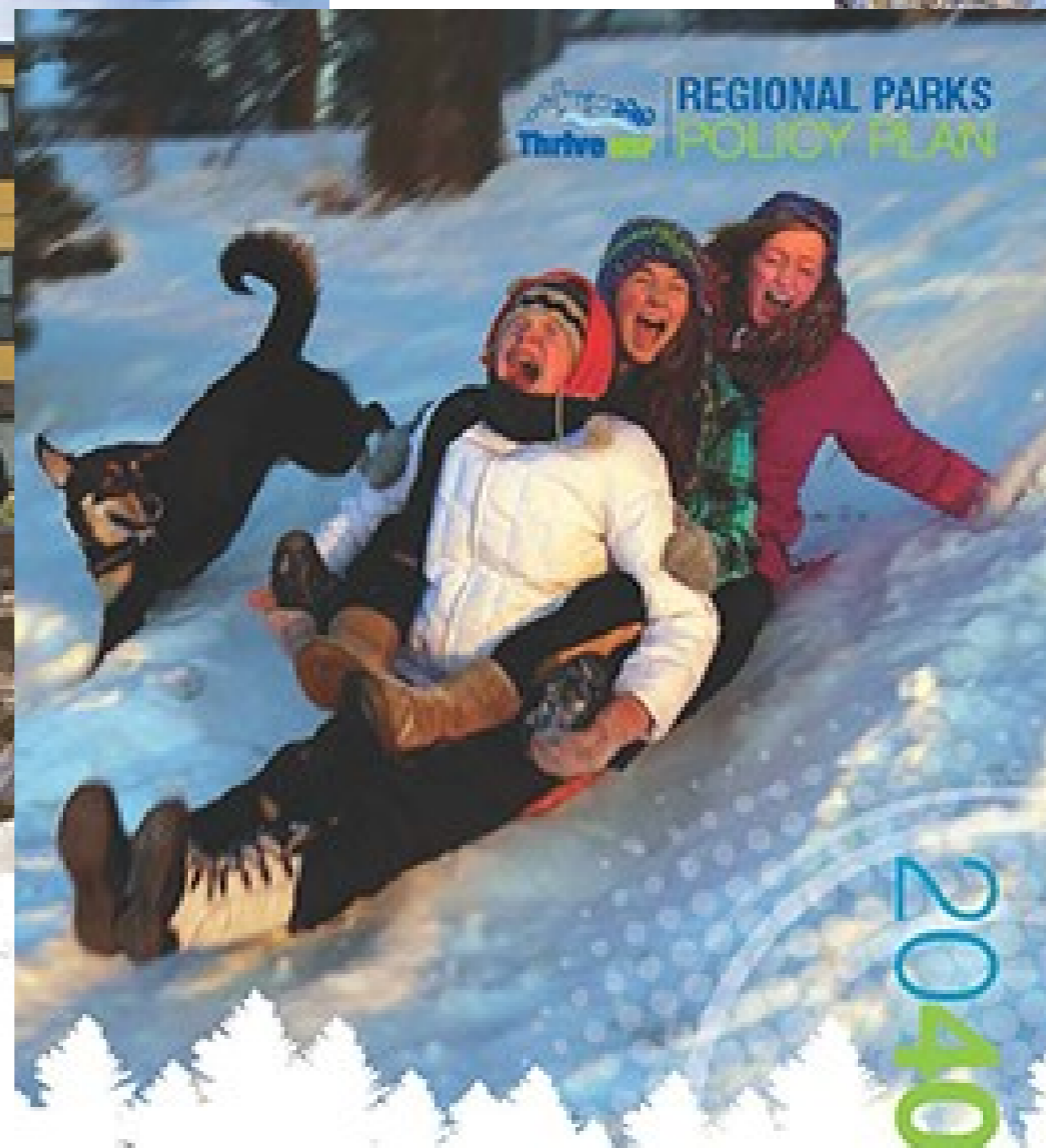
Sustainability

- Protecting our regional vitality for generations to come.
 - Lead by example in operations
 - Partner with customers and stakeholders



2040

Thrive MSP 2040 is the vision for our region over the next 30 years.



We have some cues – climate change action icons – for you to follow throughout the presentation



Definitions

- **Mitigation** – Strategies focused on minimizing contributions to climate change
- **Adaptation** – Strategies focused on how to change policies and practices to adjust to effects of climate change
- **Resilience** – Strategies that recognize the difficulty of predicting impacts of climate change and emphasize increasing our flexibility to survive and thrive regardless of how climate change develops





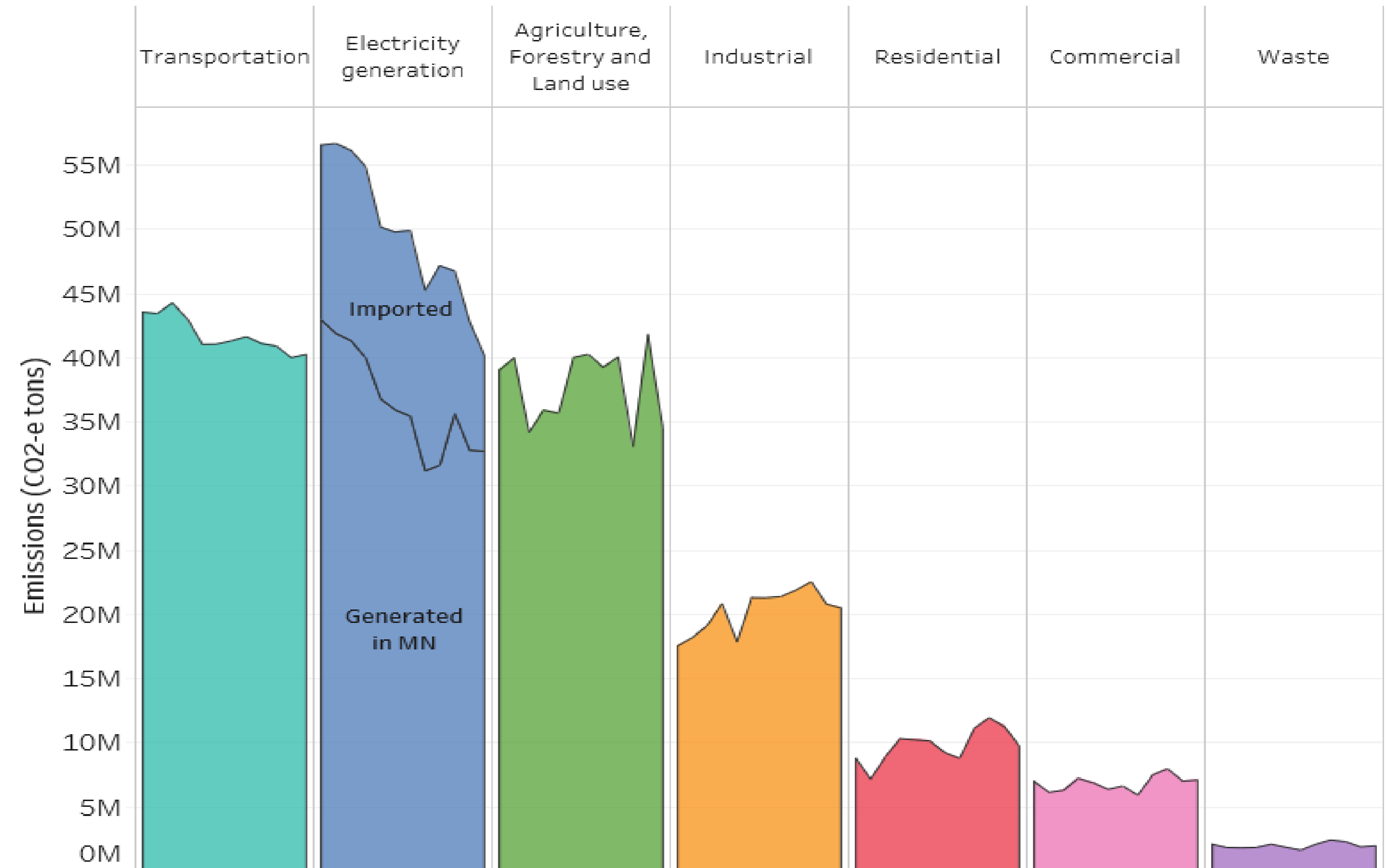
Mitigation

Mitigation

Mitigation	Mitigation focuses on minimizing contributions to climate change – for example, reducing energy use that leads to greenhouse gas emissions
Time dimension	Near-term actions lead to long-term results – today forward
Level of action	National/International (local level has opportunity to influence)
Critical stakeholders	Energy, transportation, and industry policy makers and operators
Metrics	Greenhouse gas emissions over time
Actions	Reduced use of energy, renewable energy sources, electrify energy consumers

Statewide greenhouse gas emissions

- 25% reduction in statewide emissions
- Less than 1% of statewide come from Council operational emissions
- Council has opportunity to influence and lead by example



Emission change 2005 to 2016	Transportation	Electricity generation	Agriculture, Forestry and Land use	Industrial	Residential	Commercial	Waste
	-3.31M -8%	-16.41M -29%	-4.52M -12%	2.99M 17%	0.94M 11%	0.10M 1%	-0.13M -6%
	↓	↓	↓	↑	↑	↑	↓

Mitigation – Environmental Services

Planning, Infrastructure, and Operations

- Reduce emissions and energy use
 - *Process optimization*
 - *Building optimization*
- Energy recovery and renewable
 - *Combined heat and power*
 - *Steam and digester gas*
 - *Heat recovery from effluent*
 - *Solar*
- Electrification: *Electric vehicles*



Regional Partnerships, Tools, and Resources

- Local Government Community Solar Collaborative
- Green partnership with Xcel Energy



Mitigation – Transportation Services & Metro Transit

Conservation

- Building optimization
- Building automatized systems & LED lighting



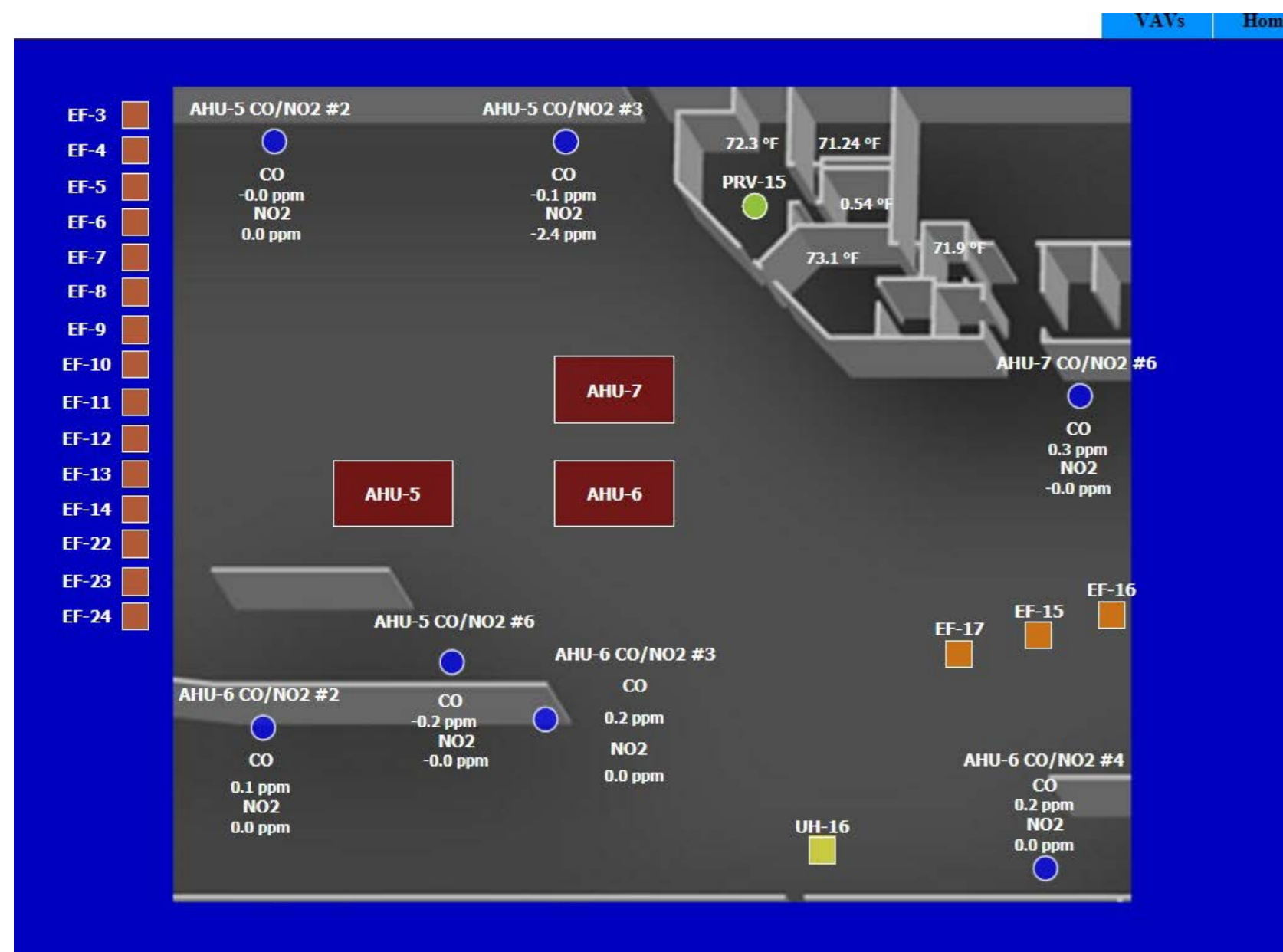
Electrification

- 133 hybrid & 8 battery electric buses
- Electric vehicles, plug-In hybrid electric vehicles



Renewable Energy

- 122 kW behind the meter
- 7.6 MW community solar collaborative



Mitigation – Community Development

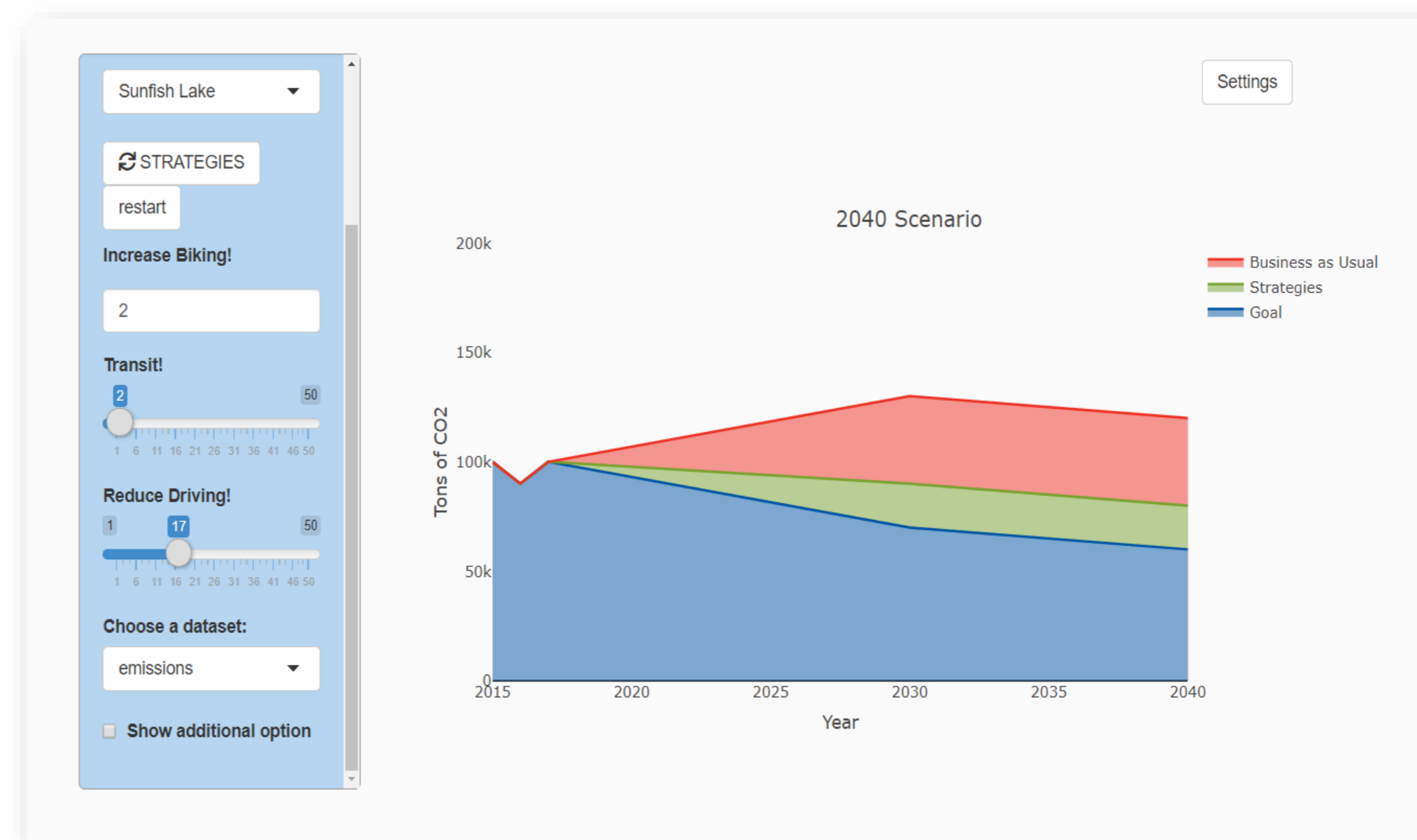
Regional Partnerships, Tools, and Resources

- Solar Energy Innovation Network
- MN Solar Pathways analysis
- MN Brightfields Initiative
- SolSmart Regional Organization designation



Scenario Planning Tool

Metro Climate Stats: Greenhouse Gas Inventory





Adaptation

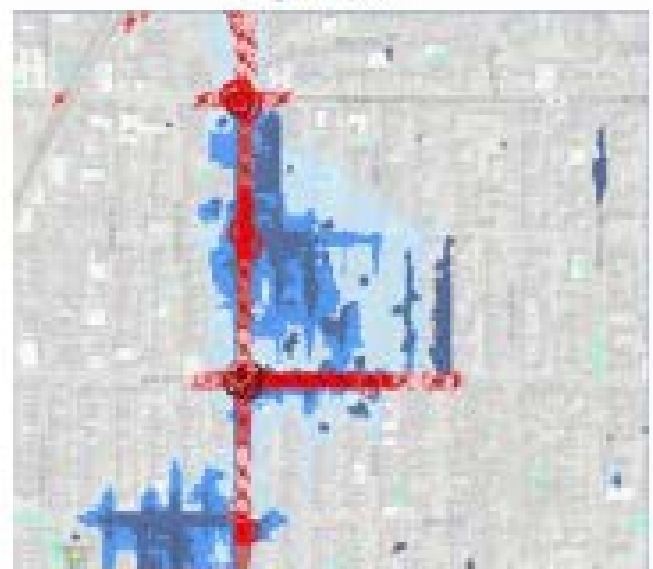
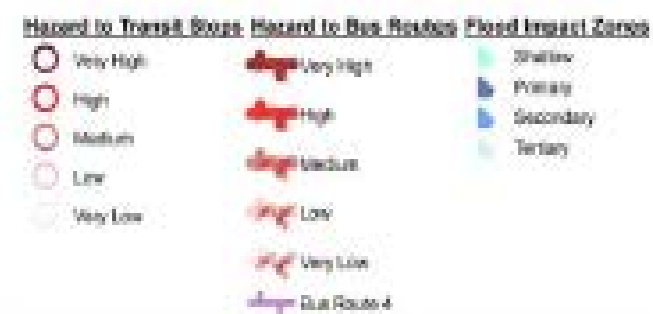
Adaptation

Adaptation	Adaptation focuses on how to change policies and practices to adjust to the effects of climate change that are occurring now
Time dimension	Short-term (adjusting to today's changes in climate)
Level of action	Local
Critical stakeholders	Infrastructure operators, local governments, community members, community experts
Metrics	Vulnerability studies and risk assessments
Actions	Infrastructure protection procedures and implementation, including asset management

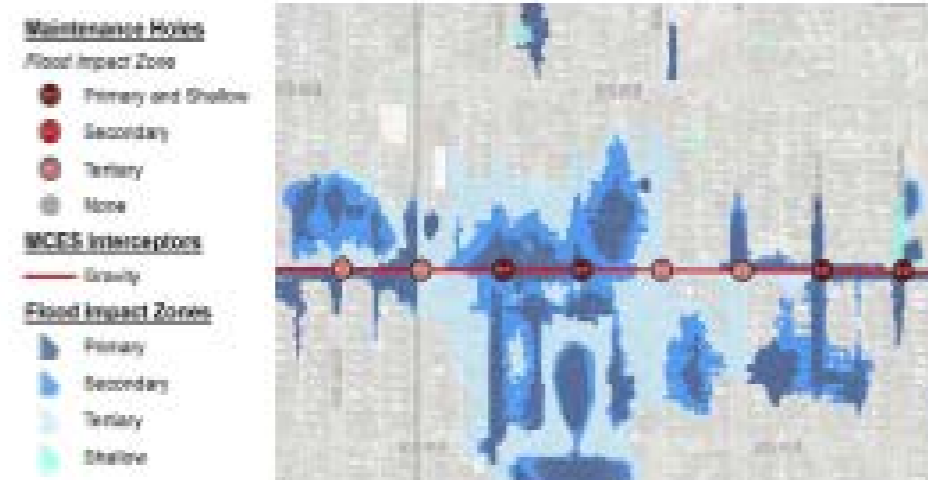
Adaptation metrics

Climate Vulnerability Assessment

Metro Transit

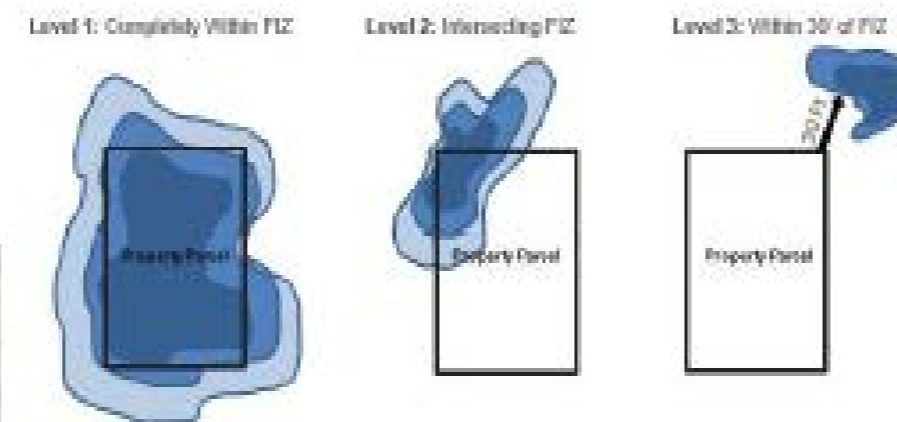
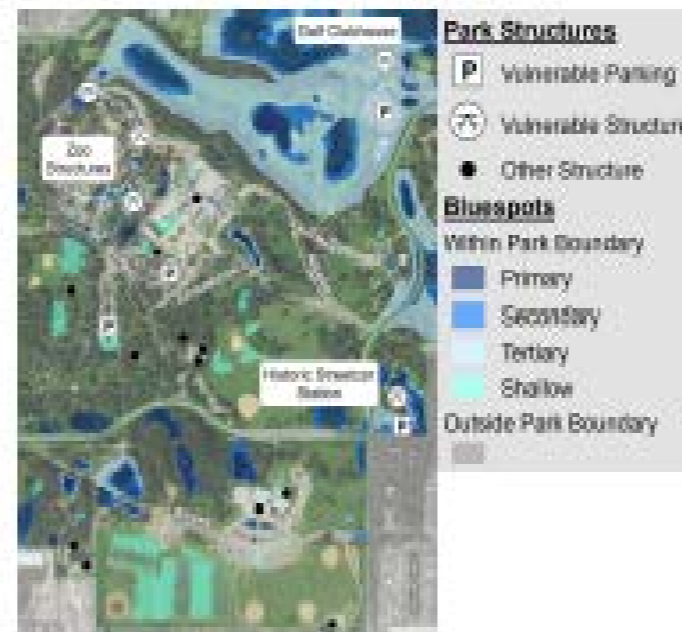


Water Supply



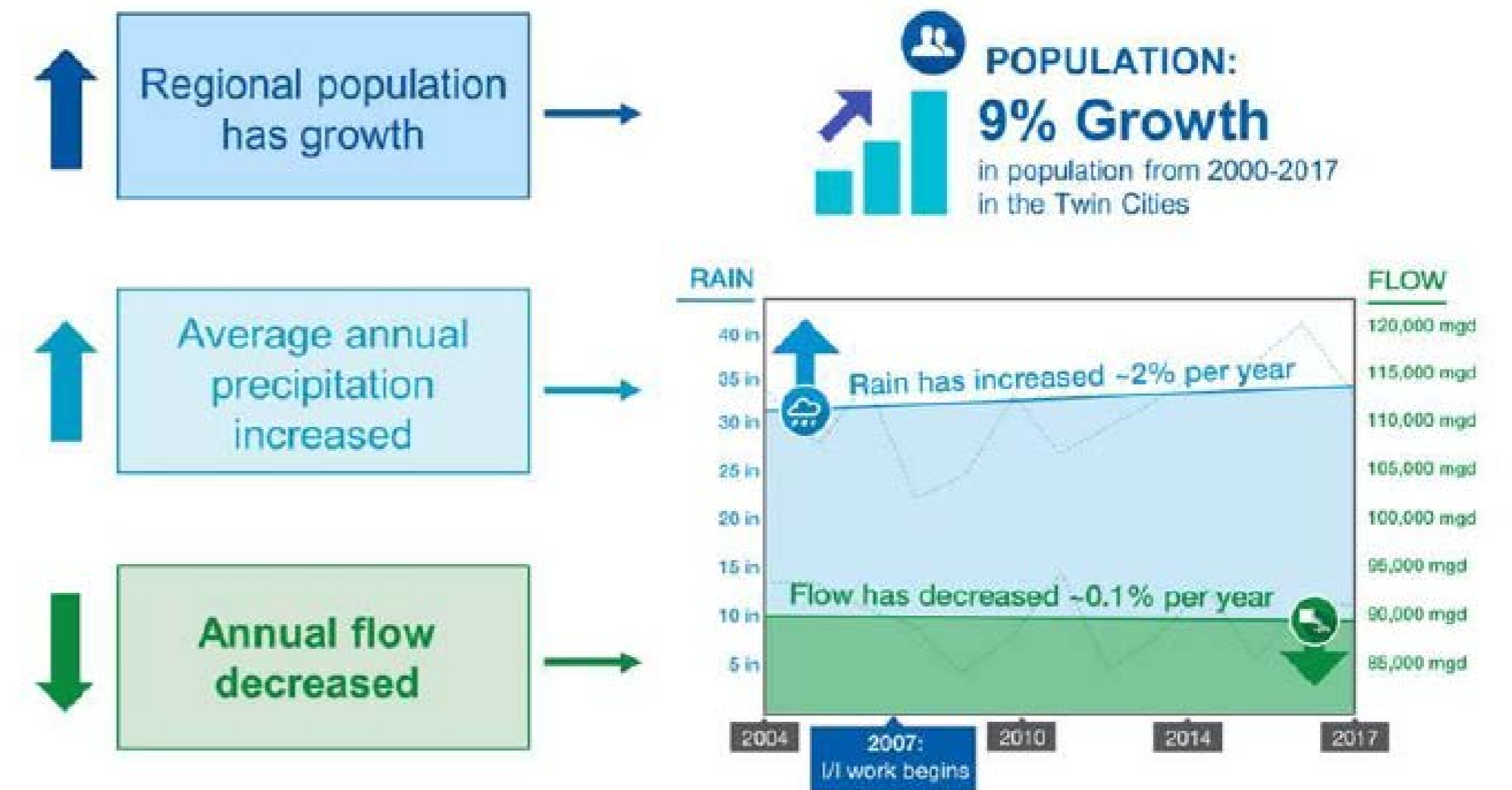
Wastewater

Parks



Housing

Inflow/Infiltration Mitigation Program



Key to public and environmental health, and wastewater affordability.



Adaptation – Environmental Services

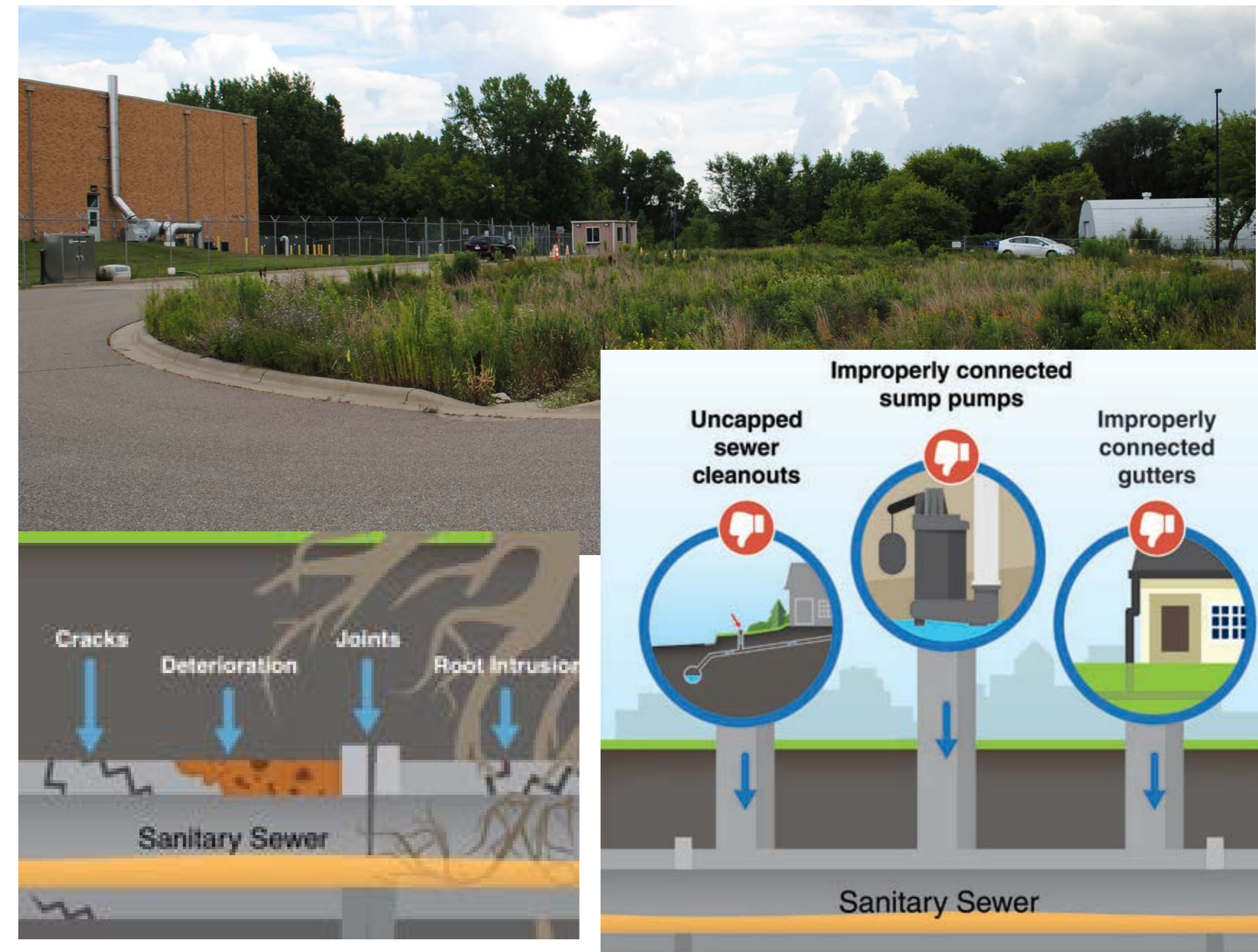
Planning, Infrastructure, and Operations

- Flood management plans
- Interceptor renewal
- Stormwater best management practices



Regional Partnerships, Tools and Resources

- Inflow and Infiltration grants
- Stormwater grants



Adaptation – Transportation Services & Metro Transit

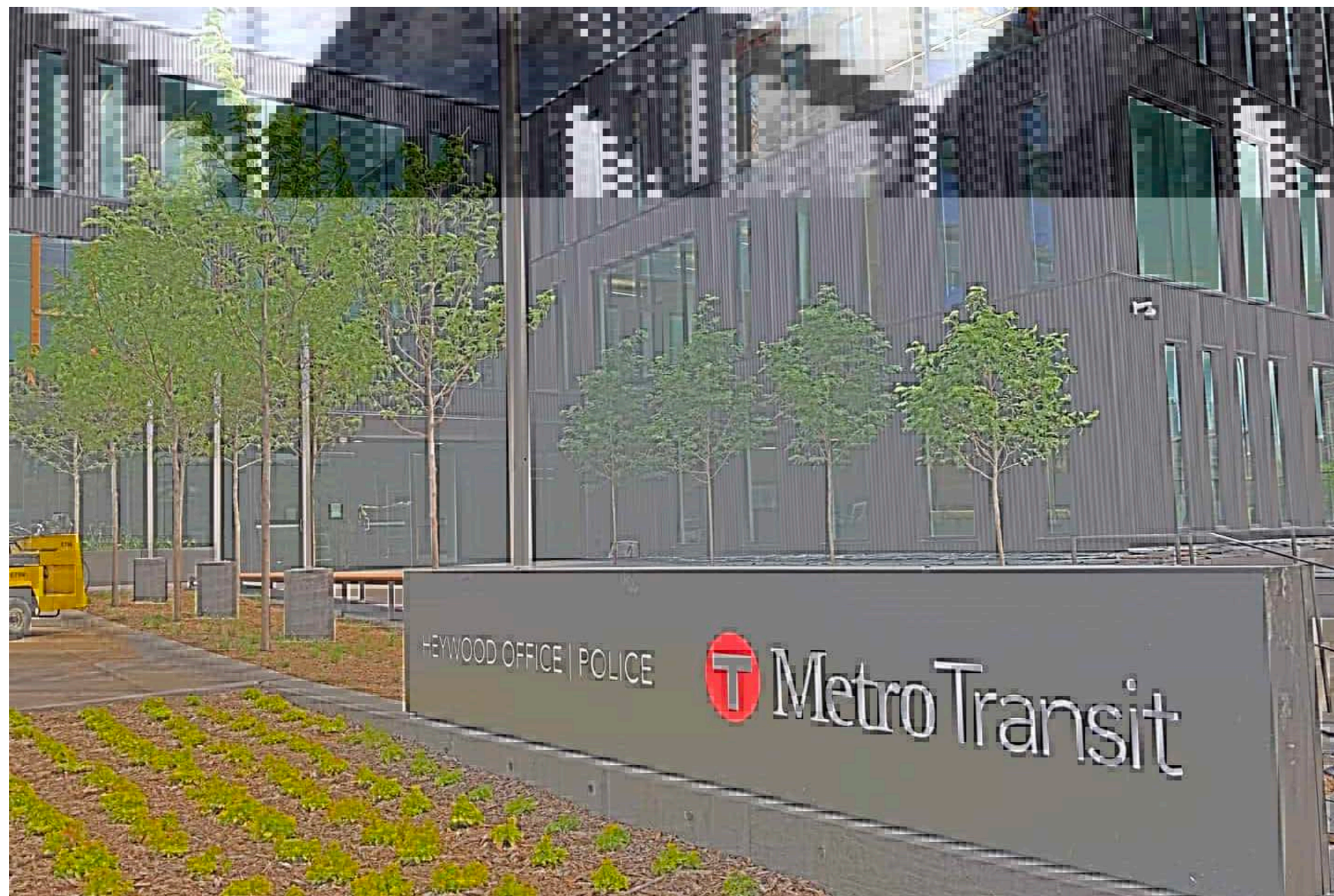
Designing and constructing new facilities

- Metro Transit Police facility
- New Minneapolis bus garage



Route planning

- Utilization of adaptation tools – example: avoiding flood prone streets

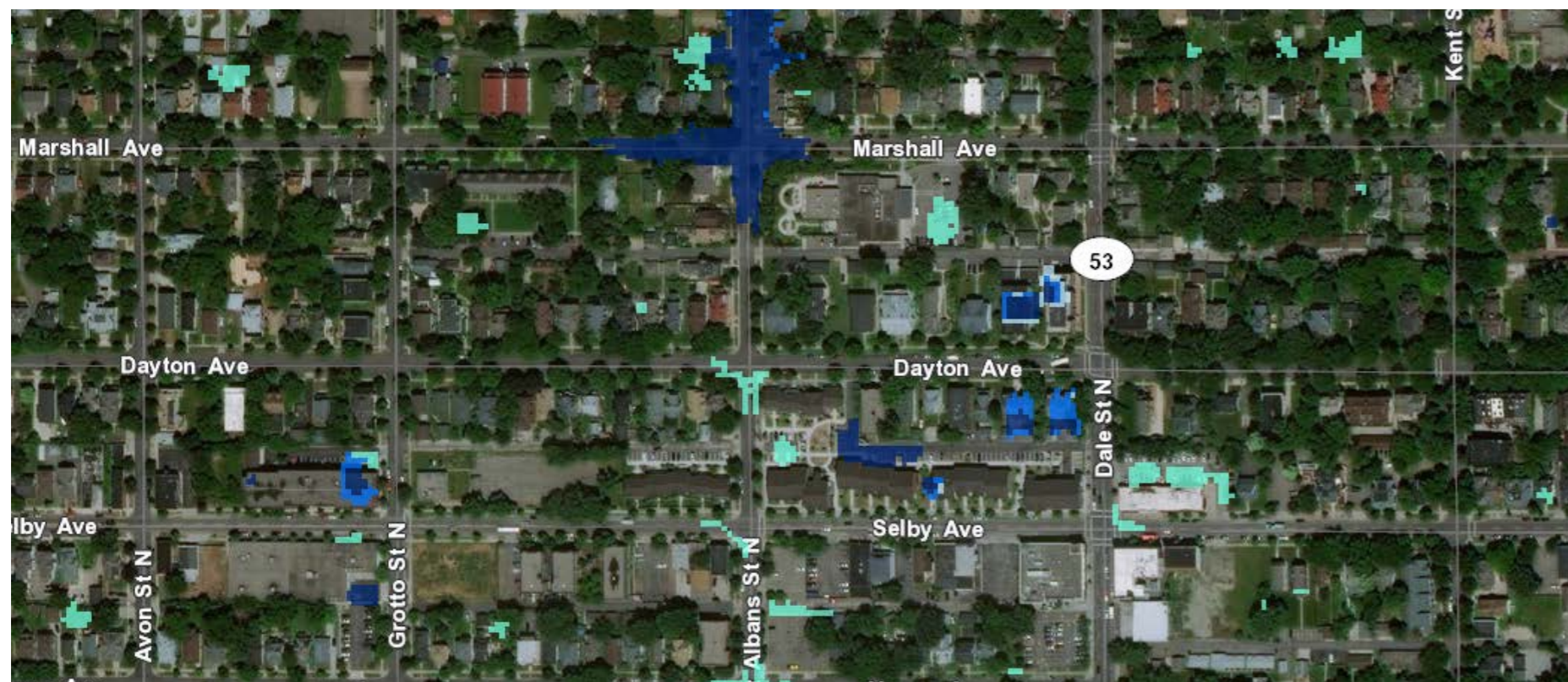


Adaptation – Community Development

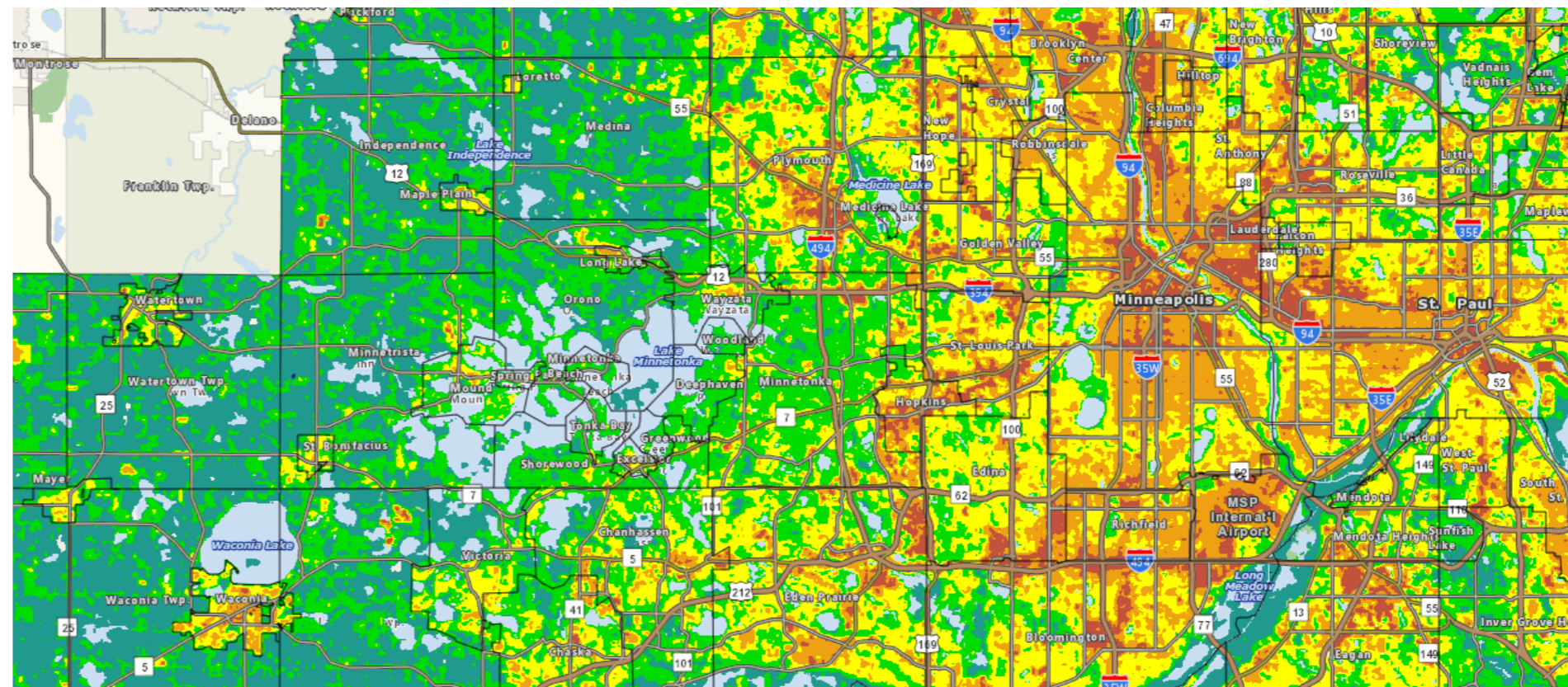
Regional Tools and Resources



Localized Flood Map Screening Tool



Extreme Heat Map Tool

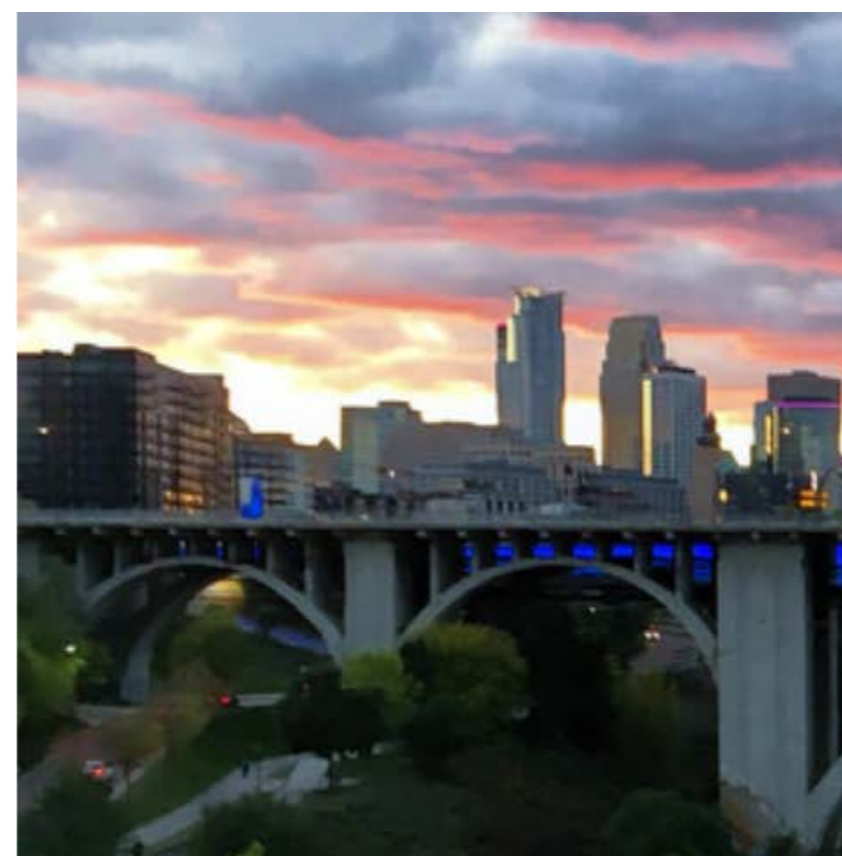


Localized Flooding Story Map

Calming the Storm: Localized Flooding in the Twin Cities Region

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1. [What is this?](#)
2. [Introduction: Mapping Localized Flood Risk](#)
3. [Transportation & Transit](#)
4. [Metropolitan Council Facilities](#)
5. [Wastewater](#)
6. [Regional Parks & Trails](#)
7. [Water Supply \(Coming Soon\)](#)
8. [What can communities do?](#)
9. [Next Steps](#)



Extreme Heat Story Map

Keeping Our Cool: Extreme Heat in the Twin Cities Region

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1. [What is this?](#)
2. [Introduction to Extreme Heat](#)
3. [Urban Heat Island Effect \(UHI\)](#)
4. [Pieces of UHI](#)
5. [UHI in the City of St. Anthony](#)
6. [A Fast-moving Storm](#)
7. [A Slow-moving Insect](#)
8. [Mitigation Actions](#)
9. [The Extreme Heat Map Tool](#)
10. [Extreme Heat & Human Vulnerability](#)
11. [Next Steps](#)





Resilience

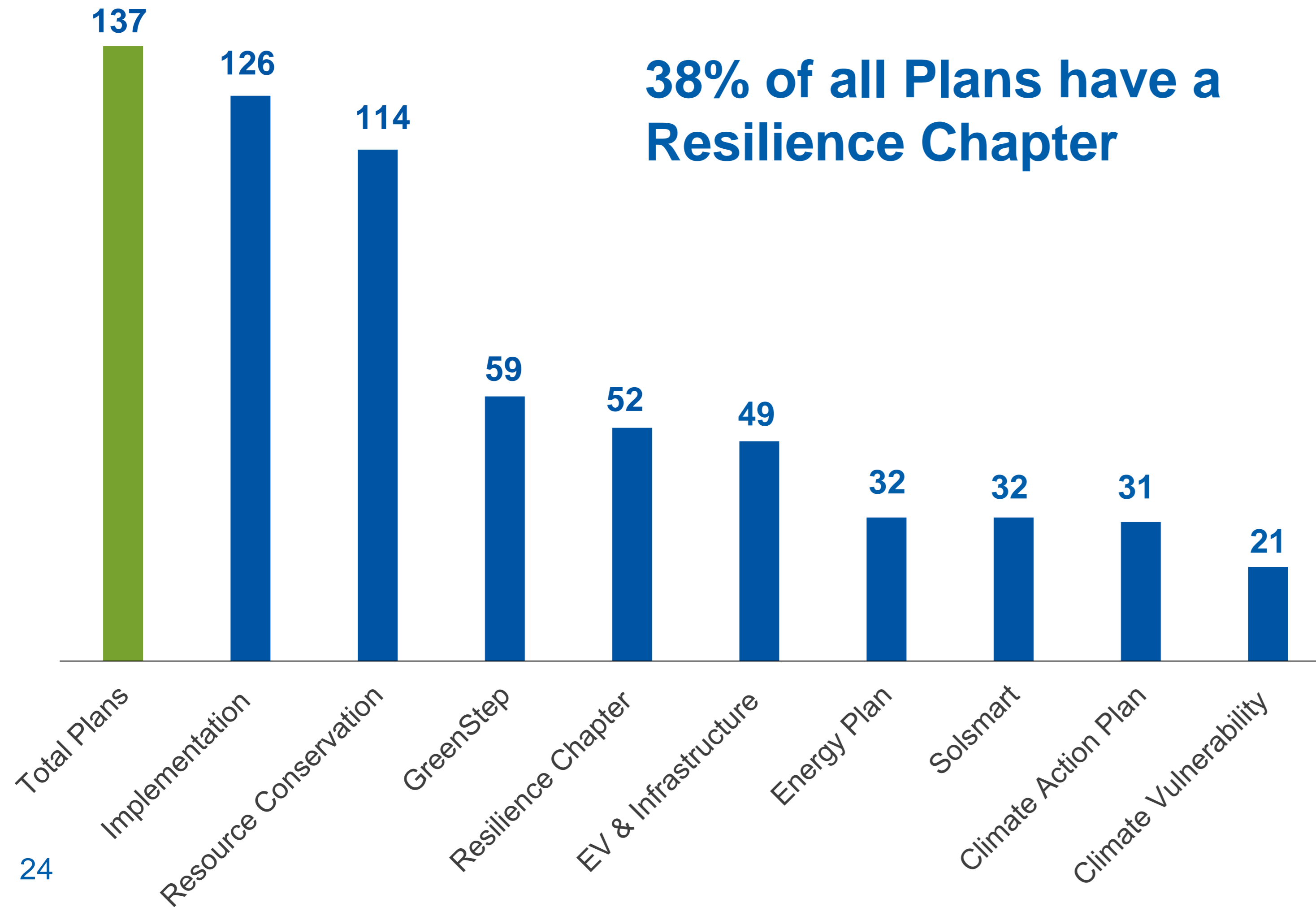
Resilience

Resilience	Strategies that recognize the difficulty of predicting impacts of climate change and emphasize increasing our flexibility to survive and thrive regardless of how climate change develops
Time dimension	Long-term with the focus on immediate changes
Level of action	Coordination among local, regional, national, and international
Critical stakeholders	All stakeholders in governance of adaptation and mitigation
Metrics	Tracking 2040 comprehensive plans for regional communities
Actions	Incremental changes, adaptive infrastructure design

2040 comprehensive plans resilience components



38% of all Plans have a Resilience Chapter



LOCAL PLANNING
HANDBOOK

PlanIt

167 plans to review
137 plans reviewed



Resilience – Environmental Services

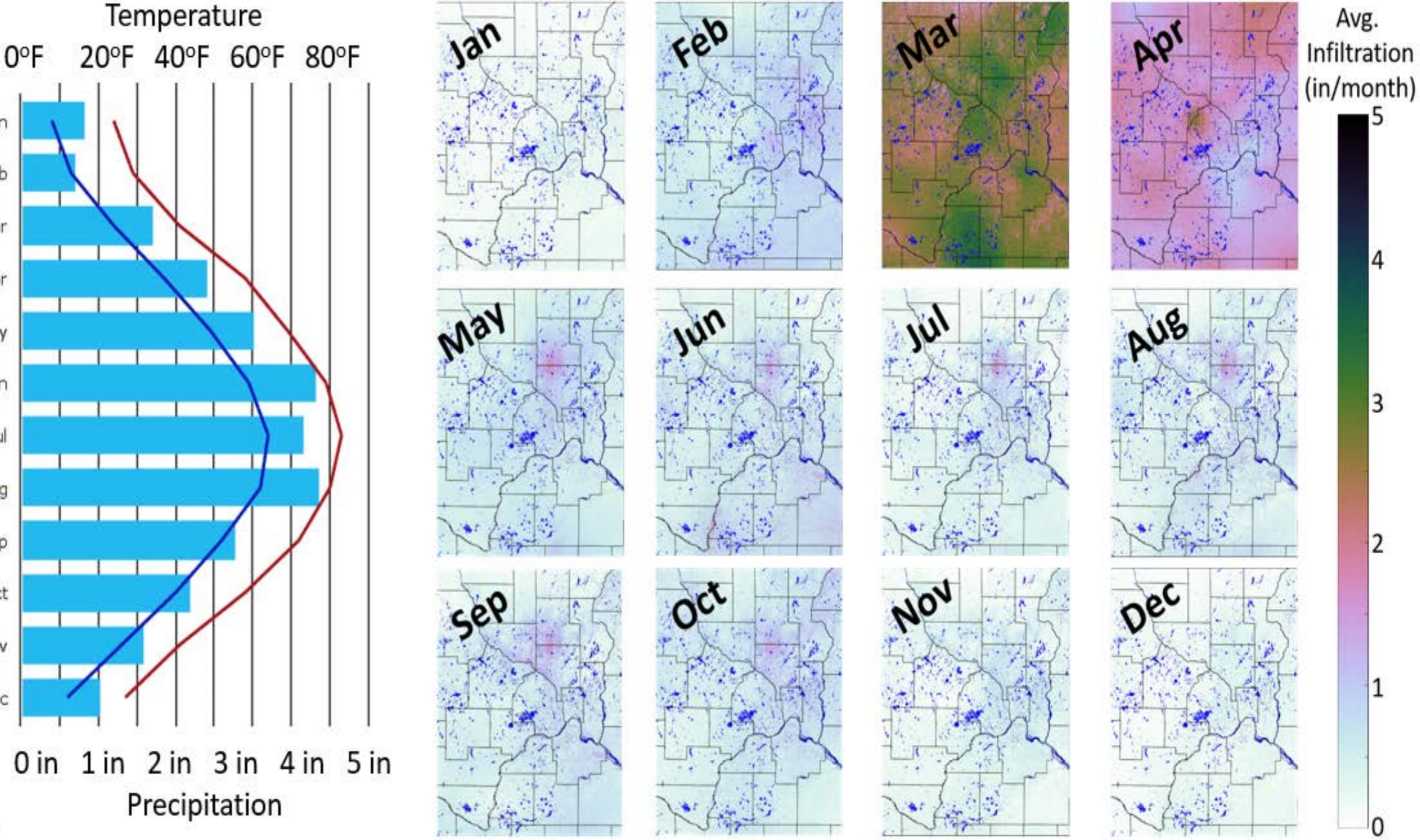
Planning, Infrastructure, and Operations

- Integrated Water Planning
- Stormwater and facility landscape plans
- Preparing for future permit restrictions
- Optimizing assets
- Facility upgrades



Regional Partnerships, Tools and Resources

- Metro Groundwater model
- Stormwater and wastewater reuse studies
- Water Conservation grants



Resilience – Transportation Services & Metro Transit



Facility design for resiliency

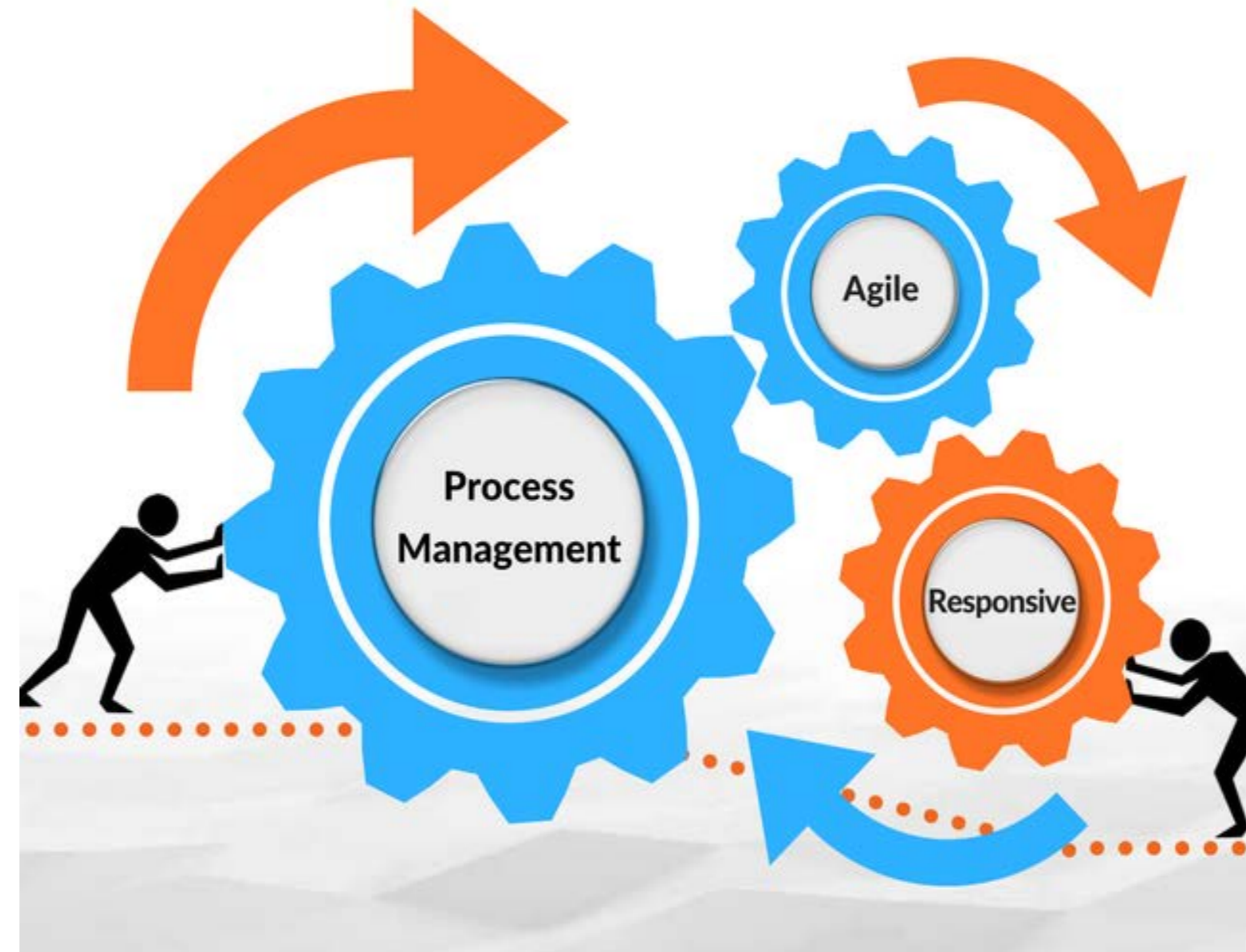
- Enhanced energy design assistance
- Stormwater and facility landscape plans
- ADA

Facility system redundancy

- Primary & secondary utility feeds

Transit asset management database

- State of good repair



Resilience – Community Development



- Building in technical assistance to local communities related to resilience
- Solsmart technical assistance
- Facilitated community resilience workshops
- Collaboration with University of St. Thomas Sustainable Communities Partnership

OFFICE OF SUSTAINABILITY INITIATIVES
**SUSTAINABLE COMMUNITIES
PARTNERSHIP**

Metropolitan Council (2017-present)



What's next?



Climate Change & Emission Team (CCET)

Objectives

- Embed practice
- Reduce duplication
- Ensure interdivisional staffing for project teams
- Establish Council communication frames
- Drive policy change
- Implement projects and practices
- Measure outcomes against regional policy objectives
- Sharing of lessons learned
- Right-source the Council's participation



Internal & Interdivisional

- Community Development
- Metro Transit
- Environmental Services
- Regional Administration
- Communications
- Research
- Transportation Services
- Procurement



What's next

Upcoming Conversations

- Planning sessions in October
- Follow up workshop/discussion in November
- Your direction on where to bring this work next
- Additional information to support your conversations?

