2026 INTEGRATED WATER PLANNING WORKSHOP-

October 8, 2026



METROPOLITAN
COUNCIL

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The Metropolitan Council is the regional planning organization for the seven-county Twin Cities area. The Met Council operates the regional bus and rail system, collects and treats wastewater, coordinates regional water resources, plans and helps fund regional parks, and administers federal funds that provide housing opportunities for low- and moderate-income individuals and families. The 17-member Council board is appointed by and serves at the pleasure of the governor.

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Workshop Purpose

The purpose of the workshop was to provide an annual opportunity for planners, utilities, agency partners, and others to come together to see how their work intersects across water, land use, climate, and other systems. Grounded in the Water Policy Plan's core objectives—climate, health, investments, and equity— participants will leave with clearer insights, relationships, and strategies for tackling shared challenges through integrated planning. This year the focus was on planning for climate resilient water infrastructure.

Opening remarks and introductory to the day

The workshop began with establishing the foundation for the Metropolitan Council's Integrated Water Planning Workshop by explaining how water infrastructure, land use planning, climate resilience, and regional goals are interconnected. It emphasized that building resilient communities requires coordinated planning across sectors and organizations.

The opening remarks framed the day's discussion around the need to ensure that water systems can continue to provide essential services while adapting to changing climate conditions. Water infrastructure is presented as a critical component of regional resilience and long-term sustainability. It also reinforced the fact that we are all water planners and collaboration is necessary to achieve our goals.

The workshop built on previous integrated water planning efforts by creating opportunities for organizations and agencies to work collaboratively on climate resilience challenges. Participants were encouraged to learn from one another and identify opportunities for alignment across jurisdictions and disciplines.

The presentation provided a background on the legal framework supporting integrated planning in the Twin Cities metropolitan area, specifically the Metropolitan Land Planning Act and required elements in local comprehensive plans.

The presentation then highlighted how water infrastructure is critical to connecting communities to essential services, protecting public health, supporting ecosystem health, and contributing to overall quality of life.

Reliable water resources and services are identified as foundational to resilience. As a result, water planning, management, and infrastructure investments must account for both current and future climate impacts. Building resilient water systems is presented as essential for maintaining regional sustainability and supporting future generations.

Key Takeaways

1. Water infrastructure and climate resilience are closely connected.
2. State statutes, regional policies, and comprehensive planning requirements provide the framework for integrated water planning.

3. Water planning intersects with land use, housing, transportation, climate adaptation, natural systems, and equity considerations.
4. Regional planning goals focus on climate leadership, resilience, healthy communities, natural system protection, and equity.
5. Climate resilience requires water systems and communities to prepare for, adapt to, and recover from changing climate conditions while continuing to meet environmental and human needs.
6. Collaboration across agencies, sectors, and planning disciplines is essential to achieving long-term resilience and sustainable water management.

Keynote Presentation

A keynote presentation was provided by Rachel Johnson of the University of Minnesota Climate Adaptation Partnership (MCAP). In the presentation, she made the case that everyone involved in water-related planning is also, by necessity, a climate planner. The presentation focused on how climate change is altering the assumptions behind water planning and how organizations can incorporate climate adaptation into existing decision-making processes.

The central theme is that climate conditions are changing, affecting water systems across Minnesota and the Twin Cities region. Because future climate conditions will differ from historical patterns, planners can no longer rely solely on past data when making long-term infrastructure and investment decisions.

Climate Trends Highlighted

Temperature

Minnesota's average annual temperature has increased by 3.4°F since 1895, with projections showing continued warming through the century. The coldest months are warming the fastest, and seasonal extremes are changing.

Precipitation

Annual precipitation has increased by 3.4 inches since 1895. Future projections suggest:

- Increased precipitation in winter and spring
- Decreased precipitation in summer and fall
- More intense rainfall events thereby increasing flood risks.
- Faster transitions between wet and dry conditions ("climate whiplash")

Water System Impacts

Changing climate conditions create challenges across all water sectors, including drinking water, wastewater, stormwater, groundwater, and surface water management. Key impacts include:

- Higher water demand and changing treatment needs due to warmer temperatures
- Increased flooding, erosion, and infrastructure stress from intense rainfall
- Water supply and streamflow concerns during longer dry periods
- Greater uncertainty in water operations and planning

Why Action Is Urgent

A major takeaway is that delaying adaptation increases costs and risks. The presentation cites a Minnesota climate adaptation study showing that:

- The costs of inaction rise substantially over time.
- Adaptation investments are estimated to cost 8 to 15 times less than the costs associated with inaction.

Planning Under Uncertainty

Rather than trying to predict a single future, planners should prepare for a range of plausible futures. The presentation emphasizes:

- Uncertainty is not a reason to avoid planning.
- There is enough information to identify likely trends and vulnerabilities.
- Decisions should be tested against multiple future scenarios to find "robust" or "low-regret" solutions.

Adaptation Tools and Strategies

Organizations already have many of the tools necessary for adaptation. These include:

1. **Climate Information**
    - Local climate projections and mapping tools
    - Historical trends and future scenarios
    - Resource-specific climate impact information
2. **Scenario Planning**
    - Stress-testing decisions under multiple possible future conditions
    - Identifying vulnerabilities before investments are made

3. **Adaptation Strategies**
    - Infrastructure improvements
    - Operations and maintenance changes
    - Planning and policy updates
    - Nature-based solutions
    - Emergency preparedness
    - Partnerships and collaboration
4. **Local Knowledge**
    - Learning from successful local efforts such as floodplain restoration, climate-adapted tree planting, and smart irrigation programs.
5. **Partnerships**
    - Engaging stakeholders across disciplines, including transportation, public health, emergency management, finance, land use, and utility operations.

Final Takeaway

The presentation concluded that climate adaptation should not be viewed as a separate planning exercise. Instead, climate considerations should be integrated into existing activities such as capital improvement planning, asset management, land-use planning, utility management, watershed planning, and emergency preparedness. The speaker's core message was:

The conditions are changing, we cannot wait, and we already have the tools, expertise, and partnerships needed to make better water decisions in a changing climate.

Scenario Planning Workshop

The remainder of the day was dedicated to a workshop with the goals to:

1. Build awareness and connections across departments and organizations; climate change and water don’t recognize political and professional boundaries.
2. Move climate projections from the abstract to operational and community realities.
3. Identify climate vulnerabilities that may not be documented and the cross-sector needs for addressing them.
4. Generate a preliminary set of actionable planning recommendations.

Participants left the workshop with:

1. An understanding of how scenario planning can help prepare for multiple possible futures.

2. Awareness of how neighboring and overlapping organizations are planning for climate resilience.
3. Collective understanding of the variety of roles, actions, regulations, networks, services, etc. that need to be in place to develop climate resilience.
4. A preliminary assessment of climate risks to the Metro's water systems and communities and possible actions that need to be taken to address them.

The Workshop

We started with participants seated at tables based on their professional roles and had them discuss their roles in climate resilience planning. We prompted them to consider their team as more than just the people at their organization or the people that they work with every day. The goal of this was to prime participants for the rest of the workshop where they sat at tables based on their subregion.

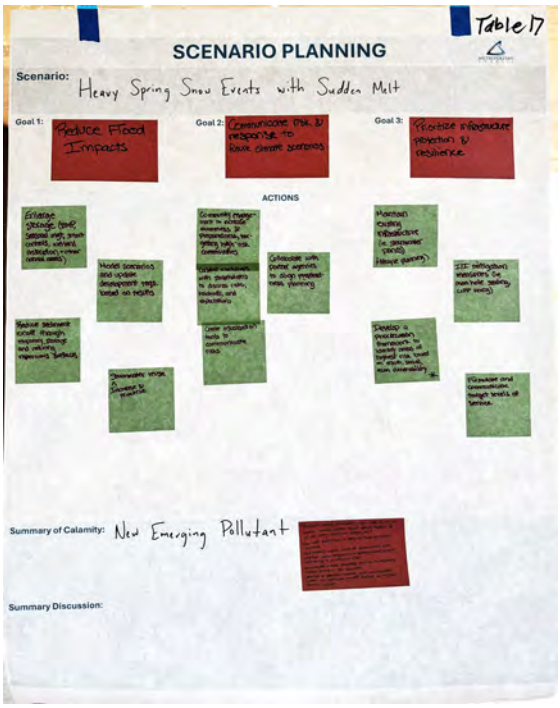
After moving to tables based on subregions, we started by introducing a climate-scenario. Each group was randomly assigned one of five climate scenarios.

Our scenarios were:

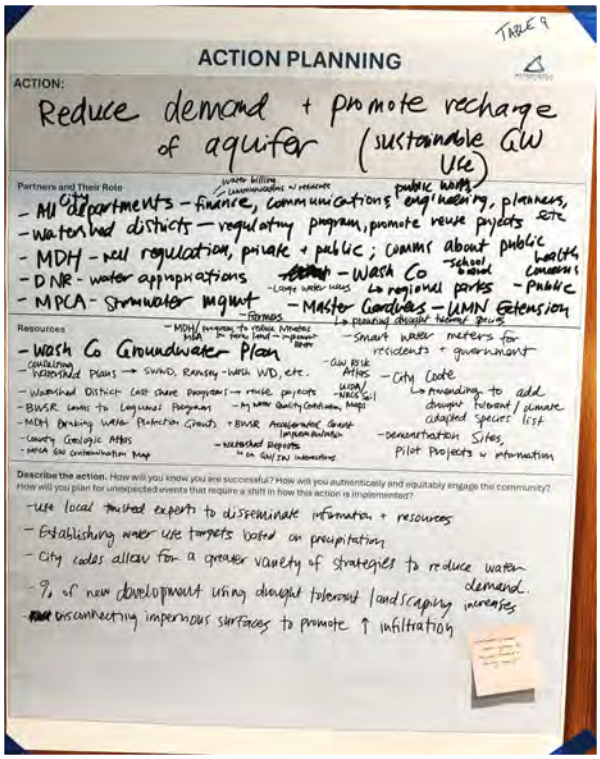
- Multiple Freeze/Thaw Events
- Heavy Spring Snow Events with Sudden Melt
- Sustained Summer Heat & Storms
- Sustained Summer Drought & Heat
- Extreme Fall Drought

Workshop participants brainstormed goals that they would have based on their given scenario. They also produced actions that would address their goals. Each table chose 3 goals and continued to discuss actions to address those goals.

The 3 priority goals along with actions were put on each table's scenario planning poster. The poster shown to the right is an example of a group that had the scenario: Heavy Spring Snow Events with Sudden Melt. Their goals were to reduce flood impacts, communicate risk & response to future climate scenarios, and prioritize infrastructure protection & resilience.



After discussing goals and actions, we gave each table a calamity to discuss how their goals and actions would be influenced by the catastrophe. The calamities were a New Emerging Pollutant, a Major Wastewater Spill, a Multi-day Power Outage, an Upstream Dam Failure, a Cyber-attack, a Major Water Main Break, a Budget Cut, and an Influx of Climate Refugees.



We then instructed groups to prioritize one action that they felt was strong and resilient to multiple climate futures. Each group went in depth with the action and identified details on the possible implementation of that action.

Groups identified many different partners and resources related to their actions. The poster shown on the left is from a group that focused on reducing demand and promoting recharge of an aquifer. They identified partners from the city finance department to Master Gardners at the University of Minnesota Extension.

WORKSHOP OUTCOMES

121 individuals participated in the Regional Workshop with representation from every Subregion.

Sector	Registrants	% of registrations
City or township	55	39.3%
Regional government	35	25.0%
Watershed organization	26	18.6%
State agency	11	7.9%
County government	10	7.1%
Consultant	4	2.9%
Nonprofit	3	2.1%
Soil and Water Conservation District	2	1.4%
Academia	1	0.7%

Focus of work	Registrants	% of registrations
Surface water	86	61.4%
Groundwater	72	51.4%
Natural resources	66	47.1%
Water supply	60	42.9%
Sustainability	55	39.3%
Climate	52	37.1%
Land use	50	35.7%
Wastewater	36	25.7%

Agriculture	7	5.0%

Initial workshop feedback from the final survey suggests that the workshop was successful at bringing together professionals across disciplines, building relationships, and creating space for cross-sector learning.

- 91% agreed or strongly agreed they found the workshop beneficial and a good use of their day
- 86% agreed or strongly agreed they left the workshop with a better understanding of how scenario planning can help prepare for multiple possible futures

Regional Workshop Themes

We analyzed the goals and actions developed at both the regional and subregional scales to identify themes. We also looked back at participant responses to the question, “What are your biggest concerns related to climate resiliency in your community (besides funding)?” and checked whether those shared concerns showed up in the goals and actions. There were 16 table groups that worked through 5 scenarios and 8 calamities.

Region	Tables	Scenarios	Calamities
Northeast	2	Spring snow and melt	Major wastewater spill
Southwest	3	Spring snow and melt	Multi-day power outage
Central	4, 7, 12	Heat and storms; heavy snow; spring snow and melt	Dam failure (4, 12); budget cuts (7)
Northwest	5, 15	Fall drought (both)	Water main break; budget cut
Southeast	6/8	Heat and storms	Climate refugee influx
East	9, 16	Summer drought and heat; freeze/thaw	Emerging contaminant; climate refugees
West	10, 11, 13, 14, 17	Fall drought; freeze/thaw; summer drought and heat; spring snow and melt	Wastewater spill; power outage; water main break; cyber attack; emerging pollutant

Strongest themes that arose at most tables:

1. Communication and trusted messengers. This was the most consistent thread, appearing at nearly every table and across all scenarios. Tables named trusted community messengers, multilingual materials, low-tech options for power outages, and a mix of channels like text, door-to-door outreach, and local media. Several treated communication as the action itself: a Northwest table chose an education campaign to reduce water demand, a Central table chose communicating the value of natural systems, a West table chose defining level of service, and an East table chose salt-reduction education. Another East table identified who

needs culturally specific outreach (Tribes and the Hmong community) in the emerging-contaminant scenario.

2. Emergency preparedness: plans, drills, and "know who to call". Tables representing the Northeast, Southwest, Central, and West subregions emphasized updated emergency response plans, NIMS, mutual aid (MnWARN), interconnects, backup power for lift stations and wells, and then actually putting the plans into practice. One West table's note, "It's Tuesday… That's Wednesday!", captured the idea that relationships and contracts need to be in place before an event happens. Another West table added that human safety comes before any planned actions during a calamity.

3. Stormwater, flood storage, and infiltration. This theme ran through the snow and melt, freeze/thaw, and heat-and-storm scenarios. Common actions included more detention and storage, maintaining ponds and catch basins, reducing impervious surface, green infrastructure and bioswales, wetland restoration, and reuse. A Central table suggested we "allow flood zones to flood" and reduce repetitive loss. Atlas 15 and updated design standards came up at the Northeast, Southeast, and Central subregion tables.

4. Landscape-based solutions with co-benefits. Native buffers, cover crops, tree canopy, low-impact development, and drought-tolerant landscaping were named in almost every scenario. Tables saw these as addressing flood, drought, heat, and water quality all at once, which is why several said their existing actions already helped with the calamity they drew.

5. Funding, workforce, and political will as the main barriers. The same short list of barriers continued to come up. Funding was named at nearly every table, and one Central table wrote "Need more funding" under every goal, along with "WORKFORCE!" The Southeast table wrote "Money!" and "Political will." Regulation and city code, short public memory, and public perception also came up. Another Central table drew a nested-circle diagram to show the cost of inaction versus action, and the Southeast table suggested we "incorporate the cost of inaction in the budgeting process."

Second-tier regional themes:

- **Equity and vulnerable populations.** Several tables built their goals around vulnerable groups. A Central table proposed cooling access and a right-to-cooling idea, a Northwest table raised affordability and the need to avoid shifting rate burdens onto vulnerable households, and a West table offered a prioritization framework based on social vulnerability. Another West table set a goal specifically focused on protecting vulnerable populations.
- **Reducing water demand.** This was the focus of the drought scenario tables in the Northwest, East, and West subregions. Tools mentioned to address this problem include irrigation limits and turf conversion, smart meters, and code changes, along with education before enforcement.
- **Chloride and winter operations.** These were themes from the freeze/thaw scenario tables in the West and East subregions. Actions included smart salt training, chloride management plans, level-of-service expectations, and snow storage planning.

- **Data, modeling, and prioritization.** Tables in the Central and West subregions both pushed for mapping, modeling, and a risk-based framework. Tables in the Southwest and Central subregions asked for better modeling and mapping of vulnerable areas.
- **Interagency partnership.** The lists developed for potential partnerships were similar across tables: watersheds, cities, counties, Met Council, DNR, MPCA, MDH, and emergency management. Indigenous and Tribal partners appeared at tables in the Central, East, and West subregions.
- **Energy and power reliability.** Backup power, underground lines, and solar came up in the heat and drought scenarios. A Central table explicitly deprioritized energy goals once their dam-failure calamity was introduced.

REGIONAL THEMES

We looked at the goals and actions to see if there were specific themes that showed up at a subregional level.

Northeast Subregion (Table 2) – Spring and Snow Melt Scenario

- **Reducing flood exposure was the lead goal:**
    - Planning snow storage.
    - Adding flood storage that works in freeze/thaw conditions.
    - Fall storm drain cleaning.
    - Retrofitting stormwater systems.
    - Native buffers and floodplain reconnection.
- **Water quality focused on agriculture and septic:**
    - Winter cover crops.
    - Native buffers.
    - Erosion control.
    - Septic inspections where flood risk is high.
- **The public health goal was the most response-oriented of any table.** Beach closures, contaminated-area modeling, water testing, relocating people from flood-prone areas, mental health access, and multilingual communication.
- **The wastewater spill calamity.** This pushed the table toward an emergency response center for displaced residents, with trained and trusted messengers and a clear chain of command.
- **Barriers.** Regulations, funding, short memories, and Atlas 15 or updated model data.

Southwest Subregion (Table 3) – Spring and Snow Melt Scenario

- **Goals were stormwater control, erosion reduction, and public safety.** Actions included smaller ponds, maintenance, limits on hardscaping, wetland restoration, and treating stormwater as a resource.
- **Agricultural erosion measures.** Cover crops, native planting along ditches, and identifying high-risk fields with farmers.
- **Utility and emergency operations.** Lift station response plans, protecting drinking water and sanitary sewer, evacuation plans, and extra freeboard for new floodplain development.
- **The action plan was an operational SOP review.** It had defined roles (public works, engineering, watershed orgs, state agencies) and a continuous-evaluation loop with post-event debriefs.
- **The power outage calamity.** This led to a short list: identify risks and designate points of contact.

Central Subregion (Table 4 – Heat and Storms Scenario, Table 7 – Heavy Snow Scenario, Table 12 – Spring Snow and Melt Scenario)

- **Natural and green infrastructure:**
    - Table 4: "allow flood zones to flood" and reducing repetitive loss, with a diagram showing the cost of action as small against the cost of inaction.
    - Table 7: bioswales, cover crops, parks planted for cover, and infiltration codes.
    - Table 12: diversifying infrastructure toward green stormwater infrastructure.
- **Emergency response:**
    - Tables 7 and 12: defined plans and equipment, NIMS, and communication planning.
    - Table 12 named emergency response as the priority under dam failure.
    - Table 4 deprioritized its energy goals under the same calamity.
- **Utilities and planning:**
    - Table 7: strict inflow and infiltration (I/I) policies, drinking water source protection, mapping, and better coordination between planning and engineering.
    - Table 12: modeling sanitary and stormwater systems, building results into the CIP, and updating design standards.
- **Funding and asset management:**

    - Table 7's budget-cut calamity produced asset management, healthy utility funds, and public-private partnerships.
    - Table 12 wrote "Need more funding" under every goal and flagged workforce and Atlas 15 as resources.
- **Success measures were the most concrete of any region.** Table 7 gave council-supported budgets, fully allocated local grants, public support for taxes, residents installing systems on their own, and fewer construction complaints. Table 12 used reduced impacts on people, infrastructure, and water quality.

Northwest Subregion (Tables 5 &15 – Fall Drought Scenario)

- **Both tables reduced water demand as the core drought response.** Tools included:
    - Education campaigns.
    - Turf conversion to climate-adapted vegetation.
    - Low-flow fixtures.
    - Leak and system-loss identification.
    - Reuse (stormwater, greywater, wastewater).
    - Targeting the highest users.
    - Irrigation outreach through HOAs, native plant sales, and utility bill information.
- **Supply side:**
    - Storage and aquifer recharge.
    - Infiltration requirements.
    - Cisterns built into development.
    - Shifting agricultural drainage to stormwater conveyance.
- **Table 5's primary action was a policy shift to improve development rather than to manage current demand.** It also named a barrier list of funding, city code, perception, and planning desire.
- **Equity.** This came through as shifting cost burden away from vulnerable communities, and as shelter plans for vulnerable populations.
- **Table 15 left success measures and the calamity discussion blank.** The budget-cut response here is not documented.

Southeast Subregion (Table 6/8 – Heat and Storms Scenario)

- **Goals were resilient landscapes, continuity of water utilities, and continuity of electrical access.** There was a strong emphasis on keeping the water system running through energy disruption.
- **Utility continuity actions:**
    - Redundant power and storage.
    - Interconnects and MnWARN.
    - Drills.
    - An emergency demand-reduction ordinance.
    - Smart meters.
- **The action plan was incentivizing low-impact development.** A long partner list that included "Nature is a partner!"
- **Success was defined as "more acres of development doing LID than not".** Also, a revenue balance to continue implementing it.
- **Funding and political will.** "Money!", resident trust, and "creative taxation" of future developers.
- **Engagement.** This was informal and practical (free food, asking residents what would incentivize them, building a coalition, finding culturally important spaces).
- **The refugee-influx calamity.** This was handled well because conservation and water storage were already in place.

East Subregion (Table 9 – Summer Drought and Heat Scenario, Table 16 – Freeze/Thaw Scenario)

- **Table 9**
    - Actions included source water diversification (Mississippi), resilience hubs, aquifer infiltration, backup energy at wells and treatment plants, and an irrigation ban in a crisis.
    - The action plan was demand reduction and aquifer recharge, with a very long list of local and state resources.
    - In discussing the new emerging contaminant calamity, this table highlighted the importance of doing outreach to Tribes and the Hmong community about fish consumption, and culturally responsible consumption limits.
- **Table 16**

    - The goals were public safety, chloride pollution, and flood risk.
    - The action plan was a consumer education plan for salt reduction.
    - Actions included required smart salt training, chloride management plans for redevelopment, integrating the scenario into hazard mitigation plans, and tracking accidents.
    - Measures included numeric salt targets and tracking salt purchases and use.
    - A winter-tire requirement like Switzerland's was suggested.
    - The refugee-influx discussion raised that more multifamily housing would be needed to avoid increasing impervious surface. It also raised that MS4 infiltration requirements might loosen.
- **Pattern:** Both tables were heavily education- and behavior-oriented, and both emphasized watersheds as the lead partners.

West Subregion (Table 10 – Fall Drought Sceanrio, Table 11 – Freeze/Thaw Scenario, Table 13 – Summer Drought and Heat Scenario, Table 14 &17 – Spring Snow and Melt)

The West had the most tables and the widest range of scenarios.

- **Emergency operations and utility continuity.**
    - Table 13: interconnection content in the water contingency plan, annual review of emergency declarations, mutual aid, contracts in place, shelter thresholds for staff, non-tech public notice, and community schools as shelters.
    - Table 14: utility emergency response plan, multichannel communication (social media, local media, door-to-door, text alerts), generation capacity at wastewater plants, and translators.
    - Table 11: emergency operations planning, with human safety first.
- **Communication and expectation setting:**
    - Table 11's action was defining and communicating level of service.
    - Table 14 included trusted public communications as a goal.
    - Table 17 included risk communication and visualization tools.
- **Prioritization and data:** Table 17 built a prioritization framework using environmental, social, and economic vulnerability. It tested success with community groups, ability to translate into the CIP, and alignment with O&M. Table 17's partner list included Indigenous and Tribal representatives with "traditional ecological knowledge".
- **Winter operations and chloride:** Table 11 reduced flood risk through catch basin maintenance, snow storage review, steaming storm lines, and plowing to the curb. It

also incorporated low-salt design and anticipated that response would take priority over planning actions in an outage.

- **Drought and water quality (Table 10):**
    - The action was a critical water deficiency declaration, with education before punitive measures.
    - The goals included private well protection and groundwater testing.
    - Agricultural drainage in the Minnesota River Basin was addressed through soil health, nutrient management, and gully restoration.
    - The wastewater spill discussion noted that a calamity diverts resources from existing goals.

APPENDIX

Integrated Planning Workshop Slides

Keynote Rachel Johnson’s “We are all water and climate planners” Slides

Workshop Poster Workproducts

Workshop Materials

Resources

Mentimeter Results



390 Robert Street North
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TTY 651-291-0904
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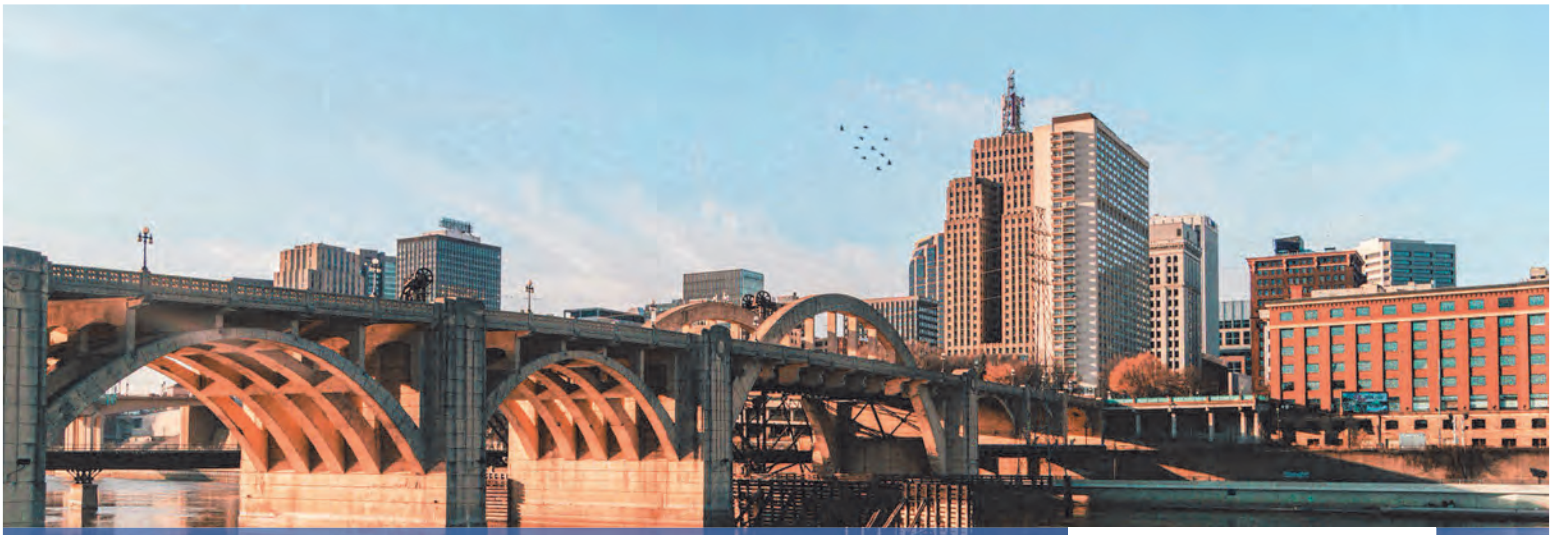

Integrated Water Planning Workshop

METROPOLITAN COUNCIL

Chaska Event Center

October 8, 2026

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It's 2050.

What's one headline (related to water) about the Twin Cities that you hope to read?

Welcome!



Annual Regional Integrated Water Planning Workshop

Creating a space where water and land use professionals can collaborate, solve problems, learn from each other, and build relationships to ensure clean, equitable, and sustainable water for today and the future.

Water Infrastructure and Climate Resilience



AGENDA



Annual Integrated Water Planning Workshop

9:30 Welcome
10:00 We are all water and climate planners: Rachel Johnson
10:30 Climate Resilience Planning Workshop
11:00 Break
11:15 Continued Workshop
12:00 Lunch
12:30 Continued Workshop
2:00 Break
2:30 Closing discussion and Next Steps

Metropolitan Land Use Planning Act



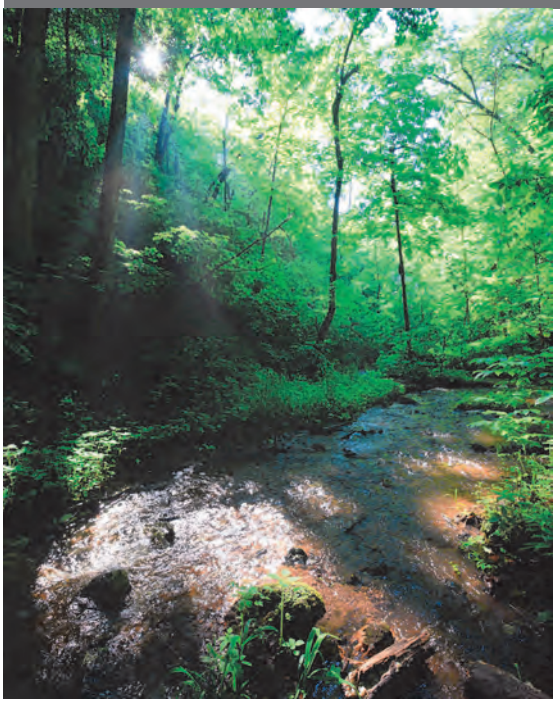
Comprehensive Plans

1976: Legislature mandates municipalities in the Minneapolis-St. Paul metro area to develop new comprehensive plans, in congruence with an overall regional plan, every decade. Minn. Stat. 473.858

Required Elements

- Land Use
- Housing
- Transportation
- Water Resources
- Parks and Trails
- Climate
- Natural Systems
- Implementation

Comp Plan Water Requirements



Where do requirements come from?

- **Local Water Management Plan:** MN Stat. 103B, MN Rule 8410
- **Water Supply Plan:** MN Stat. 103G, 473.858, 473.859
- **Comprehensive Sewer Plan:** MN Stat. 473.513
- **Met Council Regional Policy:** 2050 Water Policy Plan – Imagine 2050 Regional Development Guide

Regional goals and cross-cutting themes

Lead on addressing climate change

- We have mitigated greenhouse gas emissions and have adapted to ensure our communities and systems are resilient to climate impacts.

Our region is dynamic and resilient

- The region meets the opportunities and challenges faced by our communities and economy including issues of choice, access, and affordability.

Communities are healthy and safe

- All residents live healthy and rewarding lives with a sense of dignity and wellbeing.

Regional goals and cross-cutting themes – cont'd

Natural systems are protected and restored

- We protect, integrate, and restore natural systems to protect habitat and ensure a high quality of life for the people of our region.

Our region is equitable and inclusive

- Racial inequities and injustices experienced by historically marginalized communities have been eliminated; and all people feel welcome, included, and empowered.

Water infrastructure



Participants will leave with:



1. An understanding of how scenario planning can help prepare for multiple possible futures.
2. Awareness of how neighboring and overlapping organizations are planning for climate resilience.
3. Collective understanding of the variety of roles, actions, regulations, networks, services, etc. that need to be in place to develop climate resilience.
4. A preliminary assessment of climate risks to the Metro's water systems and communities and possible actions that need to be taken to address them.

We are all water and climate planners



Rachel Johnson

Rachel is a water resources engineer focused on helping communities prepare for a changing climate. Her work spans watershed, stormwater, and climate adaptation planning across local, regional, and national scales. She has worked across consulting, federal government, and higher education, including as a NOAA fellow supporting federal climate policy and as a stormwater engineer in the Pacific Northwest. Originally from the Twin Cities, Rachel began her career here as a watershed intern. Today, she is back home with the University of Minnesota Climate Adaptation Partnership, helping Minnesota communities translate climate science into practical strategies for flood resilience.

What questions do you have for Rachel?

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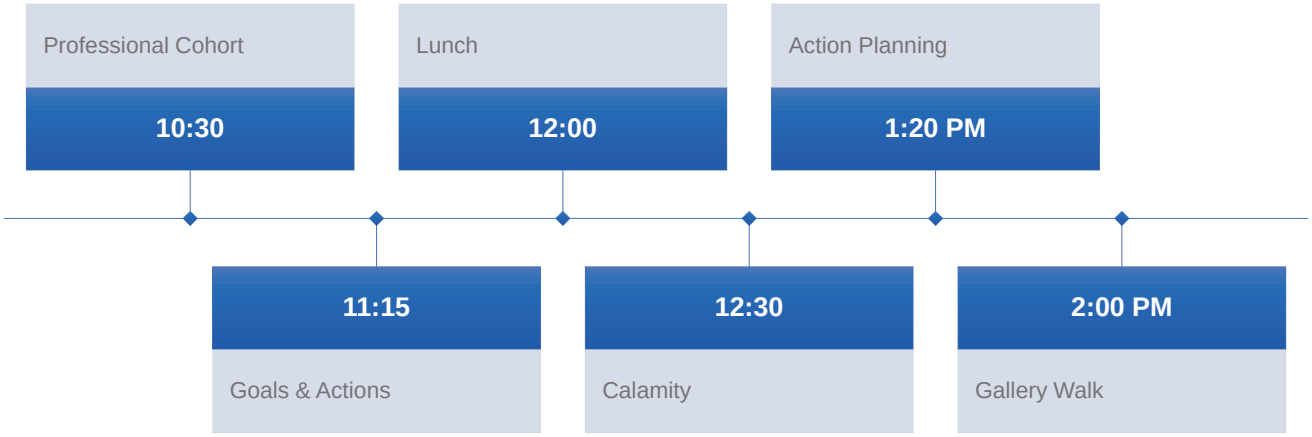
Integrated Water and Climate Resilience Workshop



Workshop Activities



Thank You Facilitators!

Introduce Yourselves



What role do you play in climate resilience and water planning?



Local Governments Play a Critical Role



Local governments, and locally tailored climate action, are often best positioned to respond to and address community needs. In addition, local government units hold unique powers and responsibilities that position them to make lasting climate progress.

These powers and responsibilities include:

- Cities, townships, counties
- School districts
- Soil and water conservation districts and watershed organizations
- Regional development organizations

Water is a cornerstone of climate resilience



As professionals directly or collaboratively connecting to water planning you are ensuring water access, protecting ecosystems, and planning equitable distribution, which in turn supports:

Human security (food, health, livelihoods)

Economic stability (energy, agriculture, industry)

Environmental sustainability (biodiversity, ecosystem services)

Climate resilience is the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance.

Professional Cohort Discussions: What role do you play in climate resilience planning?

Who is on your team? Think outside your division and organization

What decisions do you make? Budget? Monitoring? Planning? Community Engagement?

What resources do you use?

Choose an image/emoji etc. that represents your role.

Changing water system impacts

Warmer temperatures & winters
→ Water demand, treatment/operations, infrastructure performance, ecosystem health

More intense precipitation & flooding
→ Stormwater capacity, erosion, water quality, infrastructure damage

Longer dry periods
→ Water supply, groundwater, streamflow, competing demands

More variable water conditions
→ Less predictable water resources, greater operational uncertainty

Health | Investments | Equity

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Scenario Planning



What is scenario planning?



Not a prediction. Scenarios don't say what will happen.



It IS a structured way to accept uncertainty and prepare for a range of plausible futures.

What can we learn from scenario planning?



Insight into the forces driving change in the system.



A clear-eyed look at what happens if we just continue current practice ("status quo" implications).



A structured way to explore multiple possible futures at once.



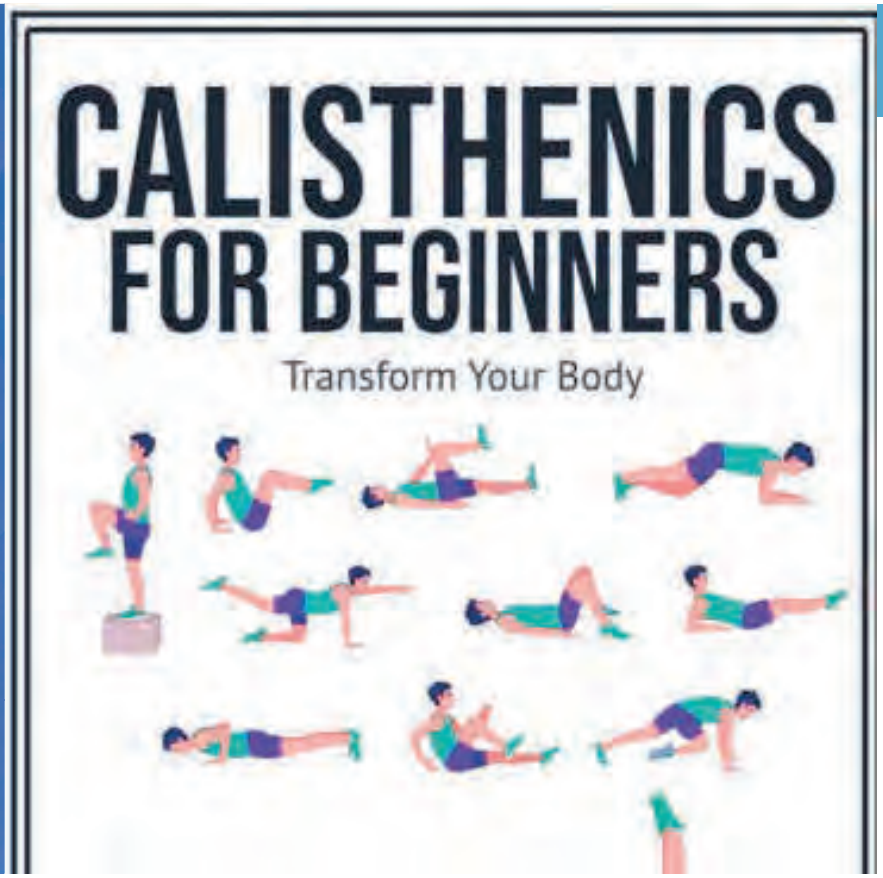
Concrete options for action that emerge from that exploration.

Embracing Uncertainty



Given that one cannot predict the future, what actions that we can take today will serve us best in the future?

BREAK!



Climate Resilience Problem Assessment: What are your goals and actions?



Regional Teams: Goals and Actions

GOAL

The final destination or desired outcome you want to reach.
It is "the what."

ACTION

The specific, controllable step you take to get there.
It is "the how."

Approaches to Climate Resilience Planning



Where do assets and hazards overlap?

Which assets are most vulnerable and at risk?

Community Assets include the people, infrastructure, and natural systems you want to protect.

Hazards are events or conditions that could injure people or damage assets.

What might be done to reduce your risk?

Approaches to Climate Resilience Planning



How will you build on tribal engagement and learn from Traditional Ecological Knowledge?

Regional Teams: Goals and Actions



Group Directions

1. Brief group introductions!
2. Read the Scenario and brainstorm a list of associated problems.
3. Take 5-10 minutes individually to brainstorm a list of goals you might have to address the problems outlined in your subregion. Write them on your worksheet.
4. As you develop your goals, or after you have written a few you, develop actions needed to accomplish the goals. Write them on your worksheet.

While considering goals and actions, consider how they might address public health, equity, quantity of water, quality of water, hazard mitigation, tribal relations, or incorporating community and cultural knowledge.

Regional Teams: Priority Goals



Individual Directions

Identify your top 2 priority goals from your list and write them on 2 large sticky notes provided.

- Decide as a group your top 3 priority goals. Combine similar goals if needed.
- Write the 3 goals with the most votes on your **Goals/Actions Poster** in the space provided.

Regional Teams: Actions



Group Directions

Work together to develop actions that need to be taken to accomplish your priority goal. Use ones that were already brainstormed, combine similar actions, and develop new ones.

- Write the actions specific to a goal under it on the **Goals/Actions Poster**. (some actions may address multiple goals)

GOAL — The final destination or desired outcome you want to reach. **It is "the what."**

ACTION — The specific, controllable step you take to get there. **It is "the how."**

LUNCH



Climate Scenario Planning



Identify Calamity Challenges



Group Directions

1. Open the envelope labelled **Calamity.** Read the calamity out loud to the group.
2. At your table, look at the goals and actions and discuss how this calamity compounds and or changes the viability of achieving the goals.
3. Discuss ways they have been preparing or ways they could prepare as a subregion.
4. Summarize the key points of this discussion on your worksheet.

Identify Priority Actions



Group Directions

1. Look over the actions you have developed and choose one action to build into an action plan.
2. Use the questions on your worksheet to help you prioritize.
3. Star the action on your poster.

Action Planning



Group Directions

It's time to use the **Action Planning Poster**!

1. Develop an action plan around the action you selected.
2. Identify the partners that would be involved in implementing the action and the roles they would play.
3. Identify the resources that would be needed to implement the action.
4. How will you know you are successful?
5. How will you authentically and equitably include the community?
6. How will you plan for unexpected events that require a shift in how this action is implemented?
7. Once completed, post the poster on the wall for a gallery walk.

ACTION PLANNING

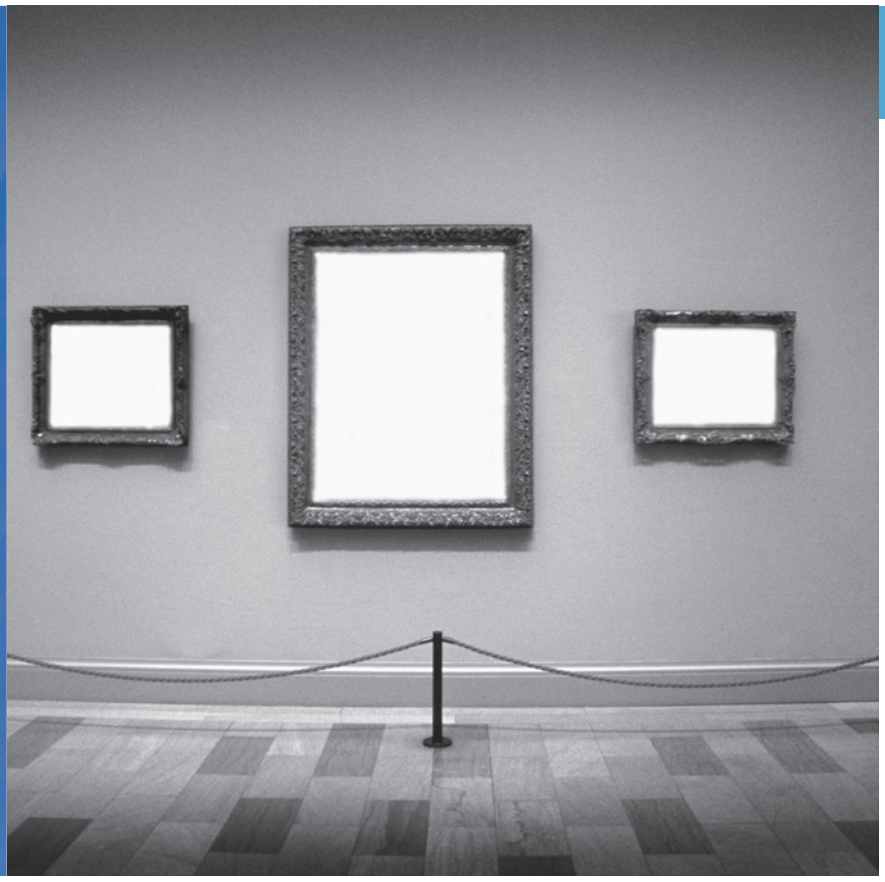
ACTION:

Partners and Their Role

Resources

Describe the action. How will you know you are successful? How will you authentically and equitably engage the community? How will you plan for unexpected events that require a shift in how this action is implemented?

GALLERY WALK AND BREAK!

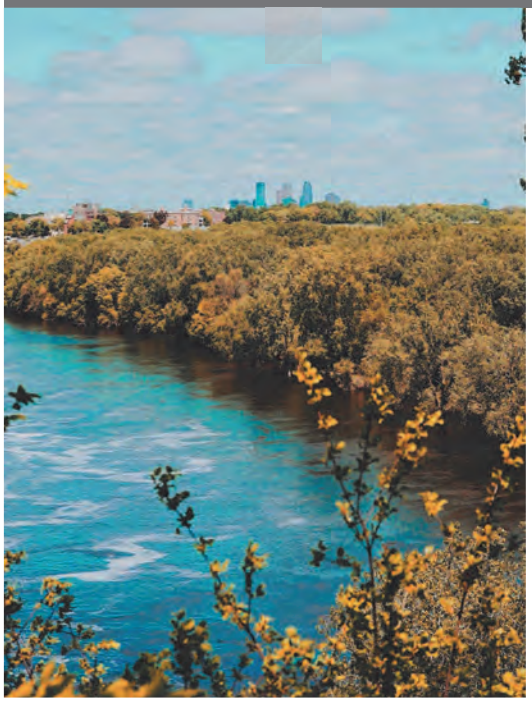


Final Discussion



What are your takeaways from today?

Next Steps

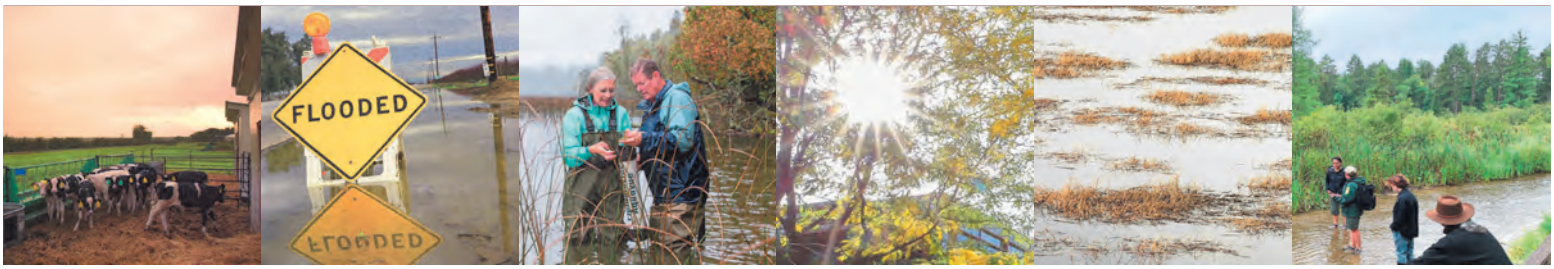


- Workshop summary
  - Slides
  - Action plans
- Resources
  - Links to Met Council planning tools and information
  - Additional information on scenario planning
- Subregional Meetings

Do Your Final Evaluation Now!

https://www.surveymonkey.com/r/waterclimate

We are all water and climate planners



Rachel Johnson
University of Minnesota Climate Adaptation Partnership

Photos: UMN Extension & H. Roop

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UMN Climate Adaptation Partnership



Cutting-edge **climate research**



Statewide **partnerships**



Extension **technical support, training, & education**

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The conditions we're planning for are changing

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Change isn't new


Population


Land use & development


Community & political will


Regulations & policies


Aging infrastructure


Funding & staff capacity


Contaminants


Technology

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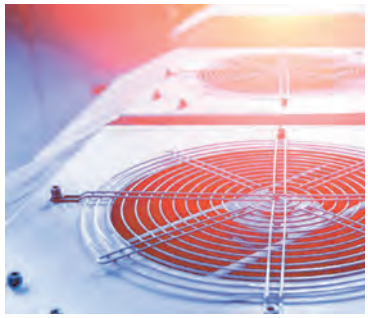
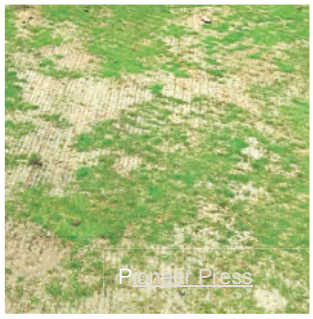
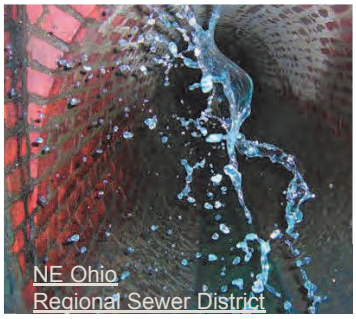
Our water systems face new climate conditions

















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Temperature

- Average statewide increase in annual temperature of **+3.4 degrees since 1895**
- Future projections in metro region show continued increases in average annual temperature
  - **+ 3.8 - 4.6°F** by 2040s - 2050s*
  - **+ 5.1 - 7.1°F** by 2060s - 2080s*
- **Coldest months are warming the fastest**
- **Changes in seasonal extremes**

**Intermediate (SSP-245), High (SSP-370), and Very High Emissions (SSP-585) Scenarios Relative to historical (1995 - 2014)*

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Precipitation

- Average statewide increase in annual precipitation of **+3.4 inches since 1895**
- Future projections in metro region show fluctuations in annual precipitation
  - **Decreases** in summer and fall precipitation
  - **Increases** in winter and spring precipitation
- **Heavier rain events**
- **More transitions between wet and dry extremes**

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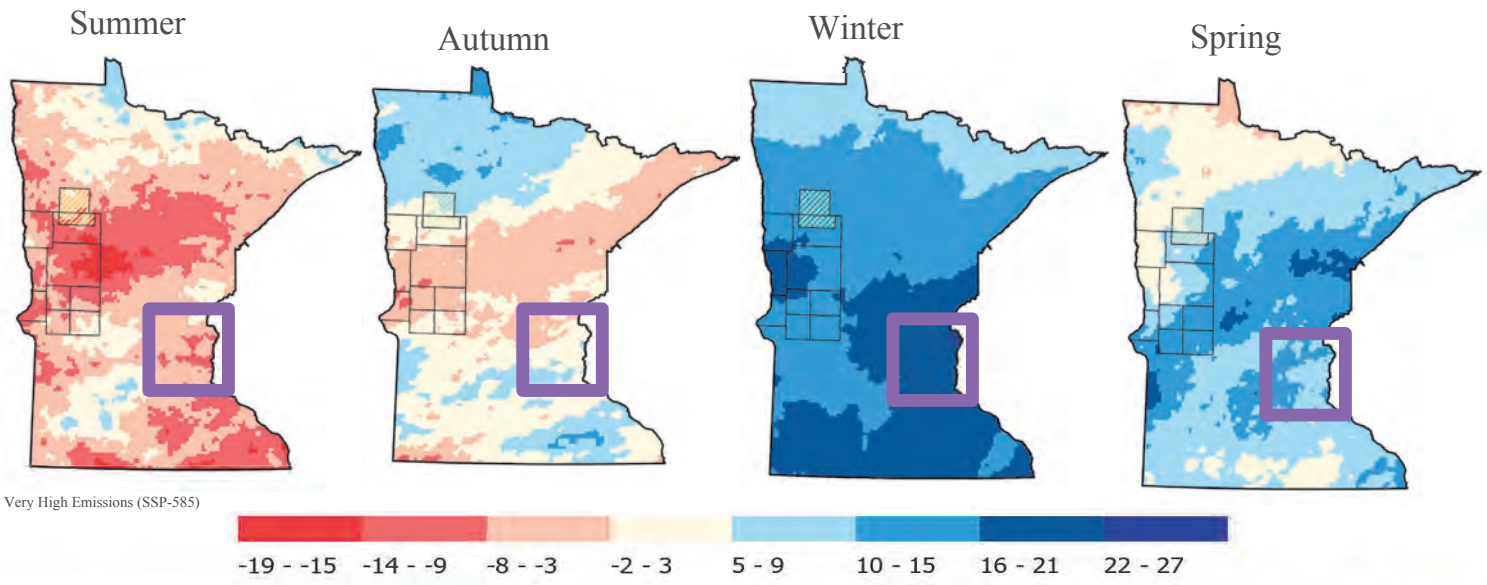
Precipitation

Projected Percent Change in Seasonal Precipitation by Mid-Century (2040-2059)



Liess, S. et al., 2026

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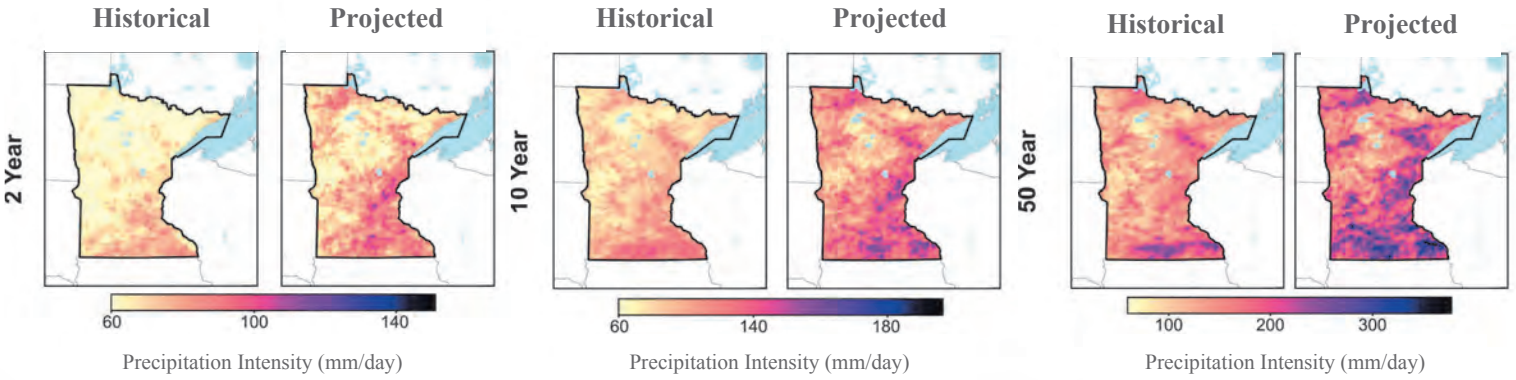
Precipitation

Precipitation intensity maps for the 1-day, 2-, 10-, and 50-year events



Projected end-of-century values based on SSP 3-7.0 scenario.

Preliminary Data. Subject to Change

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Precipitation

Across the Midwest,
transitions from wet to dry extremes
are happening **more quickly**
and
more frequently.







Photos: UMN Extension; Data: www.drought.gov

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Changing water system impacts

Warmer temperatures & winters
→ Water demand, treatment/operations, infrastructure performance, ecosystem health

More intense precipitation & flooding
→ Stormwater capacity, erosion, water quality, I/I, infrastructure damage

Longer dry periods
→ Water supply, groundwater, streamflow, competing demands

More variable water conditions
→ Less predictable water resources, greater operational uncertainty

Health | Investments | Equity

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We can't wait

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The rearview mirror is no longer sufficient to plan & prepare.

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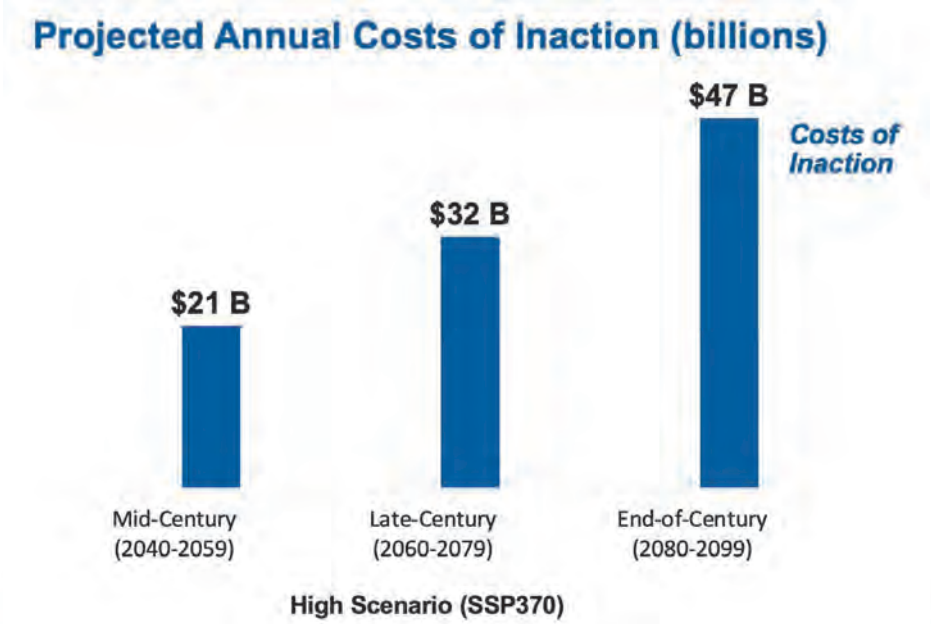
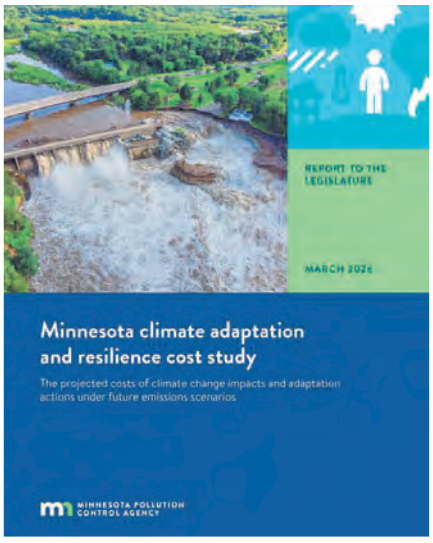
The cost of waiting





MPCA, 2026

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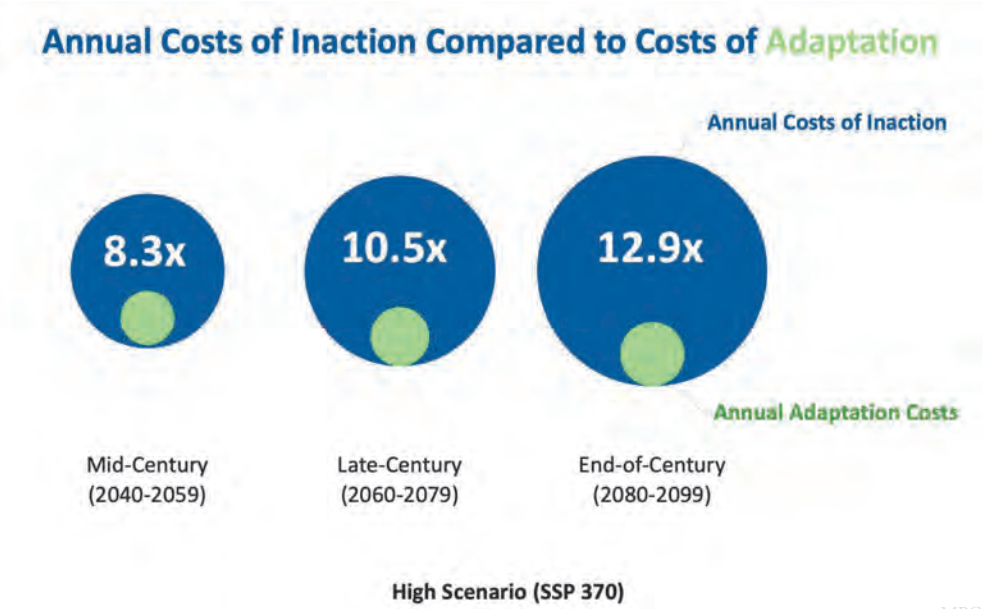
Proactive adaptation saves costs in the long run

The annual costs of adaptation are **8 to 15 times** lower than the costs of inaction.



MPCA, 2026

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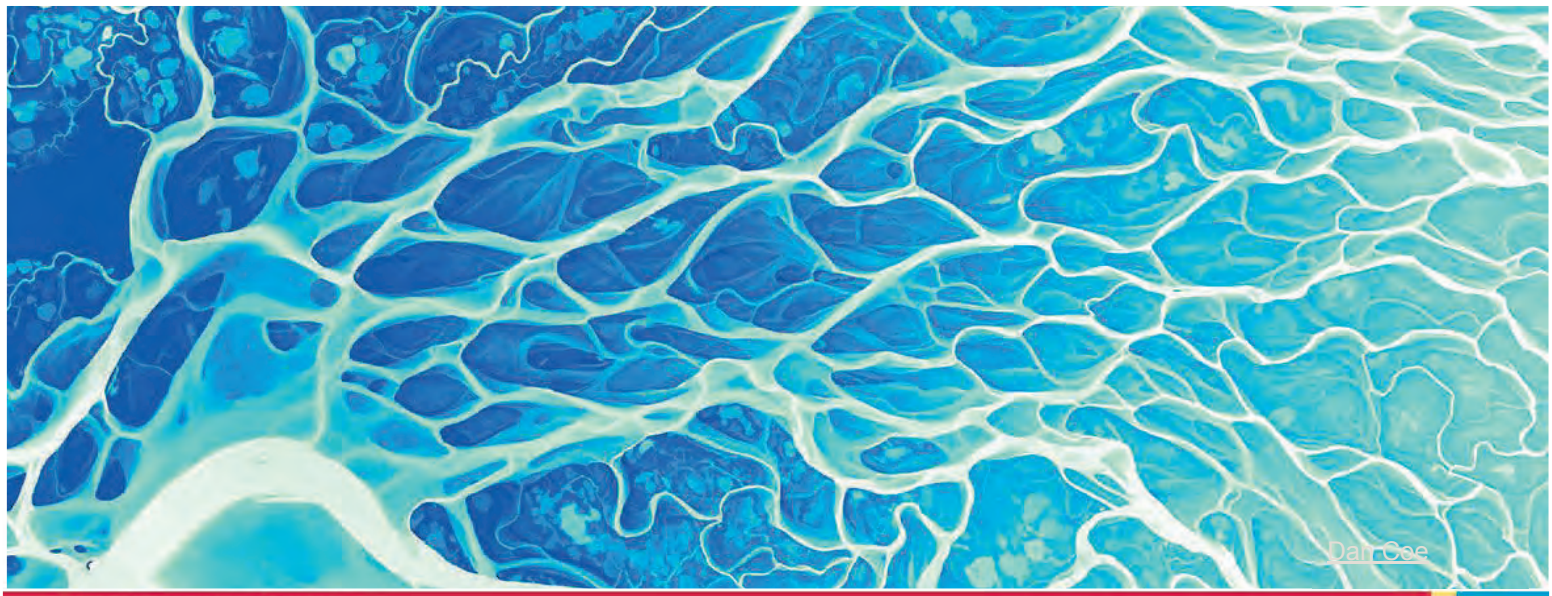
We have to make decisions under uncertainty



Dan Cee

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We already have the tools we need

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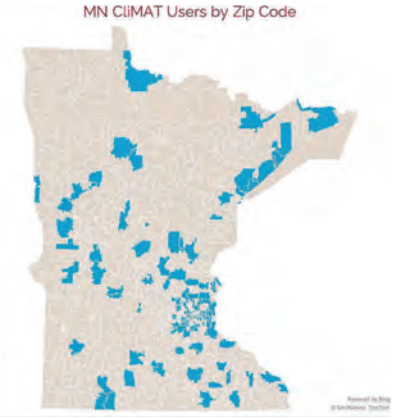
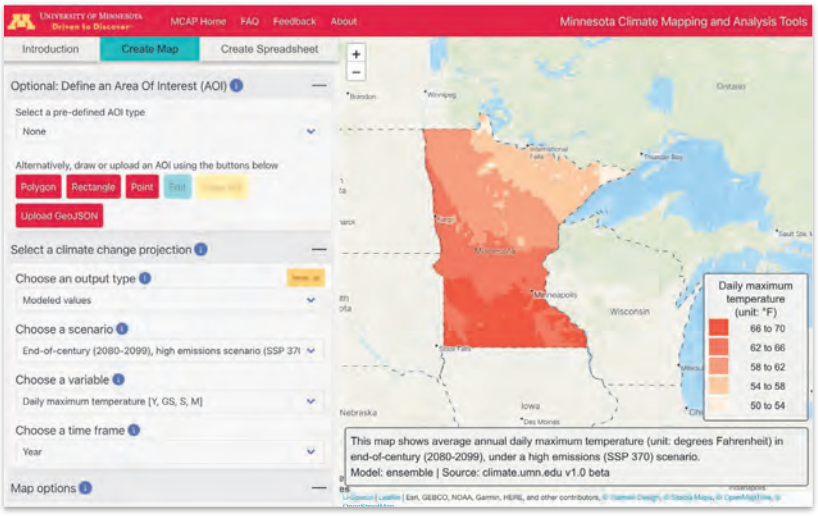
1. Climate information

app.climate.umn.edu

MN Climate Mapping and Analysis Tool - 2.5-mile scale projections out to 2100





3 scenarios; 6 model ensemble (and growing!); 4 time periods out to 2099

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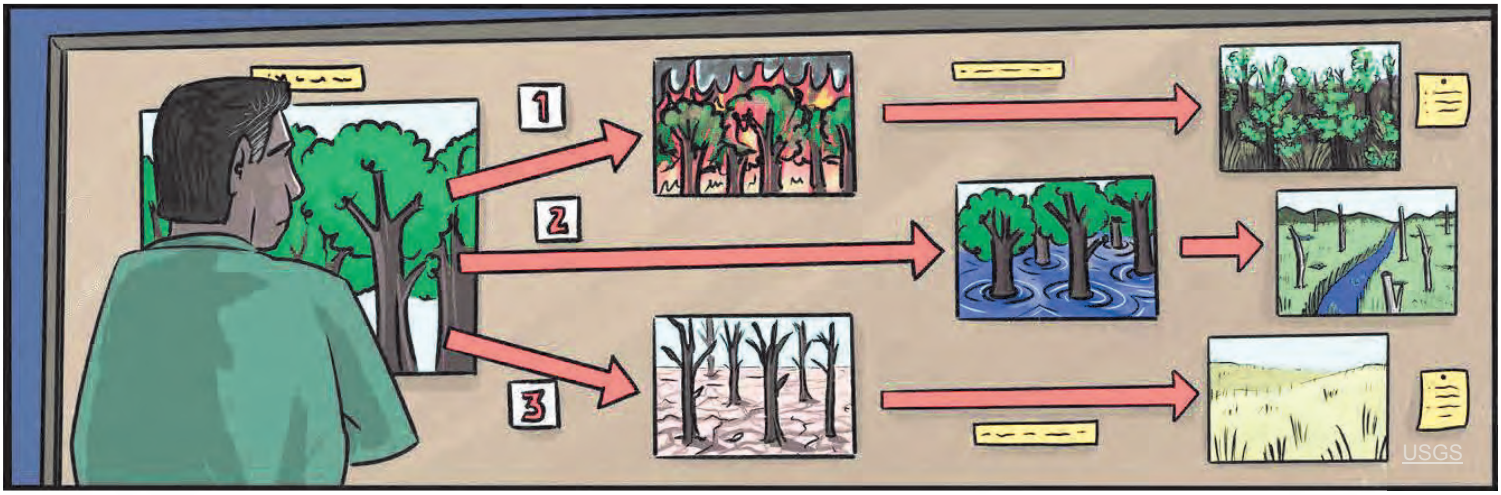
2.) Scenario planning



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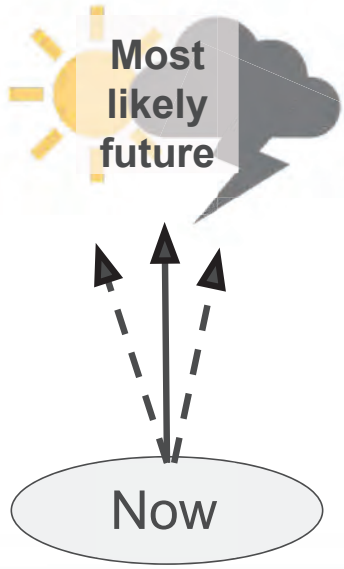
2.) Scenario planning to stress-test decisions



Plan for future

Based on what currently know

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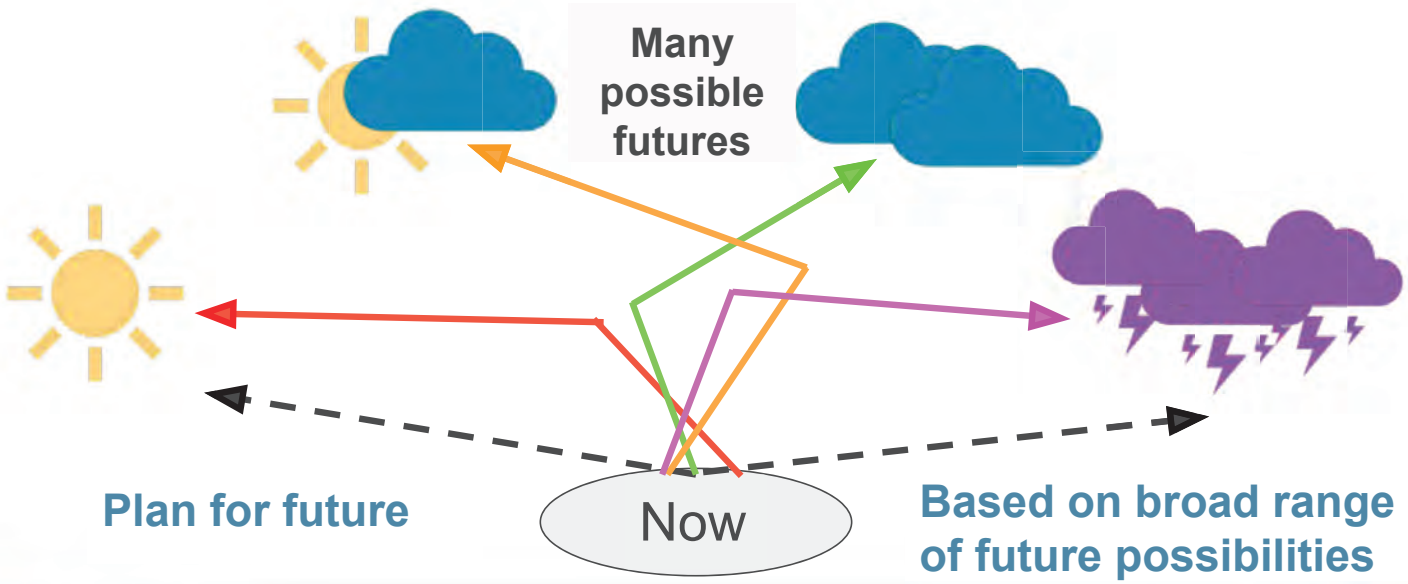
2.) Scenario planning to stress-test decisions



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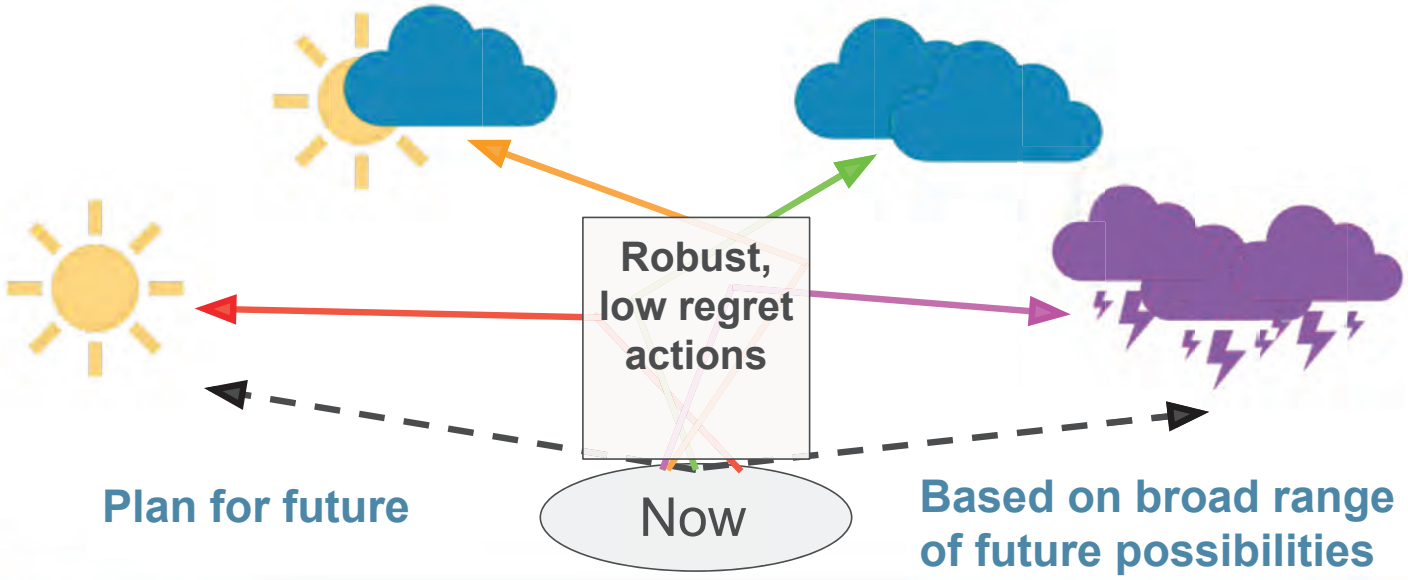
2.) Scenario planning to stress-test decisions



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3.) Adaptation strategies

Adaptation strategies are known, scalable, and bring multiple benefits.



Planning & policy



Nature-based approaches



Infrastructure



Emergency response & recovery



Operations & maintenance



Partnerships

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3.) Adaptation strategies



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4.) Local knowledge



Hastings River Flats wet prairie and floodplain restoration



Maplewood climate adapted tree plantings



Woodbury smart irrigation controller program

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5.) People and partnerships



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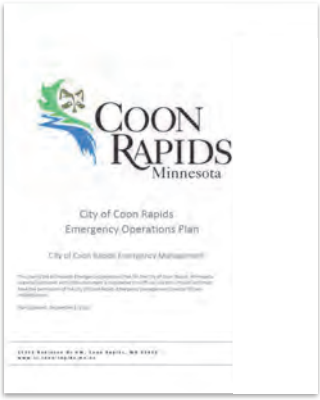
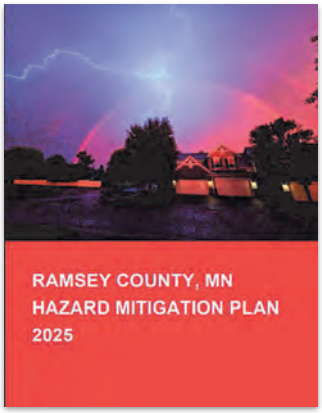
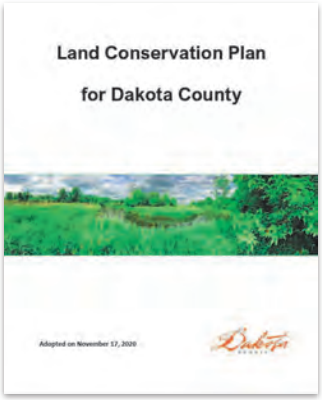
6.) Integrating climate adaptation planning into decisions you're already making



Emergency Operations Plans



Hazard Mitigation Plans



Conservation & Natural Systems Plans



Watershed Management Plans

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We're all water and climate planners

The conditions are changing
We need to understand what those changes mean for our systems and communities

We can't wait
We need to make decisions that are robust across plausible futures

We already have the tools
We can integrate climate into the planning, investments, and partnerships we already have

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Driven to Discover
Climate Adaptation Partnership

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Connect, Learn, Engage - Join us

Website: climate.umn.edu
MCAPs Weather Talk Blog with Mark Seeley: z.umn.edu/wxtalk
Newsletter: z.umn.edu/mcapnews
Email: mnclimate@umn.edu
rachelej@umn.edu



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NORTHEAST

TABLE 2

Scenario Planning: Heavy Spring Snow Events with Sudden Melt

Goals:

1. Reduce Flood Exposure
2. Protect Water Quality
3. Protect Public Health & Safety

Summary of Calamity: Major Wastewater Spill

Actions:

Goal 1 — Reduce Flood Exposure

- Plan where snow will be stored.
- Prevent future flood damage.
- Add flood storage that works in freeze/thaw conditions.
- Clean storm drains in the fall.
- Prioritize infrastructure improvements to reduce future flooding
- Analysis of communities and damaged infrastructure affected in south and west region.
- Model future flood risk.
- Education and outreach to landowners at high risk of future flooding.
- Native buffers and connection to floodplain on streams.
- Retrofit existing stormwater
- Install new volume + rate control best management practices.
- Upgrade stormwater conveyance and treatment systems.
- Increase stormwater detention during design.

Goal 2 — Protect Water Quality

- Prevent/reduce snowmelt related erosion.
- Reduce erosion.
- Agricultural programs: cover crops

- Plant winter cover crops in agricultural areas.
- Native buffers around agriculture.
- Detain/control discharge to reduce pollutant loading.
- Cost-share business/residential
- Public lands native vegetation to stabilize soils and encourage interception and infiltration.
- Septic inspections and retrofits where a high risk of flooding.

Goal 3 — Protect Public Health & Safety

- Model contaminated area.
- Close beaches.
- Close areas where unsafe
- Relocate people from flood-prone areas.
- Add emergency vehicles.
- Start with the area affected by the spill.
- Identify
- …safe
- Control SW runoff in emergency situations.
- Perform water testing.
- Access to mental health professionals.
- Clear communications with the community (different languages).
- Flood shelters in emergencies.
- Ensure warm shelter for all displaced residents.
- Protect buildings from snowmelt related flooding.

Barriers to Achieving

- Regulations
- Funding
- Short memories
- Atlas 15 or updated model data

Table 2 Action Planning:

Action(s):

1. Establish an emergency response center for displaced residents.
2. Efficient flood response/emergency management.
3. Collaborate with partner agencies.

Partners and Their Role:

- Road authority
- Emergency management authorities within jurisdiction
- LGUs, WMOs
- Wastewater treatment plant, Metropolitan Council
- Park staff (beach closure)
- Trained, knowledgeable, trusted community messengers
- Community outreach staff
- Nonprofits, community centers, churches, schools
- Elected officials
- Federal resources (FEMA, Army Corps)
- MDH, MPCA
- Sheriff / local law enforcement

Resources:

- Nonprofits/community resources
- State/federal resources (testing, $)
- Neighboring community support/resources
- Radio, news, social media

Describe the action:

- Equipment/materials (ex. Sandbags) are available/known
- Participants know role/have been trained
- Ongoing training
- Resources equitably distributed
- Limited confusion across all community groups

- Establish and follow a chain of command
- Working with partner agencies → know who to call and important actors involved

SOUTHWEST

TABLE 3

Scenario Planning: Heavy Spring Snow Events with Sudden Melt

Goals

1. Control Stormwater
2. Reduce Erosion
3. Public Safety

Actions:

Goal 1: Control Stormwater

Goal development notes (purple sticky notes):

- Enhance built infrastructure to manage the effects of stormwater.
- Manage uncontrolled stormwater runoff through policy change or expansion and building new
- Ensure stormwater infrastructure is adequately designed and maintained [partially illegible].

Actions:

- Increase smaller ponds for capacity.
- Maintain operation.
    - Ensure stormwater ponds and structures are maintained.
    - Ensure drains are open and clear of debris.
- Create forward-thinking limits on hardscaping.
- Increase restoration and capacity of wetlands across landscape + managed outlets?
- Identify current systems that could be changed to increase capacity.
- Treat stormwater as a resource through stormwater capturing or in-pipe hydro turbines or rainwater harvesting.

- Ensure new development and redevelopment are prepared for increased rainfall by requiring increased
- Consider shade and absorption in design to reduce melt and increase uptake.
- Develop mapping/modeling tools to identify specific risk areas.
- Plan future stormwater systems and development for increased storm events.

Goal 2: Reduce Erosion

Goal development notes (purple sticky notes):

- Retain groundwater on all possible fields
- Reduce erosion during storm events by keeping fields planted or capturing sediment before reaching major waterways.

Actions:

- Maintain tree + vegetation cover.
- Incentivize erosion control measures/infrastructure/plantings to improve resilience in storm events (etc.).
- Encourage cover crop and residue on fields with:
    - Incentives
    - Practice sharing
- Require native planting along ditches/erosion-prone areas -- maintain as part of erosion infrastructure.
- Provide incentives and education to keep fields planted and erosion filtered.
- Follow storm BMPs.
- Identify fields that are high erosion risk and assess best options with farmers.

Goal 3: Public Safety

Goal development notes (purple sticky notes):

- Flood response plan with sanitary lift stations.
- Public safety & health.

Actions:

- Put Lift station response plan into effect.
- Prioritizing sites based on the flood event.

- Staffing to implement action plan.
- Have a plan for sending resources to protect critical infrastructure.
- Flood management plan to keep drinking water safe and have a backup plan.
- Make sure sanitary sewer is protected.
- Understand high-risk zones and have evacuation plans.
- Communicate clearly with residents and businesses leading up to events (if possible) and in response to events.
- Rewrite ordinances to extend flood protection for new development in flood plains via increased freeboard.
- Develop with increased storm events in mind.
- Ensure flood-prone infrastructure is designed to withstand large events.

Calamity: Multi-day Power Outage

Additional handwritten notes:

- Identify risks.
- Designate roles/POC (points of contact).
- [Additional text obscured by sticky notes.]

Table 3 Action Planning:

Action:

- Evaluate existing stormwater systems and develop new SOPs based on evaluations (for changes in development and stormwater events/patterns).

Partners and Their Role

- Public works → Boots on the ground; implementation of SOP/maintenance.
- Engineering → Data gathering and analysis, design.
- Watershed orgs → Data gathering, coordination, outreach/engagement, funding?
- DNR → Regulation (local/MN standards), funding?
- Residents → inform issues, local perspective.
- MPCA → Regulation (local/MN standards), design; funding?
- MDH → Regulation (local/MN standards), funding?

- Land use planners → Inform development.
- Developers → funding.
- LGU/council → funding, approvals

Resources

- Models
- Data
- Funding
- Staffing
- Planning
- Public support / Council support
- Public works

Describe the action

1. How will you know you are successful?

- Events/effects are minimized
    - Fewer reactionary events.
    - Less disruption of public infrastructure and services.
    - Reduce spending on emergency services.
    - Clear, defined roles in SOPs.

2. How will you authentically and equitably engage the community?

- Outreach (engaging early)
    - Open meetings, mailers, reporting hotline, onsite tours at various times

3. How will you plan for unexpected events that require a shift in how this action is implemented?

- Strong community connections/partners
- Ongoing evaluation
    - Continuous evaluations, post-event debrief.
    - Reprioritize as needed.
    - Keep SOPs up to date.

CENTRAL

TABLE 4

Scenario Planning: Sustained Summer Heat + Storms

Goals:

1. Energy Management & Resilience
2. Protect Vulnerable Community Members
3. Water Infrastructure Resilience

Actions:

Goal 1: Energy Management & Resilience

- Develop alternate off-grid power supply options.
- New renewable power generation and storage.
- Better building practices — insulation and shading.
- Balcony solar.
- Expand renewable (onsite) generation and battery storage (local distributed energy).
- Underground power lines.
- Energy-efficient buildings.
- Cycle energy use by neighborhoods.

Goal 2: Protect Vulnerable Community Members

- Open city facilities during extreme heat events.
- Swimming pool access.
- EMS trained to identify/treat heat illnesses.
- Increased tree canopy in neighborhood spaces and along streets (for shade
- Increase tree canopy in green spaces
- Priority – community cooling centers – libraries, other public buildings
- Plant shade trees
- Expand access to at-home cooling – right to cooling law, incentives for mini-splits @ MFHs, MFG homes, etc.
- Broader/more flexible zoning – interconnected infrastructure, better access to parkland, reduce commute times

- Make flood prone zones floodable

Goal 3: Water Infrastructure Resilience

- Build out storm storage capacity to prevent localized flooding.
- "Green streets" – detention and retention areas and tree canopy to reduce flooding
- Increase stormwater and rainwater and reuse.
- Stormwater storage for large rain events.
- Minimize water waste/consumption:
    - No-mow/native lawns.
    - Water-use reporting.
- 1. Identify flood vulnerable areas; 2. Determine mitigation actions; 3. Implement one or more actions
- Increase water storage volumes for flood control:
    - Locate areas where flooding to occur through modeling, develop priority areas with criteria
    - Feasibility study to locate facilities: either natural/structural
    - Prioritize sites
- Feasibility studies to locate opportunities – work with partners to minimize impacts
- Expand green infrastructure
- Extensive storage and reuse system

Discussion of calamity: Downstream Dam Failure

- Decided that the energy goals were less of a priority.
- Most of our actions were already useful for the event.
- Focus on being able to flood those flood-prone areas.
- Nature-based solutions.

Table 4 Action Planning:

Action:

- Flood Prone Zone Solutions

Partners and Their Role:

- Cities
- Residents
- Watersheds
- Counties
- State agencies
- Emergency managers
- Community-based organizations
- Public-private partnerships
- Army Corps
- Policymakers / elected officials

Resources

- Climate scenario modeling
- Soil testing
- Existing conditions → event drives will
- Real estate evaluation
- EJ mapping
- Pollution / hazard map
- Zoning authority / community planning
- Funding

Describe the action

- "Allowing flood zones to flood" — mitigating costs of flooding.
- Accentuate co-benefits (multiple / stacked).
- "Repetitive loss" — reduce / eliminate.
- Systems-level thinking in design phase.

Diagram drawn →

Two nested circles are labeled:

- In-action — $$
- Action — $

The diagram appears to compare the relative costs of action versus inaction, with action representing a smaller cost within the larger cost of inaction.

NORTHWEST

TABLE 5

Scenario Planning: Extreme Fall Drought

Goals:

1. More Water In – Plan for Storage and Hydration
2. Less Water Out – Reduce Demand
3. Manage Risk

Actions:

Goal 1: More Water In – Plan for Storage and hydration

- Primary Action: Policy paradigm shift to make development better (rather than deal with current demand)
- Hydrate the landscape to prevent impacts.
- Plan for storage — increase and optimize groundwater storage potential.
- Shift agricultural drainage to stormwater conveyance.
    - Modify ditch laws.
- Recharge aquifers.
- Increase infiltration features and requirements – this increases storage
- Build in storage in development and redevelopment (cisterns under ballfields, for instance).
- Preserve green space with drought-tolerant and climate adaptive landscaping to increase infiltration + reduce demand.

Goal 2: Less Water Out – Reduce Demand

- Primary Action: Education program.
- Work with high users to understand needs (communication).
- Change normal perceptions on water use to preserve water (reduce demand).

- Water reuse:
    - Stormwater.
    - Greywater.
    - Wastewater.
- Co-locate high-water users / large-volume users
- Host irrigation-focused farmer field days with UMN irrigation specialists.
- Water irrigation ordinances to time soil moisture awareness
- Grants + low-interest loans.
- Increase use of low-flow appliances for businesses and residences
- Ensure community's emergency response plan is up to date, resourced, communicated, and understood

Goal 3: Manage Risk

- Prevent fires resulting from drought (prevent further damage)
- Create secondary cooling and water supply resources
- Asset management plans.
- Secure water grid.
- Take action x to address impacts to wildlife + ecology.
- Collaborate with public health to ensure vulnerable communities have access to resources.
- Water distribution to well owners and unhoused populations – provide well interference info proactively.

Calamity: Water Main Break

- Depends on type of break.
- Turn off water.
- Find a way to supply users.
- The actions listed reduce the impact of this calamity.

Barriers (Additional Sticky Note)

Actions that need to be taken:

- Funding — private + public.

- City code barriers.
- Perception
- Planning desire

Table 5 Action Planning:

Action: Education outreach campaign to reduce water demand.

Partners and Their Role

- County
- City
- Watershed
- Community partners
- Public health
- County communication infrastructure
- Trusted community leaders
- School districts
- Libraries
- HOAs (Homeowners Associations)

Resources

- Tree planting programs
- Established communication networks
- Incentive programs for smart technology
- Ways to detect and address leaks/waste
- Clean Water Fund – water demand reduction grants from Met Council

Describe the Action

- Landscapes changing to more drought-tolerant design and species.
- Succinct, consistent messages and branding
- Identify major water users and the nature of their use. Target strategies and communication most relevant.
- Communication available in multiple languages.

- Ensure ability to quickly communicate through trusted channels to reach impacted community members.
- Host garden parties that showcase drought-tolerant yards and gardens.
- Success: We see reductions in overall water use — in summer and in winter.
- People / businesses change behavior.
- Appreciation for the value of water.
- Codes — length of grass.
- Adding drought-resistant plants to codes.
- Shifting cost burden away from vulnerable communities.
- Agreement of reduction in use by a % of vulnerable population rather than increasing their rates.

SOUTHEAST

TABLE 6 & 8

Scenario Planning: Sustained Summer Heat & Storms

Goals

1. Resilient Landscapes
2. Continuity of Water Utilities for Residents
3. Continuity of Electrical Access

Actions

Goal 1: Resilient Landscapes

- Incentivize low-impact design:
    - Tree planting (strategically).
    - Reduce impervious areas.
- Adapt stormwater infrastructure for Atlas 15 + design standards.
- Incorporate the cost of inaction in the budgeting process.
- Align goals + plans with minimum requirements.

Goal 2: Continuity of Water Utilities for Residents

- Continue electrical access + redundancy.

- Sufficient water storage capacity.
- Emergency response plans:
    - Interconnects.
    - MNWARN
    - Sanitation plan.
    - Relationships with high water users to reduce demand.
    - Do drills
- Emergency demand reduction ordinance.
- Conservation / infiltration of groundwater (GW):
    - Smart meters.
    - Education / outreach program.

Goal 3: Continuity of Electrical Access

- Underground distribution lines or redundancy of power lines.
- "Fix it" teams.
- Identify vulnerable areas to prioritize response.
- Tree trimming.
- Smart meters required.
- Every resident has access to cooling spaces.

Calamity: Climate Refugee Influx

Calamity Discussion:

The resilient landscape goal set us up to be successful because we have a lot of low-impact designs to accommodate the influx of people. Also, we have water supplies because we conserved water and have water storage capacity.

Table 6 + 8 Action Planning:

Action: Incentivize Low Impact Development

Partners and Their Role

- Dakota SWCD
- Cities / townships:

    - Planning commissions, planners, and engineers
    - Environmental staff
    - Water resources staff
- Watershed districts / watershed management organizations (WS/WMO)
- Nature is a partner!
- MPCA
- Dakota County
- Met Council
- Legislature (maybe?)
- UMN (University of Minnesota)
- Residents
- Developers

Resources

- Money!
- Ideas
- Political will to do this
- Resident trust
- Communication plan
- Taxing authority to tax future developers -- Creative taxation!

Describe the Action

Success would be…

- More acres of development are doing LID (low-impact development) than not (i.e., above average).
- We have a balance / revenue to continue to implement.

Engaging community on this would look like…

- Free food!
- Ask them what would incentivize their behavior.
- Build a coalition.

- Find out what spaces are culturally important.

Long-term planning would look like…

- Build the funds up to handle economic swings.
- Evaluate success / metrics every 5 years.

CENTRAL

TABLE 7

Scenario Planning: Heavy Snow Events

Goals:

1. Robust Emergency Response
2. Resilient Natural Systems
3. Resilient Utility Systems

Actions:

Goal 1: Robust Emergency Response

- Have a clearly defined Emergency Response Plan.
- Have equipment & supplies for response.
    - Use lessons from history to plan for next event.

Goal 2: Resilient Natural Systems

- Implementing BMPs:
    - Bioswales
    - Cover crops
- Communication & education.
- Bioswales in R-O-W (right-of-way).
- Parks are planted with appropriate cover & landscaping.
- Codes to address infiltration for new development & existing development.
- Funding more for implementation.
- Garden View, New Brighton – City worked with county/private property owners.

Goal 3: Resilient Utility Systems

- Strict inflow & infiltration policies.
- Protect drinking water sources.
- Improve communication between planning & engineering.
- Protect wetlands.
- Improve stormwater modeling.
- Protect water treatment facilities – siting and emergency responses
- Map vulnerability areas
- Map future projects.

Calamity: Budget Cuts!

Calamity Discussion

- Asset protection — get better at this!
- Invest in an asset management system.
    - Communicate issues effectively.
- Creative funding solution in public private partnerships.
- Understand who is most [impacted].
    - Keep up to date on existing conditions
- Keep utility funds healthy.
    - Rate flux to keep fund healthy for capital improvements → build in for more frequent events
    - Public to be more frequent
- Understand perspectives & navigate the communication around that.

Table 7 Action Planning:

Action: Communicate importance of resilient Natural Systems to the Public & Policy Makers.

Partners and Their Role

- Watershed staff — Empower
- Developers — Empower

- City staff — Empower
- Met Council — Inform & Empower
- County staff — Inform & Empower
- Policy makers — Lead, educate
- Public — Inform, educate
- Local Indigenous groups — Empower, inform, engage
- City staff — Educate

Resources

- MS4 Education & Engagement Requirements
- 2040 Comp Plan for the City
- Time & Money!
- Communication & Engagement → a multi-year plan and effort!

Describe the action

- Council supports budget requests for new systems (CIP)
- Are we getting the message out on time? → How many hits are we getting on social media?
- City leaders are vocal leaders — word of mouth increases.
- Public supports tax increase to cultivate better Natural Systems.
- People install systems on their own property.
- Staff proactively change code & policy to make this easier because they see how important it is.
- Decrease in complaints during construction projects for resilient systems because people see impact.
- Relationships with community increase.
- Local grants for resilient systems are fully allocated each year.
- Equity: Communicate to underrepresented communities through vulnerability mapping.

EAST

TABLE 9

Scenario Planning: Sustained Summer Drought + Heat

Goals

1. Ensure reliable clean drinking water for residents
2. Maintain access for emergency vehicles
3. Maintain reliable energy access

Actions

Goal 1: Ensure reliable clean drinking water for residents

- Source water from the Mississippi.
- Establish resilience hubs at community spaces to provide clean water, clean air, and cooling for residents.
- Maintain aquifer levels by infiltrating water.
- Ensure WTP/wells have backup energy supply; consider sources other than diesel generators.
- Promote low-water-need landscaping.
- Establish water and energy reduction targets/order in an event to ensure priority water supply.
- Irrigation ban during crises.
- Prioritize which businesses are critical and get to use water during a crisis.

Goal 2: Maintain access for emergency vehicles

- Set up an emergency management team between jurisdictions.
- Open communication by educating the public.
- Keep things analog.

Goal 3: Maintain reliable energy access

- Identify needs and make a plan to provide for the most vulnerable (e.g., seniors, care facilities, unhoused people).
- Install and mobilize more rooftop or regional solar energy.
- Have backups:
    - People

    - Fuel
    - Keys
    - Manuals
    - Filters
- Practice for disasters — run it from beginning to end.
- Establish power backup for critical infrastructure (e.g., sewer lift stations, water wells and treatment).
- Long term: Plant trees for shade and cooling; plant diverse species.
- Alternative off-grid energy sources.

Summary of Calamity

New Emerging Contaminant

Summary Discussion

- Limit infiltration in risky areas
- Reduce demand for nonpotable sources
- Home water filters may be distributed to family, so long as it filters out the new emerging contaminant
- Cut off the source of pollution
- Monitoring the solution
- Work with MPCA to ID pollutant
- Contact Tribes, Hmong population as they do a lot of fishing – since this emerging contaminant impacts fish, need to get the word out
- Create fish advisory, consumption limits – culturally responsible limits
- Determine where concentrations are highest and which areas may be "safe enough"
- How do water suppliers balance enough clean drinking water and economics?
- Establish MCL once more is known about the contaminant

***Table 9 Action Planning*:**

Action: Reduce demand + promote recharge of aquifer (sustainable GW use)

Partners and Their Role

- All city departments — finance, communications, public works, engineering, planners, etc.
    - Water billing

    - Communications with residents
- Watershed districts — regulatory program; promote reuse projects.
- MDH — well regulation, private + public; communications about public health concerns.
- DNR — water appropriations.
- MPCA — stormwater management.
- Wash Co — regional parks.
- School board
- Large water users
- Residents and business owners
- Master Gardeners — UMN Extension.
    - Planting drought-tolerant species
- Farmers.

Resources

- Wash Co Groundwater Plan.
- Consulting watershed plans → SWWD, Ramsey-Wash WD, etc.
- Watershed District cost-share programs → reuse projects.
- BWSR Lawns to Legumes Program
- MDH Drinking Water Protection Grants + BWSR Accelerated Implementation Grant.
- County Geologic Atlas.
- MPCA GW Contamination Map.
- MDH/MPCA program to reduce nitrates on farmland — implement BMPs.
- Ag Water Quality Certification
- Watershed reports on GW/SW interactions.
- Smart water meters for residents + government.
- GW Risk Atlas.
- USDA/NRCS soil maps.
- City Code → amending to add drought-tolerant/climate-adapted species list.

- Demonstration sites, pilot projects with information.

Describe the action

- Use local trusted experts to disseminate information + resources.
- Establishing water use targets based on precipitation.
- City codes allow for a greater variety of strategies to reduce water demand.
- % of new development using drought-tolerant landscaping increases.
- Disconnecting impervious surfaces to promote increased infiltration.
- Residential / water reuse systems to decrease demand on existing supply

WEST

TABLE 10

Scenario Planning: Extreme Fall Drought

Goals:

1. Manage, protect, disbursement of water supply
2. Protect Public Health
3. Improving and protecting water quality and soil health for overall ecological and human benefit

Actions:

Goal 1: Manage, protect, disbursement of water supply

- Ensure private well water supply.
- Maintain water supply for essential uses, such as residential drinking water
- Groundwater testing.
- Reduce water use & water consumption.

Goal 2: Protect Public Health

- public and especially vulnerable populations.
- Identify vulnerable populations and provide infrastructure for everyone.
- Sustainable energy and infrastructure development
- Maintain reliable electrical service to grid.
- Close contaminated waters.

- Public notification.

Goal 3: Improving & protecting water quality and soil health for overall ecological and human benefit

- Increase infiltration + groundwater resiliency by:
    - Non-essential use restrictions.
    - Implementing ag soil health programs.
    - Implement nutrient management strategies
- Goal: Minimize the impact of agriculture drainage on water quality in the Minnesota River Basin- streams and rivers
- Decrease impact of water quality to priority fisheries.
- Goal: Minimize the changed hydrology in the Minnesota River Basin caused by agriculture drainage.
- Gully restoration.

Calamity: Major Wastewater Spill

Calamity Discussion:

- Need to review process — why did line break?
- Calamity doesn't significantly alter above goals/actions.
- Opportunity to refine plans/reflect on what worked/lessons learned.
- Calamity diverts resources away from above goals/actions.

Table 10 Action Planning:

Action: Declare critical water deficiency

Partners and Their Role

- DNR — Statewide declaration
- Watersheds — Education/outreach, material development
- Cities/townships — Public notice/education, enforcement
- Business + community organizations — Participants + champions

Resources

- Educational materials

- Funding/staff time for outreach + enforcement
- Contact list/chain of command

Describe the Action

- Sufficient drinking water for all
- Lower water usage
- Rebound in water levels
- Accessible communication
- Trusted community members engaging
- Education before punitive measures

WEST

TABLE 11

Scenario Planning: Multiple Freeze/Thaw Events

Goals

1. Reduce Flood Risk
2. Maintain Safe Infrastructure
3. Protect Water Quality and the Environment

Goal 1: Reduce Flood Risk

- Proactively maintain CBs and storm structures.
- Review snow storage locations (are they contributing to flooding?).
- Utilize steaming equipment to clear out natural storm lines. Reduces chloride usage.
- Clear snow/ice from CBs as needed after winter events.
- Identify where winter flooding is occurring.
- Create storage + infiltration practices.
- Plow to curb every winter event.

Goal 2: Maintain Safe Infrastructure

- Have a snow storage plan for street & pedestrian facilities.

- Work with (convene?) transportation partners to collaborate on safety infrastructure design that is resilient to climate events (like flooding/freezing)
- Prioritize patching operations as needed.
- Planning for budget needs.

Goal 3: Protect Water Quality and the Environment

- Incorporate low-salt design concepts to reduce need for deicing materials.
- Communicate LOS expectations to residents.
    - Possible ice conditions.
- YAK-tracks and snow tires
- Erosion control measures / manage runoff.
- Education + training on low-salt practices.
- Maintain stormwater infrastructure.

Calamity: Multi-day Power Outage

Calamity Discussion:

- Emergency operations planning — Plan ahead!
- Response prioritized over planning actions — Human safety and health first.
- Plan ahead before the flood/storm.

Table 11 Action Planning:

Action: Define and Communicate Level of Service

Partners and Their Role

- Communication staff — Communicating and engaging with the public
- Policy makers — Define the ends, provide the means
- Public Works staff — Providing recommendations, executing the plan
- The Public — Engage with staff and policymakers

Resources

- Winter operations plan
- Seasonal and historic data on events

- Staff with technology
- Funding — emergency funding
- Emergency communication method
- Planning resources for the public
- Emergency Operations Plan

Describe the Action

- Manage expectations — do you know what the city provides?
- Different communities' needs are known.
- Effective communication to communities with different access and needs.
- Proactively establish points of contact.
- Multiple channels of communication.

CENTRAL

TABLE 12

Scenario: Heavy Spring Snow Events with Sudden melt

Goal 1: Reduce impacts of climate/flooding events on ecosystems, landscapes, infrastructure, communities through emergency & recovery planning

Goal 2: Understand actual & projected extent + impact of climate/flooding to assess vulnerability

Goal 3: Improve infrastructure resilience

Actions, Goal 1

1. Implement NIMS
2. Communications Planning for emergencies
3. Refer to existing hazard-mitigation plans
4. Engage partner

5. Finance through fed grants ↳ assistance
6. Update emergency response plan

   Need more funding ✱

Actions, Goal 2

1. gather data

- drone imagery
- Condition assessment (current)
- vulnerable infrastructure
- vulnerable communities
- property damage
- water quality sampling

2. Summarize info
3. Create scenario-based models based on projected future conditions
   ↳ update models
   Need more funding ✱

Actions, Goal 3

1. ✱ Increase resiliency ~~capacity~~ of stormwater systems". "Resiliency" is written above the crossed-out "capacity
2. Prioritize vulnerable infrastructure
3. Implement IOT
4. Model sanitary + stormwater systems → build projects into CIP to address constraints
5. Update design standards for future conditions
6. Diversify types of infrastructure (GSI + more

   Need more funding ✱

Summary of Calamity: Dam failure

Summary Discussion:

- "Emergency response is priority
    - activate NIMS
    - focus on comms
    - keep people + property safe

ACTION PLAN (12)

Action: Increase resiliency of stormwater systems

Partners and Their Role

- Residents – understanding, patience, cooperation, support for disruption + changes
- Higher Ed/Researchers – info on future conditions, possible climate scenarios, tools
- Met Council – rules on I/I
- Developers – compliance, partnership
- Watersheds – support, tech + financial ~~support~~ assistance
- State Agencies (MPCA, MNDOT, etc) – regulatory, cooperation + coordination of projects
- County – cooperation + coordination

Resources

- Funding
- Data/modeling
- Atlas 15!!
- Technical expertise
- Study on future ~~conditions~~ impacts + costs
- WORKFORCE!

Describe the action: How will you know you are successful? How will you authentically and equitably engage the community? How will you plan for unexpected events that require a shift in how this action is implemented?

- Success = Reduced impacts on people, infrastructure, ecology, water quality
    - └ No floods + perfect water quality :)

- Engagement/Equity = Relationship building + maintenance
    - = Responsive to community knowledge, values, needs, realities
- Unexpected Events = Maintain relationships with partners + communities

WEST

TABLE 13

Scenario: Sustained Summer Drought & Heat

Question (upper-left sticky note): How do natural areas/buffers increase wildfire risk during droughts?

Goals

Goal 1

- Ensure public water systems function to meet.
- Ensure water supply and wastewater are resilient enough to ensure uninterrupted delivery, even during times of energy disruption.
- Ensure water systems [operate] continuously.

Goal 2

- Public health and comfort is protected through emergency and normal conditions.

Goal 3

- Ensure employees providing public works and public services are able to perform their daily duties to protect the public during extreme environmental conditions.
- Emergency operations.

Actions

Goal 1

1. ID when redundancy can be added to system processes.
2. Change usage habits.
3. Review and enhance water emergency declarations annually.
4. Regular cross-community relationship building. “you know who to call”

5. Update and practice contingency plans,I D resources, budget needed, contracts, agreements
6. Utilize sub regional workgroup teams to maximize response efficiency
7. ID and secure backup energy sources to support water system equipment and staff to respond
8. Model how to implement water interconnection plans to shore up water during emergency.

Goal 2

1. ID thresholds to make emergency shelters available when needed to bring staff home from work.
2. Revise normal staff actions to allow focused effort on providing aid, comfort, and support to residents while maintaining basic operations. i.e. maximize availability of staff for emergency support
3. Secure sources of emergency water and process to get them where they are needed.
4. ID when to request resources from outside organizations, (other states, our state, FEMA, etc.) and what information is needed to make requests.
5. Public notice plan for different events:
    - How to do without power?
    - Need non-tech options.
6. Encourage design/redesign of community-centered schools to serve as community shelters.

Goal 3

1. Put mutual aid agreements in place (MnWARN).
2. Put contracts in place for emergency resources.
3. Enhance follow-drought/management at state and local levels. (Partially obscured.)
4. Put PPE in place and make sure it is current/safe.
5. Regularly practice emergency response, focusing on public works folks.

Summary of Calamity

- Major water main break.
- High wind/downed trees (extra credit).

Summary Discussion

“It’s Tuesday:

ACTION PLAN(13)

Action: UPDATING WATER CONTINGECY PLAN – INTERCONNECTION CONTENT

Partners and Their Role

- Any feasible interconnectable water supply (utilities, users, leadership… *"city a" is written above the line, probably "a city's utilities, users, leadership…"*)
    - Declaring emergency/need for interconnect: Mayor, administration, comms, emergency m… *(cut off, likely "management")*
    - Documenting interconnects: both utilities *("both" is underlined)*
    - Communicating about use (to MDH duty officer/dist. engineer): both utilities
        - *small note under it:* maybe DNR if pumping might temp. exceed permit
    - Performing (turning on): both utilities

Resources

- Info about available capacity both ways (pressure zones
    - *small note above:* + identified gaps/opportunities → Look for more int… than you need; *(cut off at the right edge; possibly "more interconnects than you need")*
- Info about water chemistry differences between systems
- Info re: impacts to supplying communities users
- SOPs w/ responsibilities defined
- Modeling to generate info
- Actual infrastructure to interconnect → construction, maintenance
- Agreements for allocating costs/fees/rates

- Maintenance plan – shared

Describe the action: "How will you know you are successful? How will you authentically and equitably engage the comm..."

- **Success = agreement in place**
    - interconnections are maintained (exercise valves every year both ways)
    - communication plan in place – residents, council members, other utilities
        - *margin note with arrow:* ensure all residents & customers can get info – languages, diff. technologies
    - people have safe drinking water every day
    - *side note near the prompt:* "That's Wednesday!"

Q: How do natural areas, buffers increase ... risk during...".

WEST

TABLE 14

Scenario: Extreme heat, power lines down, poor air quality, water shortage, & wildfires.

Goal 1: Protect human health & vulnerable populations

Goal 2: Trusted Public Communications

Goal 3: Increase resilience of utilities

Actions

Goal 1:

1. Get potable water to those w/o
2. Get cooling to those who need it – cooling centers – fans – ice
3. End outdoor rec programs until AQ improves

Goals 1 and 2:

1. Implement Utility emergency response plan
2. **Positive response Plan/team**

        - Increase public outreach/education to bring public along with these changes

3. **Comms Plan**
    - Social media
    - Local media relationships (TV/Radio)
    - Door-to-door
    - Text alerts
    - website(s)

Goal 3

1. Risk assessment of electrical reliability.
2. Electrical generation capacity at wastewater the treatment plants."
3. Assessment of sustainability of growth in developing areas (to ensure recovery of costs of infrastructure investments
4. Reduce water use / Restrict
5. Develop Emergency Response Plan.
6. Prioritize getting power back on.

Summary of Calamity:

Cyber Attack + Misinformation (Viral Social Media Post)

Summary Discussion: blank.

ACTION PLAN (14)

Action: Implement emergency response plan

Partners and Their Role

- WDs
- MnWarn
- MnIT
- Duty officer
- Xcel

- DNR
- MPCA
- Hennepin County
- MDH
- **All ~~departments/~~ city dept heads *(the words "departments/" are struck through, so it reads "All city dept heads")***

Resources

- Ways to communicate
- Operations staff
- Contractors/consultants
- Equipment / power supply
- Emergency supply for residents
- Water + food for staff
- **Translators/interpreters**

How will you know you are successful? How will you authentically and equitably engage the community? How will you plan for unexpected events that require a shift in how this action is implemented?

NORTHWEST

TABLE 15

Scenario: Extreme Fall Drought

Goal 1: Reduce water demand.

Goal 2: Improve water quality

Goal 3: Reduce Impacts on Vulnerable populations

Actions Goal 1 column

1. **o**utreach
    - provide low flow fittings
    - offer native plants

    - industrial/heavy users
    - HOAs
2. Convert turf grass to climate adapted veg
3. Identify highest users and system loss to make short term improvements
4. Look at major water user's opportunities to capture & reuse water fit for irrigation use
5. Low-water use fixtures
6. emergency response to prohibit non-essential water use

Actions, Goal 2 column

1. Stream remander/restoration. ↳ Tree cover along stream
2. Increase funding availability for water quality projects
3. Enhance protections for wetlands, meandering streams
4. Responsible land use, zoning, and transportation planning
5. Design land uses for hotter climates (such as Spain) that reduce energy needs, reduce temps, etc.
6. Reduce pollutant loads into surface water (IESF)

Actions, Goal 3 column

1. TREES
2. Reduce/remove impervious surfaces
3. identify shelter plan/ facilities for vulnerable populations
4. incentivize renewable energy infrastructure to supplement". The note ends there, so something is probably missing after "supplement
5. Implement and grow resource availability and outreach.

Summary of [Calamity]: Budget cut

Summary Discussion: blank.

ACTION PLAN (15)

Action: Outreach to reduce irrigation.

Partners and their role:

Watershed

Local businesses

City

Media

HOA

Resources

Money

Supplies

Volunteers

Staff

How will you know you are successful? How will you authentically and equitably engage the community? How will you plan for unexpected events that require a shift in how this action is implemented?

Native plant sales for turf conversion

Rain sensor fines

Info on utility bills

Videos on cost of water

Community ambassadors

-Note: Fine Fescue requirement vs, Kentucky bluegrass Sod

EAST

TABLE 16

Scenario: Multiple Freeze/Thaw Events

Goals

Goal 1: Public Safety

Goal 2: Reduce chloride pollution

Goal 3: Decrease flooding risk

Actions

Goal 1: Public Safety

1. Integrate scenario into all local hazard mitigation plans.
2. Balance prioritization of projects for all areas.
3. Incorporate pedestrian traffic into winter maintenance roads.
4. Track accidents based on freeze/thaw in order to prioritize better treatment.

Additional note: Need for discussion of this situation in our planning now.

Goal 2: Reduce Chloride Pollution

1. Require smart salt training.
2. Require chloride management plans for new redevelopment
3. Conduct education on salt reduction.

Goal 3: Decrease Flooding Risk

1. Keep stormwater systems flowing.
2. Increase available snowmelt storage capacity.
3. Increase cracked sealings for roads/maintenance.
4. Encourage smart site design (connected).

Additional notes:

- stormwater management.
- Could be more pushback on smart design.

Summary of Calamity

Influx of Climate Refugees

1. Need more options for multifamily so we don't increase impervious surface.
2. Training on how to drive in snow. (Partially unclear.)
3. Re-education will be needed on snow impacts.

4. May loosen requirements in MS4 for infiltration [practices/program].
5. Being discussed in watershed planning in S.

ACTION PLAN (16)

Action: Implement a consumer education plan with salt reduction as a goal.

Partners and Their Role

- Partners in EMWRAP program be our partners to provide education.
- Watersheds — lead education.
- County has actions in their plans for this.
- PCA emergency science and strategy for this issue.
- State agencies — grant program to do the education.

Yellow sticky note: Consider requiring winter tires like the country of switzerland

Resources

- Money.
- People + their expertise.
- Buy-in and commitment to the issue.
- Environment — must be a consequence.

Describe the Action / Success Measures / Community Engagement

- Use AI to track unused salt.
- Make numeric salt use targets; do more education, etc.
- Need to make the issue more known.
- Sweep up and track salt remaining on pervious surfaces.
- Track salt use purchases? Use from commercial
- Decrease direct runoff effects.

WEST

TABLE 17

Scenario: Heavy Spring Snow Events with Sudden Melt

Goals

Goal 1: Reduce Flood Impacts

Goal 2: Communicate Risk & Response to Future Climate Scenarios

Goal 3: Prioritize Infrastructure Protection & Resilience

Actions

Goal 1: Reduce Flood Impacts

- Enlarge storage (BMP, seasonal wet, smart controls, natural restoration to other natural areas)
- Model scenarios and update development regs. based on results
- Reduce sediment runoff through temporary storage and reducing impervious surfaces
- Stormwater reuse & increase its priority

Goal 2: Communicate Risk & Response to Future Climate Scenarios

- Community engagement to increase awareness & preparedness, targeting high-risk communities
- Conduct workshops with stakeholders to discuss risks, tradeoffs, and expectations
- Collaborate with partner agencies to align preparedness planning
- Create visualization tools to communicate risks

Goal 3: Prioritize Infrastructure Protection & Resilience

- Maintain existing infrastructure (i.e. stormwater ponds) (preserve planning)
- I&I mitigation measures (e.g. manhole sealing, CIPP lining)
- Develop a prioritization framework to identify areas of highest risk based on climate, social, and environmental vulnerability
- Formulate and communicate target levels of service

Summary of Calamity

New Emerging Pollutant

The red sticky note appears to contain the following additional considerations and actions:

- Consider routing stormwater; might need to adjust.
- Consider whether projects require special disposal of soil, etc., during construction, dredging, etc.
- New water quality rules to design flood mitigation solutions.
- Find research around source of contaminants and whether natural ecosystems or containment/other existing technology is an effective filter.
- Communicate current knowledge of risk to residents through existing or new channels.
- Develop a decision-making and prioritization system to distribute limited funding to highest-priority projects.

Note: The first two bullets are partially difficult to read, so the transcription may not be exact.

Summary Discussion

ACTION PLAN (17)

Action: Develop a prioritization action framework to identify areas of highest risk based on environmental, social, and economic vulnerability

Partners and Their Role

- Indigenous / Tribal representatives
    - traditional eco knowledge
    - outreach to community
- Non-profits + Community orgs
    - engagement
    - local knowledge
- State agencies: DNR, MPCA, MDH
    - tech knowledge/modeling
    - permitting
    - funding

- Watershed districts
    - tech assistance/modeling
    - funding
    - infrastructure monitoring
    - project partners
- Operations & Maintenance dept.
    - cost data on maintenance
    - capabilities/constraints
- Neighboring cities
    - shared modeling
    - project partners
    - best practices
- Planning/econ development dept
    - knowledge of upcoming projects
    - econ impacts
    - community *connections*

Resources

- Existing data
    - demographic
    - soil infiltration
    - social vulnerability
    - asset registry
- Expert opinion
- FEMA
    - Flood plains
- Public input on community priorities

- Existing models
    - H&H
    - Water quality
    - climate
    - land use projections
- Documentation on observed or known problems
- Existing laws & regulations

Describe the action: How will you know you are successful? How will you authentically and equitably engage the community? How will you plan for unexpected events that require a shift in how this action is implemented?

Success =

- A framework that passes a stress test w/ community groups
- Framework applied to existing list of potential projects (& people like the results)
- Ability to translate into a CIP and timeline
- Partnerships lead to identifying funding
- better understanding of what is getting missed
- Alignment w/ O&M team

Engagement

- Websites, open houses, focus group
- Connecting through community or neighborhood organizations
- Pop ups at community events
- Focus conversations on level of service expectations and priorities
- Target areas highlighted in demographic data
- Multilingual resources

Planning & the unexpected

- Identify backup funding sources
- Identify critical links & back up plans (flaw analysis)

- Open minded to new criteria added to the framework
    - Routine evaluation to ensure alignment w/ priorities

Water and Climate Resources

MN Climate Action Framework

All Minnesotans are feeling the impacts of climate change. Warmer winters. Fewer days of safe ice on our lakes. Poor air quality that keeps us inside in the summer. Stronger storms that disrupt our daily lives. Minnesota must take bold action to protect our way of life. Now is our time to lead.

In 2026, Minnesota updated the Climate Action Framework, our plan to reduce climate pollution and prepare our communities for climate change. The 2026 framework builds on the state's original climate plan, published in 2022, which laid the foundation for more than 40 climate laws and programs and over $1 billion of state climate funding that the Legislature passed in 2023.

Climate Change in Minnesota Overview

Summary of historic trends and future projections.

MN-CLiMAT tool (Climate Mapping and Analysis Tool)

Interactive online tool that provides highly localized climate projections for Minnesota. Users can view climate projections down to the 4km/2.5mile scale across the state, visualizing how even specific towns will likely be impacted in the coming decades.

Water and Climate Resources

Metropolitan Council's Climate Action Framework

Metropolitan Council's Local Planning Handbook

Metropolitan Council's Climate page of the Local Planning Handbook

Local governments must plan for climate change as part of their comprehensive plan. This link has the tools the Metropolitan Council has created to assist with this and the minimum requirements.

Water and Climate Resources

Great Lakes Indian Fish and Wildlife Commission

The Tribal Climate Adaptation Menu, which was developed by a diverse group of collaborators representing tribal, intertribal, academic, and federal entities in Minnesota, Wisconsin, and Michigan, provides a framework to integrate Indigenous and traditional knowledge, culture, language and history into the climate adaptation planning process. Primarily developed for the use of indigenous communities, tribal natural resource agencies and their non-Indigenous partners, this Tribal Climate Adaptation Menu may be useful in bridging communication barriers for non-tribal persons or organizations interested in Indigenous approaches to climate adaptation and the needs and values of tribal communities.

MENTIMETER RESULTS

It's 2050. What's one headline (related to water) about the Twin Cities that you hope to read?

No headline. It's not news when things are working as it should
Water Still Available: Bandits from West Coast Driven Out of the Twin Cities
Water Quality continues to improve!!
Groundwater supplies replenished. Use is at sustainable rates.
Twin Cities leading the way on planning for flood resilience
Womb Water Initiative prioritizes clean water for the next generation.
Clean Groundwater Available For the next centyry
The Twin Cities area is the leader in water quality and sustainability for the USA.
Previously "permanent impairment," lake no longer too salty
A decade of normal precipition encourages water managers
Twin Cities Region Community Water Supplies Deemed Most Resilient in the Nation
The we have the cleanest drinking water in Minnesota!
From a public works prospective no headlines are the best. It means we are doing what we need to do to prov
Plenty of clean safe drinking water
World's biggest green/blue corridor complete in TC. Clean water route, fully publicly accessible
Metro Lakes cleanest ever measured
All waters are disable and swimmable.
Asian carp eradicated
Water quality is improving
Mermaids Found!
Water in Minnesota is no longer being polluted by chloride
There are no more impaired surface waters!