



Evolving technical and policy challenges for sustainable water supply in the Twin Cities Metro



Minnesota Ground Water Association | November 14, 2023 | Lanya Ross

Goal

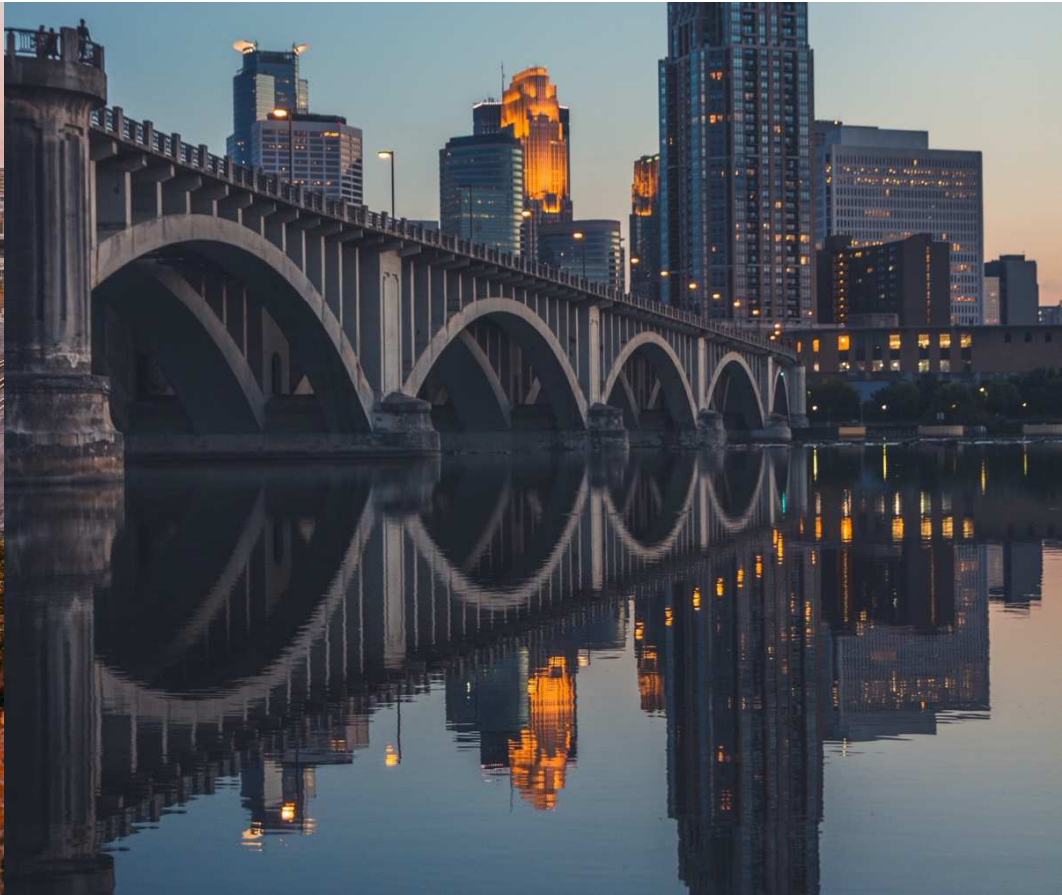
Conference attendees will leave knowing:

1. Met Council's role in regional planning and connections to water supply
2. Regional water planning and policy is shifting to more integrated water management
3. Met Council is wrestling with several issues in its policy work, related to regional trends
4. You can weigh in on regional water policy updates
5. Where to find some useful regional data to support your own work

Metropolitan Council

Our impact

Creating the foundation for a thriving region



Our vision

Clean water for future generations

Partner

Convene, engage, collaborate, and build solutions with our customers, stakeholders, and partners.



Plan

Assess conditions and identify long-term approaches and infrastructure investments.



Provide

Deliver critical services, tools, and resources.



No one community can do it alone

Every single person and community makes up the fabric and essence of this region.

- 7 counties
- 182 cities and townships
- More than 3 million residents
- Native people from 11 federally recognized Minnesota tribes and many other tribal communities
- Growing diversity representing wide-ranging racial and ethnic people, with about 300 languages spoken at home



A HISTORY OF WATER FOR A THRIVING REGION

SIGNIFICANT EVENTS

BIG SHIFTS

RESPONSES

1838

1950

1960

1970

1980

1990

2000

2010

2016

- PIGS EYE PARRANT
- POPULATION BOOM

NEWS
CHOLERA AND TYPHOID UNDER CONTROL

IF YOU ARE ANXIOUS TO COMMIT SUICIDE DRINK REIDENTIFY OF SWAMP WATER.

MINN BIRD HEALTH: MISSISSIPPI RIVER, A PUBLIC NUISANCE

CONCERNS ABOUT PUBLIC SANITATION DEVELOP

DUST BOWL

GROWTH

HIGHWAYS AND SUBURBS ARE BUILT- RAPID POPULATION

- REGIONAL SPRAWL
- SUBURBAN WASTE WATER PLANTS FAILING

- RIVERS ON FIRE BEST PRACTICES FAIL NATIONALLY
- CHEMICAL HEALTH RISKS IN DRINKING WATER

- NEWS SIGNIFICANT RISKS FROM CONTAMINATED GROUNDWATER
- NEWS DROUGHT!
- NEWS MAYFLY WATCH
- NEWS ALGAE BLOOM LAKE KEEPEE

FEDERAL FUNDING FOR SEWER SEPARATION AVAILABLE

- MINNESOTA WETLANDS DISAPPEARING
- SAC PROBLEMS

MN LEGISLATURE DIRECTS RESPONSE TO 1988 DROUGHT

SAVAGE FEN STATE NATURAL AREA

SAVAGE FEN IMPACTED BY GROUNDWATER WITHDRAWALS

- LARGE REGIONAL GROWTH PROJECTIONS
- WHITE BEAR LITIGATION

SAC CHALLENGED BY SMALL BUSINESS INTERESTS

- STAKE HOLDER LETTERS
- WASTEWATER SERVICE EXPANSION

FINALIST FOR 2015 NATURAL RESOURCES AWARD

2040 Thrive MSP

Federal Safe Drinking Water Act of 1974

- LAND FOR GRAIST MILLS BECOMES MINNEAPOLIS
- BECAME KNOWN AS "TWIN CITIES"

MINNEAPOLIS BUILDS FIRST COMBINED SEWER DISTRICT

3M BUILT

MINNEAPOLIS AND ST PAUL WATER WORKS

PRECURSER TO MET COUNCIL BEGINS MONITORING WATER QUALITY

LOCK AND DAM #1

METRO PLANT OPERATING

FIRST SOIL + WATER CONSERVATION DISTRICT

CONSTRUCTION METRO WASTE WATER PLANT

SUBURBS FIND AFFORDABLE NEW WATER

WASTE WATER TREATMENT DEGRADES

LOCAL DEBIT POOL

MINN PCA FORMED

METRO SEWER BOARD

EPA FORMS

FEDERAL CLEAN WATER ACT

SEWER AVAILABILITY CHARGE (SAC) CREATED

METRO CITIES FORMS

US-SAFE DRINKING WATER ACT

METRO SURFACE WATER MGMT ACT

MET COUNCIL WATER QUALITY MANAGEMENT PLAN

MINNESOTA + ST CROIX RIVERS ADDED TO WATER QUALITY MONITORING

MN LAND PLANNING ACT

MET COUNCIL WATER QUALITY MANAGEMENT DEVELOPMENT GUIDE

NURP CREATED BY BPM

LAKE MONITORING BEGINS

INDUSTRIAL PRE-TREATMENT PROGRAM CREATED

MN WETLAND CONSERVATION ACT

PHASE I STORMWATER

METRO ENERGY RECOVERY SYSTEM BUILT

COMBINED SEWER OVERFLOW TASK FORCE

ACCELERATED MSP 6.5 ST. PAUL COMBINED SEWER

US-SAFE DRINKING WATER ACT AMENDED

MN GROUNDWATER PROTECTION ACT

MET COUNCIL STREAM MONITORING BEGINS

METRO AREA SHORT TERM WATER SUPPLY PLAN

NATL POLLUTANT DISCHARGE PLUM SYSTEM (NPDES)

TWIN CITIES WATER SUPPLY: A PLAN FOR ACTION

NPDES EXPANDED

GRANT FUNDING FOR NONPOINT SOURCE RUNOFF

SOUTHWEST WATER SUPPLY WORK GROUP

2050 REGIONAL DEV. FRAMEWORK

MCECS SETS WORLD-WIDE STANDARD FOR SUSTAINABLE SOLIDS MANAGEMENT

MET COUNCIL WATER SUPPLY PLANNING

METRO AREA WATER SUPPLY ADV. COMM

WATER RESOURCES MANAGEMENT PLAN

MN VOTERS PASS THE CLEAN WATER LAND AND LEGACY AMENDMENT

BURNSVILLE - SAVAGE QUARRY WATER SOURCE SAVES SAVAGE FEN

FIRST REGULATING WATER WATER-SUPPLY PLAN

SMALL BUSINESSES ALLOWED TO DEFER SAC PAYMENTS

6 ACTIVE SUBREGIONAL WATER SUPPLY GROUPS

THRIVE MSP 2040 ADOPTED BY METROPOLITAN COUNCIL

COMMUNITY TECHNICAL WORK GROUP ADVISES ON MASTER PLAN UPDATE

ONE WATERSHED, ONE PLAN.

EAST BETHEL PLANT GOES LIVE

2040 WATER RESOURCES POLICY PLAN

MET COUNCIL JOINS SUSTAINABLE GROWTH COALITION

EMPIRE PLANT RECOGNIZED AS A ROLE MODEL

SANTS STADIUM / TRANSIT RECOGNIZED FOR STORM WATER REUSE

WATER SUPPLY TECHNICAL ADVISORY COMMITTEE FORMED

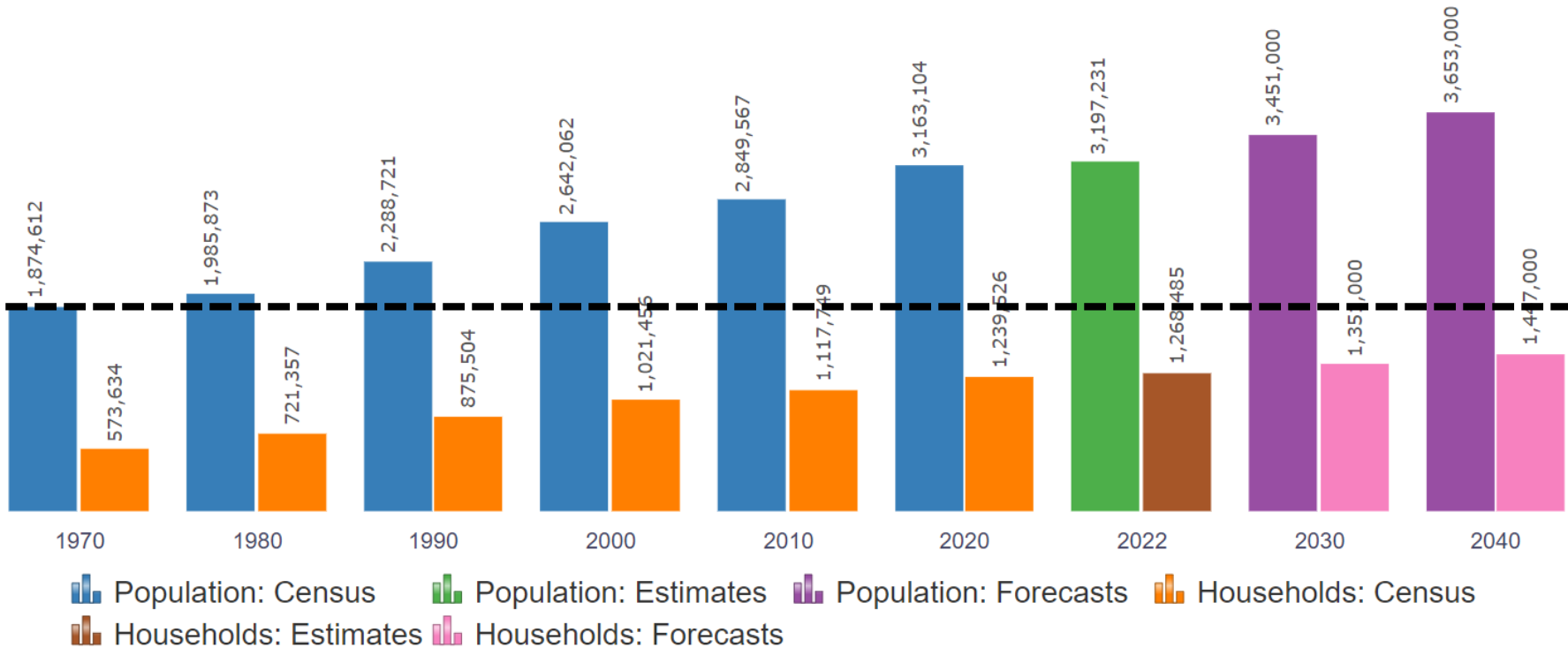
TARGETED STORMWATER MANAGEMENT GRANT PROGRAM 01-14

- PROTECTING PUBLIC HEALTH
- PROTECTING PUBLIC HEALTH + THE ENVIRONMENT
- PRESERVING & IMPROVING ENVIRONMENTAL ECOSYSTEMS HEALTH
- INTEGRATING ALL 3 FOR LIVABLE SUSTAINABLE CITIES



The region's population has grown

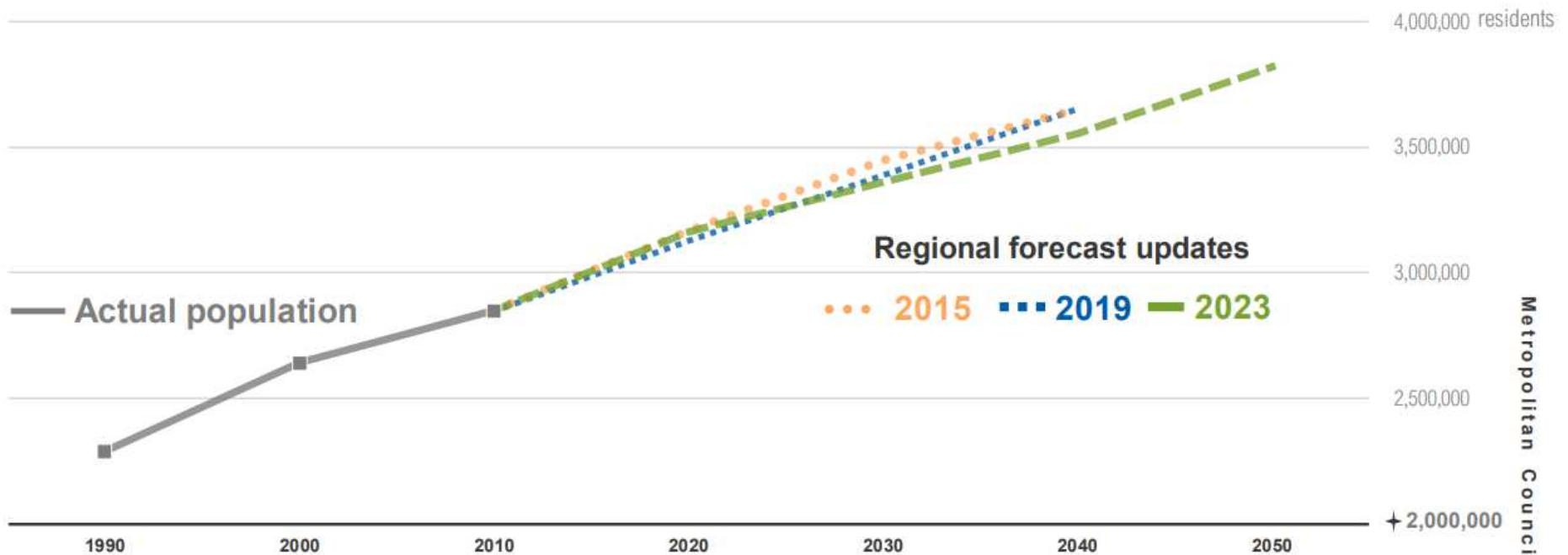
Explore more on the Met Council website at <https://stats.metc.state.mn.us/profile/>



Further growth is expected, though it may slow

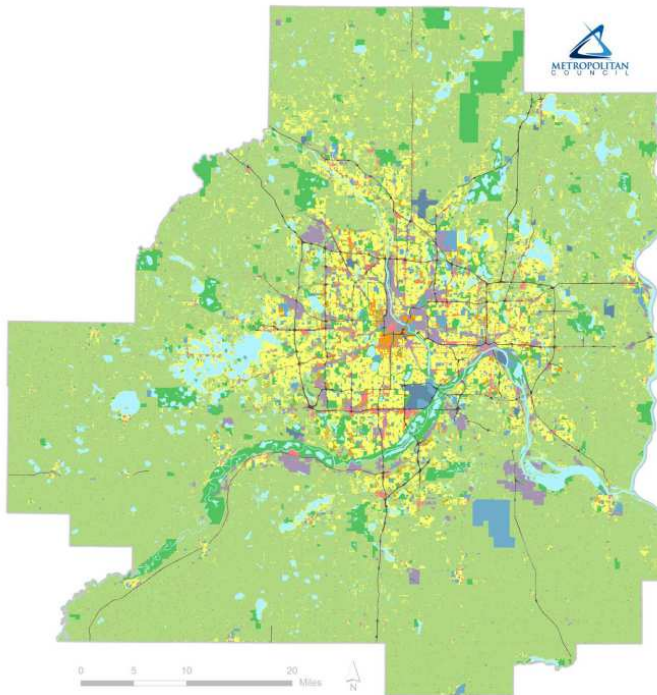
2023 updated forecasts: +705,000 people, down from +802,000 in 2015

<https://metro council.org/Council-Meetings/Committees/Committee-of-the-Whole/2023/04-05-23/4-5-23-Regional-Forecast-PPT.aspx>

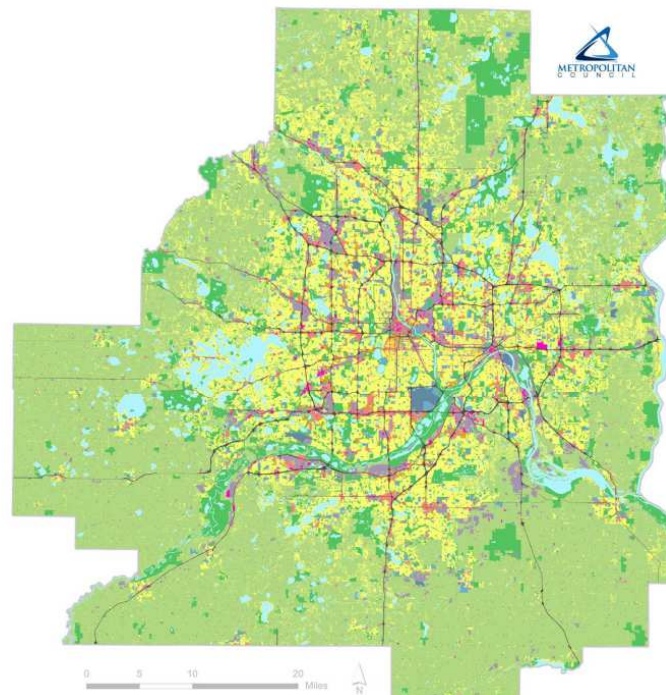


The region's land use has changed

[https://metro council.org/getattachment/Council-Meetings/Committees/Environment-Committee/2023/July-25,-2023/Agenda/Water-Policy-Research-Project-\(1\).pdf.aspx?lang=en-US](https://metro council.org/getattachment/Council-Meetings/Committees/Environment-Committee/2023/July-25,-2023/Agenda/Water-Policy-Research-Project-(1).pdf.aspx?lang=en-US)



1984 Land Use

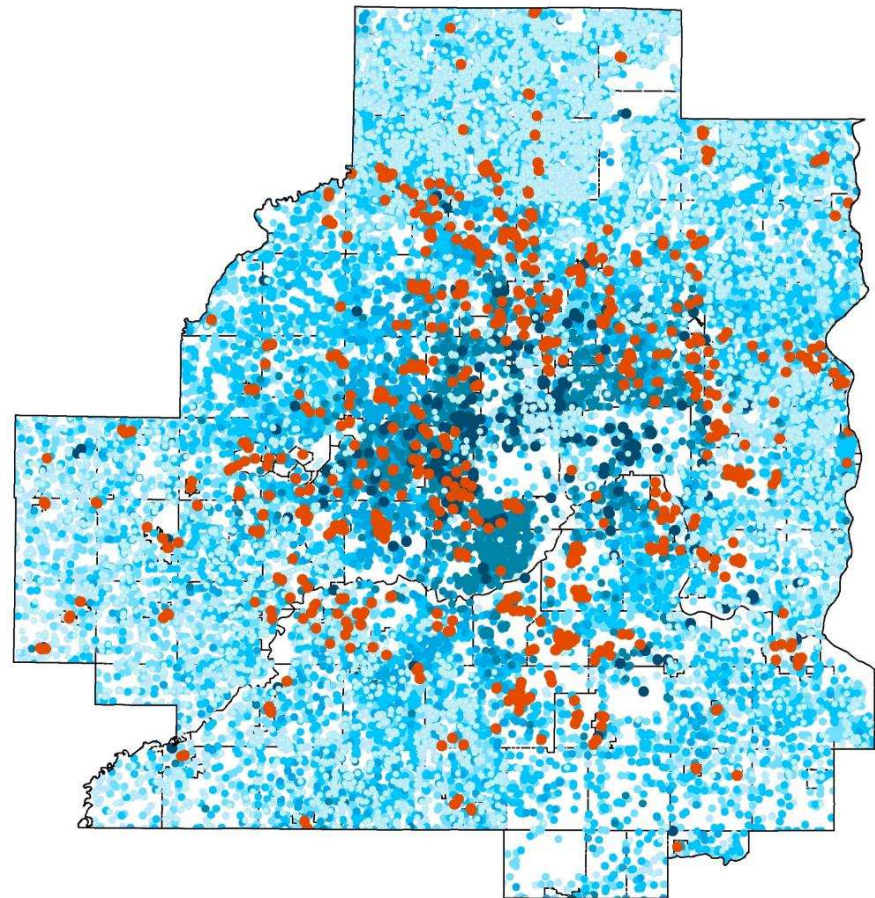


2020 Land Use

| color on map | 1984 category label | 2020 category label |
|--------------|--|--|
| | Farmstead | Farmstead |
| | Single family residential | Seasonal/vacation Single family detached Manufactured housing park Single family attached |
| | Multi-family residential | Multi-family |
| | Commercial | Retail and other commercial Office |
| | | Mixed use residential Mixed use industrial Mixed use commercial and other |
| | Industrial Industrial parks not developed | Industrial and utility Extractive |
| | Public/semi-public Public/semi-public not developed | Institutional |
| | Parks & recreation | Park, recreational, or preserve Golf course |
| | Major four lane highways | Major highway |
| | | Railway |
| | Airports | Airport |
| | Vacant/agricultural | Agricultural Undeveloped |
| | Open water bodies | Water |

Wells in the region (drilled from 1940-2010)

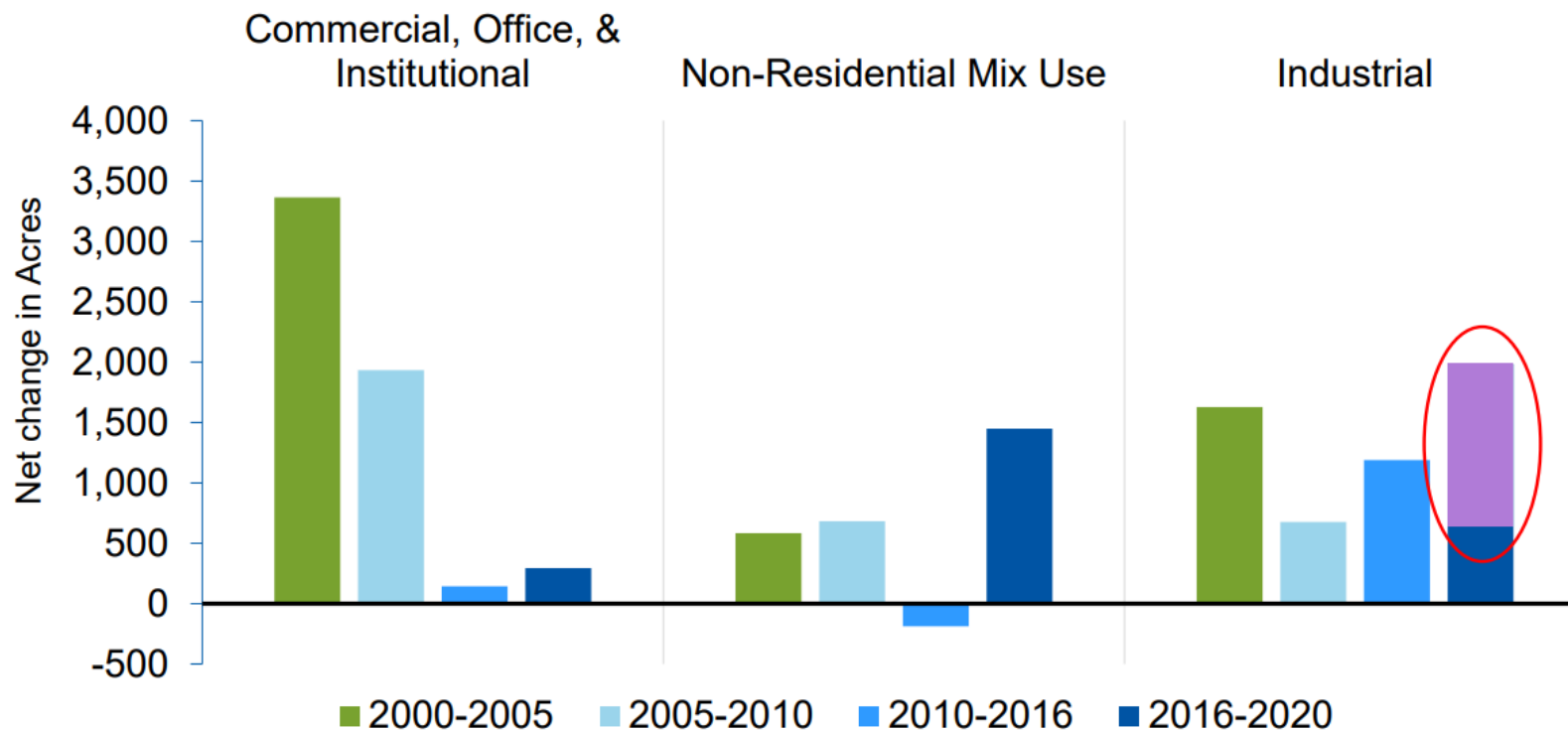
- Public Community (800)
- Private (60,000)
Darker blue = older well



1940-2010 data reported for 7-County Metro in 2013 Minnesota County Well Index

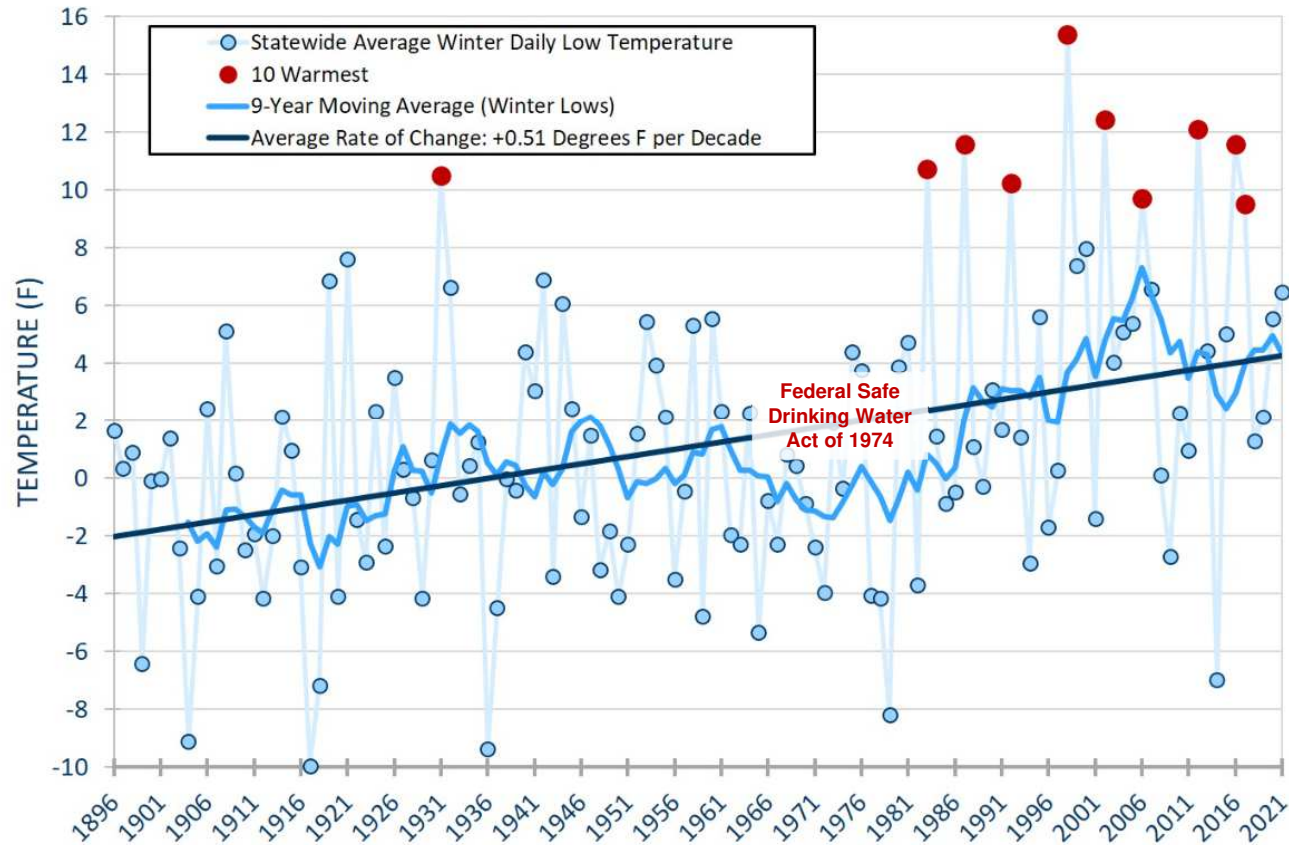
Non-residential development suggests growing investment in solar farms

Learn more in a 2021 presentation on the Met Council website at <https://metro council.org/getdoc/a2c900bd-cfaa-4c95-93f4-7ed71ac21a67/Agenda.aspx>



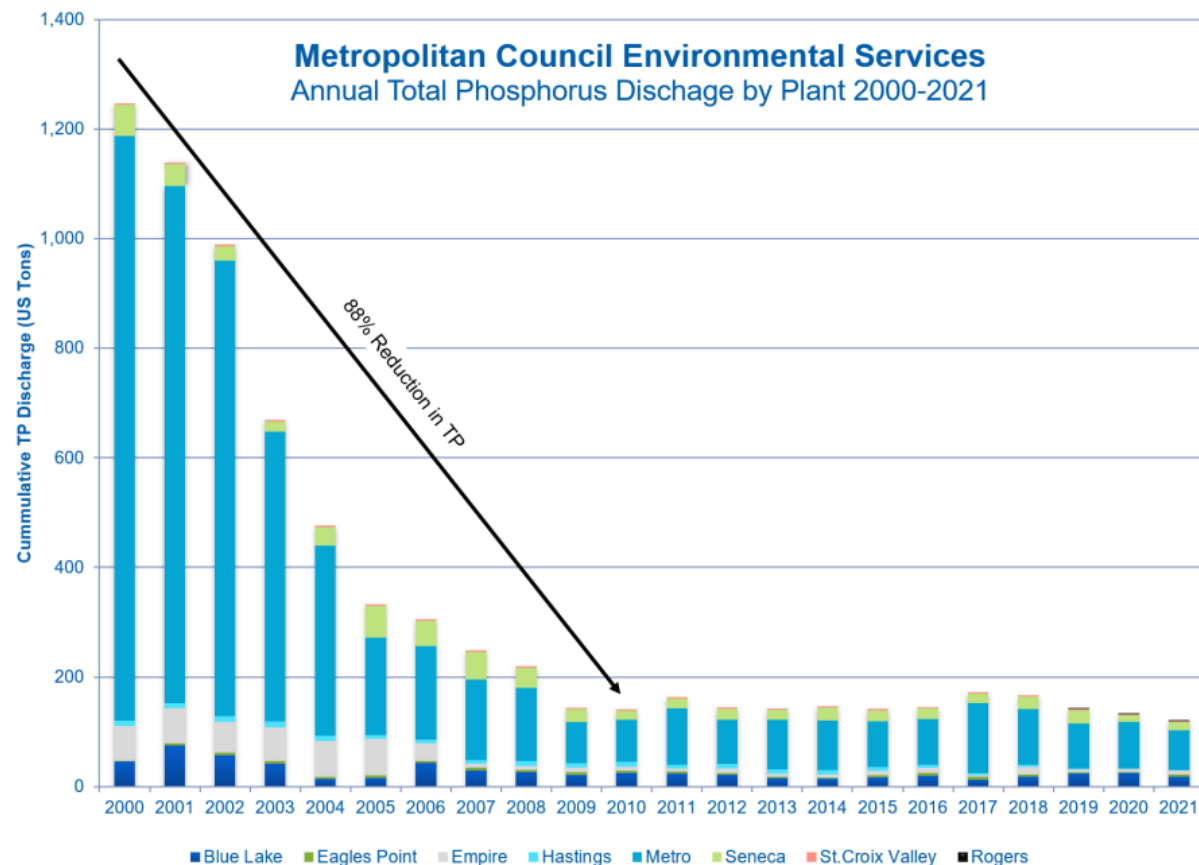
Climate change is about more than precipitation

Minnesota Average Winter Daily Minimum Temperatures (December through February, 1896-2021)



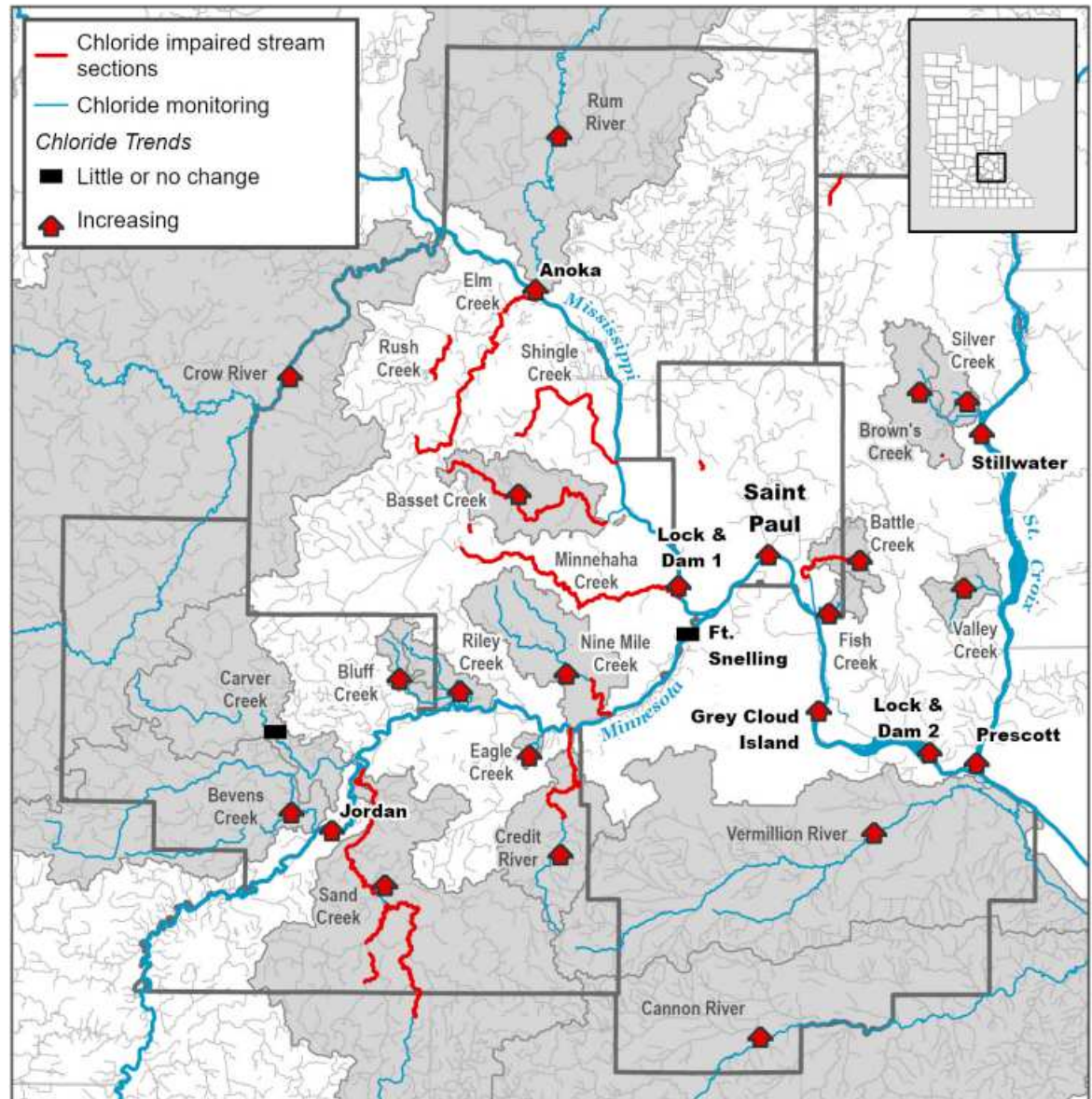
Investments in treatment infrastructure have increased, improving some water quality

Learn more about water quality in the metro area in a water policy research paper at <https://metro council.org/Wastewater-Water/Planning/2050-Water-Resources-Policy-Plan/Research/Water-Quality/Water-Quality-Research-Paper.aspx>



Chloride levels have increased in Twin Cities water bodies

Learn more in the factsheet at <https://metrocouncil.org/Wastewater-Water/Services/Water-Quality-Management/Stream-Monitoring-Assessment/Regional-Chloride-Fact-Sheet.aspx>

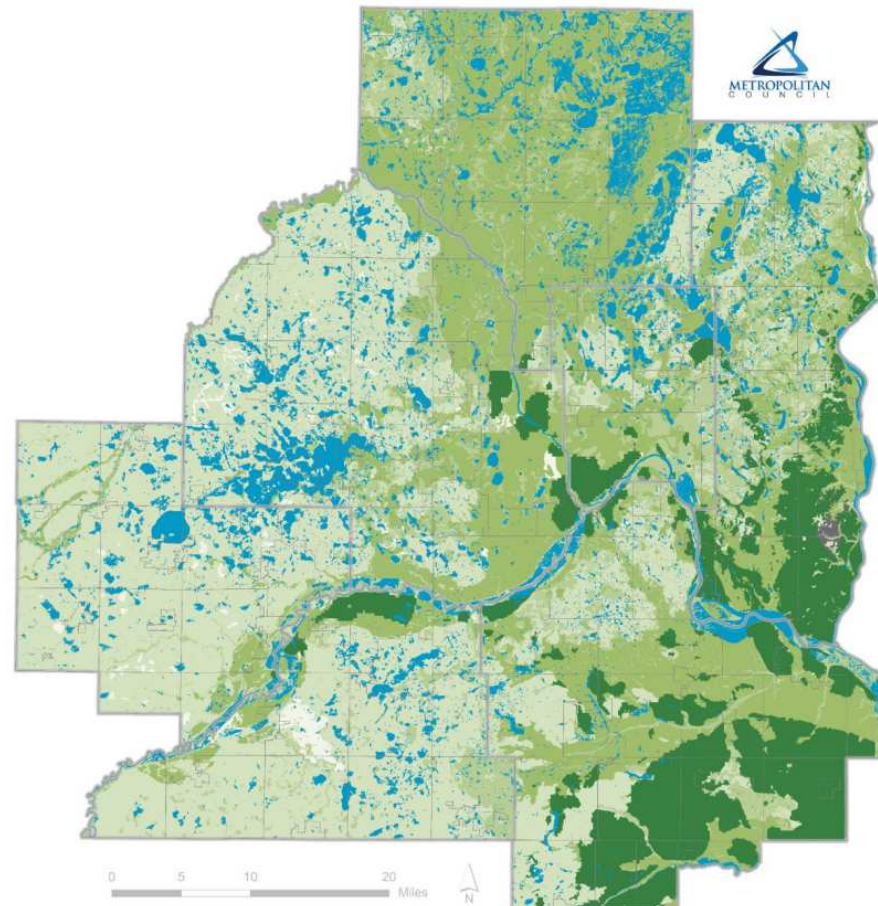


Some parts of the region are more vulnerable to contamination than others

Soil type, depth to water, and deeper bedrock conditions vary across the region, making some areas more sensitive to pollution.

Land use planners and best management practice guidance should share this information with developers or other project teams to mitigate source water risks.

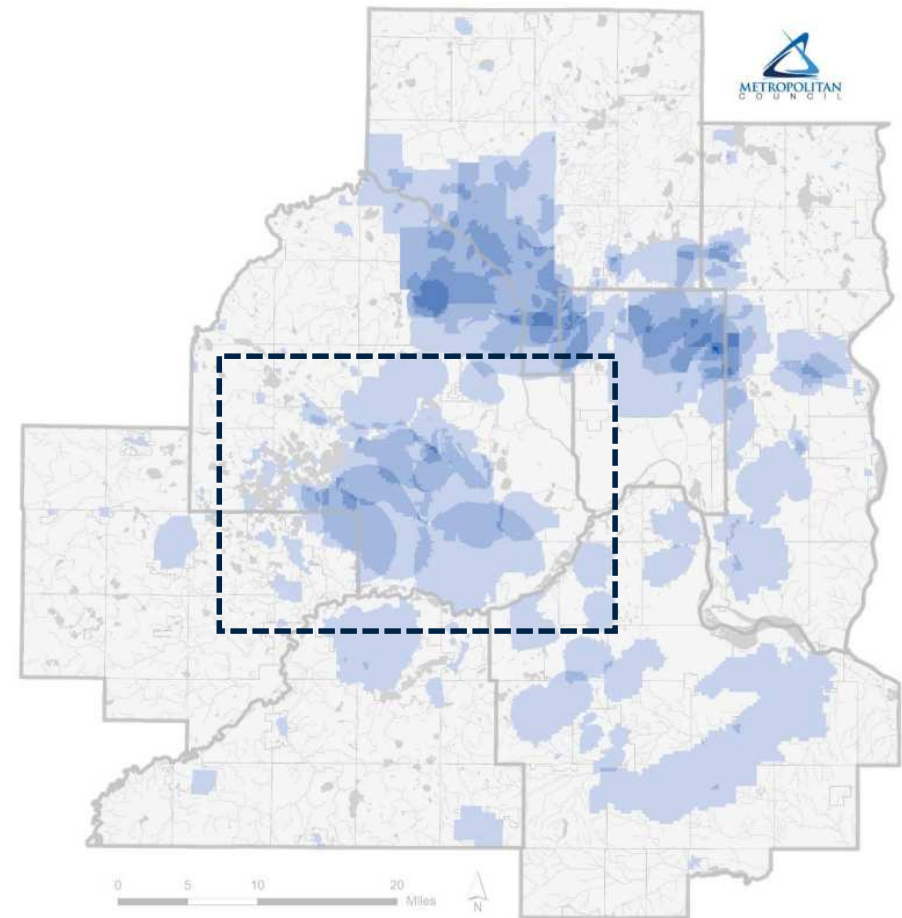
This information is also useful for prioritizing pollution prevention or remediation programs.



Source water protection areas in the metro region, highlighting overlaps

- No overlap; only one DWSMA in this area
- Two DWSMAs overlap in this area
- Three DWSMAs overlap in this area
- Four DWSMAs overlap in this area
- Five DWSMAs overlap in this area

Learn more about protecting source water areas in the metro area in a water policy research paper at <https://metro council.org/Wastewater-Water/Planning/2050-Water-Resources-Policy-Plan/Research/Protecting-Source-Water-Areas/Protecting-Source-Water-Areas-Research-Paper.aspx>



Please weigh in on regional water policy discussions

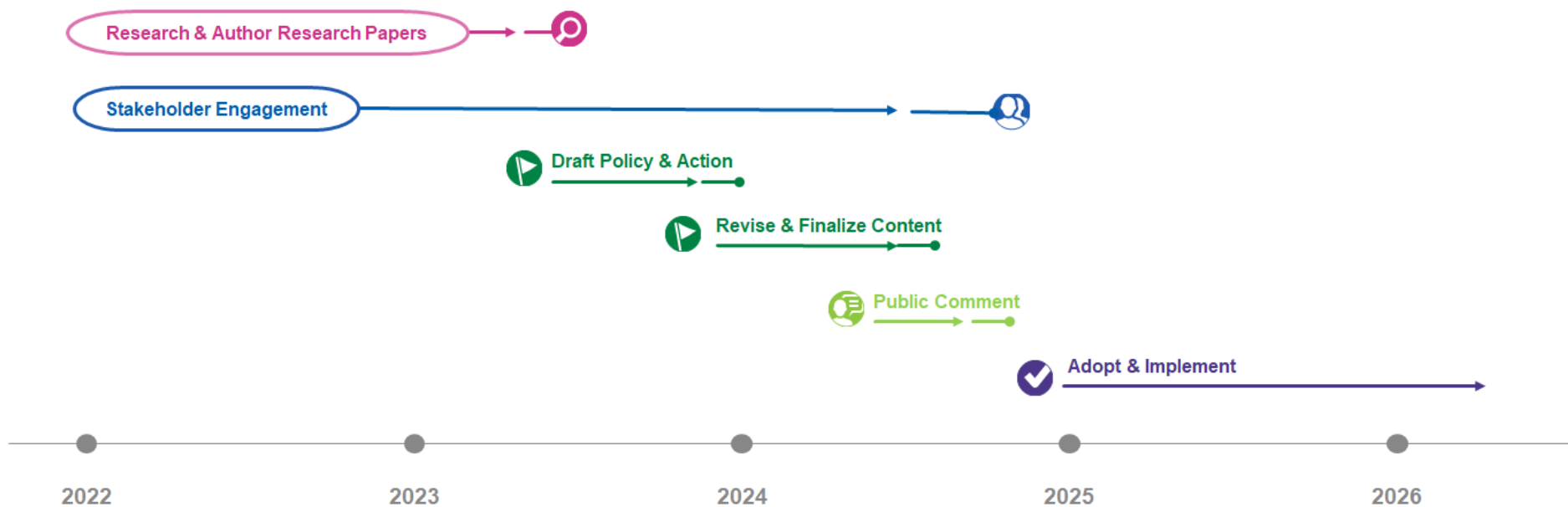
To address these and other concerns, Met Council is exploring regional policies and strategies related to:

1. Water Reuse
2. Water and Climate
3. Rural Water Concerns
4. Wastewater Planning and Service Considerations
5. Water Quality
6. Protecting Source Water Areas

Visit the Council's Water Policy Plan Research web page to learn more and provide feedback:

<https://metrocouncil.org/Wastewater-Water/Planning/2050-Water-Resources-Policy-Plan/Research.aspx>

Timeline to update regional water policies through 2050



Planning for the future...



2050 Forecasts

How the regions' population, households and jobs will change

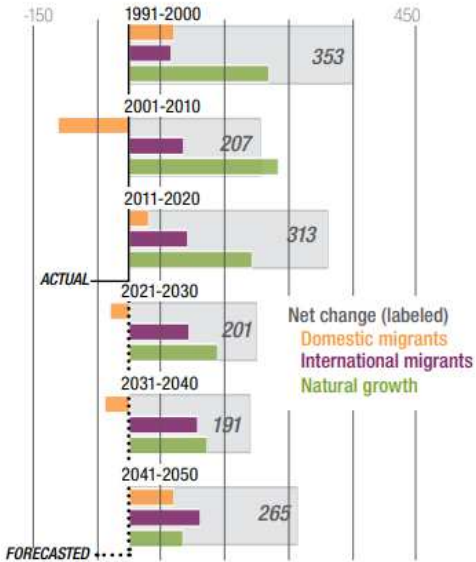
Access long-range forecast data on the Met Council website at <https://metro council.org/Data-and-Maps/Research-and-Data/Thrive-2040-Forecasts.aspx>

2023 Update - Quick stats

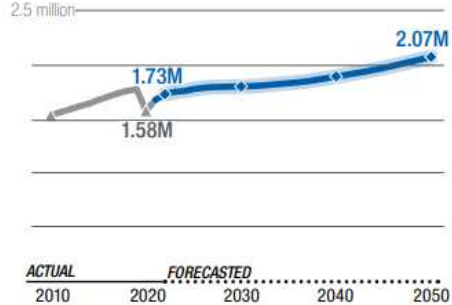
| | 2010 | 2020 | 2030 | 2040 | 2050 |
|------------|-----------|-----------|-----------|-----------|-----------|
| Population | 2,850,00 | 3,163,000 | 3,364,000 | 3,555,000 | 3,820,000 |
| Employment | 1,541,000 | 1,581,000 | 1,802,000 | 1,895,000 | 2,074,000 |

Example information from 2023 forecast update

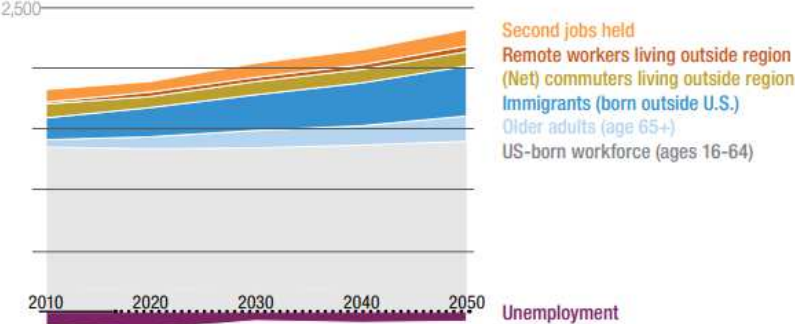
Sources of population change by decade (000s)



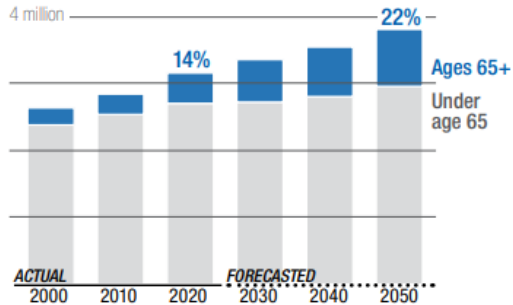
Number of actual and forecasted jobs



Sources of workforce change (000s)



A. Population growth by under or older than age 65+



Metropolitan Region Water Supply Planning Atlas



A summary of water supply information to support a shared understanding of water supply challenges and identifying collaborative approaches

<https://metro council.metctest.state.mn.us/Wastewater-Water/Planning/Water-Supply-Planning/Basics/Atlas.aspx>

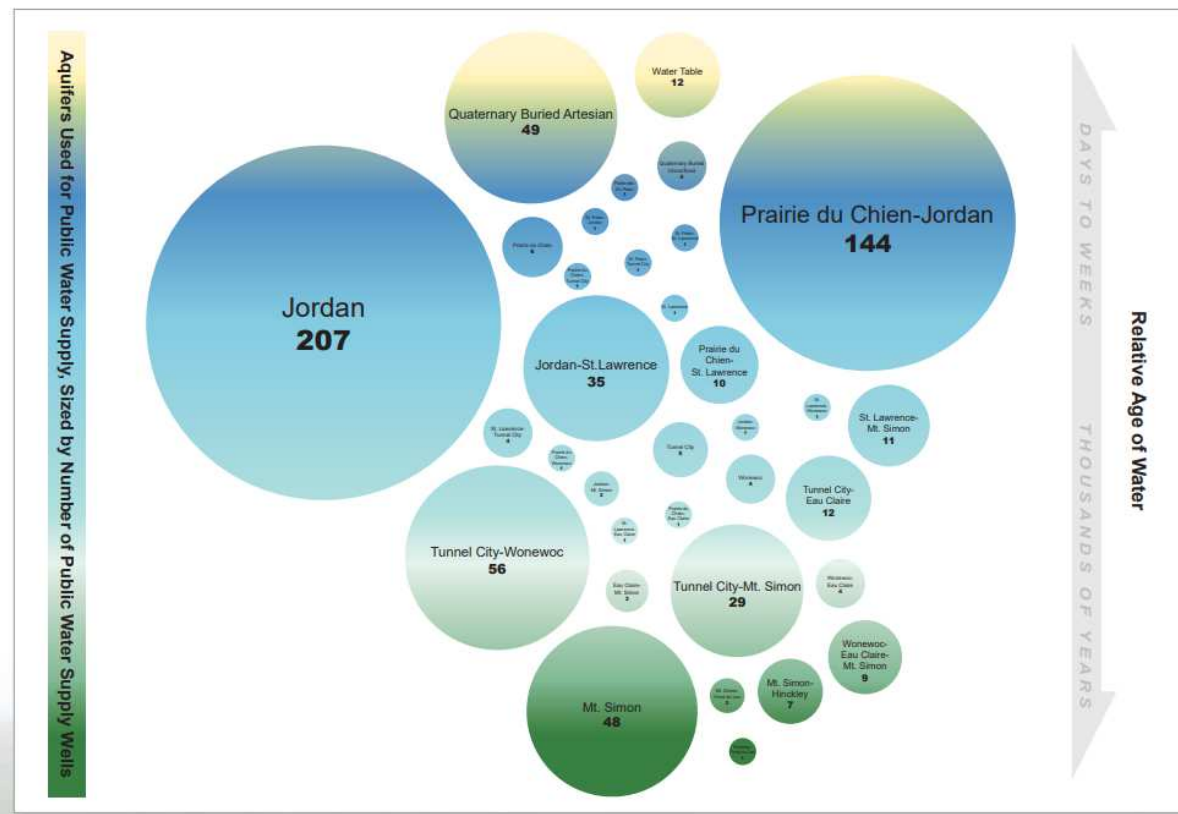
Water Supply Planning Atlas for the Twin Cities Metropolitan Area (PDF)

- + Central
- + Northeast
- + East
- + Southeast
- + Southwest
- + West
- + Northwest



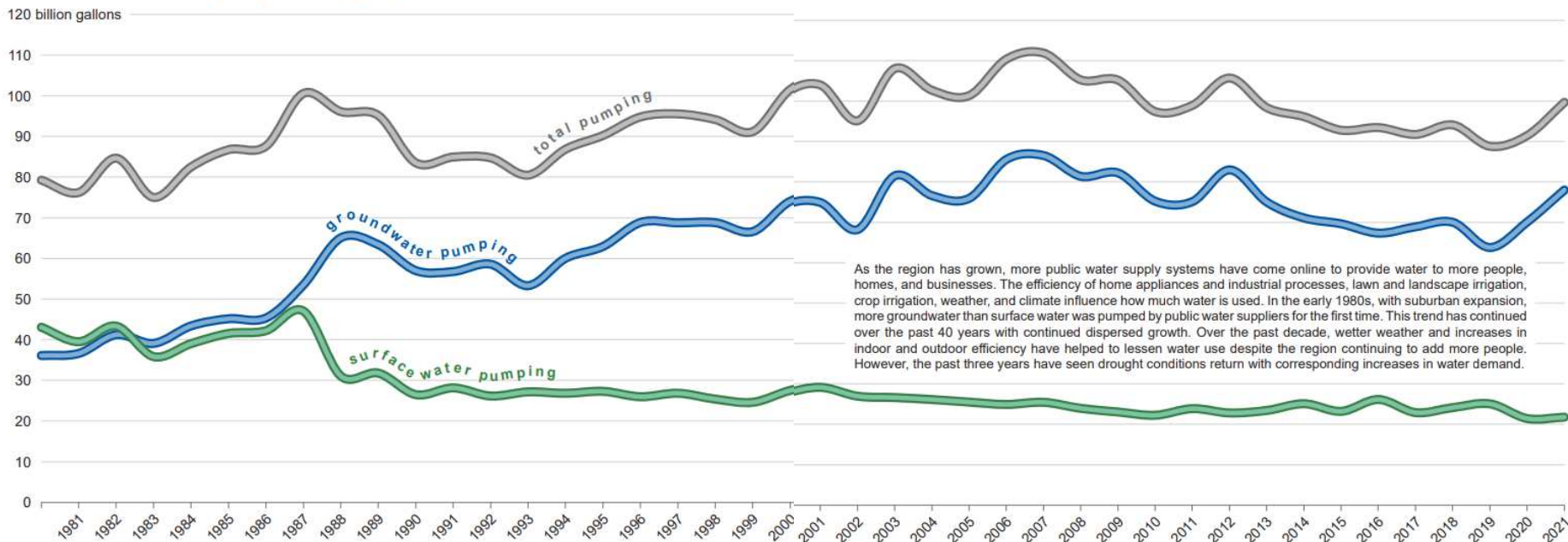
Example information in the Water Supply Planning Atlas

Number of Public Water Supply Wells by Aquifer



Example information in the Water Supply Planning Atlas

Annual Water Pumped by Public Suppliers, in Billions of Gallons



As the region has grown, more public water supply systems have come online to provide water to more people, homes, and businesses. The efficiency of home appliances and industrial processes, lawn and landscape irrigation, crop irrigation, weather, and climate influence how much water is used. In the early 1980s, with suburban expansion, more groundwater than surface water was pumped by public water suppliers for the first time. This trend has continued over the past 40 years with continued dispersed growth. Over the past decade, wetter weather and increases in indoor and outdoor efficiency have helped to lessen water use despite the region continuing to add more people. However, the past three years have seen drought conditions return with corresponding increases in water demand.



Updated Priority Waters List



Waters the Met Council has determined to be regionally significant based on their uses and benefits

The Met Council will prioritize dedicating resources to these waters to help maintain and improve their valued qualities for present and future generations.

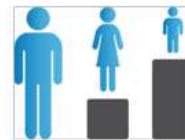
<https://metrocouncil.org/Wastewater-Water/Planning/Water-Resources-Management/Priority-Waters-List.aspx>

| Lake Name | DNR Lake ID | Counties | Area (acres) | Qualifying Reason | | | |
|------------|-------------|---------------------------|--------------|-----------------------|----------------------------------|---------------------------|------------------------|
| | | | | Drinking Water Source | Top Recreation and Tourism Score | Top Healthy Habitat Score | Top Well-Rounded Score |
| Amelia | 02001400 | Anoka | 156.4 | | | ● | |
| Ann | 10001200 | Carver | 115.7 | | ● | | ● |
| Auburn | 10004400 | Carver | 290.6 | | ● | | |
| Bald Eagle | 62000200 | Anoka, Ramsey, Washington | 1,049.1 | ● | ● | | |
| Baldwin | 02001300 | Anoka | 181.6 | | | ● | ● |

Priority Waters List: Use / benefit categories



Drinking Water Protection



Equity



Recreation and Tourism



Industry and Utility



Healthy Habitat



Science and Education



Tranquil Connection

Metro water supply perspectives over time

“The water supply of the Minneapolis-St. Paul area is adequate to satisfy present requirements and requirements for many years to come if the area continues to develop at about the present rate.”

1953

“...we must be prepared for water shortage with a well thought-out plan in advance of problems occurring rather than in the midst of an emotionally stressed situation. We can no longer be complacent...”

1990

“...the region's water supplies are not limitless, and human activities can affect the quality and quantity of our water.”

2015

“...seasonal variations in water use have become more pronounced. This trend will probably continue, and greater differences between summer and winter withdrawals are likely.”

1983

“Residents value the protection of wetlands, lakes and streams and hold a deep commitment to ensuring that plenty of water will be available to future generations.”

2010

What conclusions do we want those in the future to tap into from our planning today?





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