Protecting Minnesota's Waters:

Assessing Water Supplies and Biennial Priorities

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Environmental Quality Board

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Water Affects Minnesota's…

- Economic development
- Agriculture
- Water quality
- Wildlife
- Recreation
- Quality of life

Environmental Quality Board

- 9 Commissioners
- 5 citizen members
- Governor's representative

- Administration
- Agriculture
- Commerce
- Employment & Economic Development
- Health
- Natural Resources
- Pollution Control
- Transportation
- Water & Soil Resources

EQB Mission

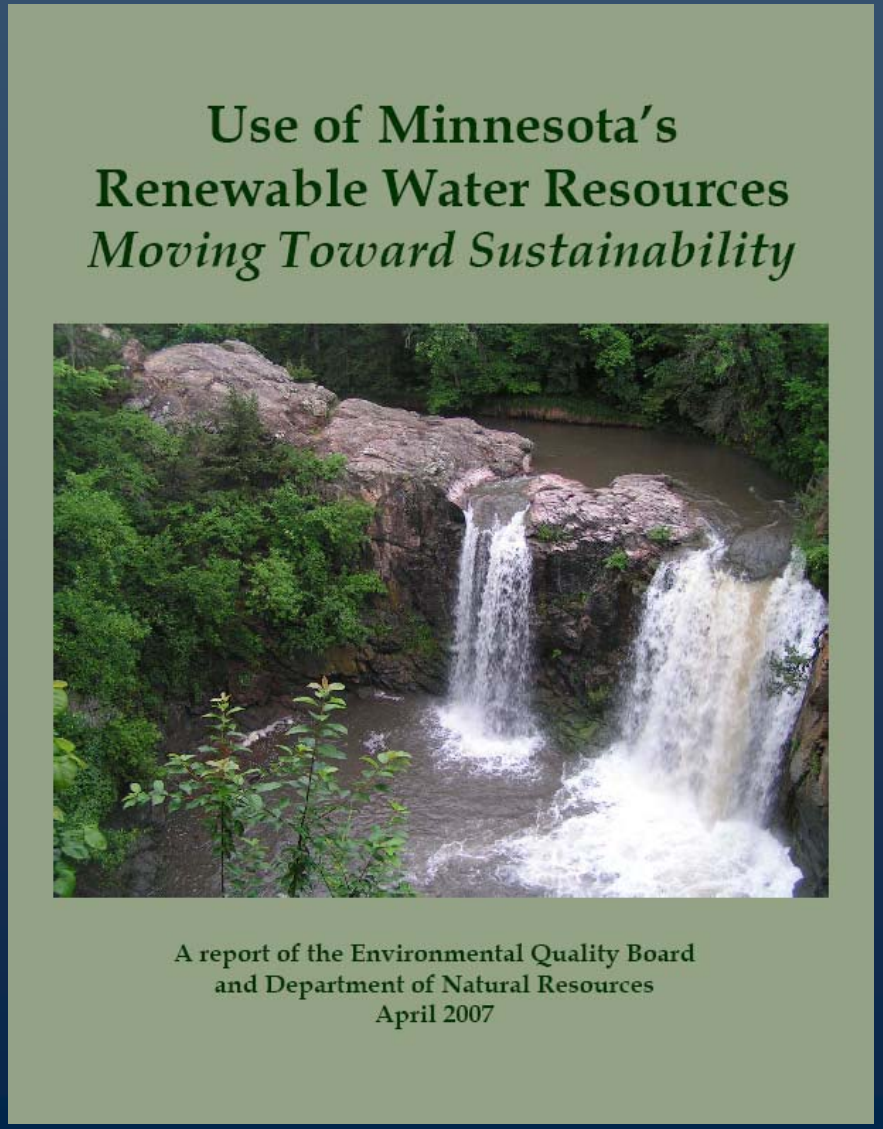
- The board develops policy, creates long-range plans and reviews proposed projects that would significantly influence Minnesota's environment and development

Presentation Overview

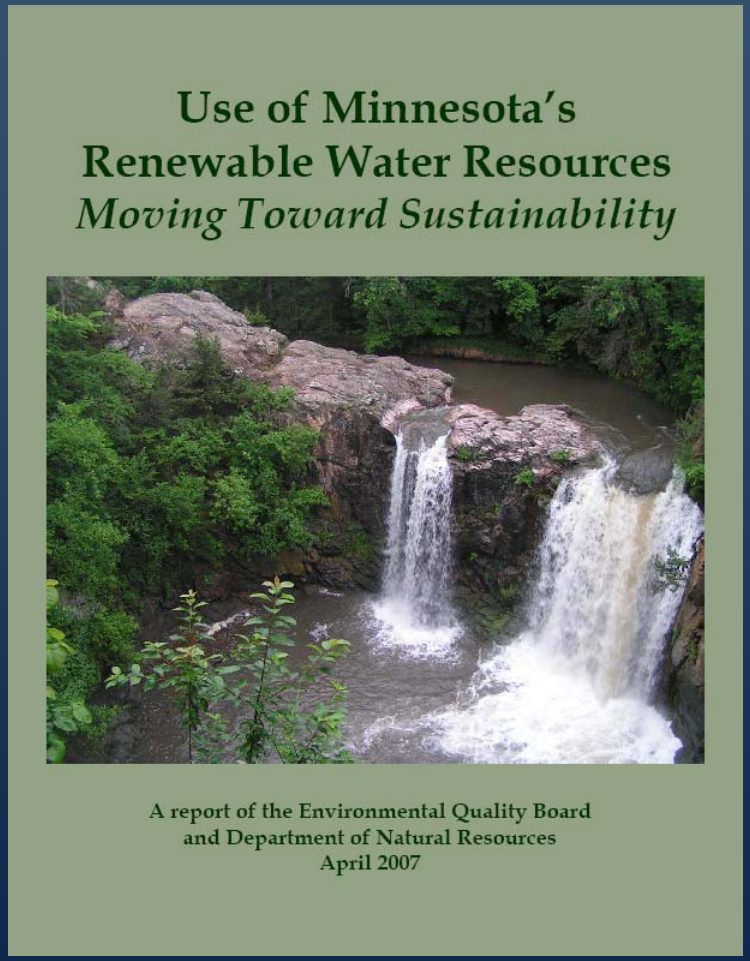
- **Water supply & demand assessment**
  - ***Use of Minnesota's Renewable Water Resources: Moving Toward Sustainability***
- **Biennial water priorities**
  - ***Protecting Minnesota's Waters: Priorities for the 2008-2009 Biennium***

Water Supply & Demand Assessment

- ***Minnesota Statutes***
  - **Section 103A.43 (c)**
  - ***The EQB shall work with DNR to coordinate an assessment and analysis of the quantity of surface and ground water in the state and the availability of water to meet the state's needs.***
  - **Statewide assessment**



Project Partners



- DNR
- USGS
- U of M
- Met Council
- EPRI
- MDH
- MGS

Project Overview

- Need
- Methods
  - Water demand
  - Water supply
- Findings
- Recommendations

Sustainability & Water

- **Protecting the renewable resource:**

  the quantity of water that could be removed from the system on a renewable basis without drawing down the resource

Project Need

- Understand how Minnesota is doing
- Define unknowns in quantity & use
- Recognize the importance of water in planning for growth
- Highlighted by drought of 2006 & 2007

Project Approach

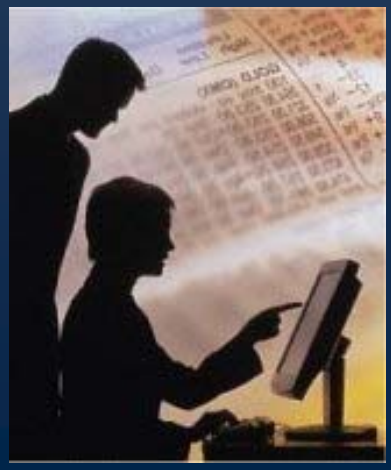
- County level
- Water use - 2005
- Future demand - 2030
- Quantify sustainable supply
- Compare supply & demand

County Supply

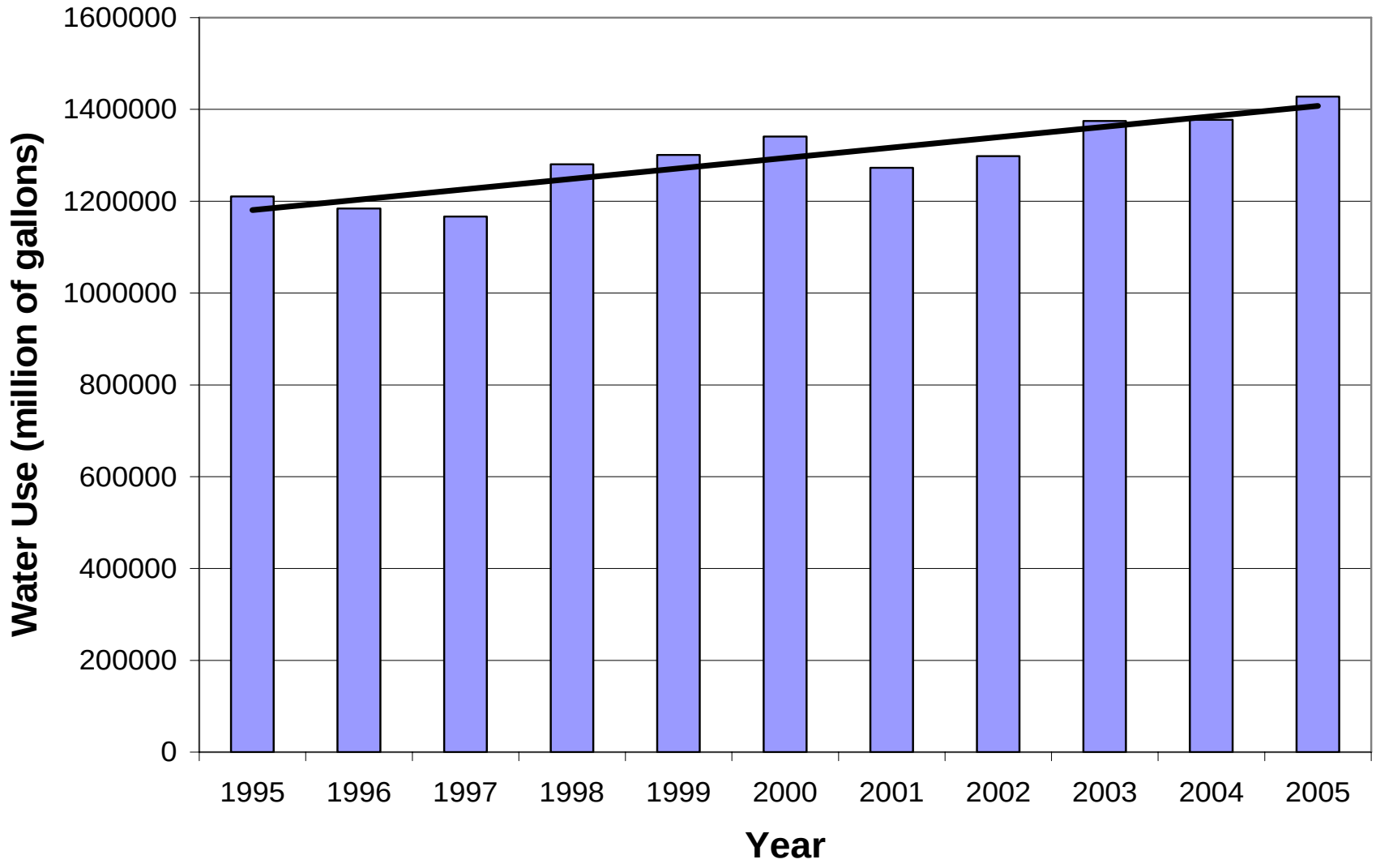
County Demand

Current Water Use: Permitted

- Focused on 1995-2005
- Summarized DNR permit database
- Compiled population by county
- Calculated per capita usage



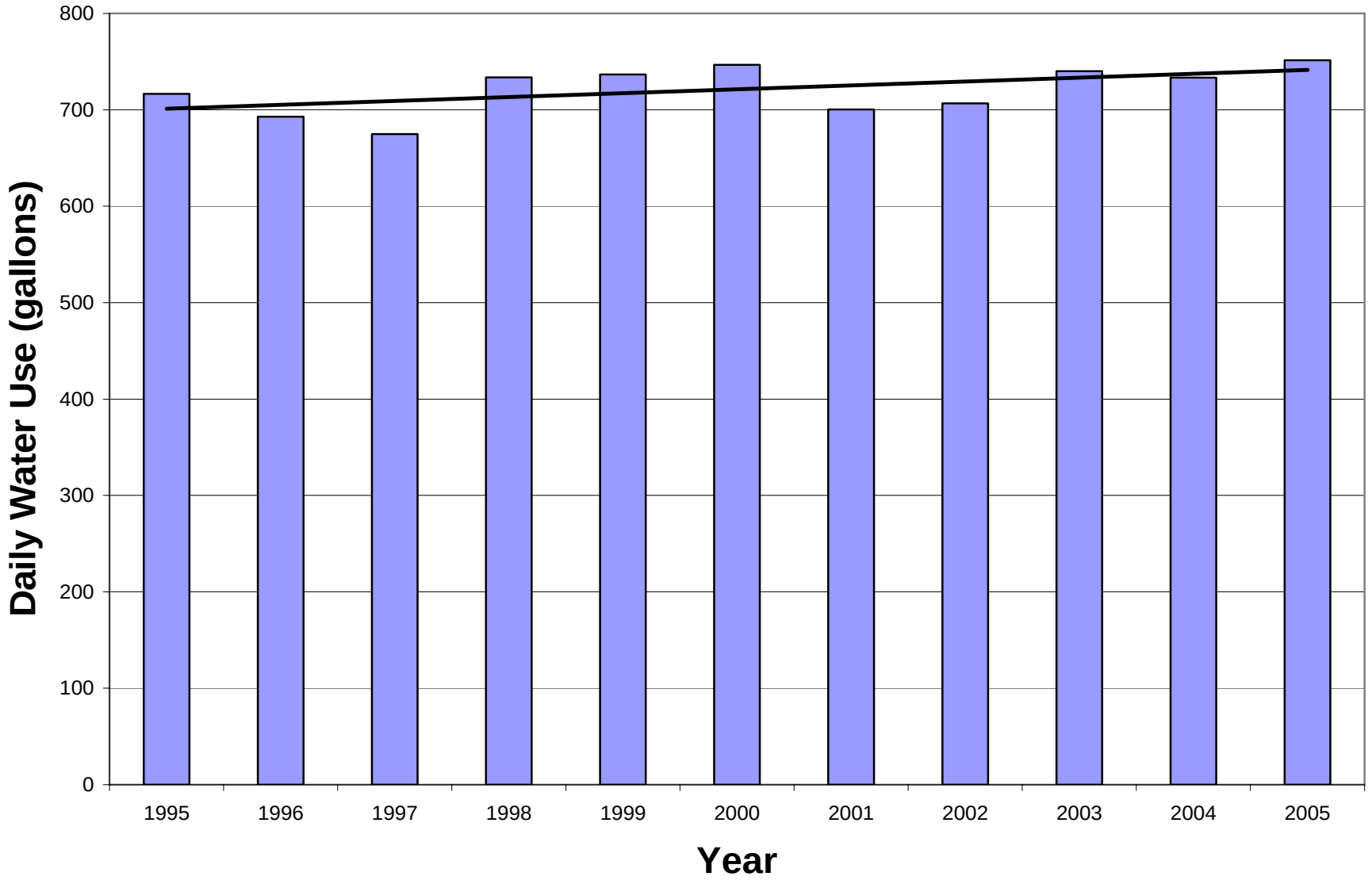
Minnesota Annual Water Use



Water Use Trends 1995-2005

- 12% increase in population
- 18% increase in total water use
- 6% increase in per capita use

Daily Per Capita Water Use



Current Water Use: "Unpermitted"

- Established population on private wells
- Used MDH & census data to calculate unpermitted use
- Added unpermitted & permitted to establish base use

  Per Capita 1995-2005 = Permitted + Unpermitted

2005 Gross Water Use

- Calculated baseline

2005 Gross Use = Per Capita 1995-2005 x Population 2005

- Reduce impact of climatic variations

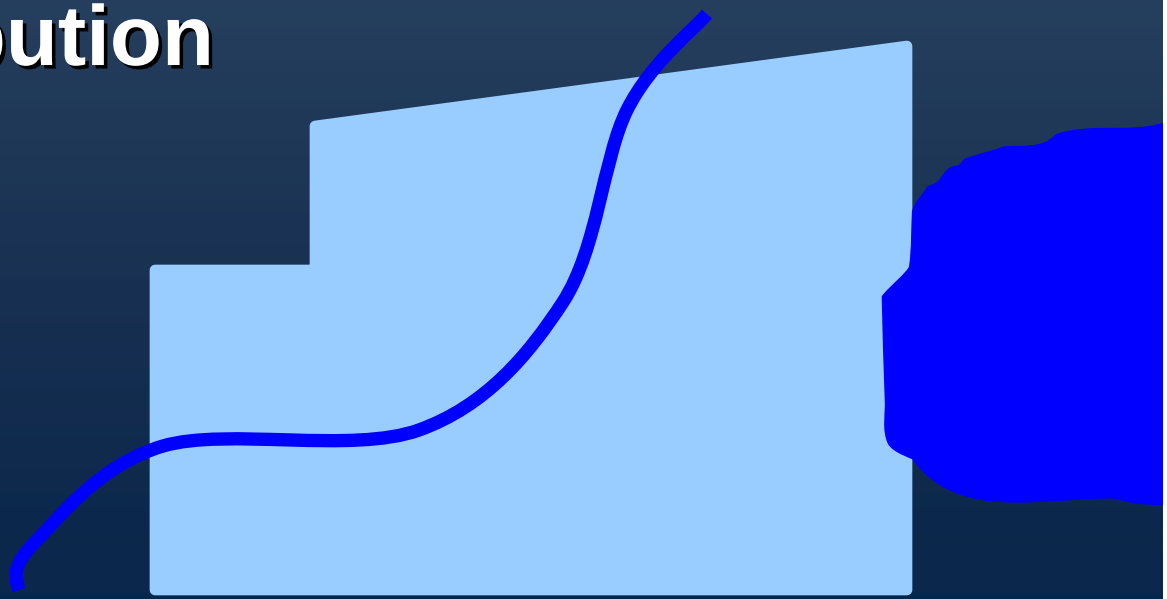
2005 Net Water Use

- Evaluated all 1,600 surface water permit
- Removed imported water & non-consumptive use

Imported Waters

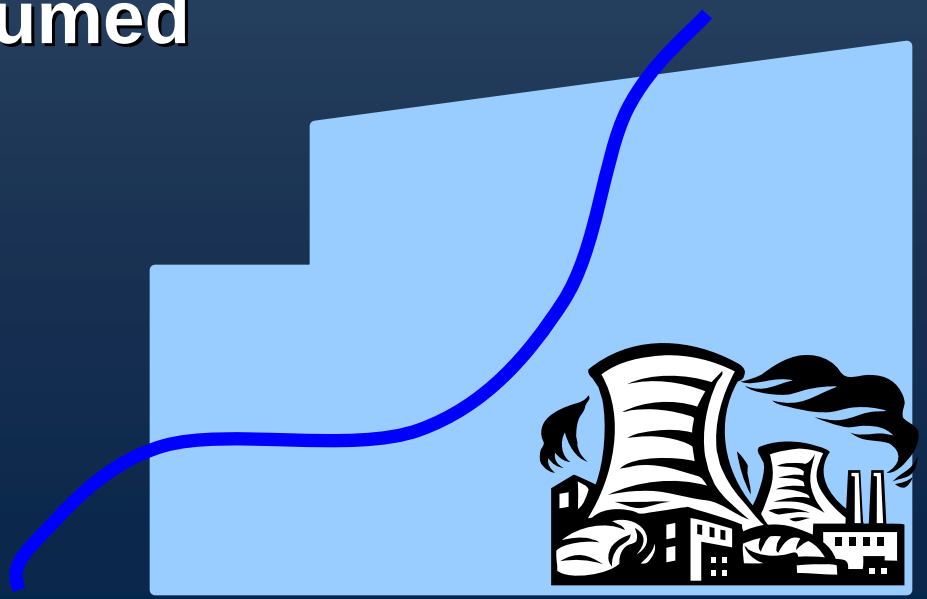
- Surface water
- Originate outside of county
- Should be removed in analysis
- Treated as ratio of upstream to in-county contribution

Examples:
Mississippi River
Lake Superior



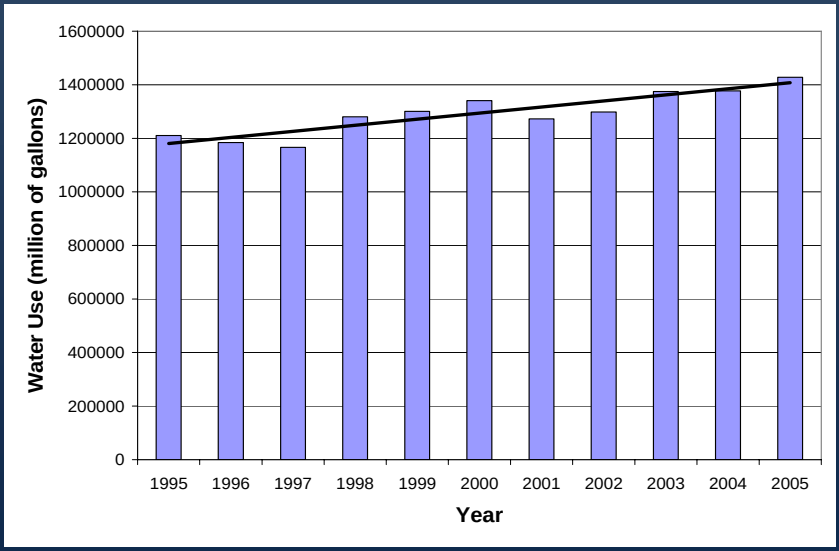
Non-Consumptive Use

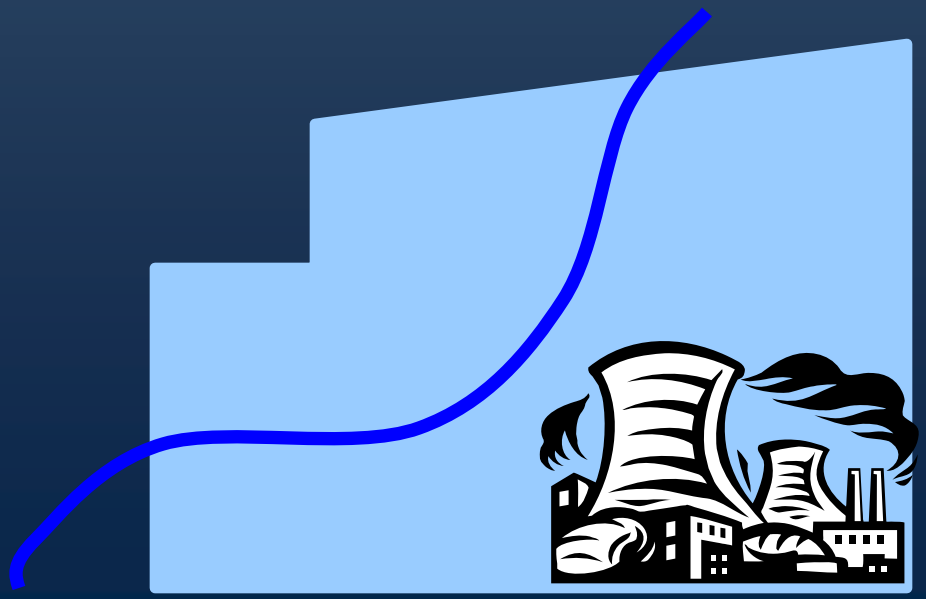
- Some industries return much of their water to surface water source
- An example is steam power cooling, where only 2% is consumed
- Ground water is considered consumed



2005 Net Water Use

2005 Net Water Use = 2005 Gross Use – Imported Waters – Non-consumptive Use





Future Water Use: Estimate 2030 Demand

- Assumed per capita use is constant to 2030
  - Increase
  - Constant
  - Decrease

- Estimated 2030 population from State Demographer & Met Council

2030 Gross Water Use

2030 Gross Use = Per Capita 1995-2005 x Population 2030

2030 Net Water Use

2030 Net Use = 2030 Gross – Imported – Non-consumptive

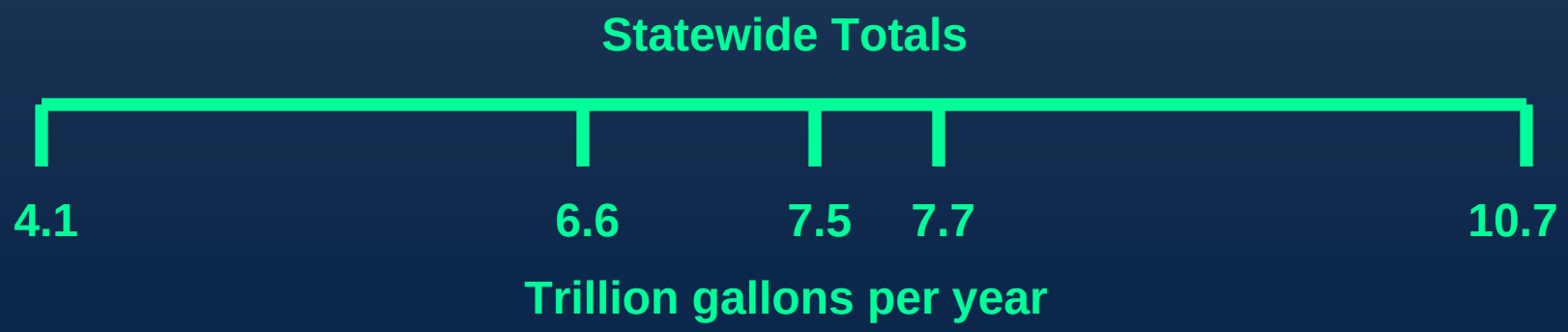
Quantifying Renewable Resources

- **Challenge!**
- **Published supply methods were used**
- **Surrogates for sustainable supply**
- **Quantified at county scale**
- **Based on:**

  Soils, precipitation, watershed discharge, evapotranspiration, ecoregion, hydrology, etc.

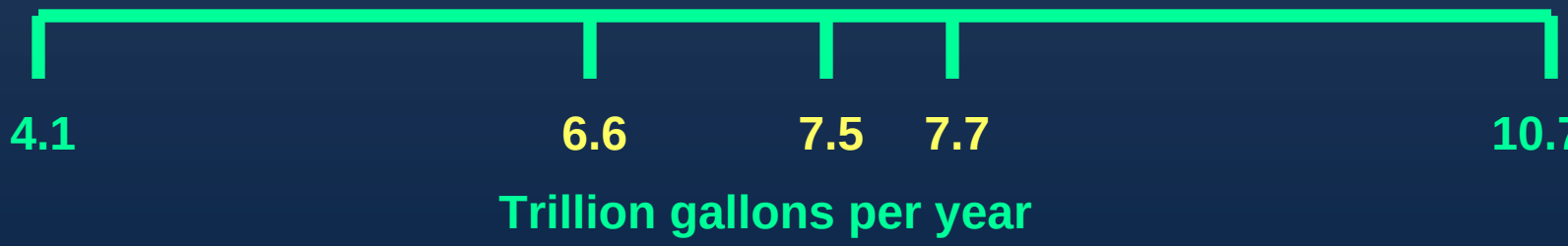
Supply Methods

- Regional regression recharge
- Watershed characteristics
- Net available precipitation
- Fractional precipitation



Supply Value

- RRR high & low bracket others
- Median of remaining three

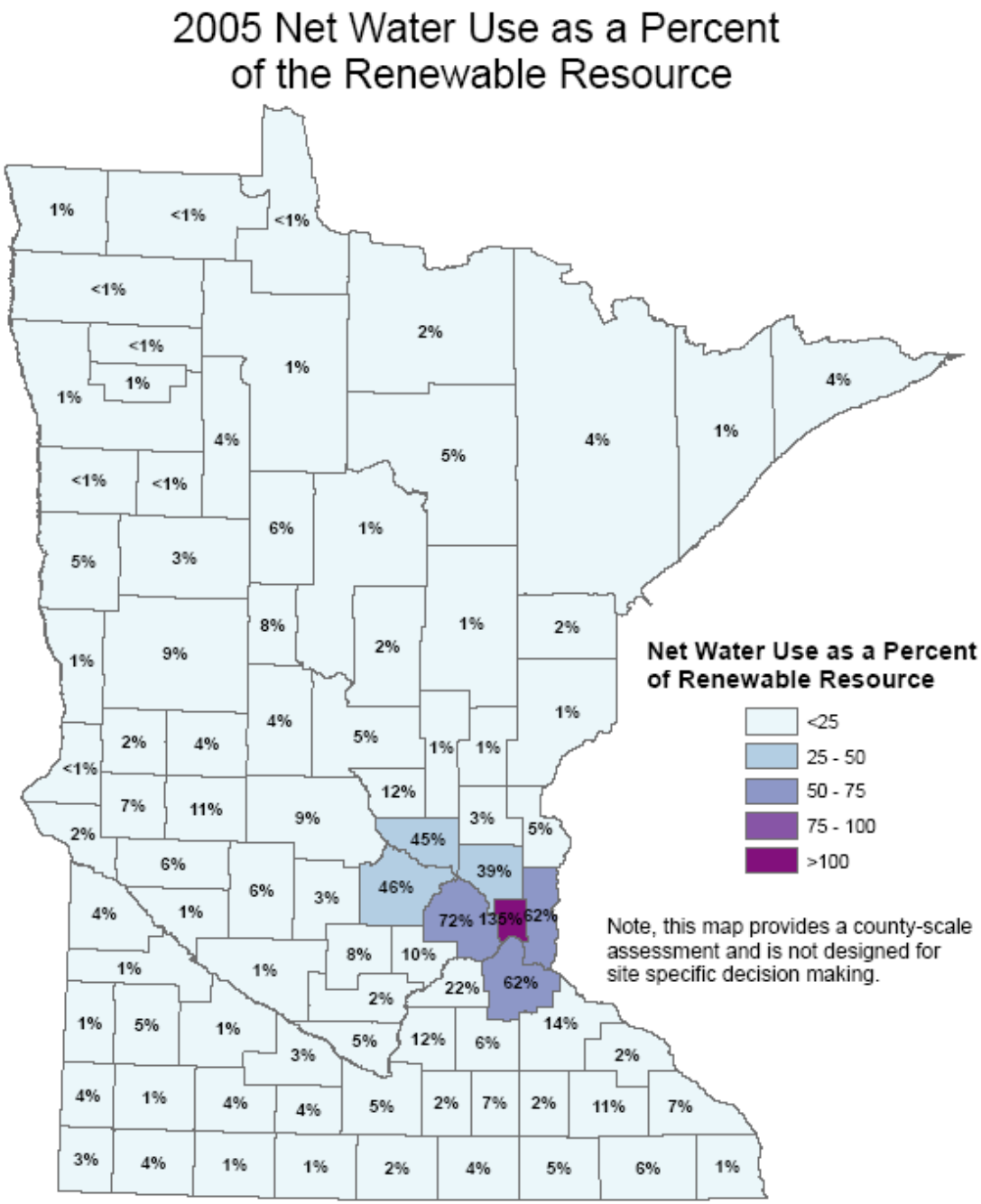


Supply vs. Demand

- County by county
- Use as percent of renewable resource
- 2005 & 2030

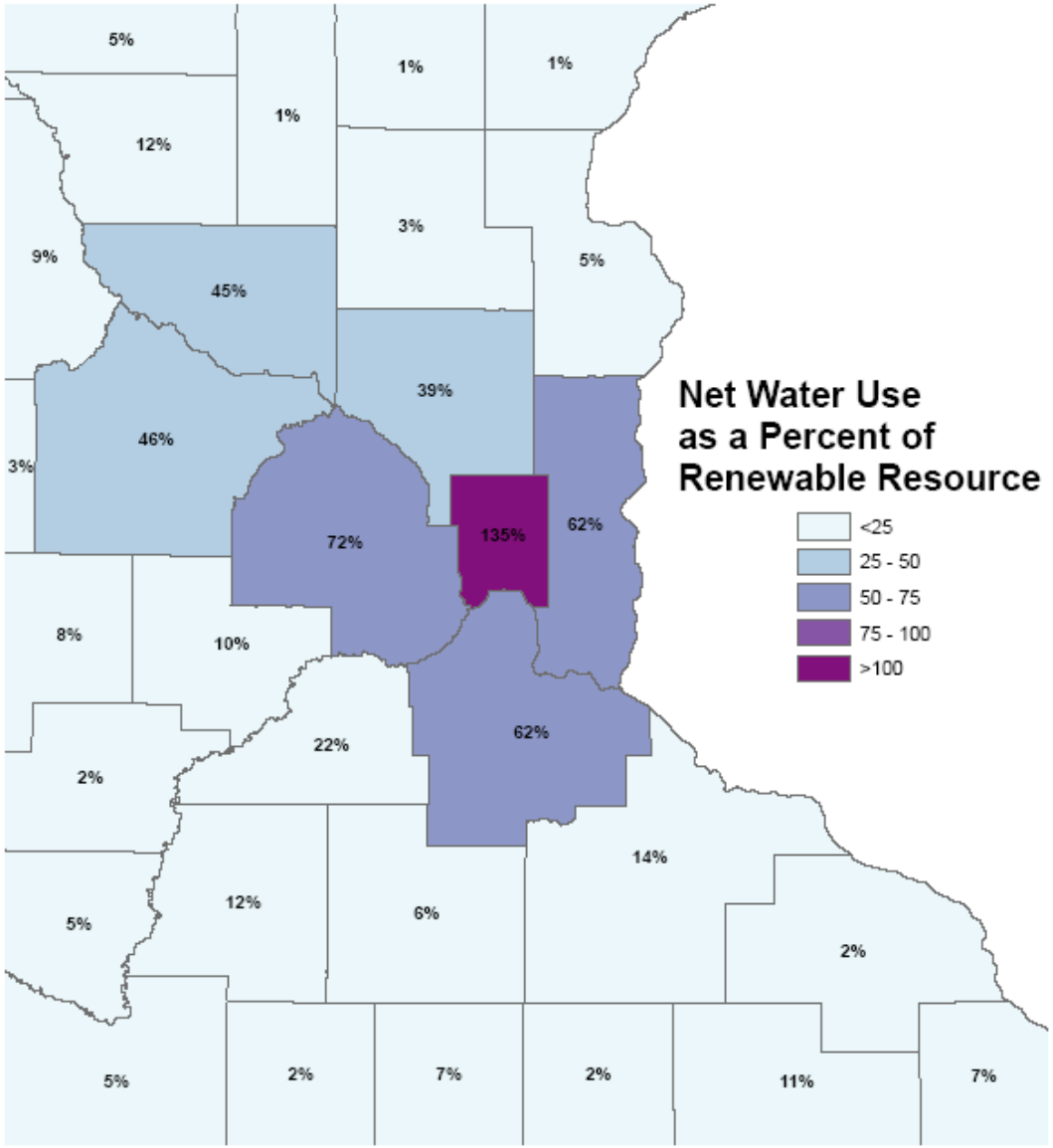
County Supply

County Demand



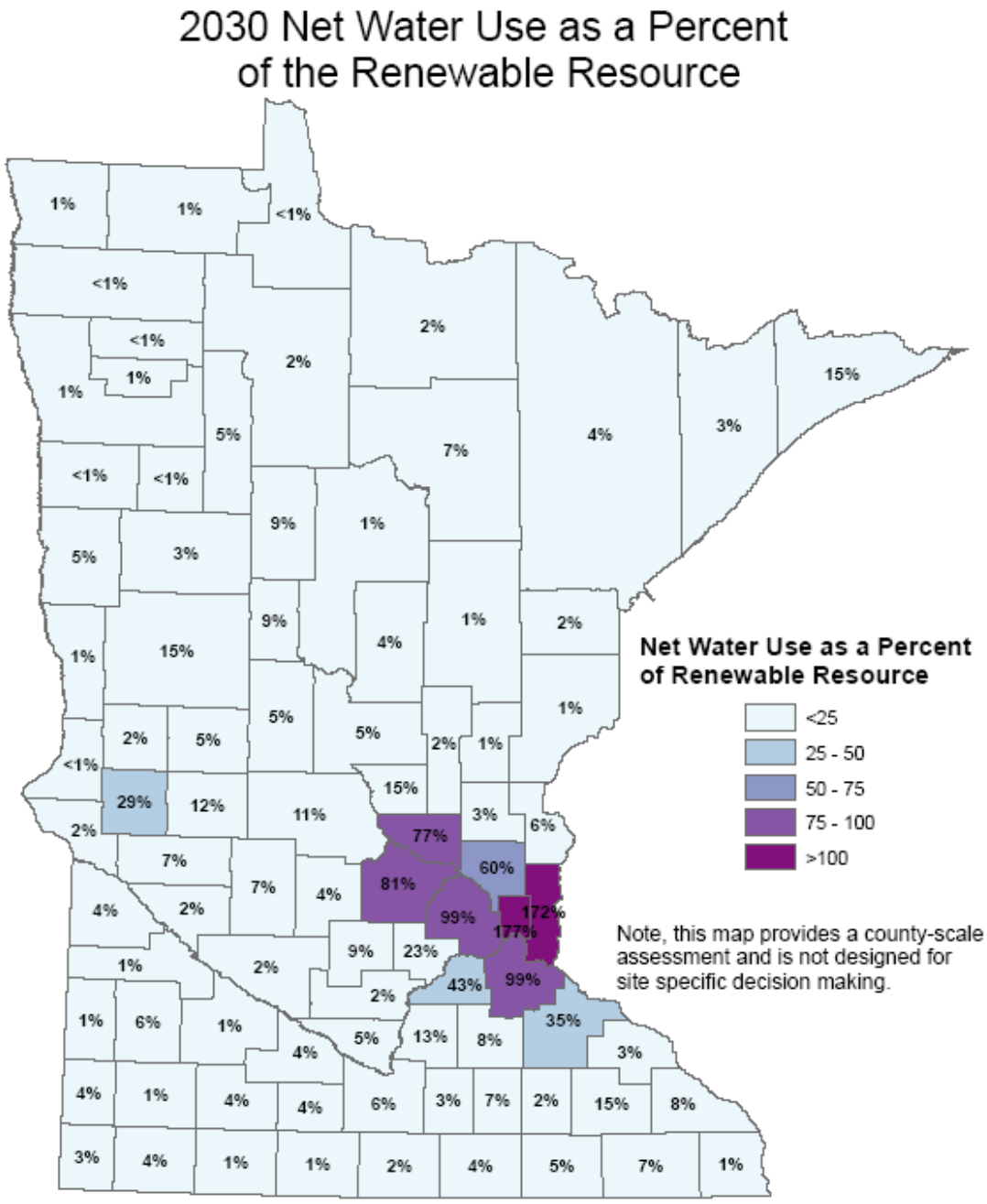
- **Four counties used more than 50%**
- **Metro range was 10% to 135%**
- **Greater Minnesota range was <1% to 46%**

2005 Net Water Use as a Percent of the Renewable Resource



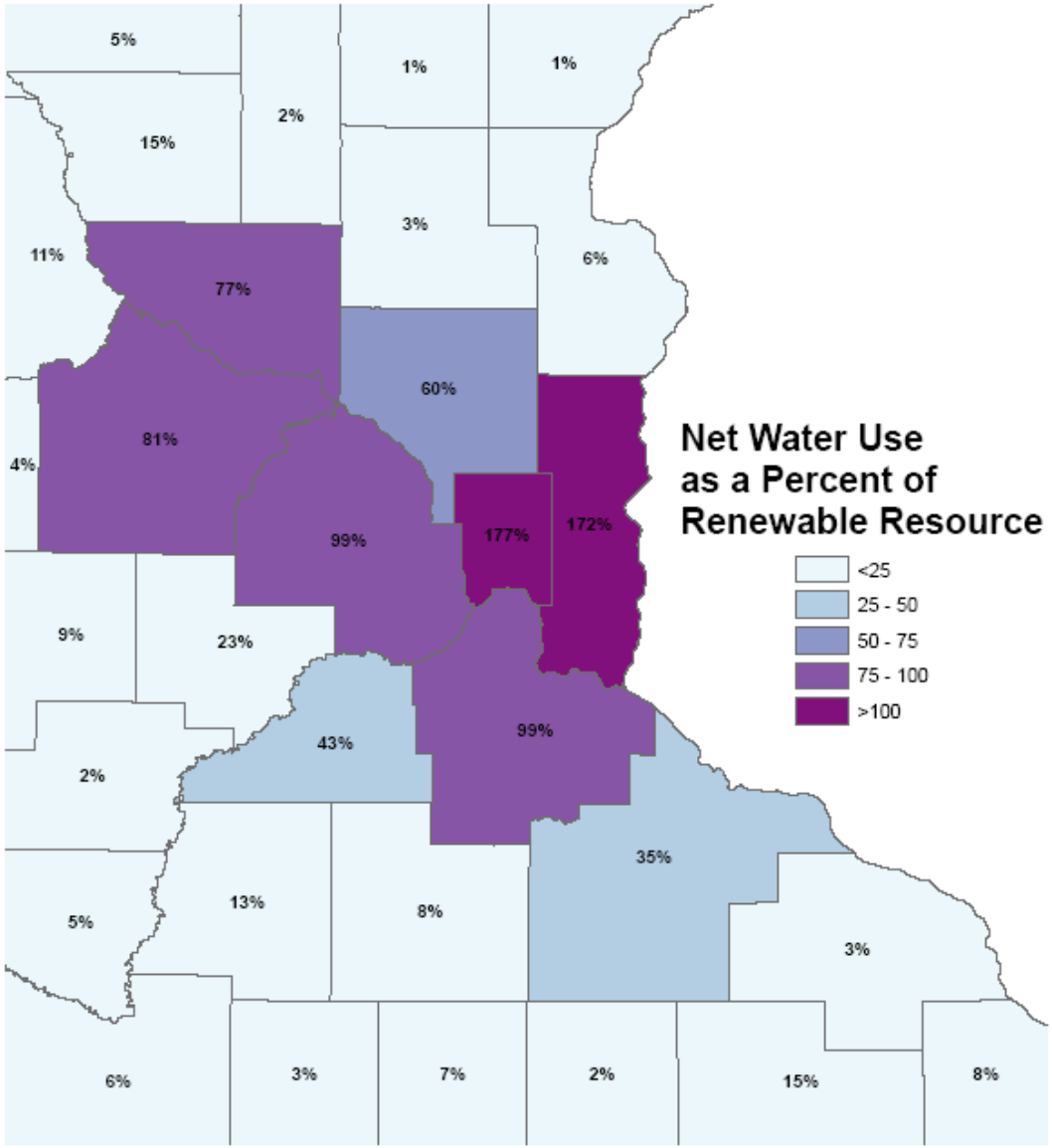
- Anoka 39%
- Hennepin 72%
- Ramsey 135%
- Washington 62%
- Dakota 62%
- Scott 22%
- Carver 10%

- **Seven counties used more than 50%**
- **Metro range was 23% to 177%**
- **Greater Minnesota range was <1% to 81%**



- Anoka 60%
- Hennepin 99%
- Ramsey 177%
- Washington 172%
- Dakota 99%
- Scott 43%
- Carver 23%

2030 Net Water Use as a Percent of the Renewable Resource



Study Characteristics

- Used best available information
- High level of agreement in model predictions
- Developed “most likely” scenario
- Chose median values for population, use & supply
- Did not include “safety factor”
- Doesn’t inform site-specific permitting

A “Water Rich” State?

- Can Minnesota still be considered water rich?

- Real limits exist …
  - Regionally, the growth corridor
  - Locally, throughout the state

Applications

- **Element of priority setting**
  - **Inform monitoring & research priorities**
  - **Ecosystem needs, impacts of land use & climate change**
- **Tool for planning**
  - **Local water commitments; need for conjunctive use; long term growth**
- **Aid in call for better water resource information**

Add to the Foundation

- Water quality
- Seasonal or monthly assessments, as well as annually
- Ecosystem needs for water
- Sub-county level work

In Conclusion

- First systematic assessment lays foundation for future work
- Identifies what we know, what we don't know & what we need to do about it

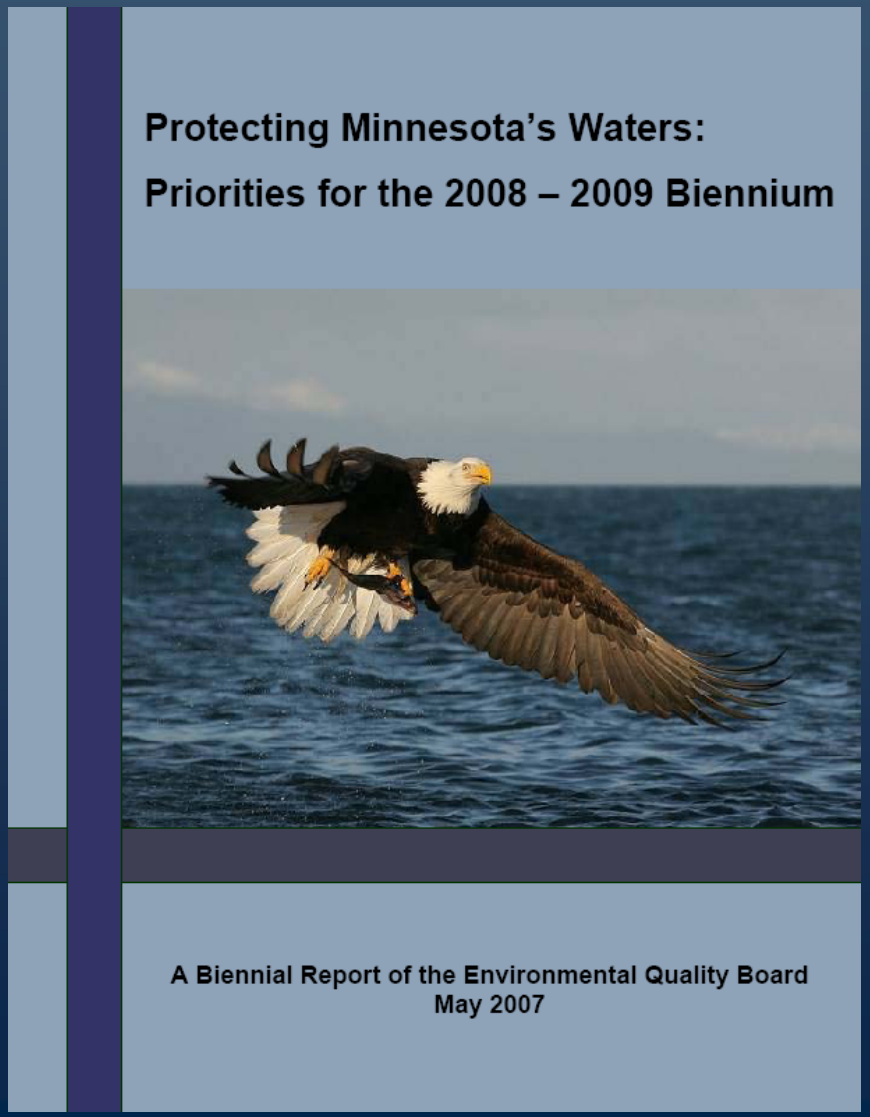
The Opportunity

To strengthen management of Minnesota's renewable water resources …

- **To better define their location, capacity and vulnerability**
- **To better understand their limits**
- **To promote discussion**

Biennial Water Priorities

- ***Minnesota Statutes*** **Sections 103A.43 and 103B.151**
- **Directs the EQB to develop a biennial water policy and priorities report**



The Vision

- Guard waters from present & future threats
- Restore waters that are impaired
- Maintain an accurate picture of waters for citizens, managers & policy-makers
- Ensure adequate reserves of safe water to keep Minnesota prosperous & sustain healthy communities

The Challenge

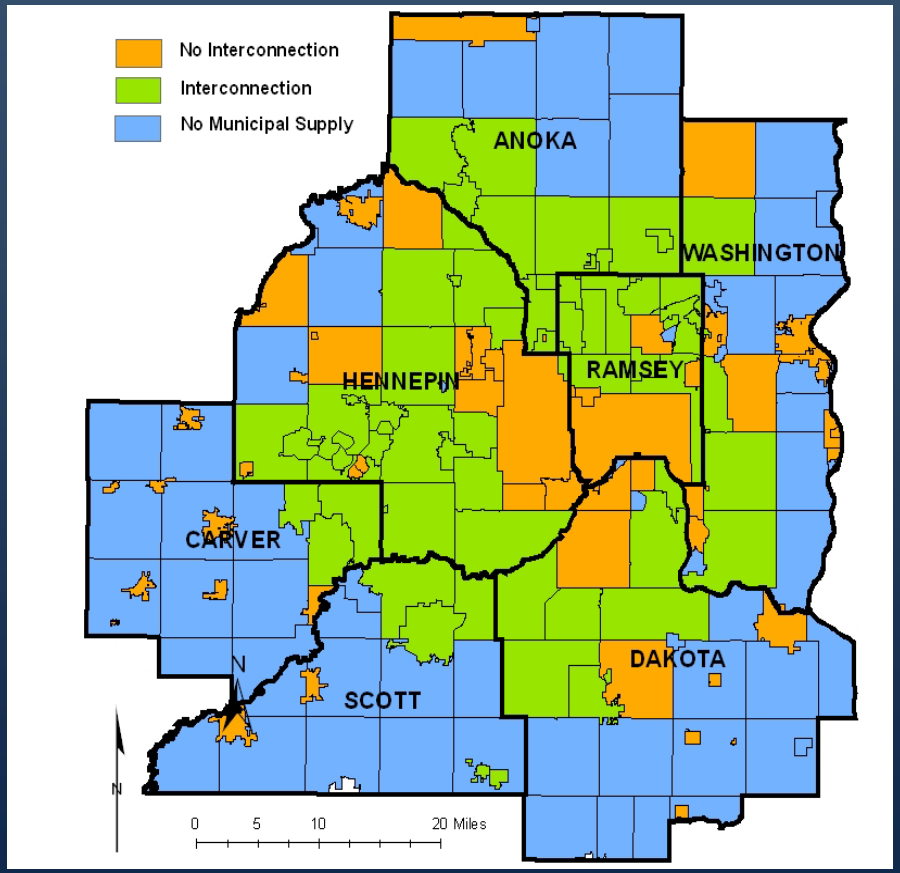
- 2,250 listed impairments on 1,300 lakes & streams
- Limited understanding of how much water can be safely withdrawn for drinking
- Continuing loss of wetlands

The Priorities

- Implement the Clean Water Legacy Act
- Safeguard Water Supplies
- Protect Minnesota's Wetlands

Safeguard Water Supplies

- Twin Cities region
  - Develop a water supply interconnect between Minneapolis and St. Paul
  - Continue efforts to ensure metropolitan water supply reliability, safety and security



Safeguard Water Supplies

- **Statewide**
  - **Support research to better define ground water resources**
  - **Evaluate public water sustainability efforts in emergency and conservation planning**
  - **Use the biennial water availability assessment as a benchmark to guide water allocation policies and priorities**
  - **Complete mass water-level measurements of the major Twin Cities water supply aquifers**

In Conclusion

- Both reports support the efforts of Met Council
- Minnesota is not in a crisis, but cannot take its supplies for granted

For More Information

- **Reports and press releases**
  - http://www.eqb.state.mn.us/
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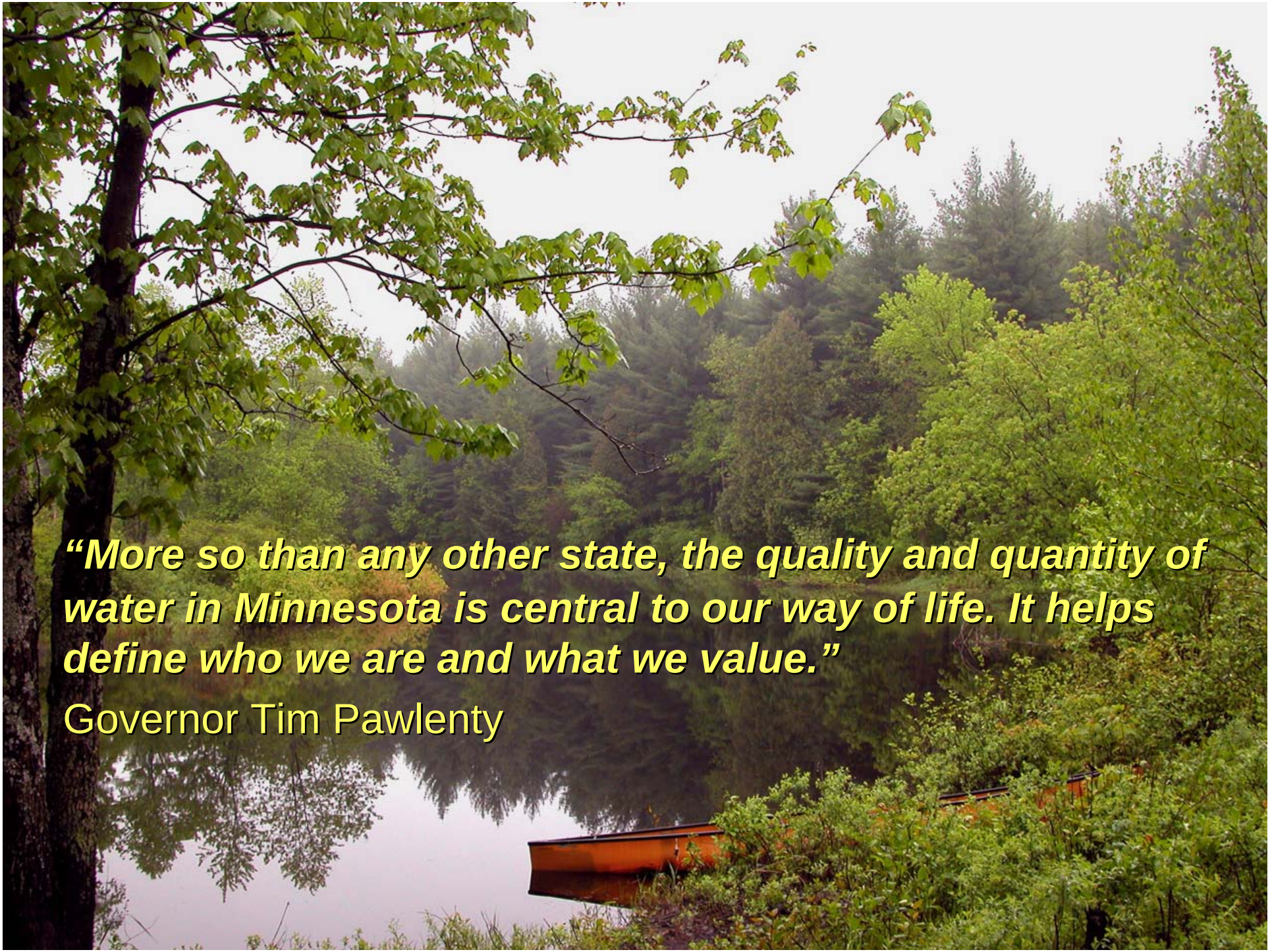
“More so than any other state, the quality and quantity of water in Minnesota is central to our way of life. It helps define who we are and what we value.”
Governor Tim Pawlenty