Metropolitan Council
Environmental Services

Recycling Treated Wastewater for Industrial Water Use in Minnesota

Metropolitan Council
Environment Committee Meeting
May 22, 2007

A Clean Water Agency

Interest in Wastewater Recycling in MN is Growing

- **Applications**
  - Agricultural irrigation, throughout Greater MN
  - Golf course irrigation, Nisswa, Montgomery, etc.
  - Toilet flush water system, Hennepin Cty PW
  - Power plant water supply, Mankato
- **Quantity**
  - Current (non-ag) = 6.5 mgd (6 mgd for Mankato)
- **Drivers**
  - Receiving stream limitations
  - Water supply concern

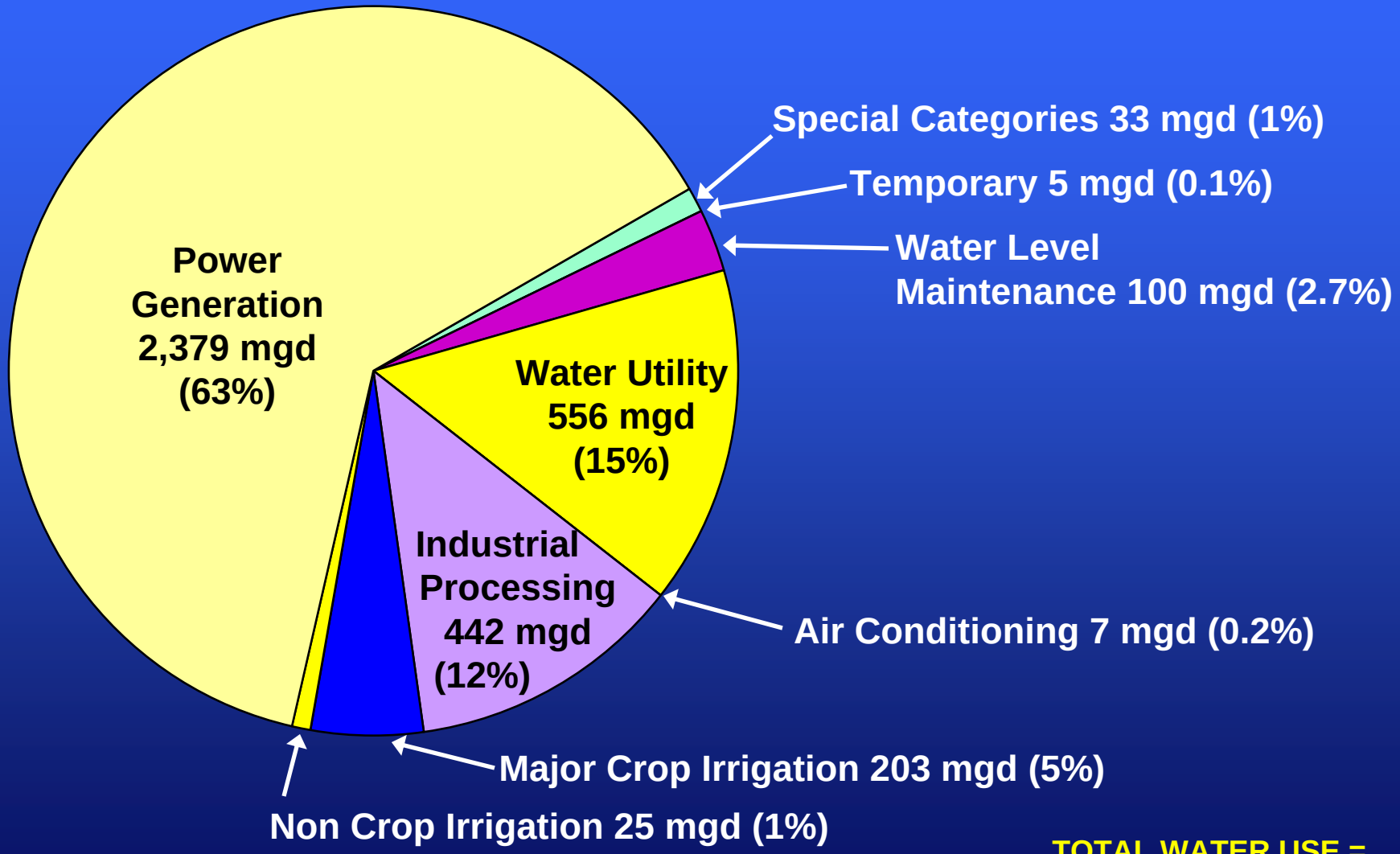
Growing Interest Resulted in LCMR Grant

- **Compare industry demand with treated wastewater supply**
- **Compare industry water quality needs with treated wastewater quality**
- **Estimate treatment and conveyance costs**
- **Identify implementation issues**

Recycling Wastewater Conserves Water Resources and Supports Industries and Economic Development

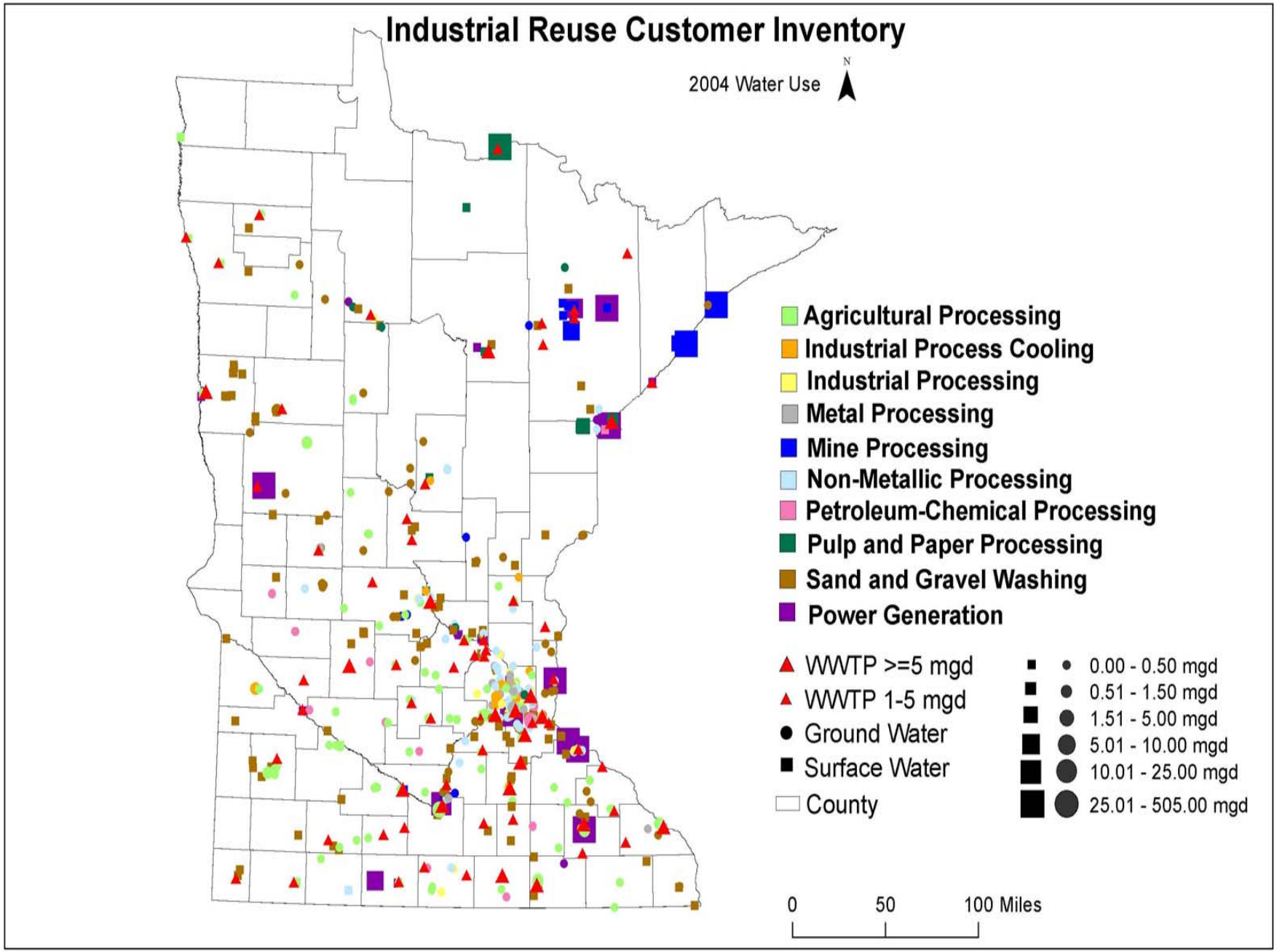
- **Purpose of presentation:**
  - **Present the project and key findings**
  - **Prepare for report approval at June 26 meeting**

Water Use in Minnesota



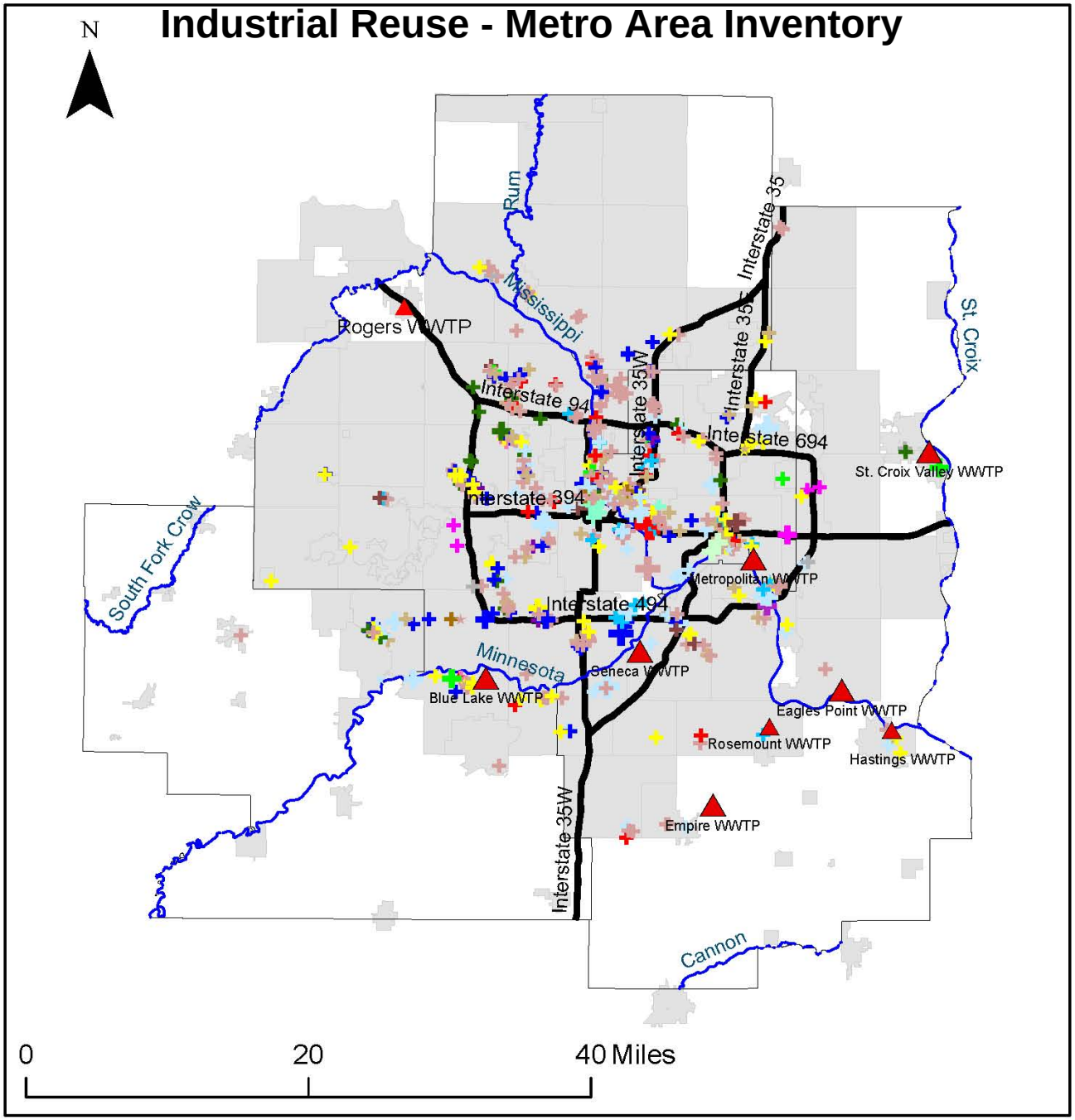
TOTAL WATER USE = 3,750 mgd

Source: MDNR Water Appropriations Permit Program, 2004



Source: Minnesota DNR Water Appropriations Permit Program, 2004 (Withdrawls greater than 1 mgy or 10,000 gpd)

Industrial Reuse - Metro Area Inventory



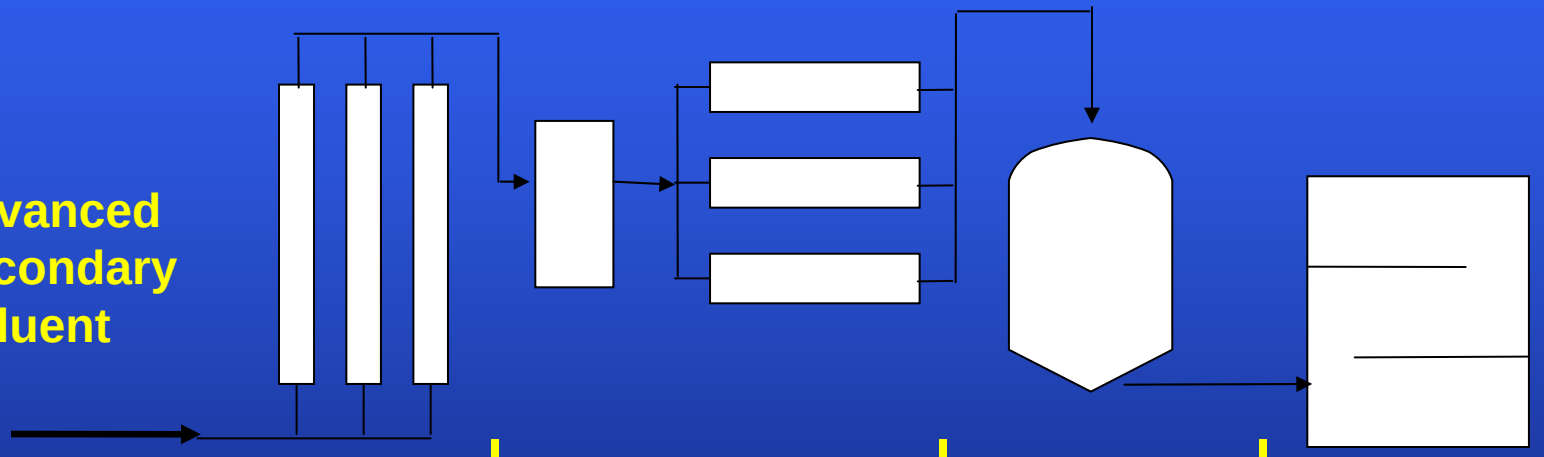
Building Material
Chemical Products
Electronic Products
Food Product
Glass Products
Laboratory
Laundry
Leather Products
Medical Products
Metal Products
Other
Paper/Packaging
Photofinishing
Printed Products
Research Development
Textile
Transportation
Utilities_Power
Utilities_Steam
WWTP >= 5 mgd
WWTP 1-5 mgd
Major Rivers
Interstate
Well/Other Nonmunicipal
Municipal
County
Municipality
0.00 - 0.50 mgd
0.51 - 1.50 mgd
1.51 - 5.00 mgd
5.01 - 10.00 mgd
10.01 - 25.00 mgd
25.01 - 505.00 mgd

Source: Metropolitan Council Industrial Dischargers Permit Program, 2005

Treated wastewater quantity could fill a large portion of industry water demand

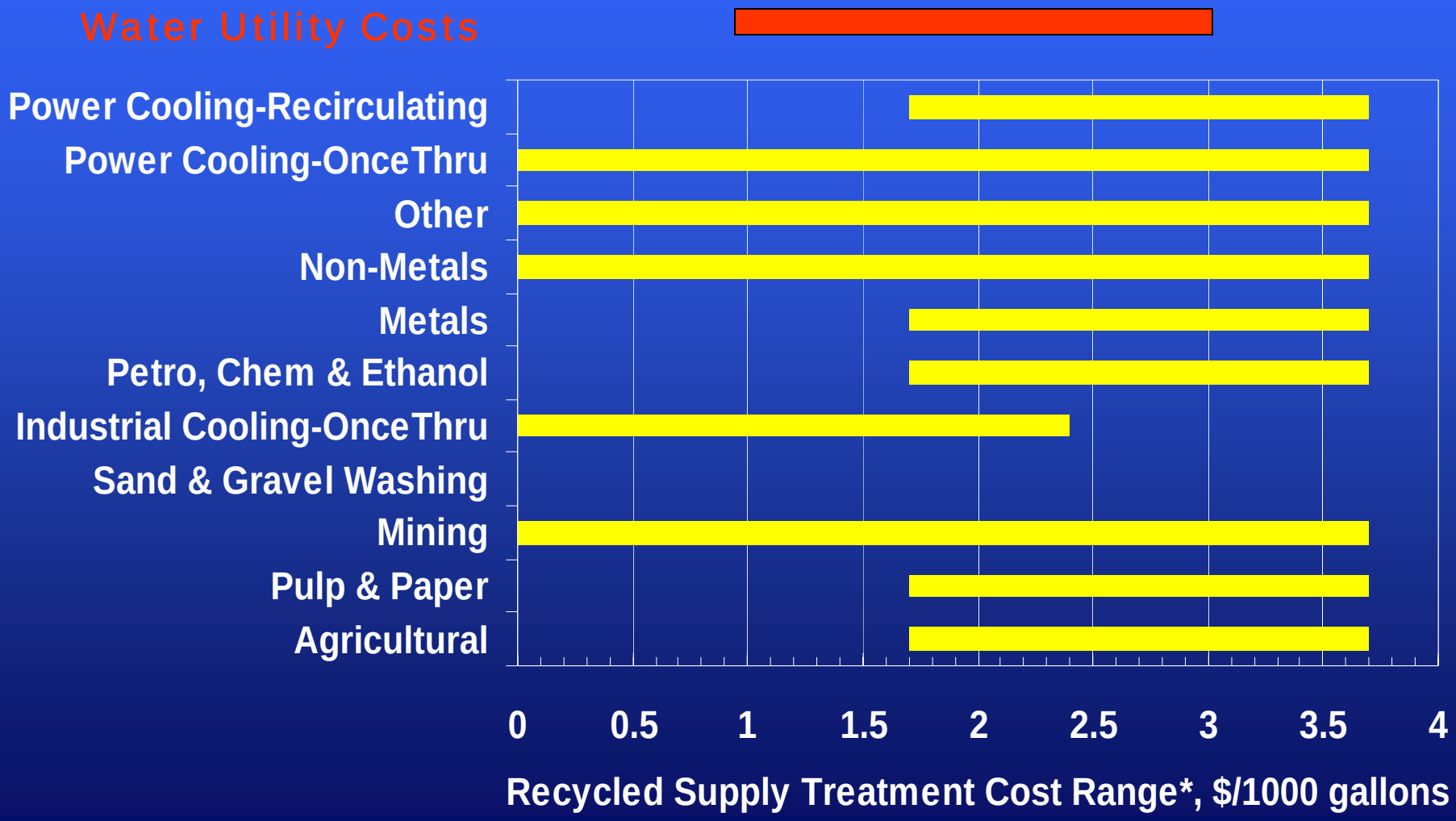
	Industry Water Demand	Treated WW Supply
Statewide	**442 mgd**	**425 mgd**
Metro	**75 mgd**	**255 mgd**

Wastewater Can be Treated to Match Industry Needs



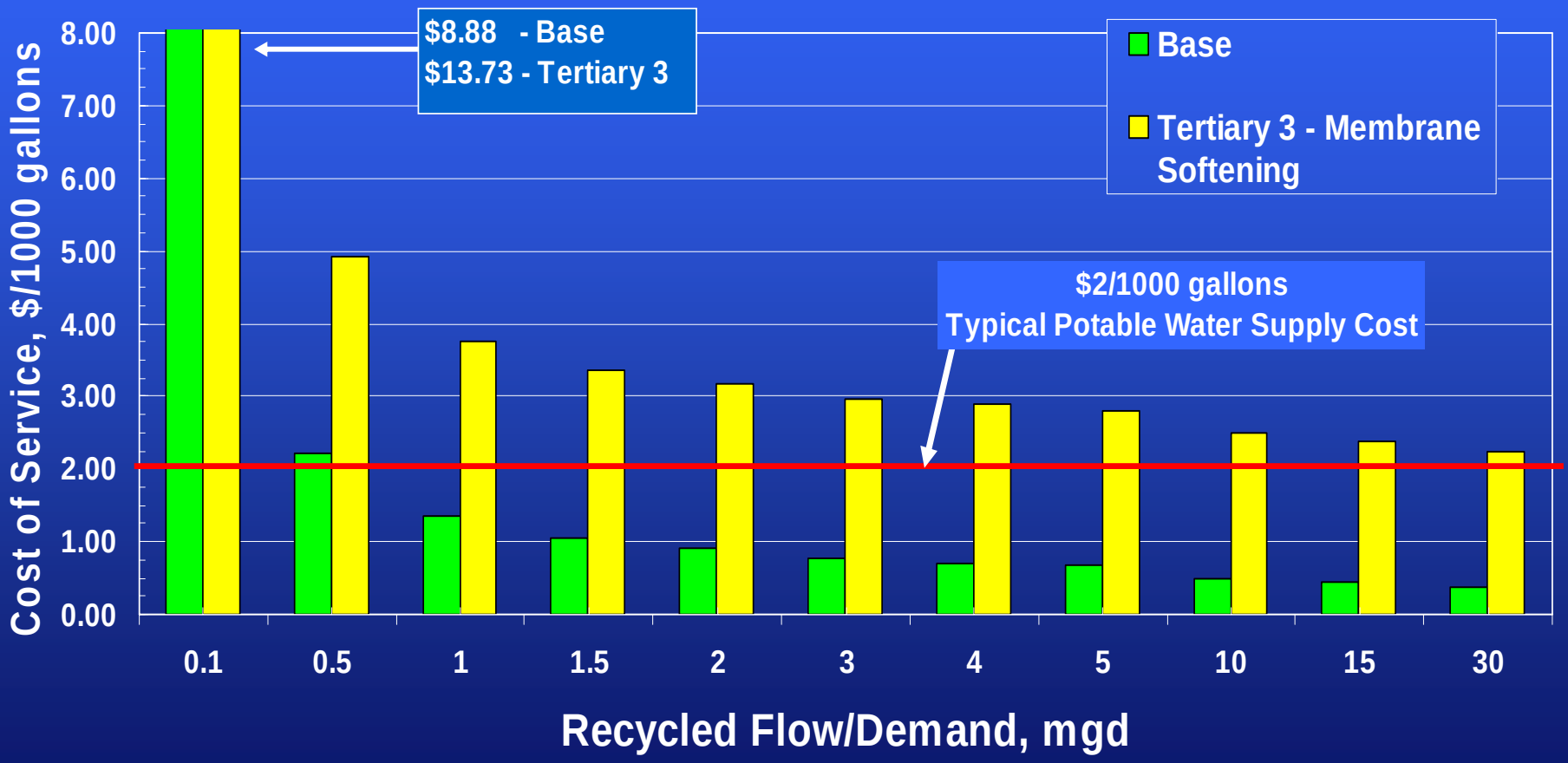
Base
Tertiary 1
Tertiary 2
Tertiary 3
Tertiary 4

Treatment Cost for Recycled Wastewater Compared to Potable Supply (1 mgd)



*Add $1.50/1000 gallons for 5-mile transmission

Economy of Scale Points to Recycled Systems > 1 mgd



*Assumes a 5-mile transmission system

Stakeholders Clarified Implementation Issues

- **Stakeholder Forums: Regulatory, Industry, Broad Base Representatives**
- **Resulting Issue Areas**
  - **Environmental Stewardship**
  - **Regulations**
  - **Incentives & Risks**
  - **Data Collection**

- **Environmental Stewardship**
  - Wastewater recycling: “right thing to do”
  - Wastewater recycling public image: move from unknown to positive
- **Regulations**
  - Case-by-case regulatory approach matches current permit demand
  - Approach may deter some recycling projects

- **Incentives & Risk**
  - Economic incentives: currently cost of water vs. cost of recycling
  - Unresolved industry concerns with risk and liability
- **Data Collection & Research**
  - Wastewater effluent quality data gaps
  - Testing treatment technologies for specific applications needed

"Demonstration" Project

- **Grant sought recommendation**
- **Approaches: unilateral, partnered, other**
- **Unilateral: utility takes initiative alone**
- **Partnered:**
  - **Industry and wastewater agency partner**
  - **Enlist participation from regulators, etc.**
  - **Focus on implementation issues, not technology**
  - **Document outcomes**

Summary and Conclusions

- **LCMR grant requirements completed**
- **Demand and Supply Analysis: wastewater recycling for industrial use is feasible**
- **Economics: wastewater recycling is competitive in some situations**
- **Implementation Issues: identified and addressable**
- **“Demonstration” project: could take multiple forms**

Requested Committee Action

- **Comments or questions**
- **Report approval and submittal process**
  - **June 26: Environment Committee**
  - **June 28: Council**
  - **July 1: Submit to LCMR**