

Info Item 2: Energy Overview

Presented to the Environment Committee

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Interests in Energy

- **Reduces:**
 - **Costs for rate payers**
 - **Budget risk of changing costs**
- **Improves Council's position for emissions regulations**
- **Offers co-benefits (pollution reduction)**
- **Supports societal interests in energy work**

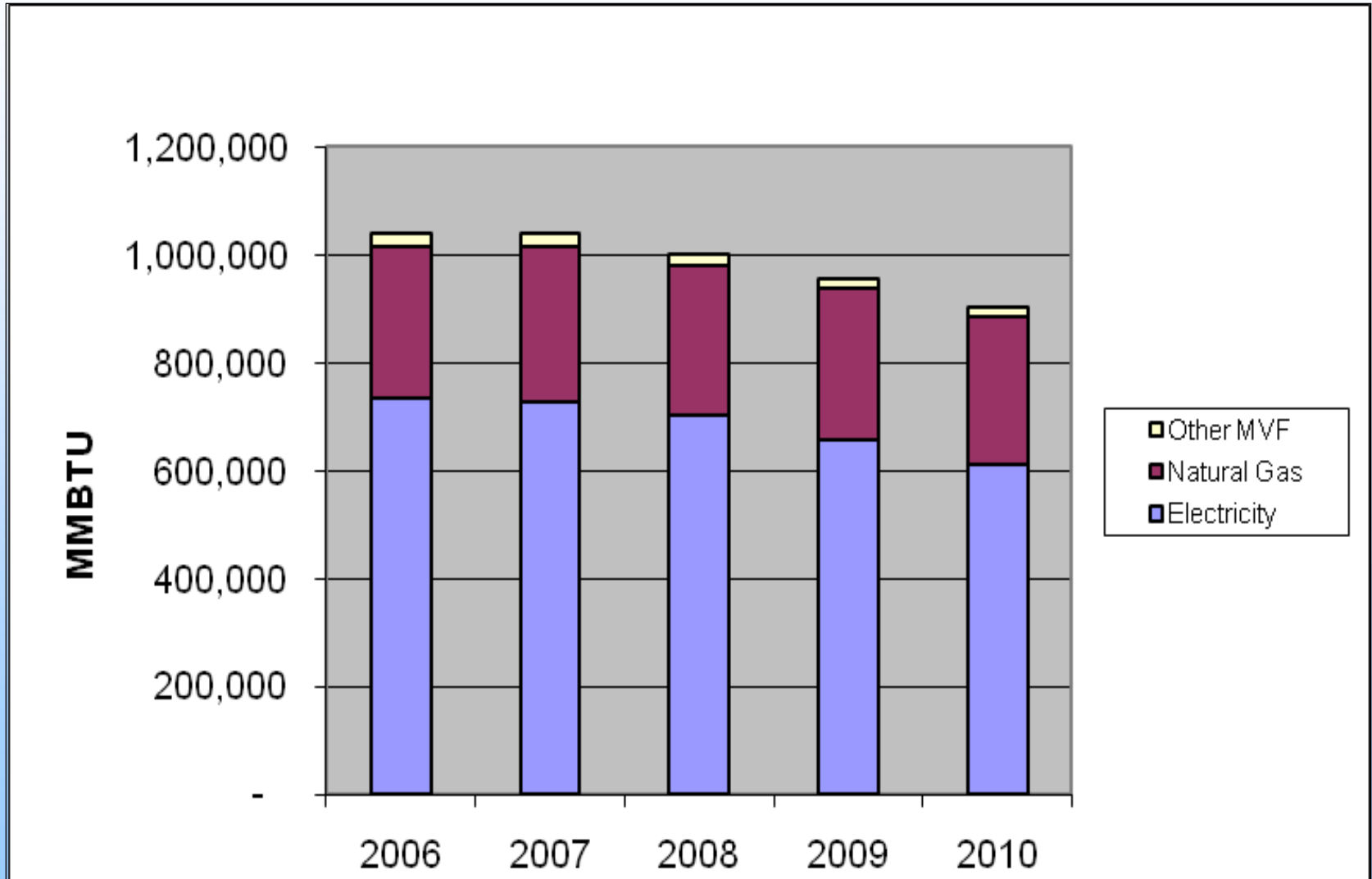


MCES Energy Goals

- **2010: Reduce purchased energy by 15%**
 - Actual reduction = 13% (17% annualized)
- **2015: Reduce purchased energy by 25%**



MCES Energy Profile



MCES Energy Conservation Work



Energy Conservation: Major Projects—Completed

Project	Facility	Annual Savings
Diffuser cleaning (maintenance)	Metro Plant	10 million kWh
Dissolved oxygen set point	Metro Plant	6 million kWh
Tunnel lighting redesign	Metro Plant	3 million kWh
New dissolved oxygen control strategy	Seneca Plant	3 million kWh

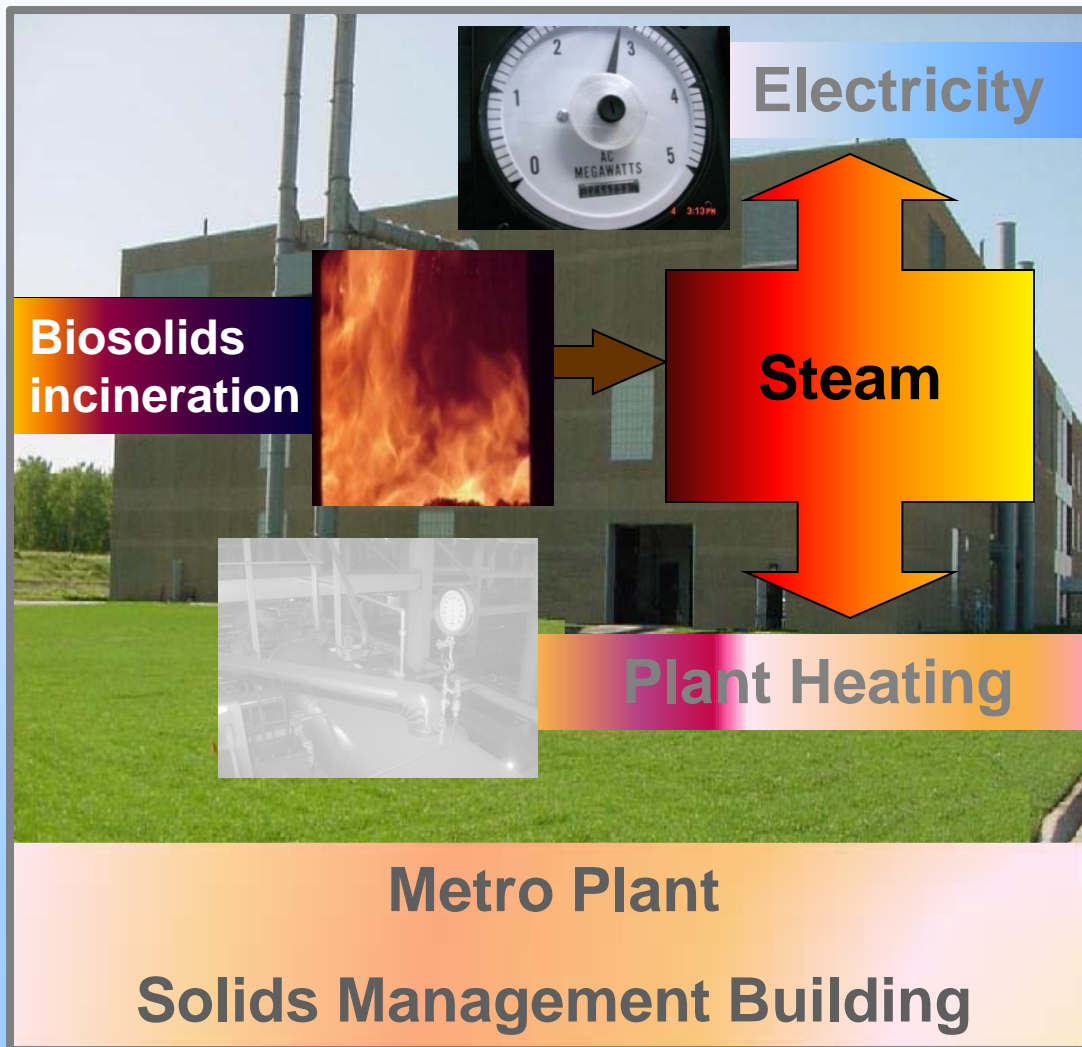


Energy Conservation: Major Projects—Underway

Project	Facility	Estimated Annual Savings
Decommission buildings	Multiple facilities	4.5 kWh
Redesign lighting	Multiple facilities	3 million kWh
Replace membrane diffusers	Metro Plant	1 million kWh
Test and replace steam traps	Metro Plant	1 million kWh

MCES Renewable Energy Work

Sludge to Energy





Thermal Recovery Demonstration

- **Eagles Point Plant:**
 - Utilizes thermal recovery from effluent water to heat and cool admin building





Methane Recovery, Use

■ Blue Lake Plant:

- Conversion to anaerobic digestion
- Use of biogas as substitute for natural gas in heating drying (NEFCO) operation
- \approx \$750,000/year gas cost avoided
- Under construction 2010



Heat Recovery

■ Seneca Plant:

- Recovers heat from incinerator pollution control scrubbing process
- Annual savings: **\$108,000**



■ MCES Interests:

1. Explore methods of phosphorus and nitrogen capture
2. Reduce energy needed to treat recycle “centrate” stream
3. Explore greenhouse gas impacts
4. Biproduct utilization for energy (biofuel) or fertilization





Biofuel/Land Application Research with U of M

■ Empire Plant:

- Develop system of producing biomass for production of bioenergy (2.5 acres)
- Compare different energy crops (trees/prairie grasses)
- Increase carbon content in soil
- Explore use for sludge



Council Collaborations



Metropolitan Energy Policy Coalition (MEPC)

- **Members: Anoka, Dakota, Hennepin, Ramsey, Scott, Sherburne, and Washington Counties and Met Council**
- **Purpose: Provide a forum for member entities to exchange ideas and collaborate on issues of:**
 - Energy conservation and efficiency
 - Renewable energy
 - Greenhouse gas emissions reduction

www.mepc-mn.org/index



The Climate Registry

- **Non-profit collaboration among American states, provinces, territories and Native Sovereign Nations**
- **Sets consistent and transparent standards to calculate and publicly record greenhouse emissions**
- **MCES 2009 emissions: 576,218 metric tons carbon dioxide equivalent**



Other Collaborations

- **State Interagency Energy Team**
 - Align/organize state cabinet agency energy activities
- **University of Minnesota**
 - Joint powers agreement: research projects and student intern program
- **Chamber of Commerce**
 - Xcel rate cases
- **Xcel Energy**
 - MOUs – to help leverage energy optimization resources
 - Energy Performance awards

MCES Energy Work: Other Financial Impacts



Financial Impacts

- **Local Government Grant (OES)**
 - \$200K non-condensing steam turbine (Metro Plant)

- **Green infrastructure grants (PFA)**
 - \$2.1 million solids improvement (Blue Lake Plant)
 - \$200K lighting redesign (Metro Plant)

- **Utility “CIP” rebates**
 - About \$200K over last 3 years

- **Tariff changes**
 - About \$120K over last 2 years



Conclusions

- **Energy work to date has achieved substantial energy and dollar savings**
- **Additional opportunities for reducing energy in wastewater operations are being pursued**
- **Renewable energy opportunities exist and are being investigated**
- **Energy work potential is increased through partnerships with counties, State, U of M, Xcel Energy and others**



Questions

