

Information Item 2:

Update on Blue Lake Solar Proposal

Presented to the Environment Committee

December 13, 2011

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Today's Agenda

- **Why we should be concerned about energy sources?**
- **Benefits of Solar**
- **Financial details on proposals**
 - **Blue Lake Wastewater Treatment Plant (Shakopee)**

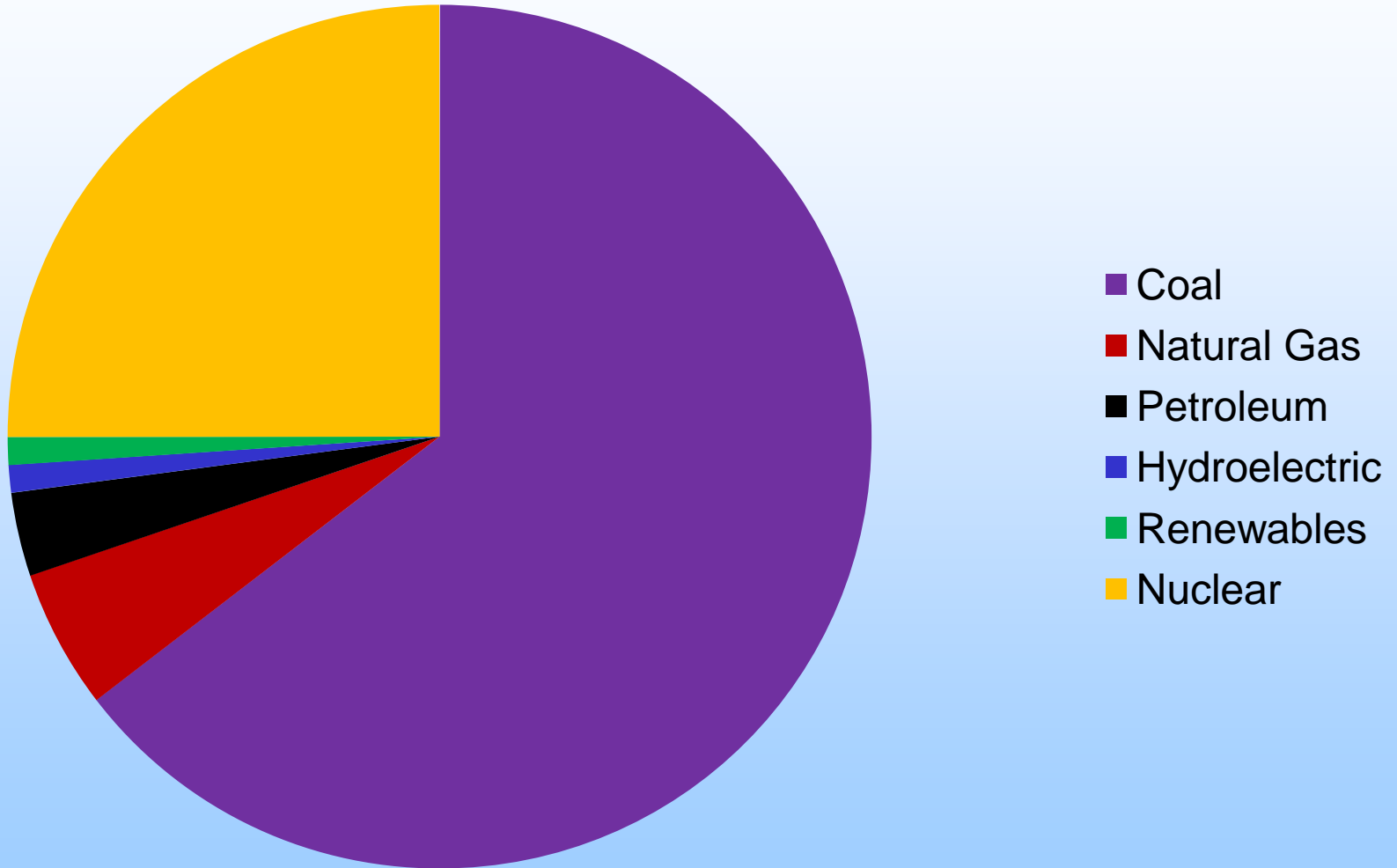


Economics of Fuel Sources

- **Current energy dependence puts Minnesota at an economic disadvantage...**
 - Jobs and dollars sent out of state because MN does not have its own coal, natural gas, petroleum or uranium
 - Volatility in fuel prices causes energy price instability, which causes economic instability



Fuel Sources for Electric Power Generation in MN



Source: U.S. Department of Energy: Energy Efficiency and Renewable Energy State Activities and Partnerships



MN Energy Production and Air Quality

- **Most of MN's current air quality challenges result from the combustion of fuels to produce electricity, generate heat, and move people or things.** *(Source: MPCA 2011 Report to the Legislature on Air Quality)*
- **Nearly 13% of key air pollutants in MN come from electric utilities.** *(Source: MPCA 2011 Report to the Legislature on Air Quality)*
- **Breathing air containing elevated ozone and particulate concentration can aggravate asthma or other respiratory conditions.**



Climate Change

- **2010 greenhouse gas (CO₂e) were 5.9% over the 2009 global estimate (larger than the worst-case scenario expected by United Nations scientists).** *(Source: Carbon Dioxide Information Analysis Center)*

- **Minnesota is already experiencing impacts from climate change, and will continue to experience impacts.**
 - Increasing number of heat waves, reduced air quality, and increasing number of insect and waterborne diseases.
 - Increasing periods of floods and water deficits
 - Greater challenges to managing crops, livestock and forest
 - Increasing threats to native species



General Benefits of Solar

- **Creates clean, renewable energy that will sustain and support the health of future generations**
 - Uses little to no water
 - Supports national energy independence
 - Operates most efficiently when utility rates are at their highest
- **No air emissions from operations**



Benefits of Solar to MN

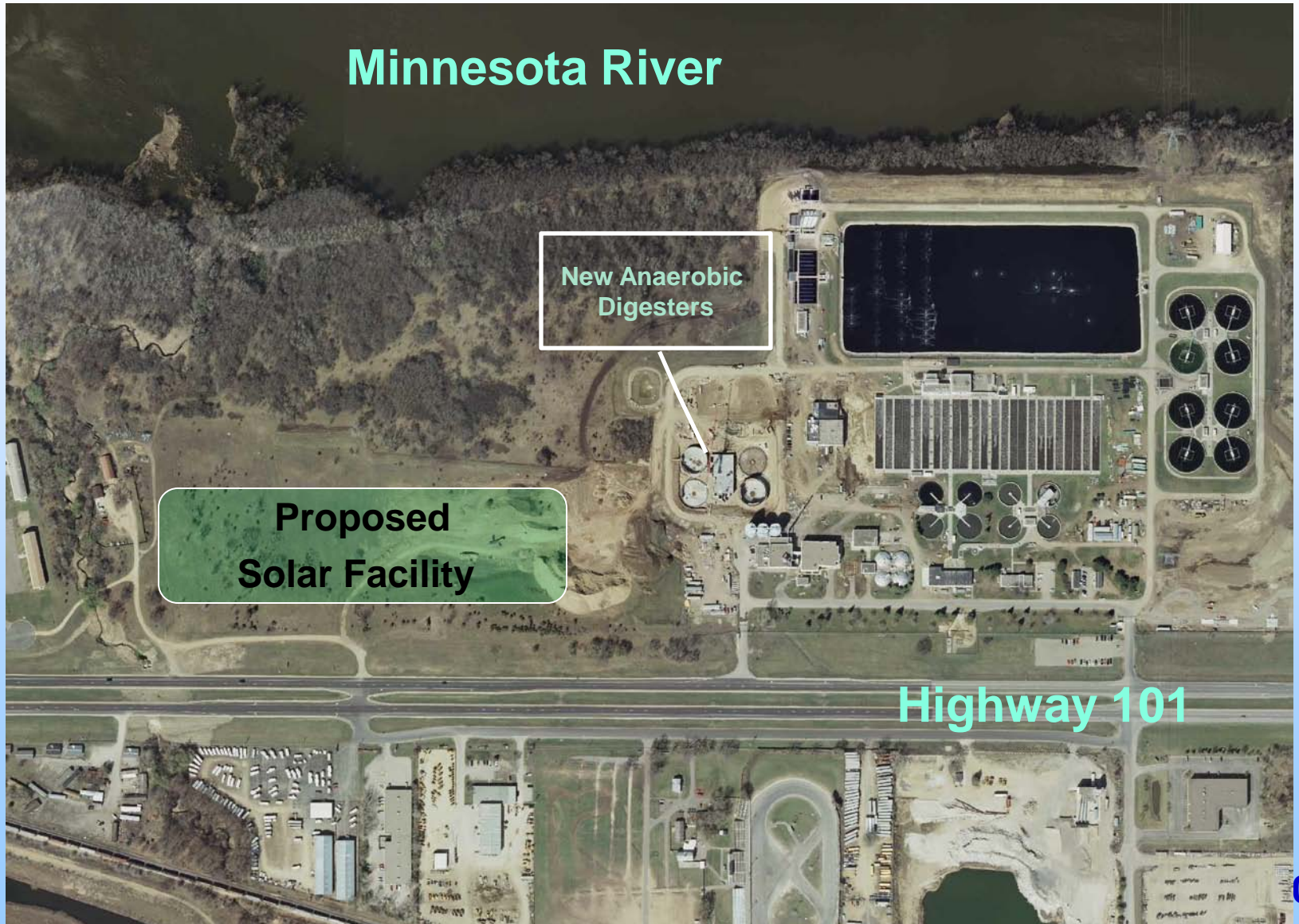
- **Diversifies energy sources, which improves reliability and energy independence**
- **Supports Next Generation Energy Act of 2007**
 - “...the State has a vital interest in...the development and use of renewable energy”
 - Goal: “25 percent of the total energy used in the State...derived from renewable energy resources by the year 2025”
- **Avoids public paying a return on investment for utilities (avoids transportation and distribution costs of power lines)**
- **Provides value as demonstration of large scale grid-tied system**



Benefits of Solar to Council

- **Supports MCES Mission**
- **Supports Governor's Administration initiatives on energy**
- **Provides beneficial use of buffer land around plant**
- **Provides price stability of some energy costs**
- **Contains salvage value**
- **Adds to leadership image for Council with public**
- **Reduces carbon emissions, saving future costs if required (assuming use of documented baseline)**
- **Provides future opportunity to leverage facility**

Blue Lake WWTP



Minnesota River

New Anaerobic Digesters

Proposed Solar Facility

Highway 101



Proposed Facility Details

1.25 MW AC Solar Facility

- 5368 Static Solar Panel Modules
- Provides the minimum daytime energy consumption at Blue Lake plant
- 11-13% of average electric load for plant





Summary Assessment



1. Environmental

- Avoided CO² emissions: 1987 tonnes/year or 50,000 metric tonnes in lifecycle; avoids other air emissions; uses no water



2. Societal

- Energy independence, economic impacts, info from demo

3. Financial (estimated present values)

- Electrical Savings: \$2.6M
- Project Costs \$6.8M → Net Cost: \$4.4M (over lifecycle)
- Other: stability of price, residual value, leverage



Funding Sources

- **State Bonding Request: \$10 million to support 2 solar facilities**
 - 1.25 megawatt (MCES)
 - 1.0 megawatt with battery system (Metro Transit)
 - Both plans are scalable

- **Other possible funding sources**
 - MCES—Public Facilities Authority’s Green Project Reserve; rate payers
 - Transit—Federal grant

 - Both – Renewable Development Fund
 - Both – Public/Private partnership tax benefits



Staff Recommendation

- **Pursue financial support,**
- **Construct MCES facility if lifecycle costs in proposals break even or better**
 - No additional costs to ratepayers



Next Steps

- **12/14/11 - Metropolitan Council Action:** Authorize its General Manager of Environmental Services to schedule and hold a public hearing for the Draft Facility Plan Amendment for the Blue Lake Wastewater Treatment Plant Improvements Project.

- **2012 - Staff Updates:** Provide progress reports to Environment Committee