

BEST PRACTICE AREA 6: RENEWABLE ENERGY

BEST PRACTICE AREA 7: ENERGY EFFICIENCY

Vision

The Joint Planning District is a state-wide model in the production of renewable energy and in energy efficiency for new and existing infrastructure. Renewable energy is readily available and is in use by all residents, businesses and governments. District heating and cooling has been implemented in central locations such as downtowns and campuses. Neighborhood energy production and distribution systems have been implemented in many locations.

Background

Local government can play a vital role in reducing energy use and carbon dioxide (CO₂) emissions. Energy efficiency saves taxpayers money and is the most cost-effective way to reduce greenhouse gas emissions. Cities can lead by example by reducing energy use of city buildings and by educating residents and businesses about how to reduce their energy use. Creating strategic partnerships with business and educational institutions can also help to educate the public and promote energy efficiency and conservation.

Solar, geothermal, and wind have great potential as alternatives to fossil-fuel-based energy generation. Solar electric systems use photovoltaic panels to convert sunlight into electricity, which is converted from direct current to alternating current by the use of an inverter. Solar electric systems have been the most expensive renewable energy option, but costs are coming down dramatically. Solar hot water systems can be cost effective and efficient.

Geothermal or ground-source heat pump system uses the earth's ability to store heat in the ground and water. The U.S. EPA has called geothermal the most energy-efficient, environmentally clean, and cost-effective space conditioning system available.⁷ These systems are warranted for 25 to 50 years, are expected to last in excess of 50 years, and have typical paybacks from the initial investment of three to five years.

Wind power is often the most cost-effective renewable energy source. To be effective, wind turbines need to be placed high up in the air to avoid turbulence. This height factor makes the use of wind power most appropriate for large open spaces, making them ideally suited

⁷ U.S. EPA. "Space Conditioning: The Next Frontier – Report 430-R-93-004," 1993.





to agricultural areas. Wind measurements are needed to confirm whether wind power is feasible for each locale.

Many utilities offer incentives for the installation and use of renewable energy alternatives.

Goals

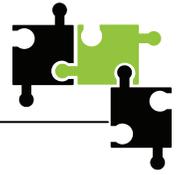
- A. Continue efforts to conserve energy.
- B. Encourage and support the use of renewable energy in new construction and redevelopment, in both public and private sectors.
- C. Recognize and create incentives for the use of renewable energy within each jurisdiction's system of environmental regulations.
- D. Encourage investment in renewable energy technologies that will use existing infrastructure and create jobs and businesses.
- E. Take advantage of local and regional hydroelectric, solar, wind, and non-food based biomass opportunities to support local energy security.
- F. Gather building performance data that support the use and financing of renewable energy technologies such as geothermal and solar hot water.
- G. Remove regulatory barriers to the use of renewable or more efficient technologies.
- H. Support ongoing efforts to conserve energy through rebates and other utility incentive programs.
- I. Encourage the use of renewable/ alternative fuels (see Transportation goals).

Initiatives and Action Steps

The following three initiatives for initial action were identified through public input and reflect local stakeholders' views of which goals would have the most profound effect on moving the Joint Planning District toward sustainability. The three initiatives prioritized focus on partnering with utilities, moving towards more renewable and cleaner sources of energy and changing overall behaviors that reduce energy consumption and demand.

1. **Use less:** Support ongoing efforts to conserve energy through rebates and other utility incentive programs.
 - a. Utilize the Minnesota Municipal Energy Challenge as a format to promote energy efficiency. The Challenge involves teams of participants from government agencies, businesses, and other formal and informal groups. Promote the Challenge at least six times per year. www.mnenergychallenge.org



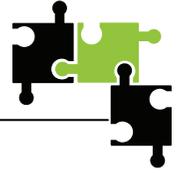


- b. Promote participation in utility-sponsored programs to the community at least four times per year. Establish goals and monitor participation levels.
 - c. Use data from successful passive solar housing— learn from good examples and give a head start to projects wishing to incorporate this technology. (See work by Ed Mazria, AIA 2030, on passive solar)
2. **Transition to Clean:** Encourage and support use and financing of alternative energy technologies.
- a. Explore and research potential for installing a demonstration photovoltaic system on a city building.
 - b. Partner with a school or business facility to install a solar thermal domestic hot water system.
 - c. Offer tax credits, code revisions, and utility rebates for alternative energy technologies.
 - d. Research potential for wind turbine installation, including measurements of wind factors.
 - e. Consider implementing a Property Assessed Clean Energy (PACE) program. New legislation adopted in 2010 enables local governments to create voluntary programs that will allow property owners to finance solar, other renewable energy, energy efficiency, and electric vehicle plug-in improvements to their homes or businesses through voluntary property assessments. See <http://www.cleanenergyresourceteams.org/greensteps>.
3. **Measure and Monitor:** Gather building performance data that support the use and financing of renewable energy technologies such as geothermal and solar hot water.
- a. Select and promote local case studies of different building types and different energy technologies.
 - b. Partner with local vendors to promote renewable energy technologies.
 - c. Create benchmarks and quantifiable goals for overall energy usage from renewable and non renewable sources.

General Actions

- I. Market programs through local utilities for home energy audits.
- II. Market Home Performance Rebate Program offered by Xcel, Stearns Electric, East Central Energy, and other providers as an incentive to make energy-saving home improvements and receive money in return.





- III. Offer workshops for improved in-home energy efficiency: install programmable thermostats, add storm windows or replace old windows with new EnergyStar rated windows, add insulation, change furnace filters, etc.
- IV. Offer programs to test efficiency of appliances and light fixtures; work with local businesses to offer promotions on energy efficient appliances and fluorescent light bulbs.
- V. Encourage people to take ownership of their energy use and behavior by testing their energy use themselves. Promote Kill A Watts for purchase or for checkout at the library and other public places.
- VI. Promote programs like the XCEL Energy and Neighborhood Energy Consortium Community Energy Efficiency Workshops to help people change their behavior and take control of decreasing their energy use.
- VII. Offer an energy efficiency loan or grant to provide financing to businesses to improve their facilities in ways that decrease their environmental impact.
- VIII. Replace traditional meters with Smart Meters to encourage decreased energy use.

