

# Sustainable Design PHOTOVOLTAIC SOLAR

**U**tilizing the energy potential of the sun as a renewable energy resource is becoming more and more cost effective. There are currently two marketable methods of harnessing solar energy: solar heating and photovoltaic panels. The latter, often referred to simply as solar panels, provides a means to convert the solar energy from the sun directly into electrical energy. While there have been great technological strides made over the last several decades, this form of renewable energy is still quite expensive. However, a number of rebates and tax incentives make the proposition of installing this green technology more feasible.

## **REBATE OPPORTUNITIES**

The Minnesota Office of Energy Security, a division of the Department

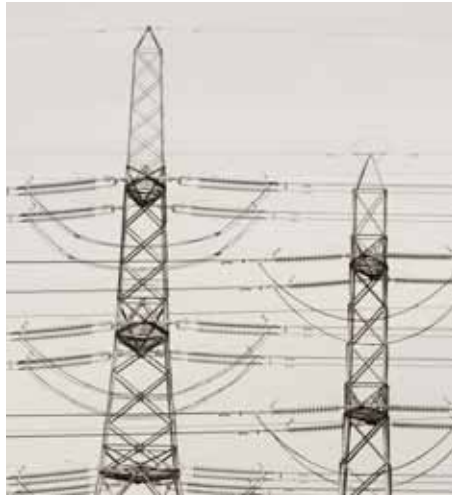
of Commerce, has an ongoing energy rebate program for the installation of solar photovoltaic systems for residential and small business applications. The rebate amount has yet to be determined for 2010, but ranged from \$1.75-\$2.00 per watt in 2009. There are a number of requirements that must be met to qualify for these rebates. Please contact I&S to discuss this program in more detail.

A new program is currently in development and will be offered directly through Xcel energy. The program, called Solar Rewards, is anticipated to offer a one-time \$2.25 per watt incentive to homeowners and commercial businesses. As a part of this program, a production meter will be installed on each residence to assist with net metering the energy flow. This program will help in reaching the utility's required renewable energy percentage to 30% by 2020.

## **TAX BENEFITS**

There are currently a number of tax credits related to the installation of renewable energy sources for homeowners and businesses. Specific to photovoltaic solar installations, the federal government offers a tax credit for up to 30% of the cost of installation of the system. Again, there are a number of requirements that must be met to be eligible for the credit.





### How We Can Help

Our design staff has considerable experience in performing energy audits and evaluations of existing facilities. Most of the rebate and tax credit programs require or strongly recommend an energy audit be prepared prior to the design of a photovoltaic system. This energy audit will review the existing facility to determine the energy usage of various components of the facility including lighting, heating, cooling, and ventilation. Often additional efficiencies (with their own rebate incentives available) may be able to be implemented to reduce the cost of the potential photovoltaic system.

Upon completion of the energy audit, I&S will make recommendations for energy improvements, calculate the pay-back period on these investments, and provide potential grants, rebates and tax credits for the proposed improvements. Once the base load has been calculated, I&S will work closely with a certified solar photovoltaic installer to accurately estimate the cost of the system.

Photovoltaic systems are generally installed on the roofs of existing structures, and the additional loadings must be carefully evaluated. Our structural engineers will review the existing structural elements and roof to ensure that the proposed system does not adversely effect the structure. In our climate, snow loading also needs to be considered, including potential drift conditions caused by the installation.

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