Wind and Solar Renewable Energy Applications

AN ARRAY OF FEDERAL AND STATE TAX CREDITS have been structured to spur development of both established and emerging renewable energy sources. This advisory focuses on two of the most popular of the renewable technologies — wind and solar — and the tax credits available to individuals and small businesses willing to invest in them.

Wind

Wind resources in Montana are considered superb to excellent along many corridors and very good to excellent across wide swaths of the central and eastern plains. Development of this resource in the state has been aggressively pursued at the industrial scale. Smaller wind projects for residential, commercial and agricultural purposes have also sprouted over the past decade.

As with any small electrical generation system, wind energy can be used directly near the source of production or the electricity can be stored by a battery array for use at a later time. Some investors will negotiate an agreement with their electrical providers to tie into the grid and be credited for the energy generated. A standard net metering arrangement with NorthWestern Energy or Montana-Dakota Utilities calls for wind systems to have a peak capacity of 50 kW or less. Each rural electric co-op in the state has adopted its own net metering policy. Most allow up to 10 kW. Wind systems for individual homeowners are more commonly 2 to 5 kW, but much larger sizes are seen, particularly in rural settings.

Cost

The cost for small wind averages perhaps $5 to $6 per watt, or about $5,000 per kW installed. About 2,500 kilowatt-hours (kWh) of electricity might be produced per installed kilowatt per year, depending on the type of system, tower height and the quality of the wind resource. At about 10 cents per kWh, roughly $250 worth of electricity would be produced per installed kilowatt per year.

Larger systems enjoy an economy of scale, but once again, a great many variables come into play when projecting wind costs and benefits. Some utilities may offer rebates on certain wind components. And producers may be able to sell Renewable Energy Credits (RECs), also known as Green Tags, once the system is up and producing power. Investment tax credits can further offset the cost of a wind system and are discussed later in this advisory.

Solar

Many regions of the state offer more than 300 cloud-free days per year, which is good for solar energy development. Unlike the major industrial wind farms erected in recent years, however, solar projects in Montana to date are small residential and commercial projects.

PV

Photovoltaic (PV) panels generate electricity directly and are a popular choice for individuals and small-scale commercial applications. These installations may be stand-alone, off-the-grid systems with battery storage. Perhaps more commonly, the PV installation is converted from direct current (DC) to alternating current (AC) and tied into the electrical grid, with or without battery backup. Through an agreement with the electricity provider, on-site generated power that enters the grid is credited to the producer. A so-called "net-meter" literally runs backward as the PV system generates more electricity than can be used by the on-site producer. The net meter measures electricity entering the grid by crediting the producer against ordinary electrical use.

According to a recent study of almost 6,000 PV installations across the country, the average cost to bring an array online varies widely. The survey arrived at an average of $8.32 per watt. A 4 kW array would therefore run about $33,000 prior to any rebates or tax incentives. NorthWestern Energy in Montana offers rebates for PV installations in its service area of $3.00 per watt on systems up to 2 kW in size. A 2 kW array produces somewhat less than the requirement for most homes. Consequently, many individuals opt for a larger PV array or size the inverter system to accommodate additional panels in the future.

Product lines vary, of course, but a 4kW PV array may require 400 to 600 square feet of surface area or more. The solar modules constitute roughly half the cost of the system; the remaining investment is in the inverter, mounting, wiring, safety disconnects and system installation. A 4kW array might generate 5,000 kilowatt-hours (kWh) in a year. At 10 cents per kWh, the value of the electricity would be about $500.

Solar Thermal

Solar thermal applications are commonly installed for domestic or commercial space heating and to provide hot water. Some systems heat water directly in panels. Perhaps more commonly at our latitude, an anti-freeze type fluid is heated in the solar panels. The fluid may be used to deliver space heat or the heat may be exchanged in a tank for domestic hot water purposes.

To capture the federal credit, a solar thermal system must provide at least half of the energy needed to heat the dwelling or the dwelling's water. Further, the equipment must be certified by the Solar Rating & Certification Corporation (SRCC). The SRCC independently tests solar hot water systems to verify that the collectors perform as advertised and meet the regional climatic conditions. An SRCC label on the thermal panel is required to capture the credit. Thermal applications cannot be used to heat water for a swimming pool or hot tub.

The Tax Credits

Individuals will find the tax incentives for wind and solar investments to be generally comparable. New incentives for wind were passed as part of the Emergency Economic Stabilization legislation passed in October, 2008. This year's American Recovery and Reinvestment Act signed into law in February removed the $4,000 cap on the credit, making it essentially unlimited. For individuals, the federal investment tax credit for wind is 30 percent of the project, inclusive of design, engineering and installation costs. A wind project must be 100 kilowatts (kW) or smaller and be installed before Jan. 1, 2017.

As mentioned earlier, there is no ceiling on the 30 percent federal credit, at least for the 2009 and 2010 tax years. This is known as the federal Investment Tax Credit (sometimes called an ITC) and it is available to individuals for the tax year the installation is placed in service.

Montana Credit

The Montana state Investment Tax Credit may be claimed against the entire investment, but is capped at $500 per tax payer for the year the project is placed in service. In addition, individual investors can have their property reappraised following a wind or solar installation. A tax exemption on the additional valuation up to $20,000 may apply and can be taken over 10 years. See the Resources section for contact information on state property tax incentives.

Wind and solar projects installed for existing and new homes, second homes, rentals or cabins are eligible for the federal credits. To capture the $500 per taxpayer Montana credit, however, a solar system must be for a primary residence. Neither state nor federal credits for a thermal system can include expenses for standard plumbing fixtures or items ordinarily required of a dwelling.

Commercial Considerations

For those considering a commercial wind or solar investment, the tax strategy has become more flexible since passage of the American Recovery and Reinvestment Act. Commercial wind systems at 100 kW or smaller are eligible for a 30 percent federal credit, also uncapped. Solar systems of any size are eligible for the 30 percent federal credit, uncapped. The Montana property tax exemption based on additional valuation can be up to $100,000 on commercial properties and multi-family dwellings. Perhaps most importantly, commercial investors can select a variety of ways to capture tax incentives.

During planning for a commercial project, the federal Investment Tax Credit can be estimated. Businesses can opt to collect the estimated Investment Tax Credit in the form of a Department of Treasury grant. These grants are payable within 60 days of installation, making the money available sooner than if the business waits until tax time.

A Production Tax Credit (sometimes called a PTC) is based on actual kilowatts produced and sold by a renewable energy system to a utility over a year's time. This is used by investors in large commercial projects that sell electricity to a utility or consumer. For commercial wind, the credit is $21 per megawatt-hour,

collectable over 10 years. (The credit for commercial solar is about half the amount.) This credit, too, can be projected and converted into an Investment Tax Credit. Businesses can choose to collect the estimated Investment Tax Credit in the form of a Treasury grant, also payable within 60 days of installation.

ITC, PTC or Grant?

This new ability to convert projected post-construction production and investment credits into grants may greatly improve financing for these types of commercial projects. However, corporate taxpayers installing renewable energy systems must decide whether to take the Production Tax Credit, the Investment Tax Credit or grants in lieu of the credits. Lawrence Berkeley National Laboratories offers a decision-making matrix for commercial investors, available at: www.nrel.gov/docs/fy09osti/45359.pdf.

Individuals and commercial investors in renewable energy projects should always seek the advice of a competent tax and financial planner.

Resources

The Solar Pro website offers a decision-making calculator for both thermal and PV systems, as well as wind: www.solar-estimate.org/. The site offers features for both individual and commercial renewable projects.

The Tax Incentive Assistance Project (TIAP) is a coalition of public interest nonprofit groups, government agencies, and other organizations in the energy efficiency field. Its website is designed to give consumers and businesses the information needed to make use of the federal income tax incentives for energy efficient products and technologies. The TIAP website can be accessed at: http://energytaxincentives.org/

The Database for State Incentives for Renewables and Incentives (DSIRE) offers good descriptions of state and federal incentives at its national website: www.dsireusa.org/**.**

The World Resources Institute offers good information about Production Tax Credits and Investment Tax Credits at its website: www.wri.org/publication/bottom-line-series-renewable-energy-tax-credits

The Montana Department of Environmental Quality (DEQ) offers the Energize Montana website at: www.energizemontana.com**.** This website offers renewable energy and energy conservation information, data and statistics and links to state and federal resources.

The Montana Department of Revenue offers the definitive site for state tax credits at: http://mt.gov/revenue/energyconservation.asp. A description of the Montana property tax exemption can be found there. The form for the property tax exemption is (AB-14) and is available at: http://mt.gov/revenue/formsandresources/forms/05AB-14.pdf

The Montana Green website offers valuable links to the full range of renewable energy resources in the state. Installation professionals and engineering services are listed on the site, which may be accessed at: www.montanagreenpower.com/

Common Questions

Q: **Can I install photovoltaic panels in 2009, take the tax credit, and install more panels in 2010? Since the credit is uncapped, can I take an additional credit for the 2010 tax year?**

A: Since qualifying renewable projects have no cap on the credit, additions to an installation would seem eligible expenses.

Q: **If I owe less tax than the 30 percent credit on my investment in renewable energy, will the government pay me the remainder?**

A: No. The credit is against taxes owed. You can lower your tax liability to zero, but the program is not designed to offer refunds on investments.

Q: **Since design, engineering and installation costs may be claimed for these credits, can normal mark-up costs be included?**

A: According to the Internal Revenue Service, normal mark-up costs by a builder for solar PV installations can be applied to the credit.