

When customers choose to operate a generating system, their electricity is monitored by a system known as net metering, which measures the difference between the electricity the customer consumes from the utility and the electricity the customer generates to the utility using their own solar, wind or other acceptable renewable generating equipment.

The following material provides detailed information on small electrical generators and net metering.

## Our voluntary Blue Sky<sup>sm</sup> renewable energy option

Whether you're ready to take steps toward net metering or not, Pacific Power has an easy way for you to reduce your environmental footprint and help grow a sustainable energy future. Our voluntary Blue Sky renewable energy program gives you the option to support renewable energy in addition to the renewable energy included in our diverse mix of resources used to generate electricity for all our customers.

For as little as \$1.95 more each month you can buy one 100-kwh block of Blue Sky. Supporting renewable energy through the Blue Sky program is easy – all you have to do is sign up.

For more information about Blue Sky, please call us at 1-800-769-3717, email us at [bluesky@pacificpower.net](mailto:bluesky@pacificpower.net) or visit [pacificpower.net/bluesky](http://pacificpower.net/bluesky).



*Let's turn the answers on.*

## Understanding small electric generators and net metering

### Overview

Pacific Power recognizes that customers may be interested in purchasing and operating small generating systems to provide electricity to their home or business. However, there are formal rules and schedules for interconnections between small customer-owned generators and electric utility providers. Under these rules and schedules, or "tariffs," customers generate all or part of their electricity using renewable resources. Customers are charged for the amount of energy they purchase from the utility company minus the cost of the energy they provide to the utility company. The tariffs specify that the customer is responsible for all costs associated with any modifications that may be required to connect the generating facility to the larger utility system.



*Let's turn the answers on.*





## Generator technology

Small generating systems include solar photovoltaic panels, wind turbines and other renewable generators. Many small generating systems are easily available and environmentally sound.

When considering the purchase of energy generation equipment, ask the dealer which agencies have tested, qualified, or otherwise approved a unit. Underwriters Laboratories (UL) organizations and the Institute of Electrical and Electronic Engineers (IEEE) certify the safety and performance of renewable products. Every net-metered generation project must meet specific safety and engineering standards to qualify for interconnection to the utility grid.

	Photo-voltaic	Fuel cell	Small wind
<b>Commercial availability</b>	Well established	Limited	Well established
<b>Size</b>	0.30 kw – 2 MW	1 kw – 200 kw	600 watts – 40 kw
<b>Installed costs per kw</b>	\$3,500 – \$5,500	\$8,000	\$3,000 – \$7,500
<b>O&amp;M costs (cents/kwh)</b>	Varies	0.13 – 1.5	Varies
<b>Fuel type</b>	Solar	Hydrogen, biogas and methane	Wind

*This table compares size, cost and other aspects of various electric generators.*

## Solar photovoltaic panels

Solar photovoltaic panels (PV) generate direct current electricity. These solar cells consist of positive and negative layers on a silicon wafer. Sunlight striking the panels is absorbed, freeing electrons in the silicon crystal. Electrons activated by the sunlight move through the crystal and out to the load or battery. With this type of electric generation, typically 12 to 18 percent of the energy striking the panels is converted to electricity. Research advancements continue to increase this efficiency.

## Interconnection process timeline



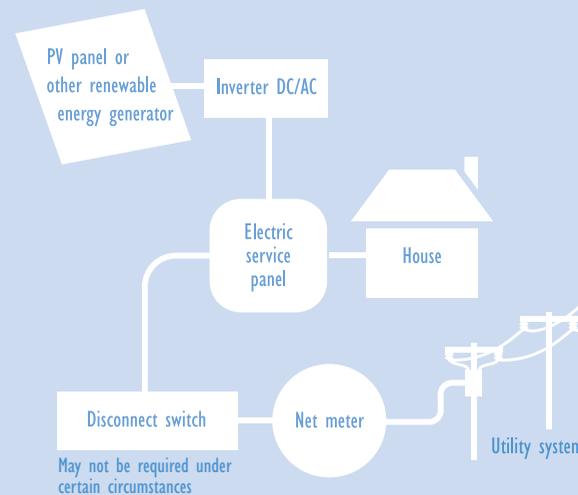
## Wind

Wind turns a propeller connected to a generator. A direct current wind generator will provide its energy to direct current loads. Alternating current for refrigerators, computers, TV, etc., would have to be provided by an inverter. If the wind turbine-generator produces 60-cycle alternating current, the generator could serve AC loads directly.

## Fuel cell

Fuel cells are similar to batteries in that they produce electricity using an electro-chemical reaction. Unlike a battery, which must be recharged, a fuel cell produces electricity continuously when supplied by fuel. These units are available commercially in 250-kw sizes. Smaller residential units also are being produced and field-tested at this time.

## Generation system components



*This illustration shows a small electricity generation system's major components and its connections to Rocky Mountain Power's system.*

## What is net metering?

Net metering measures the difference between the electricity you consume from your utility and the electricity you generate and send to the utility using your own solar, wind or other acceptable renewable generating equipment. A special net meter is installed that keeps track of this difference as you generate electricity and take electricity from the electrical transmission grid. When you generate more than you use, electricity flows to the utility.

Normally, your electric meter spins forward as it measures how many kilowatt-hours (kwh) of electricity you buy, and is read by your utility once a month. The net meter allows you to use the electricity you generate first, reducing what you would normally buy from your utility. If you generate more electricity than you use, the excess goes through your electric meter and into the grid. Your meter shows the net amount, measured as the difference between the electricity you generate to the utility and the electricity you purchase from your utility.

Please note, net metering rules, credits and rates are subject to the oversight and changes made by the applicable state public utility commission.

## What are the benefits?

Net metering is a simple way to get a present and future benefit for the electricity you generate. For example, if you are a residential customer, you may not be home during the day when your system generates electricity. Net metering allows you to "store" this excess electricity on the grid, reducing or offsetting the electricity you would otherwise have to purchase.

For more information on net metering, please call toll free 1-800-625-6078. You can find the net metering tariff for your state on our website at [pacificpower.net/netmetering](http://pacificpower.net/netmetering).