

Understanding Net Metering

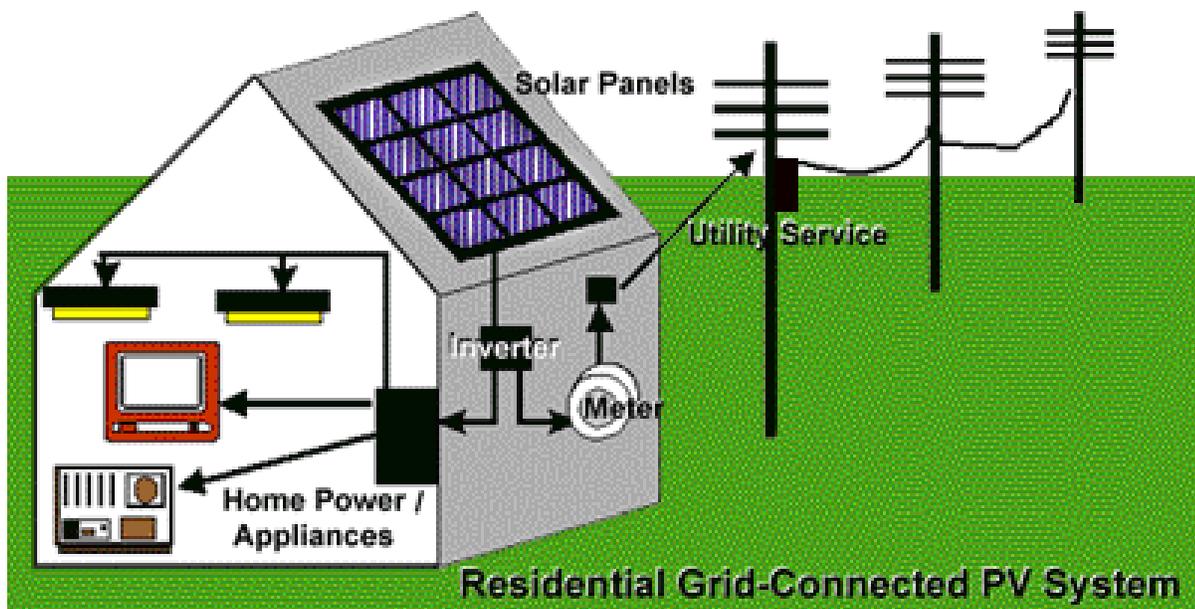
The Basics

The concept of electrical net metering is simple. First you need a customer-generator that has a generation resource such as a wind generator or solar panels and then you need to have them interconnected to their local electric provider—a distribution utility. If electrical generation by an individual customer-generator exceeds that customer's power use at a residence, this power flows backwards onto the electrical system, turning the meter backwards. In essence, the utility and the consumer trade kilowatt hours. In other words, the net difference between how much flowed back onto the utility system or flowed to the residence from the system is credited or billed to the consumer.

Without net metering, or under the federal Public Utilities Regulatory Policy Act (PURPA), if a customer has renewable generation, a utility is required to buy energy produced by a qualified customer-generator at the utility's avoided cost, there is no requirement to net meter. Avoided cost is the cost the utility would otherwise pay for power from the utility's traditional source of generation. Avoided costs are based on actual costs. For utilities that own generation this cost will be less than those that are simply distribution systems.

The Technical Picture

The generation resource generates electricity. The energy flows toward the meter, but must go through an "inverter" first. The inverter ensures that the energy flows in the form (AC-alternating current) that is used in the home. If there is no demand for energy at the residence or the demand is lower than the generation the energy then flows to the distribution system. It moves through the transformer on the customer's utility service, which will "step up" the energy to match the voltage in the distribution system. This same transformer "steps-down" the energy when it flows from the distribution system to the residence.



Safety Features

As required by LB 436, renewable generation facilities are required to have Underwriters Laboratories (UL) approved equipment that does not allow a system to deliver or backfeed energy into the distribution system if there is no energy flow in the distribution system—the line is dead. In other words, in order to function, the generation facility needs to be “excited” by energy in the distribution line.

Some utilities will, as part of their interconnection standards, require the installation of a disconnect switch with viewable lockable features. This is similar to the disconnect box on the outside of a home with an air conditioner or heat pump. For a small renewable facility, a disconnect switch can be purchased for approximately \$40 at a building supply store, such as Menards. Utilities have the right to open and lock out the generator with the disconnect switch.

To ensure that everything is operating as it should LB 436 requires a safety inspection before a system will be allowed to interconnect.

To ensure linemen safety utility policies require treating all lines as live unless properly test and grounded. This procedure will always be necessary as the final safety step. All things man-made are subject to failure. Everyone should approach power lines as live and wait until proper utility personnel verify a line’s status.

Metering

In the initial description of net metering an example was used to illustrate what net metering is. Simply, the meter runs backwards when the customer-generator generates more energy than is used. A single meter is the simple way to meter a customer-generator, but it is not the only way. Two meters may be used, one to measure total energy used, one to measure energy generated. Simple math comes up with the net. A “smart metering system” can be used that uses the power line or internet service to deliver use and generation information as well as providing other services to the consumer. It is important to note that if a single meter is used for billing, a second meter recording just the output of the generation facility is necessary in order to meet the reporting requirements of LB 436. LB 436 leaves the type of metering up to the distribution utility as long as the information is easily accessed by the consumer.

LB 436 as Amended by AM 708 Summary—Supported by the Electric Utilities in Nebraska

- 25 kw mandated capacity allows for a utility to permit larger systems
- Customer-generator pays interconnection costs
- Utility pays for metering system
 - Allows flexible language for the system to determine what kind of meter to use. One meter, two meter, smart meter etc.
- System cap of **one percent** average aggregate peak demand
- Safety and Interconnection Standard language
 - Utility maintains their interconnection standards.
 - State inspection required prior to interconnection and operation
- Credit for excess generation is a **monetary value** based on the value of the energy when it was generated—avoided cost of power supply
 - Monetary credit carries over month to month through annual period—paid out at the end of the annual period
 - **Not** a kilowatt hour credit