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SMALL TURBINE COLUMN:

Planning Your Wind System (4)—Utility-Buy-Back Rates

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Having met all of the requirements of your utility company to hook your new wind system up to the grid, you still have one last item to negotiate: the “buy back” rate the utility will “pay” you for your excess energy.

In theory, a utility-tie-in wind system works in such a way that when you are consuming more electricity than you are producing, your utility kilowatt hour meter runs forward, and you are billed for the electricity you consume. However, when you are producing more electricity than you are consuming, your kilowatt hour meter could actually run backwards, depending on how your kilowatt hour meter is set up. This is called by various names including “net energy billing” or “net energy metering.”

The reason the above explanation begins with “in theory” is that, even though the requirement to allow small energy producers to connect to the grid is guaranteed under the Public Utility Regulatory Policy Act of 1978 National Energy Act, not all utilities, or even states for that matter, follow the letter of the law. Some utilities have resisted net metering on grounds that any excess electrical generation fed into the utility system constituted a “sale” of electricity, and therefore, the homeowner should be paid only the wholesale value of the electricity, if anything at all.

However, in 2001, the Federal Energy Regulatory Commission (FERC), which regulates wholesale electricity markets in the U.S., clearly stated that “no sale occurs when an individual homeowner or farmer (or similar entity such as a business) installs generation and accounts for its dealings with the utility through the practice of net metering.” FERC further stated that an individual who generates power for his/her own use is, in effect, “banking” the excess generation on the utility system for later use.

Your utility may not like the idea of net billing or net metering because, in effect, they are crediting you, a small power producer, the same retail rate for your excess electricity that you, their customer, pay them for the electricity that you consume. They may argue that they are in business to make money, and if they bought electricity from all small power producers at retail prices, they would soon be out of business.

What the utility pays for excess electricity, however, is an issue decided by your state's public utility commission. Wind turbine owners need to know what their state policy is, or what the policy of their utility is, as this information is critical to what size wind turbine you decide to install.

Payment methods vary

Currently, 38 states provide for some form of net metering of renewable energy systems. Each state has different interconnection requirements for net metering, different metering technologies that are allowed [edit correct?], and different ceilings for total installed capacity. Information on each state's net metering programs can be found on the Database of State Incentives for Renewable Energy (DSIRE) at <http://www.dsireusa.org/>

In most states, net metering takes the form of simply running the kilowatt-hour meter for the house backwards. Net energy metering with one meter is ideal. It effectively means that the homeowner with a grid-connected renewable energy system is credited with the retail value of their electricity. In a few states, two separate kilowatt-hour meters are utilized, one for electricity consumed from the utility, and the second to record any excess generation that is stored on the grid.

The case can be made that the energy you produce is insignificant to the utility, and therefore does not warrant the administrative cost of a second kilowatt-hour meter and processing a second bill. However, the utility might counter by charging you for those costs, which they may have a right to do. You might point out that what the utility gains in public relations by adding renewable capacity to offset their coal- or nuclear-generated electricity far outweighs any perceived monetary losses that may occur. They cannot buy that kind of advertising!

Unless net energy metering is required, the utility probably will require that a second kilowatt-hour meter be installed at your site. Both the production meter and the consumption meter will be ratcheted; that is, they will move in one direction only. This way, the utility can monitor how much you consume versus how much you produce, and bill or pay you accordingly. What the utility "pays" for the electricity you produce can be very different from what you pay them for the electricity you consume. Any disparity will greatly affect the economics of your utility-tied wind system, and must be considered carefully.

Even if a second kilowatt-hour meter is installed, you may be able to persuade the utility to put your system on net energy billing rather than pay you a lower wholesale rate for your excess electricity. A second meter, however, puts you in a vulnerable position should the utility have a change of heart. There have been all too many situations where utilities have done so, or are paying outrageously low rates for the electricity put onto their grid.

Choose the right turbine

The upshot of all of this is that your state's or utility's net metering policy will play a critical role in determining the wind turbine you decide to install. For example, if you are on a net metering policy where the utility credits you with the retail value for your annual electricity generation until you reach your historic annual consumption, then you will want a wind turbine that is sized to meet your annual needs but will not over produce. You want to offset retail electricity purchases but avoid any "wholesale sales."

In Wisconsin where I live, most utilities will pay the retail rate of all excess electricity for renewable energy systems up to a name plate capacity of 20 kW, regardless of what your annual consumption is. Different states have different upper limits. If your situation is similar, you will want to put up the biggest wind system possible, up to the legal limit. Any money you receive from the utility for excess electricity generation can be used to help pay for your system.

Finally, if the utility will only credit you the wholesale rate for any electricity that you back feed onto the grid, then you want to use a wind turbine as a "demand side management appliance"; that is, you want to reduce your consumption, but never back feed onto the grid. This would be analogous to unscrewing an incandescent light bulb and screwing a compact florescent light bulb in its place. You are reducing you demand on the utility. You want to substitute buying their expensive polluting electricity with your less expensive, environmental alternative.

The actual value of the electricity you generate is slightly higher than what the utility charges you per kilowatt-hour. The only "fixed" cost of your bill is the service charge, as this represents your "storage" cost. If you subtract this amount out of your monthly bill, then divide the balance by the kilowatt hours you have consumed, you will come up with an amount that is slightly higher than what the utility says it is charging you. This is because these kilowatt-hours are inflated by any fuel adjustment surcharges, and local and state sales taxes. Because you are generating your own electricity and banking it on the grid, this "inflated" cost is the actual value of your electricity.

Do your homework

In calculating the economics of your wind system, the "buy back" arrangement with your utility will play a critical role. As such, researching your state or local utility rules should be one of the first things you do.

An excellent explanation net metering and net billing can be found on AWEA's web site at <http://www.awea.org/faq/netbdef.html> .

[Editors Note: The opinions expressed in this column are those of the author and may not reflect those of AWEA staff or board.]