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Structuring a “Buy-Down” Program for Small Renewable Energy Systems: Some Recommendations

As states restructure their electric utility industries to promote greater competition, one question that often arises is how best to encourage the use of small (residential) renewable energy systems, which reduce pollution and reduce the need for new power plants.

The overall goal of competition is to lower electricity prices, but small renewable systems often already have a fairly long payback, and if prices drop, the payback becomes longer, which is a disincentive to potential customers for these systems.

One approach that a few states have adopted, and others are considering, is a “wires charge” used for a “buy-down” program. What this means is:

- 1) A small charge is levied on every kilowatt-hour (kWh) of electricity sold. Since many kilowatt-hours are sold, the charge can be **very** small and still raise a significant amount of money.
- 2) The money raised is used to “buy down,” or subsidize, the purchase of small renewable energy systems. A homeowner might only pay 50% of the cost of a new small wind turbine, for example, and the state’s wires charge fund (may be called a “public benefits fund”) would pay the rest (by means of a rebate).

Early results from the states that are using this approach suggest that it can indeed be an effective method of encouraging consumers to buy small wind machines or other renewable energy systems. The purpose of this fact sheet is to outline some desirable features to make a buy-down program as effective as possible:

A state grant is easy to apply for and the money is provided quickly after the installation of a wind system. As with any consumer product, word of mouth is important: if the application for state funds is cumbersome or the amount of time before payment is long, word will quickly spread to other potential customers and the market will dry up, making the program ineffective.

The state should establish some minimum requirements for eligible systems to make sure they are legitimate. In the past, problems have been encountered with shoddy manufacturing of solar heating systems and wind turbines. The state should verify that systems are being sold commercially and that they carry at least a five-year warranty.

The rebate amount should be high enough, particularly in the program's first years, to generate customer interest and enthusiasm. AWEA recommends that the program cover 50% of the cost of a system purchased during the first 3-5 years and then, if necessary, gradually phase out, with the amount covered declining by perhaps 5% each year. The hope is that increasing purchase volume will allow manufacturers to reduce the price of their systems to keep pace with the declining rebates.

The rebate amount should be limited to a certain level per watt of capacity of the system, to prevent manufacturers or dealers from raising prices. AWEA recommends that the rebate be limited to \$3 to \$4 per watt of capacity. If the limit were \$4/watt, for example, and the rebate were 50%, then the maximum rebate on a 10-kilowatt (10,000-watt) wind system would be \$20,000 ($\$4 \times 50\% \times 10,000$). This ensures that a manufacturer or dealer cannot charge an artificially high price for the system because of the rebate.

The rebate should be provided only for systems that are connected to the utility lines (the "grid"). There are several reasons for this distinction: (1) "Remote" systems (those not connected to the utility) are already more cost-effective compared to the alternative, which is usually an expensive extension of the utility's lines. (2) Most remote systems use small fossil-fueled backup generators (typically gasoline-powered) which have low operating efficiencies. (3) Grid-connected systems help improve the utility system's performance by providing some added generation located closer to customers. (4) Grid-connected systems are also more efficient than remote systems because they need not include batteries and can avoid the losses associated with battery charging and discharging and voltage regulation.

The rebate will be most effective if it is accompanied by an effective "net metering" law. Typically, a small wind system will provide more electricity than its owner needs at some times and less at others. Under net metering, the utility meter is allowed to run backward when the system is producing excess power—in effect, a one-for-one trade for electricity the system owner requires from the utility at other times. Net metering also makes the economics of a small wind system more attractive, because nearly all of its production can be used to reduce the owner's electricity bill. More than 30 states today offer some form of net metering, but net metering can be more or less effective depending on the complexity of state and utility interconnection requirements. Obviously, the strongest encouragement to potential wind system customers is provided by an effective buy-down program **and** an effective net metering law.