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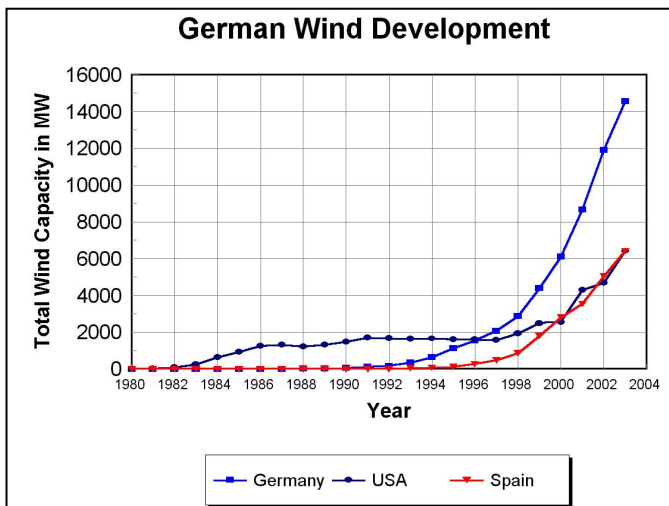
ONTARIO SUSTAINABLE ENERGY ASSOCIATION

Advanced Renewable Tariffs & Electricity Feed Laws

by Paul Gipe*

Since 1991 when Germany introduced its ground-breaking Electricity Feed Law, the country has installed more than 14,000 MW of wind generating capacity--more than twice that installed in the United States. One-third of all German wind capacity, about \$7 billion CAD, is owned by farmers, households, small businesses, and co-operatives. Spain, France, and a host of other countries have followed Germany's example and introduced similar Feed Laws. This has resulted in the spectacular growth of wind energy in Europe. Spain now ranks second in installed wind capacity worldwide, surpassing that in the United States in 2002.

In 1999, the German parliament amended the Electricity Feed Law and updated it for the new millennium. The Renewable Energy Sources Act covered additional technologies and introduced a multi-tiered system for determining the price paid for renewable sources of electricity. The French government followed the German example and introduced what it called Advanced Renewable Tariffs.



What Are Advanced Renewable Tariffs?

Advanced Renewable Tariffs permit the interconnection of renewable sources of electricity with the grid and specify the price paid for the electricity generated.

How Do They Work?

Via a public policy debate, society (a state assembly, congress, or parliament) determines a rate to be paid for every kilowatt-hour (kWh) generated by a renewable source of energy. This rate varies from one form of renewable energy to another.

How Are Prices Determined?

The payment for wind energy in the original German Electricity Feed Law was simply 90% of the retail tariff. In Advanced Renewable Tariffs, economists and engineers use a more complex approach, calculating the prices per kWh needed for various technologies to produce a profit under varying conditions. They then report their findings to a legislative assembly, where the final price is determined by a transparent political process. In this manner prices can be tailored to technologies, regions, and sectors of the economy.

For wind energy in Germany and France, Advanced Renewable Tariffs specify payments in several tranches: one price during an initial period to recoup the turbine's capital cost, and multiple prices in a subsequent period based upon the productivity of the wind turbine. In the second period, higher prices are paid for wind turbines that are less productive than a "reference" turbine, lower prices for turbines that are more productive. This is to encourage installation of wind turbines across the countryside instead of concentrating them only in areas with the highest winds.

France sets three different tiers and different prices depending upon location: metropolitan France or its former colonies. The overseas departments and territories and Corsica are paid more than mainland France.

Germany's Advanced Renewable Tariffs set two tiers that apply across the entire country. In Germany, the fixed price for new installations gradually declines every year. Further, the prices are revisited by parliament (the *Bundestag*) every two years. This provision encourages economic efficiency and allows for tailoring the program to changes in the economy.

What are the Advanced Renewable Tariffs in Europe?

Wind Energy

- § Germany paid \$0.15 CAD/kWh during the first five years of operation (base year 2002). During the following 15 years, Germany will pay \$0.10 CAD/kWh at windy sites, and \$0.14 CAD/kWh at the less windy reference site.
- § France pays \$0.14 CAD/kWh during the first five years of operation for projects less than 12 MW. During the following 15 years, France will pay as little as \$0.05 CAD/kWh for windy sites, and as much as \$0.14 CAD/kWh at less windy sites. Wind turbines at sites between these two extremes will be paid \$0.10 CAD/kWh.
- § Spain pays \$0.10 CAD/kWh for projects less than 50 MW. Developers may also choose a premium of \$0.05 CAD/kWh above the wholesale or market price. Most have chosen the fixed price.
- § Austria pays \$0.13 CAD/kWh for wind-generated electricity under its new Electricity Feed Law.

Photovoltaics

- § Germany pays \$0.83 CAD/kWh for projects less than 5 kW.
- § Spain pays \$0.67 CAD/kWh for projects less than 5 kW, \$0.33 CAD/kWh for projects less than 25 MW.
- § France pays \$0.25 CAD/kWh on the mainland, \$0.51 CAD/kWh in its overseas territories.

How Do Advanced Renewable Tariffs Differ from Net-Metering?

Net-metering is often limited both in the size of renewable systems used (often only 10 kW) and in the total amount of capacity permitted on the system. Moreover, net-metering by definition does not include surplus generation or electricity delivered to the grid in excess of customer demand. Advanced Renewable Tariffs permit ratepayers, for example, to install the most cost-effective wind turbine for their application. Under net-metering, no customer can justify producing excess generation which is effectively delivered to the grid gratis. This effectively limits the size of the wind turbine to that which is less than economically optimum.

How Do Advanced Renewable Tariffs Relate to Renewable Portfolio Standards?

Renewable Portfolio Standards (RPS) are simply targets, for example 10% of electricity supply from renewables by a certain date. Renewable Portfolio Standards do not specify how to arrive at such a target. Many mistakenly assume that to meet RPS targets, bidding is required. Bidding is only one way to meet RPS targets, Advanced Renewable Tariffs are another.

Bidding is cumbersome, legalistic, and often excludes community participation. Because of the sophisticated gaming strategies used by bidders, there are heavy up-front legal and engineering costs associated with bidding. These up-front costs deter individual farmers, as well as community groups, from participating in bidding. This leads to further concentration of renewables in the hands of the power generators.

The most egalitarian mechanism for quickly bringing the most new renewables on line is Advanced Renewable Tariffs.

Have Advanced Renewable Tariffs Been Used Before in North America?

Much of the wind-generating capacity operating today in California was installed under a program quite similar to Advanced Renewable Tariffs. In the early 1980s, the California Public Utility Commission introduced what were then called Standard Offer #4 contracts. These contracts guaranteed a pre-determined price for a period of ten years. Unlike modern Advanced Renewable Tariffs, the price under these contracts increased gradually during the period they were in effect. Nearly 1,500 MW of the 2,000 MW currently operating in California today were installed under this program and launched the world's commercial wind industry.

Who Pays the Difference?

Society--federal or provincial taxpayers, or ratepayers--makes up the difference between the so-called wholesale market price and the fixed tariff.

Who Should Qualify?

For maximum rural economic benefit, premium payments under Advanced Renewable Tariffs should be limited to farmers, co-operatives, or other small holders. Power generators should be excluded.

Why Now?

Energy is politically in play and the deregulation fiasco opens the door to innovative proposals.

Where are Advanced Renewable Tariffs Being Used?

Germany, Spain, France, Austria, and Portugal now have Electricity Feed Laws. In Spain, wind developers can opt for either a fixed payment or take the market price. All have chosen the fixed price and as a result, Spain has become the world's largest wind market outside Germany.

More information on Feed Laws and Advanced Renewable Tariffs

For more information on Electricity Feed Laws and Advanced Renewable Tariffs, point your browser to www.wind-works.org/articles/feed_laws.html

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