End the Wind Production Tax Credit

It is time to end the production tax credit for wind energy for the very simple reason that society cannot afford it. After thirty years of failed promises about the impending competitiveness of wind power, it is time to face the fact that it will never be competitive with fossil fuel and cannot meaningfully supplement our energy requirements except at unreasonable cost levels.

The ultimate requirement for any electrical energy source is the capability to provide dispatchable (i.e., electric energy generating units that provide power when requested as opposed to intermittent power like wind and solar that only provides power when the wind is blowing or sun is shining) energy and there is a current need to invest in new electric generation facilities that must be evaluated against that criterion. Let me give a specific example why I think that wind energy fails this test.

There is a proposal to replace the existing coal-fired Dunkirk, NY generating units with a new combined cycle natural gas fired turbine with a capacity of 440 MW. It is not unreasonable to expect that new unit will be able to provide electricity 90% of the time (the capacity factor is 90%) so we expect that it can provide 90% of 440 MW 8760 hours per year for a total of 3,468,960 MWhr of dispatchable power. The facility can schedule maintenance activities when loads are projected to be low and easily replaceable by other sources of power so we can expect that it will be available when we need it.

There are individuals that will oppose this re-powering proposal because it will "enable" hydro-fracking natural gas development and propose replacing the facility with wind and solar energy. Those proponents of renewable power will present their comparison of costs as levelized cost per Mwh for similarly sized capacity. In other words they will propose 440 MW of wind or solar. If that approach is used then the cost is for all intents and purposes the same and maybe even cheaper for the renewable power.

However, what we really need when we repower a facility is 3,468,960 MWhr of dispatchable power when the new facility is on-line. The capacity factor for wind is around 30% so in order to produce the same amount of power customers would need to invest in 1320 MW of wind capacity. Assuming that those wind turbines are in the same general area as the existing power plant means that all the turbines would have the same pattern of windy and calm periods because the wide area driver of wind speed is low and high pressure systems that are hundreds of miles across. That means that customers also have to pay for storage of the wind and it is not unreasonable to assume that two thirds of the wind capacity would have to have storage capability.

As a result, using wind power to replace a new combined cycle unit will require three times as much installed capacity plus storage for around two thirds of the capacity. But it gets even worse. Dispatchable power will be available for the seasonal peak loads. Those are generally very hot or very cold periods caused by high pressure systems when the wind resource is even worse. The New York Independent System Operator assumes that wind energy capacity during those periods is only 20% so that means to completely replace dispatchable load you need five times as much wind capacity.

Unfortunately there is even another reason why wind is uneconomic. Dr. Paul Joskow's paper "Comparing the costs of intermittent and dispatchable electricity generating technologies" (http://dspace.mit.edu/handle/1721.1/59468) demonstrates that levelized cost comparison is a misleading metric because it fails to take into account the large variations in the market value of electricity. On a daily basis the highest value of electricity is during the day when the winds are light and

the value is low at night when the winds are higher. Market value of electricity also varies by season. In the spring and fall, electricity demand and value is low, but it peaks in the high demand periods of the summer and winter. Again the wind resource is highest in the low demand periods and lowest in the peak demand periods. This means that the payments to cover the cost of wind development are not in synch with the highest value of electricity generated. Dr Joskow proposes that be taken into account when the costs are compared and it significantly de-values wind development.

When the total costs of wind energy are compared to the total costs of a dispatchable technology such as nuclear, gas combined cycle or coal, wind is a loser. Moreover, it will always be a loser because of the pattern of intermittent wind against electricity peak needs. We cannot continue the charade that somehow someday wind can be competitive.

Please end the production tax credit for wind energy as soon as possible to end this drain on the economy.

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