

The Powerful Role of State Renewable Portfolio Standards

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Renewable energy – electric power derived from renewable resources such as wind, water and the sun – is the fastest-growing segment of the U.S. electric power industry. The amount of wind-powered generation in the United States increased by 45 percent in 2007, and approximately 30 percent of all new generation added to the national power grid was from wind. And 2008 looks to be another record-breaking year for wind. Solar-powered electric generation is also experiencing a renaissance, albeit on a smaller scale. Other forms of renewable energy, such as biomass and geothermal heat pumps, likewise are attracting new investment.



U.S. energy policy historically has encouraged the development of renewable energy resources through the use of federal tax incentives. Specifically, Congress has enacted and subsequently renewed the production tax credit (PTC) for wind, biomass and other applications, and the investment tax credit (ITC) primarily for solar. Both the PTC and the ITC were extended in the Emergency Economic Stabilization Act of 2008, with a one-year extension of the PTC for large-scale wind projects placed in service on or before Dec. 31, 2009, and an eight-year extension of the ITC for solar projects placed in service on or before Dec. 31, 2016. These federal tax incentives help create a level playing field as they allow renewable energy to be more cost-competitive with traditional fossil-fueled electric production. The PTC and the ITC therefore provide the foundation for renewable energy in the United States.

However, the PTC and ITC do not dictate where the renewable energy projects will be developed. Rather, the renewable portfolio standards (RPSs), which mandate that a certain amount of electric power be generated by renewable energy resources, are what shape the market for renewable energy in the United States. While efforts to pass a national RPS have consistently failed in Congress (for more about this topic, please see the sidebar), mandatory RPSs have been established in a patchwork manner in 28 states and the District of Columbia, with nonbinding RPSs in another three states. These state RPSs, combined with other state programs and incentives, are leading and shaping the country's development of renewable energy.

RPS Policies Continue to Evolve

RPS policies have evolved substantially over the past 10 years. Initially, state RPSs were incorporated into broader state electricity restructuring laws and contained broad, often unachievable goals with little to no enforcement mechanism. Today most RPSs emerge from stand-alone legislation, arguably contain more achievable objectives, and include market mechanisms to accommodate compliance as well as alternative penalty payments to

incentivize compliance. The most recently enacted RPS policies include resource set-asides specifying how much of which particular renewable resource is required to be obtained for consumption, and these set-aside programs typically target greater use of solar power (explaining why New Jersey has emerged as a leading market for photovoltaic installations). State RPS targets currently vary from as low as 8 percent (the 2020 target in Pennsylvania) to as much as 25 percent (the 2025 targets in Illinois, Minnesota and Oregon). The time frames for compliance also vary, from a 2010 compliance date (for a 20 percent target in California) to a 2025 compliance date (for varying targets in Arizona, Illinois, Minnesota, New Hampshire and Oregon). Finally, beyond the 26 states and the District of Columbia with mandatory RPSs, four states (Missouri, North Dakota, Vermont and Virginia) have nonbinding RPS targets.

Unlike the congressional approach to the PTC and the ITC, which has been to tinker with but generally leave these incentive programs in place, many of the 26 states with RPS goals continue to substantially revise their programs as the renewable energy market evolves. In 2007, 11 states made significant changes to their RPS policies, many increasing RPS targets and adding resource set-asides to accommodate an evolving à la carte approach to the consumption of renewable energy. This is noteworthy because the set-aside requirement places a premium on diversity of supply over other factors such as cost. Also noteworthy is the growing sophistication of many RPS programs that have adopted tiered time frames for compliance, which differ depending upon the renewable energy resource. Adding to what some in the industry might describe as a cacophony of varying targets, time frames, resource-specific set asides and in-state/in-region requirements is the fact that some states exempt their publicly and privately owned power companies from compliance with RPS targets. Further complicating the evaluative process is the fact that four states (Hawaii, Michigan, Nevada and North Carolina) now include energy efficiency (what used to be called demand-side management) in their mandatory RPS requirements. This can make it difficult for a developer to evaluate the market if it is competing with a nongeneration resource for capital and customers.

As noted in the April 2008 Lawrence Berkeley National Laboratory report, entitled “Renewables Portfolio Standards in the United States” and written by Ryan Wisser and Galen Barbose, three distinct models have emerged for the procurement of renewable power. The first model applies in states where there is retail electric competition, where electric power providers are given

State RPSs – Yes; National RPSs – Not Yet

The difficulties in establishing a national RPS are grounded in the fact that currently there is no single renewable energy market in the United States. First, each region in the United States has its own unique meteorological and geological conditions. Second, different technologies, with varying levels of cost-competitiveness, are used to exploit these vastly different renewable energy resources. Third, the nation’s electric transmission grid was not designed with the objective of carrying energy to load centers from remote locations where renewable resources are often located. Finally, there is no national renewable energy credit trading system to allow regions that are not rich in renewable resources to compete with regions that have renewable resources by purchasing such credits to address their shortfalls in renewable energy generation or consumption.

While recent attempts by Congress to create a national RPS have failed, a national renewable energy credit trading system could mitigate these first two impediments by creating a national renewable energy market. While the failed Lieberman-Warner Climate Security Act of 2007 would have provided such a framework, most experts on Capitol Hill believe that enactment of such far reaching legislation and the promulgation and implementation of enabling regulations are at least a few years off.

significant latitude to comply with RPS requirements as they see fit. The second model applies in states with regulated monopolies, where the state public utility commission oversees the utility procurement of renewable energy. The third model applies in states where a state agency is directly responsible for the procurement of renewable energy. Only New York and Illinois fit into this last category. Painting with a broad brush, one can make the general observation that compliance is strong in most states with RPS policies. California, Iowa, Maine, Maryland, New Jersey, New Mexico, Pennsylvania, Texas and Wisconsin all have achieved compliance levels greater than 95 percent, in some cases supplementing or substituting renewable energy purchases with purchases of renewable energy credits (RECs). Other states have struggled, in part due to an illiquid REC market in their respective regions.

Part of the problem in fully evaluating the strengths and weaknesses of these RPS policies is that energy companies have minimal experience with these relatively new programs. In fact, some states do not even require the first year of compliance until 2010 (North Carolina),

2011 (Oregon) or 2012 (Washington). Nonetheless, the Berkeley report concludes that “state RPS policies are already beginning to have a sizable impact on the amount and location of renewable project development.”

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While the report goes on to credit federal tax incentives together with voluntary green power markets, much of the current investment in renewable energy might have been redirected elsewhere but for the politically mandated consumption of renewable energy in these states. In 2007, approximately 76 percent of all non-hydroelectric renewable capacity was added in states with active RPS programs. On the other hand, it must be noted that in some states with RPS programs it is not clear that the RPS program was the prime motivating factor. Some states, in fact, have coordinated programs of incentives and government purchase undertakings separate from any RPS program, while others have been able to attract renewable energy investment without RPS mandates.



Other State Programs Also Attract Renewable Energy Investment

An RPS target is helpful only to the extent that one has the necessary transmission capacity to move the renewable energy resource to market. While some have looked to the federal government to create “an interstate transmission superhighway system,” some states are taking the initiative to construct the necessary electric transmission infrastructure to allow for the development of renewable resources. Leading the way is Texas, which at the end of 2006 created Competitive Renewable Energy Zones (CREZs) to enable the development of transmission lines to connect the state’s wind-rich areas with load centers. This process started with a study by the Electricity Reliability Council of Texas (the regional transmission coordinator) and the Public Utilities Commission of Texas. The study identified 25 areas where wind power could be developed and then grouped these areas into four zones in the state. The state government has taken the lead in the development of transmission lines that have been projected to cost between \$2.95 billion and \$6.38 billion. These new transmission lines will enable even more wind farms in a state that is already the largest, and fastest growing, in the development of its renewable resources.

Other states, including New York, have actually had their renewable energy generation curtailed as a result of transmission constraints. Some states, like Maryland, continue to treat new transmission as a fight for the next generation and instead have gone for the quick fix. Supplementing its existing RPS program, Maryland recently announced that it would join local jurisdictions and the state university in the purchase of renewable energy under long-term contracts. This coalition plans to purchase 200 megawatts under contracts with terms up to 15 years – big plans for a state that has been unable to bring a utility-scale renewable energy project online since its RPS was enacted in 2004.

Many states offer tax and cash incentives for small-scale renewable energy systems. For instance, in California, there is a program for small-scale wind projects connected with the grid. There is also a series of programs aimed at the development of solar energy, including the California Solar Initiative, which is designed to provide up to \$2.2 billion in incentives over the next 10 years for the installation of solar panels in existing residential homes and in existing and new commercial, industrial and agricultural properties. Municipal utilities in California are also required to offer solar programs to their customers. Other states provide a series of wholesale and retail rebates to renewable energy developers and consumers;

one of these is New Jersey, which already has one of the most aggressive RPS targets, with a 22.5 percent mandate for renewables by 2021.

One of the more interesting phenomena is that some states with renewable energy resources – in particular, wind – have been able to attract investment in the renewable energy sector even without an RPS mandate. Kansas, which has relied upon inexpensive coal to generate power in one of the most wind-rich states in the country, has set a goal of producing 10 percent of its energy from wind by 2010 and 20 percent by 2020. Working closely with heads of the electric utilities in Kansas, Gov. Kathleen Sibelius announced at the American Wind Energy Association (AWEA) Windpower 2008 gathering that Kansas is well on its way to accomplishing this goal ahead of schedule. Kansas now ranks twelfth in the country in terms of installed wind capacity. North Carolina's utilities embarked on renewable energy programs prior to enactment of an RPS, and both West Virginia and Wyoming increased their renewable generation without RPS mandates. Nonetheless, studies have shown that renewable energy development in states without significant renewable energy resources is less likely in the absence of an RPS mandate.

The Cost of RPS Compliance Is Not a Deterrent

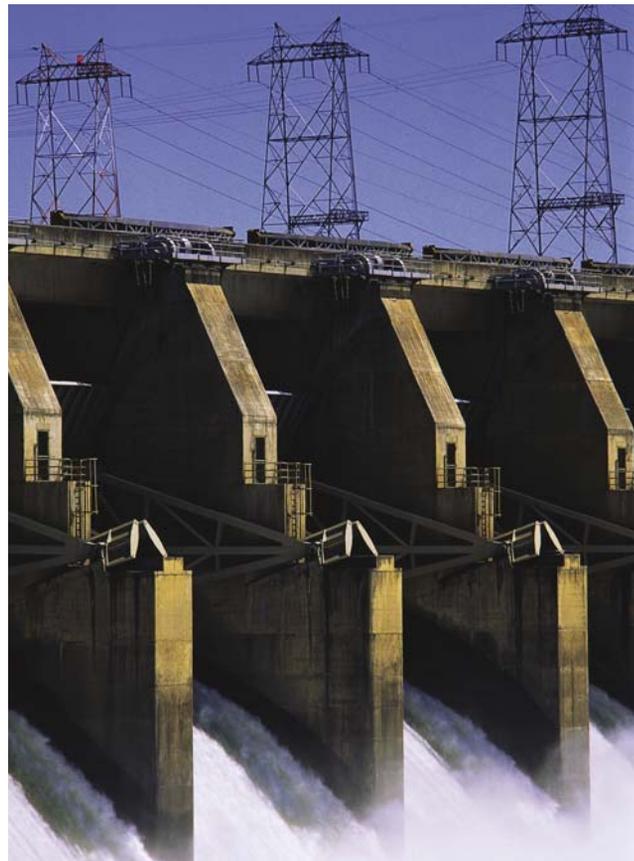
The cost of purchasing renewable energy or RECs to comply with state RPSs has resulted in significant disagreement from all areas within the electric power industry. As a starting point, determining cost differentials is extraordinarily difficult because of the number of variables that come into play. Notwithstanding this difficulty, and understanding that reported results vary from state to state, in most cases consumers in states with RPSs have seen their costs increase by less than 1 percent. One study over the period 1999-2006 indicates that states that adopted an RPS program subsequently experienced a 0.35 percent larger annual increase in average retail prices than states without an RPS mandate. A more recent study including price data for 2007 indicates that only Connecticut and Massachusetts have estimated rate impacts greater than 1 percent, while New York, Pennsylvania and many of the states in the mid-Atlantic region have estimated cost impacts less than 0.2 percent. Moreover, all of these estimates are based upon short-term REC pricing while long-term REC purchases are likely to be priced lower.

Notwithstanding the empirical evidence upon which these studies are based, others in the industry have voiced concerns over cost impacts associated with RPS compliance. Noting that RPS mandates are moving

electric utilities and other electric-load-serving entities away from least-cost procurement, and that customers are only now seeing the impacts from these changing policies, Standard & Poors has expressed concern that the cost issues could have credit implications for some companies.

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The Edison Electric Institute (EEI), the association of shareholder-owned electric companies, claims that RPS mandates in some states are “unachievable” and notes that either the shareholders or the ratepayers will ultimately bear the cost of the penalties that could be imposed on noncomplying energy companies. More important, EEI points to the elephant in the room: the cost of new electric transmission lines that will be required to bring much of the targeted renewable resources to market.



Continuing Role of the PTC and ITC

As noted earlier, the PTC and the ITC provide the foundation for investment in the U.S. renewable energy market as these tax credits subsidize the currently more expensive renewable energy technology. The PTC was originally enacted as part of the Energy Policy Act of 1992 to stimulate use of renewable energy technologies for the production of electric power. The ITC, with its roots in the 1978 energy crisis, was also revived in this legislation. The PTC provides a 10-year credit currently valued at 1.9 cents per kilowatt-hour (adjusted for inflation) that may be used to offset the generator's federal tax liability. The ITC is a dollar-for-dollar reduction in the generator's federal tax liability up to 30 percent of the tax-credit basis invested in certain eligible property. Since its inception, the PTC has expired on three occasions (2000, 2002 and 2004), and each time Congress has renewed the PTC retroactively. Illustrating the fundamentally enabling effect of the PTC and the ITC is the fact that development of renewable energy goes through a severe boom-and-bust cycle with each expiration and subsequent renewal of these tax credits.

Renewable tax credits enjoy bipartisan support in Congress and from almost every state governor. Notwithstanding such broad-based support, the cost-based approach to extending the PTC and ITC, whereby the value of the tax credits had to be offset by an equivalent amount of tax revenue, reflects the cautious political environment in Congress. This is what produced the disparity in the one-year extension for large-scale wind, but an eight-year extension for solar. Considering the six-to-eight-month timeline for constructing a fully licensed



wind project, the PTC extension amounts to a four-to-six-month "patch" requiring yet another extension in 2009. However, with President-elect Barack Obama having advocated renewable energy as part of his campaign platform, it seems likely that the PTC will be extended, yet again, in the next Congress.

These credits are applicable across the country without regard to the meteorological or geological conditions of any particular region, the location of the renewable energy resource in relation to the electric load in the region, or the existence or availability of high-voltage electric transmission lines to move the power derived from renewable energy resources. When developers of renewable energy consider where to invest, they assume the existence of the PTC and the ITC (as applicable) and focus on which states are providing a guaranteed market and/or additional incentives for their renewable energy product. This is why state RPSs continue to shape the renewable energy market in the United States.

Conclusion

Some see renewable energy as a panacea for the confluence of energy and foreign policy in the United States. The reality is that renewable energy (excluding conventional hydroelectric power) currently comprises less than 4.5 percent of the electric power consumption in the United States. And because it is primarily dependent upon natural resources that are not always constant, renewable energy is not going to displace the country's reliance on fossil fuel over the next 15 years. Nonetheless, renewable energy comprised approximately one-third of all new electric capacity brought on line in the United States in 2007. Recent polling suggests that consumers are willing to pay more for clean energy. With increasing public awareness of renewable energy and a willingness to pay the modestly increased cost, states are well positioned to continue to take the lead in the development of renewable energy at this critical phase of development. ■

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