

Appendix C

The Renewables Portfolio Standard

Implementation Status as of November 1998

Status

As of December 1998, renewables portfolio standards had been adopted in Arizona, Connecticut, Maine, Massachusetts, and Nevada, passed by the Vermont senate, and filed in bills in Nebraska, New Jersey, New Mexico, Delaware, Kansas and Wisconsin (see table C-1).¹ In Pennsylvania, some individual utility settlements have been adopted which provide for a minimum renewables requirement for a default provider to serve up to 20 percent of non-switching customers.² A number of federal restructuring bills also have RPS provisions, including those proposed by Representative Daniel Schaefer (R-Colorado), Representative Edward Markey (D-Massachusetts), Senator Dale Bumpers (D-Arkansas), Senator James Jeffords (D-Vermont), and the Clinton Administration (see table C-2).

Implementation Issues

Renewables portfolio standards can be implemented in a variety of ways, as discussed below. No two states adopting renewables portfolio standards (RPS) have chosen the same approach to date.

Credit Trading. As originally proposed by the American Wind Energy Association, the RPS would allow companies to meet their obligation by generating or purchasing renewable energy, or by buying tradable credits from other suppliers. Credits would be created as renewable power is created, with one credit representing one unit of electricity. Renewable energy generation companies would sell credits to retailers who need them to meet the RPS standard. This approach is based on the credit-trading program for sulfur dioxide emissions instituted by the Clean Air Act: utilities that can make low-cost reductions of sulfur dioxide can sell excess credits to utilities facing higher compliance costs, resulting in an economically optimal result. Appendix B discusses in detail

how an RPS credit trading system would work and the advantages of this approach.

All federal bills introduced to date have included renewables credit trading. The National Association of Regulatory Utility Commissions has passed a resolution endorsing credit trading for implementing any minimum renewable energy requirements. So far, however, no states adopting an RPS have required credit trading. The Connecticut restructuring law allows the Department of Public Utilities Control to implement credit trading. Arizona and Nevada are considering tradable credits. The Massachusetts law requires the Division of Energy Resources to study credit trading and report to the legislature, which would need to adopt new legislation to implement credit trading. The Maine Public Utilities Commission tentatively decided against credit trading in its draft RPS regulations, stating that it is inconsistent with the intention of New England state commissions to track kilowatt-hour sales in order to inform customers of each utility's fuel mix and emissions.³ However, if the national system to verify sulfur dioxide emission reductions—which uses credits to determine compliance with regulations—does not conflict with the proposed disclosure mechanism, it is unclear why a credit system to verify compliance with an RPS would either.

Cost Caps. One potential disadvantage of renewables portfolio standards is that the cost of the policy is not defined. Appendix B describes a cost cap mechanism that can address this issue where it may be a concern. To date, however, no state adopting a portfolio standard has enacted a cost cap, although individual utility settlements in Pennsylvania include caps. Originally, the RPS passed by the Massachusetts House of Representatives included a cap, but the Senate and conference committee discarded it. At the federal level, the administration's restructuring bill includes an RPS with a cost cap, which sets a 1.5



cent per kWh maximum price for renewable energy credits.

Level of the Standard. Determining the level of the standard may be the most difficult decision in RPS implementation. In Maine, the legislature set the requirement at 30 percent of retail sales. Because Maine had the highest level of renewables generation in the country (approximately 50 percent of generation) in 1995, its RPS was intended to ensure that a large portion of existing renewables generation continues to operate after restructuring. It could also lead to development of new renewables if sales increase over time.

Connecticut and Massachusetts adopted separate standards for existing renewables and for new renewables. The Connecticut law clearly requires existing renewable technologies, labeled Class II technologies, to maintain their current 5.5 percent of sales and to increase to 7 percent of sales by 2009. Class I technologies—which are new, emerging technologies—must increase yearly to 6 percent of sales by 2009. Class I technologies can also displace existing Class II renewables if they are more cost-effective.

The Massachusetts law is somewhat ambiguous about the level of existing renewables included in the RPS. The law directs the Division of Energy Resources to set a standard for renewables, with *new* renewables (built after 1997) increasing to “an additional” 1 percent by 2003, 4 percent of sales by 2009 and 1 percent per year thereafter. Some Massachusetts stakeholders have interpreted the requirement to apply *only* to new renewables. Others believe that the phrase “an additional” means that the state must protect the existing level of renewables and ensure that new renewables add to that level, requiring in effect a two-tier standard.

The Vermont Senate has passed a two-tier RPS that would preserve existing sales of 15 percent renewables and add 4 percent from new renewables by 2007.

The advantage of a two-tier proposal is that it assures the continued development of new projects and technologies. Without such a requirement, the entire RPS in Connecticut, Massachusetts, or Vermont could be met by existing renewables in Maine or Canada, without stimulating any new renewables development. In addition, the two tiers mean that the

incremental cost of meeting the standard in each tier can be different. If the cost of continuing to operate existing renewables is much lower than the cost of developing new renewables, the credit price for existing renewables will also be much lower, thereby reducing the cost of the RPS to customers.

The level of the RPS passed in Connecticut and Massachusetts, and proposed in Vermont, is approximately the level that the Union of Concerned Scientists had recommended, based on the availability and cost of renewables in the region and on an analysis of the regional contribution to goals for sustained orderly development nationwide.⁴ UCS estimated that the RPS should increase gradually to 1 to 2 percent of electricity revenues by the end of the 10-year period. A preliminary estimate by the Massachusetts Division of Energy Resources was also about 2 percent in 2009.

The renewables portfolio standards passed in Arizona and Nevada focus on developing new renewables. Nevada would increase new renewables generation to 1 percent of sales by 2009. The Arizona Corporation Commission originally approved a solar portfolio standard of 0.5 percent of sales by 1999 and 1 percent of sales by 2002. This proposed Arizona standard would have increased rates by 0.6 percent to 1.7 percent by 2010, according to the state energy office.⁵ The requirement was subsequently modified to 0.2 percent by 1999 and 1 percent by 2003, remaining in place until 2012.

Pennsylvania utility settlements start with the default provider supplying 2 percent renewables, increasing at 0.5 percent per year, with a cost cap.

The federal bills would all begin at approximately the level of existing renewables generation—about 2.5 percent of generation—and increase over time. They would reach at least 4 percent of sales by 2010 in the Schaefer bill, 10 percent of sales by 2010 in the Markey and Jeffords bills, and 20 percent of sales by 2020 in the Jeffords proposal. The national Sustainable Energy Coalition has recommended that the level be set at 10 percent of sales by 2010, based on general considerations of sustained orderly development, environmental protection, fuel diversity, and national security. Over 200 environmental, consumer, and business organizations have endorsed a platform including this goal.⁶



In-State vs. Out-of-State Generation. Nevada and Arizona have required that the RPS be met using generation located in the state. The New England states allow the requirement to be met with any generation sold to customers in the state, whether generated in state or not. A standard in which all generators can compete to meet the RPS, irrespective of location, may be more likely to withstand potential challenges to the Commerce Clause of the US Constitution.⁷

Eligible Resources and Technologies. States have adopted very different RPS eligibility requirements, depending on resource availability and costs. Arizona, for example, has required that its standard be met exclusively by solar technologies. At least half of Nevada's requirement must be met by solar.

Each New England state has adopted slightly different eligibility requirements. Maine allows the RPS to be met using hydroelectric generation from plants smaller than 100 MW, as well municipal solid waste (MSW) facilities, and cogeneration plants under 100 MW, even if fueled by natural gas. Massachusetts and Connecticut allow MSW and hydroelectric plants to meet the requirement for existing renewable technologies, but not the requirement for new technologies. All three New England states allow fuel cells to qualify as new renewables, even if natural gas is used as the fuel.⁸ Some environmental groups had urged fuel cells to qualify as a low-emission bridge to a renewable hydrogen fuel technology. Connecticut is also home to a major fuel-cell manufacturer.

Most federal proposals exclude hydropower. The proposal by Senator Bumpers includes hydropower, but grants large hydro plants only half the credit granted to other existing renewables. New renewables would earn double credit under the Bumpers bill.

REFERENCES

¹ For updates (3 times/year) of regulatory activity on renewables see www.nrel.gov/analysis/emmaa/projects/sren/.

² *State Renewable Energy News*, NARUC Subcommittee on Renewables, Summer 1998.

³ The Maine PUC order is available on-line at: www.state.me.us/mpuc/ordtbl98.htm.

⁴ Alan Noguee, "Renewables in Utility Restructuring: New England's Fair Share," DOE Office of Utility Technologies Workshop, June 23, 1996.

⁵ Ray Williamson and Howard Wenger, "Solar Portfolio Standard Analysis," Proceedings of the 1998 Annual Conference, American Solar Energy Society, Albuquerque, June 14-17, 1998.

⁶ For more information about the Sustainable Energy Coalition, contact Ken Bossong, Sustainable Energy Coalition, Sun Day Campaign, 315 Circle Ave. Suite 2, Takoma Park, MD 20912-4836; 301-270-2258; kbossong@cais.com.

⁷ Kirsten Engel, "The Federal Constitution and State Implementation of Renewables Portfolio Standards: An Analysis of Commerce Clause Issues," Memorandum for the American Wind Energy Association, Washington D.C., March 13, 1996.

⁸ Fuel cells convert hydrogen to electricity using an electrochemical process. They are thus like large batteries with a continuous fuel supply. Fuel cells using pure hydrogen produce only water as a by-product. When the hydrogen is derived from natural gas or biomass, other emissions, including some carbon dioxide and very low levels of nitrogen oxides, are produced.

