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Gone with the Wind

Renewable Portfolio Standard Threatens Consumers and the Industrial Heartland

By William Yeatman and Myron Ebell*

As part of comprehensive legislation to raise energy prices, Congress is once again considering proposals to set a renewable portfolio standard (RPS) for electric utilities. Such a requirement would raise electricity prices for consumers and industry, but would negatively affect some regions of the country much more than others. As the Bush Administration Statement of Policy of June 12, 2007 correctly states:

A limited Federal RPS would result in higher electricity costs for consumers in areas where renewable resources are less available and could place new strains on electricity reliability needs.

Although 21 states have already passed a renewable portfolio standard, this is not an argument in favor of a federal RPS. These RPS states tend to have a much higher potential for renewable energy, less energy-intensive manufacturing, or both. In the RPS states that do have considerable manufacturing, the effect of adopting an RPS has been to raise electricity prices and push manufacturing into states or other countries with lower electricity prices. Therefore, a federal RPS would require states with low electricity prices and proportionately lower renewable energy potential, such as is found in our industrial heartland, to raise electricity prices to a level that would force their industries to migrate overseas to countries with cheaper energy rates and no renewable portfolio standards.

Determinants of RPS Impact. While a one-size-fits-all federal RPS would impose uniform requirements nationwide, the costs would be far from uniform. The effect of renewable energy targets on electricity cost is determined chiefly by two factors—the

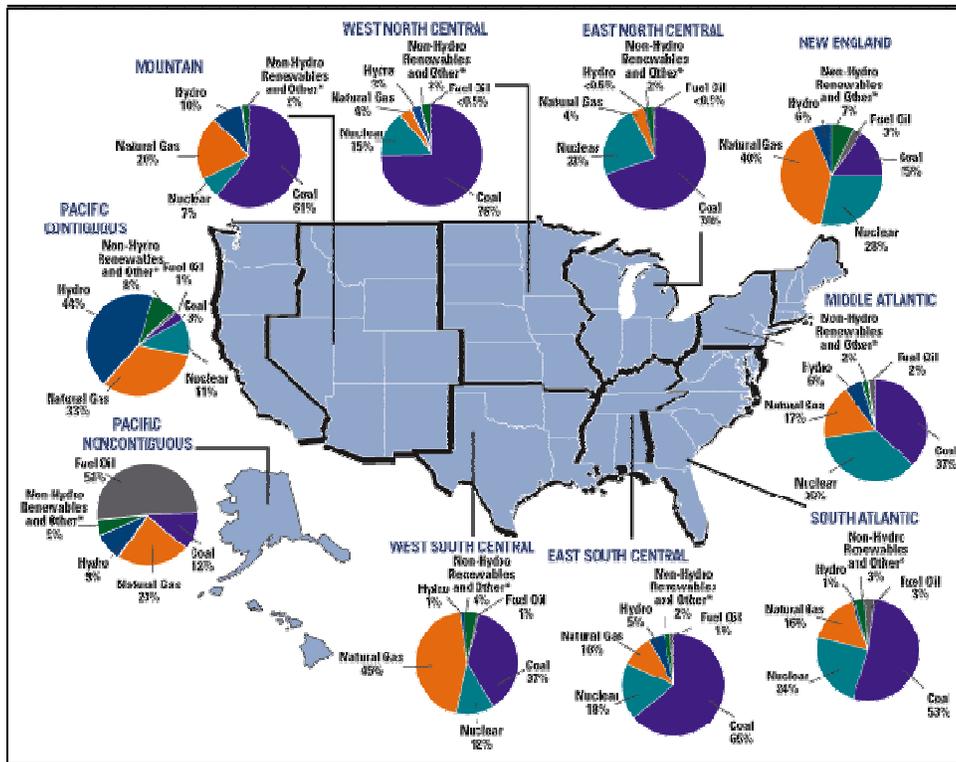
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cost of conventional generation and the renewable resource potential of the area in question.

The relationship of each factor to the marginal cost of an RPS is straightforward. It costs more to generate electricity from renewable sources than from conventional sources. That is why significant renewable capacity is currently being added only in states that have already passed renewable requirements. This is the case even though most forms of renewable energy have received large federal subsidies for decades. For example, wind generation receives a 1.9 cents-per-kilowatt-hour production tax credit. (In 2006, the average cost of electricity was 8.37 cents per kilowatt hour.)

The first factor affecting the price of electricity in a state with an RPS is the state’s current mix of conventional sources which, as can be seen in Map 1, varies considerably between the states. Map 1 should be compared with Maps 3 and 4. The regions of the country that rely most heavily on coal-fired generation are generally also the regions with the lowest electricity rates and the highest concentrations of manufacturing. This is not a coincidence.

Map 1 – Power Sources by Region¹



The second factor is the potential for renewable energy being spread unevenly across the country. For example, the southern and middle parts of the country have low potential for wind power, which is the renewable energy resource that is closest to the market costs of conventional energy, given current federal subsidies.

And although wind energy produced, for example, in Oklahoma could be transmitted to Georgia, the additional transmission costs greatly increase the total costs of that energy to the receiving state.

Renewable Energy is Wind Energy. The notion that an RPS will include a “portfolio” of renewable energy sources is misleading—wind energy is the only economically viable renewable energy source given current technologies. Although other renewable sources, such as biomass and solar, have long-term potential, they are currently no more than niche technologies.

Even assuming that these technologies improve significantly in the next decade or two, a major logistical obstacle will remain. The technology to convert biomass into electricity remains prohibitively expensive and uncertain. Huge investments will be needed to build infrastructure to gather and transport large quantities of biomass to generating plants.

With solar energy, the near-term potential is almost certainly at the consumer level rather than large-scale generation, again because of cost and reliability issues. In other words, the potential for photovoltaic panels is greater on rooftops than across deserts.

Wind power, on the other hand, is an established technology. In an analysis of the impact of a 10-percent nationwide RPS on the energy industry, the federal Energy Information Administration (EIA) found that “non-hydro electric technologies such as geothermal, solar thermal, solar photovoltaic, and ocean technologies are not projected to have net capacity additions.”² As of 2004, of the estimated 2,335 megawatts of renewable energy use attributable to state renewable standards, 2,183 megawatts (93 percent) were generated by wind.³ Thus, a renewable portfolio standard is, in reality, a mandate for wind power.

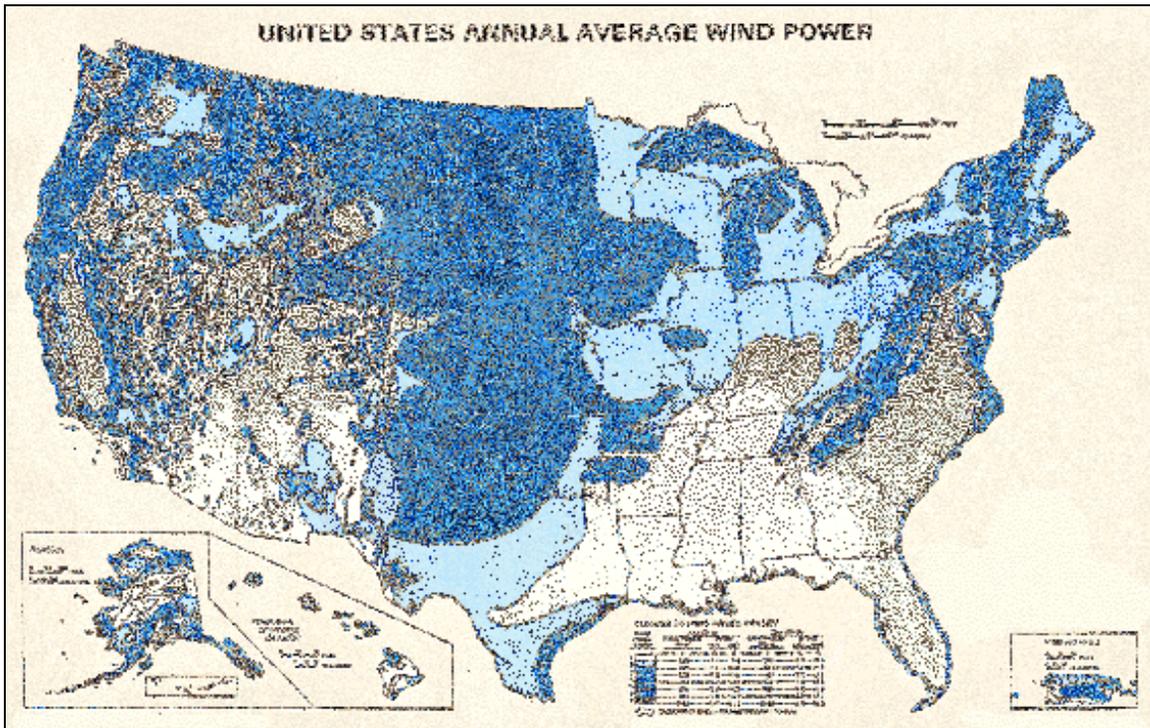
Economic Conditions Shape RPS Debate. Virtually every state that has implemented a renewable portfolio standard has had relatively high retail electricity rates. According to a 2005 EIA survey, consumers in states with renewable portfolio standards pay 42 percent more for electricity than consumers in states without them (Table 1). Because the margins between conventional and renewable electricity were smaller, the comparative viability of renewable energy sources was greater in the states that eventually chose an RPS.

Table 1 Retail Rates of Electricity, 2005

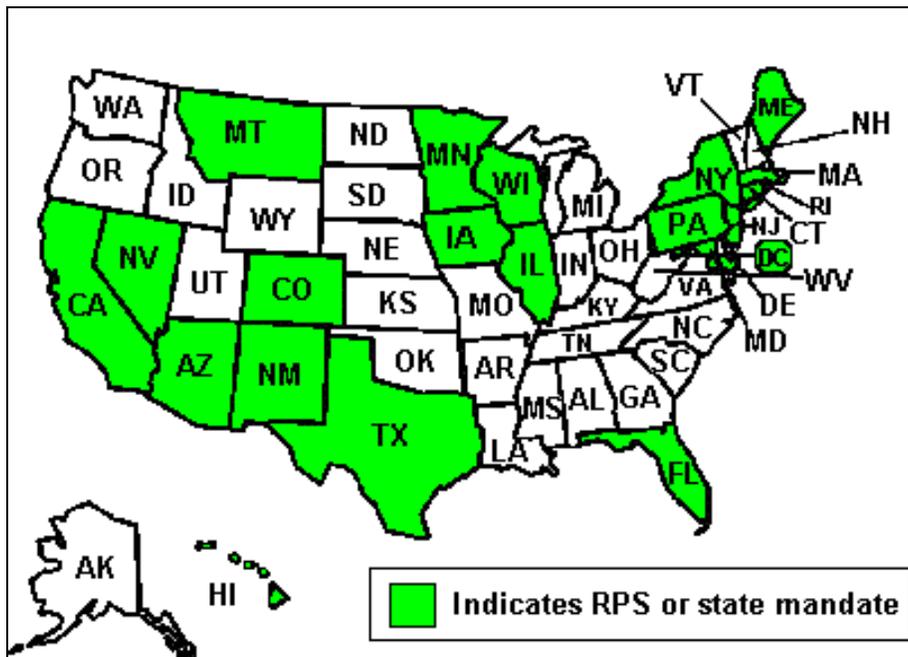
Average Retail Price Electricity (kWh), States with a Renewable Portfolio Standard	9.73 ¢
Average Retail Price Electricity (kWh), States without a Renewable Portfolio Standard	6.80 ¢
Average Retail Price Electricity (kWh), Southeastern States	6.74 ¢

Moreover, many RPS states possess abundant wind energy generating capacity. Compare Map 1, which shows the potential for wind energy in the United States, with Map 2, which depicts those states that have adopted an RPS. Roughly speaking, the prospects for wind energy are greatest in the Upper Midwest, the Mountain West, the Northwest, the Southwest, and the Northeast. Not coincidentally, these are precisely the regions where we find states that have adopted an RPS.

Map 2 – U.S. Annual Average Wind Power⁴



Map 3 - RPS or State Mandate⁵

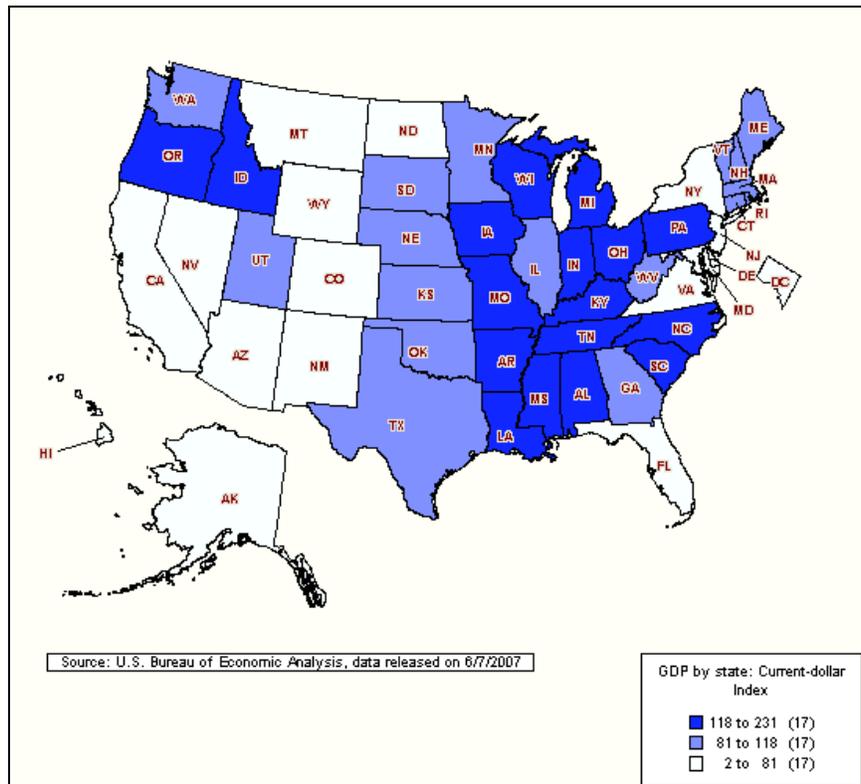


Regions With a Comparative Disadvantage. By and large, states that have adopted renewable portfolio standards were already burdened with high electricity rates; most of them also have high wind potential.

But not every state suffers high electricity costs, nor is every state endowed with windy plains. For example, the Southeast is a region where consumers enjoy some of the lowest electricity rates in the land, largely due to reliance on coal-fired generation. On the other hand, the Southeast has the least wind potential in the country, closely followed by the Midwest.

The impact of a federal RPS on manufacturing regions with low electricity costs and low wind energy potential promises to raise electricity rates considerably. (Map 4)

Map 4 - U.S. Commerce Department Industry Specialization Index, Manufacturing⁶



According to the Commerce Department’s Bureau of Economic Analysis’ industry specialization index, which measures states’ level of industrial specialization, the Upper Midwest and the Southeast are more dependent on the manufacturing sector than other regions. Although manufacturers have moved their factories from states with high electricity costs to these states with lower electricity costs, a federal RPS would then tend to drive these industries to foreign countries with lower electricity rates.

Conclusion. Depending on the current cost of electricity and renewable energy potential, the economic impact of a federal renewable portfolio standard is modest in some regions of the country and dire in others. State legislators have weighed the economic costs and benefits of an RPS in their states and acted accordingly. Congress should not impose a federal renewable portfolio standard on those states that have correctly judged that such a mandate would raise their consumer electricity prices and destroy jobs in energy-intensive industries. While Members of Congress from some regions of the country may be tempted to economically disadvantage states in other regions by voting for a federal RPS, they should recognize that it is not in the nation's interest to undermine any of our manufacturing industries.

Notes

¹ Energy Information Administration,

http://www.eei.org/industry_issues/energy_infrastructure/fuel_diversity/diversity_map.pdf

² Beamon, J; Jones, J; Haq, Z; Namovicz, C; Petersik, T. 2003 "Analysis of a 10% RPS." Energy

³ Information Administration, [http://www.eia.doe.gov/oiaf/servicerpt/rps2/pdf/sroiaf\(2003\)01.pdf](http://www.eia.doe.gov/oiaf/servicerpt/rps2/pdf/sroiaf(2003)01.pdf)

⁴ National Renewable Energy Laboratory, Wind Energy Potential Map,

<http://rredc.nrel.gov/wind/pubs/atlas/maps/chap2/2-01m.html>

⁵ Energy Information Administration, States with RPS,

http://www.eia.doe.gov/cneaf/solar.renewables/page/trends/h5_0713.pdf

⁶ The "Industry specialization index" (ISI) is a measure of the degree to which states are more or less specialized in an industry. The more specialized a state is in an industry, the higher the ISI will be. The ISI is computed as the share that an industry is of a state divided by the share that the industry is of the nation, and the resulting quotient multiplied by 100. If an industry is a greater share of a state than it is of the nation, its ISI will be greater than 100; if an industry is a smaller share of the state than it is of the nation, its ISI will be less than 100, <http://rredc.nrel.gov/wind/pubs/atlas/maps/chap2/2-01m.html>