



dams, by allowing power to be generated when it is most needed, are far more valuable. Other states include burning garbage as a renewable resource. Of course, states downwind from the garbage burners may not agree, especially if the garbage includes old tires. Nevertheless, these emissions are harmless, according to Chrostowski's article in this issue. —Ed.] Still other states include waste coal on their renewable resource list. All states adore wind and solar, even those where a sunny day might as well be an oxymoron.

From a developer's standpoint, one state's renewable manna may be another's pillar of salt. Disjointed definitions of what are and are not renewable resources lead to higher costs, because a developer who finds an ideal spot for building new renewable generation, such as the flat expanses of the Midwest for wind turbines, may not be able to sell its generation elsewhere. Moreover, individual states' self-interest is often reflected in policies that prevent imported renewable energy from "counting" toward a mandated, in-state RPS. Thus, for reasons that stem from economic ignorance to naked self-interest and political expediency, established economic concepts such as "trade" and "comparative advantage" have not penetrated the legislative consciousness in many states. As a result, despite promises of cleaner air, fewer greenhouse gases (more polar bears), and more jobs, many states' renewable policies are creating one group that is bearing the brunt of the excess costs: consumers, who pay higher than necessary electric rates as a consequence.

A developer who finds an ideal spot for building new renewable generation, such as the flat expanses of the Midwest for wind turbines, may not be able to sell its generation elsewhere.

Renewable energy sources are not uniformly distributed across states. Electric utilities or wholesale electric suppliers located in states with comparatively poor renewable energy resources are, therefore, forced to build minimum quantities of renewable generation; this needlessly raises costs. Legislative attempts to pick renewable industry winners, by creating head-scratching definitions of "renewable," mandating unrealistic percentages

of different types of resources, and preventing trade among states, are no different than the folly of nations raising artificial barriers to trade. A few are economic winners, whose gains are paid for by a far larger majority of losers, as all previous attempts by governments to pick industrial winners and losers (think U.S. Synthetics) have painfully demonstrated.

## RENEWABLES AND THE ENVIRONMENT: HONESTY AT TWICE THE PRICE

Given that many states' renewable policies are needlessly expensive, to be fair, perhaps we should examine if those excess costs are justified by the environmental benefits that renewable energy provides. If, for example, RPS mandates are a least-cost approach to reducing greenhouse gas emissions or eliminating our dependence on imported oil, then they might be justified on environmental and energy independence grounds. Alas, the evidence in support of this idea is not compelling.

There is widespread agreement among economists, and even some environmentalists, that market-based policies are the most cost-effective approaches to meeting environmental goals. The development of tradable emissions allowances under the Clean Air Act Amendments has led to reductions in overall emissions of sulfur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) at a far lower cost than could be achieved under the previous "command-and-control" approaches. Similarly, combinations of taxes and tradable greenhouse gas emissions permits are generally recognized as the least-cost approach to reducing those emissions.<sup>2</sup>

In developing RPS policies, many states appear to have succumbed to the urge to "do something" even before determining whether that "something" will provide any measurable benefits. A few basic economic questions, none of which policymakers appear eager to ask, nevertheless seem reasonable:

### Where Does That RPS Come From?

In most cases, it seems that states (and some countries) have adopted "Mine is bigger than yours" RPS mandates. There is little apparent thought given to the costs, or even technical feasibility, of those mandates. Nevertheless, setting ridiculous RPS goals, only to move the goalposts in a few years when it becomes obvious that the

mandates will not be achieved, serves only to exacerbate regulatory uncertainty and needlessly raise costs. Perhaps it would be useful to examine RPS mandates from an economic and technical basis. For example, one key issue with wind power, which because of its relatively low cost remains today's renewable of choice, is the ability to interconnect massive slugs of wind capacity without destabilizing existing transmission systems.

### What Is the Real Cost of Subsidies?

Have policymakers applied any sort of cost-benefit analysis framework to compare the estimated cost of electricity (or market price in states/countries with restructured industries) with the value of the environmental benefits provided by renewables?

Will different RPS standards affect the cost of renewable generation itself? Specifically, by mandating huge increases in the supply of renewable generation, policymakers can increase the cost of that generation. Moreover, inefficient producers can thrive in a subsidized market when that inefficiency is paid for by electric consumers and taxpayers.

Still other, more indirect, subsidies lurk. With the exception of geothermal and biomass, other types of renewable generation cannot provide high-value, round-the-clock electricity. Solar generation is obviously diurnal but is also affected by a variety of atmospheric conditions. Run-of-the-river hydroelectric, besides being almost impossible to site, is seasonal. With wind energy's relatively low capital cost, wind energy is perhaps the worst of all from this respect. It is highly variable and tends not to be available when it is most needed. As a result, solar and wind generation require backup generation to "firm" their output. That backup generation comes at a cost and is paid for by consumers.

### Will RPS Give Us Energy Independence?

Energy independence is one of those "apple pie" policy goals that have been flogged ever since President Carter started wearing cardigan sweaters and telling everyone to turn down their thermostats. It was a silly idea then and remains so today. However, that has not stopped more policymakers from promoting it. In fact, earlier this year legislators in Maryland introduced legislation to promote energy independence by requiring all electric ener-

ation to be produced within that state. No word on whether those legislators will mandate drilling oil and gas wells in the Chesapeake Bay. No word on whether Pennsylvania legislators are planning to introduce their own energy independence legislation this fall.

While one can make an argument about the benefits of using economic pressure to clamp the mischief-making opportunities of today's crop of thugs and caudillos in oil-exporting countries, barring technological miracles, renewable energy is not likely to become "too cheap to meter" in the foreseeable future. Economies will do little, if anything, to decrease our energy imports. In fact, overly ambitious RPS mandates will encourage greater fossil fuel use. As renewable generation will raise electricity prices and increase the direct demand for fossil fuels. For example, there is much ado about plug-in hybrids and full electric cars. As electricity prices increase, the economic benefits of those cars decline.

### IS THERE ANY ROOM FOR REALISM?

Renewable energy clearly can provide some benefits. However, it has been oversold as a world-redeeming panacea. Policymakers who continue to create RPS mandates that are devoid of realism are not doing their constituents any favors. Instead, they are needlessly raising costs for all of us, while providing little, if any, of renewable energy's promised benefits. A bit more economic rigor could go a long way not only in evaluating the costs and benefits of renewables but also in determining the least-cost approaches to achieving "noneconomic" goals which, contrary to the beliefs of some, neither economists nor economists disdain.

### NOTES

1. The 80-megawatt figure is derived from the Public Utility Regulatory Policy Act of 1978 (PURPA). PURPA created a set of independent, nonutility-owned generators called qualifying facilities (QFs). QFs were required to provide electricity from nontraditional sources, and their generating capacity was required to be 80 megawatts or less.
2. In several previous columns, I addressed whether such policies provide any real benefits in terms of stemming climate change relative to policies that focus on adapting to climate change. See (2007, August), "No leg to stand on," *Natural Gas & Electricity*, pp. 28-31; Goldilocks chills out, (2007, July), *Natural Gas & Electricity*, pp. 26-28; and (2007, April), "Idly musing on the three climates," *Natural Gas & Electricity*, p. 2.

351