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An Ill Wind for Consumers: The Energy Bill

by Robert J. Michaels

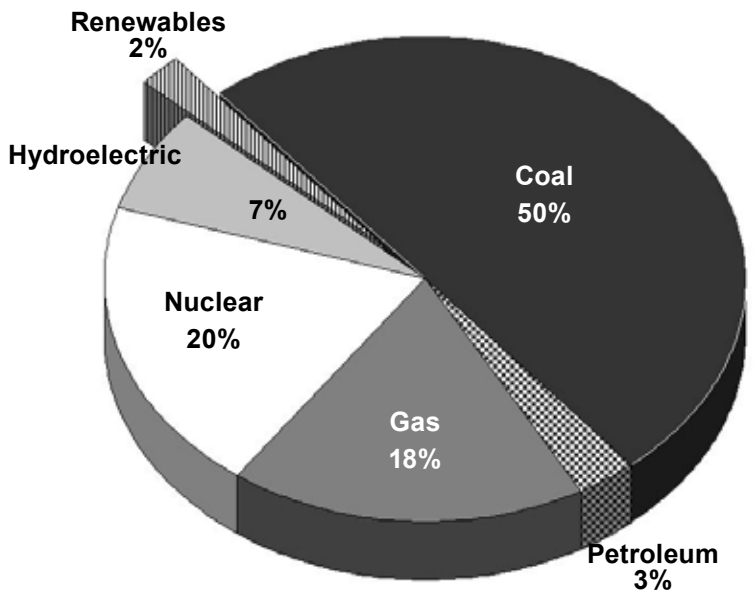
One of the most important differences facing a congressional conference committee reconciling the Senate and House versions of the 2005 energy bill is a Renewable Portfolio Standard (RPS) that appears in the Senate version but was rejected by the House. It would require all electric utilities selling more than 4 million kilowatt-hours (kwh) per year — which would include all major and many minor electric power systems — to obtain at least 10 percent of their power from "renewable" sources by 2020. In effect the RPS defines renewables by exclusion — sources that are not fossil-fueled, nuclear or hydroelectric. Eligible renewables include windmills, solar power, waste burning, geothermal, landfill gas and exotic sources like the tides.

Superficially the RPS appears benign: It will foster the construction of pollution-free electric power sources and lower the risks of continued dependence on fossil fuels. In reality it is a new tax levied on electricity consumers, who will pay for these expensive resources through higher electric bills. Few if any of the proceeds will accrue to developers of sources like solar energy, which will lose badly in most competitive electric utility resource procurements. The greatest beneficiaries will be investors in windmills, who are already subsidized 1.8 cents for every kilowatt hour (kwh) they produce.

The RPS responds to no obvious "market failure" of the type usually used to rationalize subsidies. After an eight-year binge of gas-fired powerplant construction by independent power producers, much of the country (except California and parts of the northeast) is awash in excess generation capacity. Where capacity is scarce, renewables will do little to alleviate it. Supporters of renewables continue to claim that it is an "infant industry" that needs subsidies and protection from competition while it becomes economically viable. Most renewable technologies have been with us for decades, and so have the subsidies. There is little reason to expect that an RPS will finally make them competitive.

Contribution of Renewables to U.S. Energy Supplies. To see why an RPS is no more than special-interest legislation, look at today's renewables and recent trends. Renewables are a tiny part of the nation's power supply. Figure I shows the continuing dominance of coal-fired plants (49.9 percent of 2004 production), nuclear (19.9 percent), and natural gas (18.1 percent). Non-hydroelectric renewables produced 2.25 percent of the total. After massive subsidies and development projects, renewables have remained a backwater. In fact, they produced almost exactly the same percentage of all electricity in each of the last 14 years. (The 2004 percentage is actually less than 1991!)

FIGURE I
Percentage of Electricity Generated by Fuel Type, 2004



Source: U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly*, June 2005, Tables 1.1 and 1.1A.

Problems of Renewables. There are only four important types of renewables: solar, geothermal, waste and wood burning, and wind. The first three are unlikely to grow much, even under an RPS that allows recovery of all their costs. Wind power is different, but there are problems with all four:

1. Solar power remains thoroughly uneconomic, save in limited end-use applications like heating small volumes of water. The levelized costs per kwh of five important solar thermal technologies range from 13.52 to 42.72 cents. A 500 megawatt combined-cycle gas-fired plant can do the job for 5.18 cents, and will continue to be more economical than solar even if today's natural gas prices quadrupled.

2. Economical waste-burning plants require fuel of uniform quality such as wood chips or sugar cane stalks,

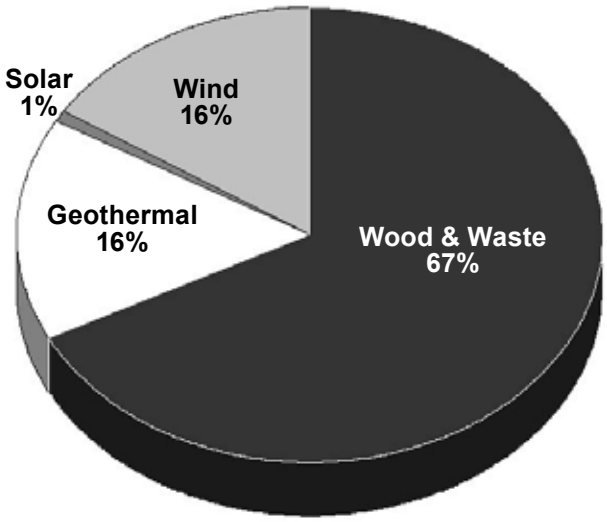
available only in limited regions. Plants that burn less uniform waste like household trash are less efficient, have high pollution control costs, and are difficult to site, often due to environmentalist opposition.

3. The only important geothermal resources are on the west coast, and in Alaska and Hawaii. Much of California's are in environmentally sensitive areas, and production of geothermal energy is accompanied by the release of toxics, acids and CO_2 that are costly to control and have rendered them unreliable as base-load electric power facilities.

4. Advocates of wind resources simultaneously claim that they are both competitive in costs (by some calculations less than a new gas-fired plant) but that they require a continuing 1.8 cent/kwh subsidy if more are to be built. Windmills require large amounts of land with the right wind conditions. (The best state for them appears to be North Dakota.) Some people view them as unsightly, noisy and contributing to wild bird deaths.

FIGURE II

Percentage of Renewables Energy by Source, 2004



Source: U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly*, June 2005, Tables 1.1 and 1.1A.

Figure II shows the relative importance of various renewables to U.S. electric power supplies. Solar energy is a tiny fraction (0.6 percent) of the total. Waste burning is the largest portion, but its share of the total is declining, reflecting limits on site availability and permits. Geothermal production in 2004 was only 70 percent of its 1991 value. The winner was wind: Since 1998 its share of renewable energy rose from 4 percent to nearly 16.

Basically all renewables other than wind are out of the running. Advocates have touted the RPS as "market oriented" since all sources can compete for inclusion in utility portfolios. Solar is astoundingly expensive, geothermal and waste are site-limited, leaving wind energy by default. The RPS is a wind energy requirement, and promises more stable support for the industry, since state regulators will be required to pass on the full costs of such supplies to consumers.

Beyond environmental issues, wind energy is hardly a bargain. As for other renewables, capacity is only available when nature allows it. For equivalent reliability, larger numbers of windmills must be built, or additional conventionally-fueled plants will be required for standby operation. New transmission will be required to deliver power from isolated wind farms, with all the attendant environmental and financial difficulties. Wind power in California operated at only 25 percent of capacity last year, and failed to deliver at critical moments. California has approximately 2,000 megawatts of wind capacity. On the September day in 2004 that the state reached its annual peak power consumption, there was no wind and these units produced only 100 megawatts of power. A new combined-cycle gas turbine generator will normally be available for operation at capacity 95 percent of the time.

Conclusion. After 30 years of subsidies and pilot programs, renewables have yet to stand on their own feet. As recently as 1999, a single 1,875 MW gas-fired complex in England produced more electricity than every solar collector and windmill on the planet. It did so on 25 acres of urban land, at a tiny fraction of the cost of renewables and with greater reliability. The RPS is not about renewables or saving the planet. It is about saving a wind power industry that cannot survive on its own, and should not survive as the ward of ratepayers who will have no choice about paying for it.

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