State Policies Provide Critical Support for Renewable Electricity

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Growth in renewable energy in the U.S. over the past decade has been propelled by a number of forces, including rising fossil fuel prices, environmental concerns, and policy support at the state and federal levels. In this article, we review and discuss what are arguably the two most-important types of *state* policies for supporting electricity generation from geothermal and other forms of renewable energy: renewables portfolio standards and utility integrated resource planning requirements.[1] Within the Western U.S., where the vast majority of the nation's readily-accessible geothermal resource potential resides, these two types of state policies have been critical to the growth of renewable energy, and both promise to continue to play a fundamental role for the foreseeable future.

In its essence, a renewables portfolio standard (RPS) requires utilities and other retail electricity suppliers to produce or purchase a minimum quantity or percentage of their generation supply from renewable resources. RPS purchase obligations generally increase over time, and retail suppliers typically must demonstrate compliance on an annual basis. Mandatory RPS policies are backed by various types of compliance enforcement mechanisms, although most states have incorporated some type of cost-containment provision, such as a cost cap or a cap on retail rate impacts, which could conceivably allow utilities to avoid (full) compliance with their RPS target.

Currently, 27 states and the District of Columbia have mandatory RPS requirements. Within the eleven states of the contiguous Western U.S., all but three (Idaho, Utah, and Wyoming) now have a mandatory RPS legislation (Utah has a more-voluntary renewable energy goal), covering almost 80% of retail electricity sales in the region. Although many of these state policies have only recently been established, their impact is already evident: almost 1800 MW of new renewable capacity has been installed in Western states following the implementation of RPS policies. To date, wind energy has been the primary beneficiary of state RPS policies, representing approximately 83% of RPS-driven renewable capacity growth in the West through 2007. Geothermal energy occupies a distant second place, providing 7% of RPS-driven new renewable capacity in the West since the late 1990s, though geothermal's contribution on an energy (MWh) basis is higher.[2]

Looking to the future, a sizable quantity of renewable capacity beyond pre-RPS levels will be needed to meet state RPS mandates: about 25,000 MW by 2025 within the Western U.S. (see Figure 1). Geothermal energy is beginning to provide an increasingly significant contribution, as evidenced by the spate of new projects recently announced to meet state RPS requirements.

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[1] Two recent Berkeley Lab publications discuss these topics in greater detail: *Renewables Portfolio Standards in the United States: A Status Report with Data through 2007* (April 2008) and *Reading the Tea Leaves: How Utilities in the West are Managing Carbon Regulatory Risk in their Resource Plans* (March 2008), both available at: http://eetd.lbl.gov/ea/emp/emp-pubs.html.

[2] The nameplate capacity of a generator (essentially its maximum instantaneous output) is expressed in units of megawatts (MW), while the amount of energy produced by a generator over some period of time is expressed in megawatt-hours (MWh).

Most of this activity has been driven by the RPS policies in California and Nevada, where the Geothermal Energy Association has identified 47 new geothermal projects, totaling more than 2,100 MW, in various stages of development.[3] Additional geothermal projects in Arizona, New Mexico, Oregon, and Washington are also under development to meet those states' RPS requirements.

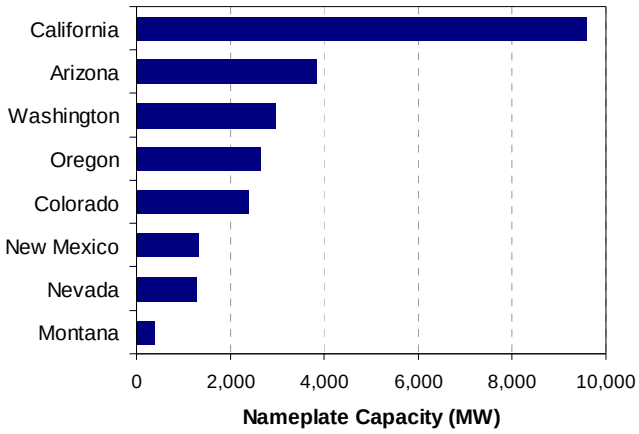

Figure 1. New Renewable Capacity Needed by 2025 to Meet Western RPS Requirements (Beyond Pre-RPS Levels)

The other major state policy driver for renewable electricity growth, particularly in the West, is integrated resource planning (IRP).[4] IRP was first formalized as a practice in the 1980s, but the practice was suspended in some states as electricity restructuring efforts began. A renewed interest in IRP has emerged in the past several years, however, with several Western states (California, Montana, and New Mexico) reestablishing IRP and others developing new rules to strengthen their existing processes.

In its barest form, IRP simply requires that utilities periodically submit long-term resource procurement plans in which they evaluate alternative strategies for meeting their resource needs over the following ten to twenty years. However, many states have developed specific requirements for the IRP process that directly or indirectly support renewable energy. The most general of these is an explicit requirement that utilities evaluate renewables, and that they do so on an "equivalent" or "comparable" basis to conventional supply-side generation options. Many states also require that utilities include various types of risk analyses within their IRP. For example, utilities are often required to evaluate fuel price risk within their resource plan, which can reveal the value of renewables as a hedge against rising and volatile fuel prices.

Of particular importance for supporting renewable energy is the increasingly common requirement that utilities evaluate the potential costs and risks associated with future greenhouse gas regulations. Virtually all of the major Western utilities that prepare IRPs incorporated future carbon dioxide regulations in their analyses of alternative resource strategies in their most recent resource plans. Some state public utility commissions (e.g., in California, New Mexico, and

[3] http://www.geo-energy.org/information/developing.asp
[4] IRP is alternatively referred to as Least-Cost Planning, Long-Term Procurement Planning, and Default Supply Resource Procurement Planning.

Oregon) have even specified particular carbon dioxide emission allowance prices that utilities are required to include in their analyses, or have established other requirements related to how utilities undertake their analysis of carbon regulation risk.

The impact of IRP on renewable energy development is most apparent in states without an RPS, where the IRP process has often led directly to procurement or construction of new renewables. For example, in its 2004 IRP, Idaho Power selected a preferred resource portfolio containing new geothermal resources, and subsequently issued an RFP for 100 MW of geothermal energy that has since culminated in the signing of at least one power purchase agreement (for the output from a new geothermal unit at the Raft River Project in Idaho). Similarly, many of the Washington and Oregon utilities were actively procuring new renewable resources prior to enactment of those states' recent RPS laws, in part as a result of IRP. Even in states with an RPS, IRP has played an important role in supporting renewables development, in some cases leading utilities to pursue greater levels of renewables than is strictly required for compliance with the RPS. For example, in its most recent IRP, Public Service Company of Colorado opted for a resource portfolio – including 20 MW of new geothermal power – that far exceeded the quantity of renewables needed to meet the state's RPS requirements.

Together, state RPS policies and IRP requirements are creating strong demand for new renewable electric generation capacity which is driving the development of new geothermal resources in the Western U.S. Both types of policies are relatively stable and are therefore likely to continue to support new renewable electricity generation for the foreseeable future. The extent to which geothermal energy ultimately benefits from these policies will depend largely on how well it can compete against other renewable resource options.

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