



Via: E-Mail

September 20, 2010

MEMORANDUM

Re: RPS Resource Eligibility

The purpose of this memo is to illustrate how the design of a renewable portfolio standard (RPS) will impact the cost and effectiveness of the program.

Summary

RPS guidelines should be designed to maximize the environmental benefit at the least cost to the economy. Standards that restrict the qualification of out-of-state resources will:

- Shift capital from highly efficiency to less efficient projects;
- Increase costs to ratepayers; and
- Reduce the environmental benefit provided by the RPS.

Analysis

One of the most significant factors in determining the ultimate cost of compliance is the parameter related to qualifying renewable resources. RPS standards with restrictive qualification requirements will tend to have higher costs associated with meeting the established targets.

Allowing out-of-state resources to qualify will ensure that, to the greatest extent possible, the renewable requirement is met through the least cost available resources. Limiting qualification to in-state resources will result in higher overall compliance costs since available resources will be more limited and potentially less efficient. Qualifying out-of-state resources



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will lead to increased supply and access to the most efficient resources (e.g., Arizona solar or Texas wind). The various treatments of out-of-state resources include:

- No limitation on using out-of-state resources to meet compliance targets (e.g., NY)
- Limiting out-of-state resources to those that can be physically delivered to the compliance market (e.g., CA)
- Limiting out-of-state resources to those that are generated within a specific geographic region (e.g., CT)
- Allowing out-of-state resources but providing additional incentives, typically multipliers, to encourage sourcing from in-state resources (e.g., CO and MO provide a 1.25 multiplier for in-state resources)
- Allowing out-of-state resources for some technologies but requiring others to be sourced from in-state resources (e.g., NJ solar)

Any restrictions on using in-state resource will likely increase compliance costs in the near-term. However, in the long run, if the state has significant renewable potential within its borders, an in-state requirement may not result in substantially higher compliance costs (e.g., Texas wind).

As an example of the cost penalty resulting from geographic restrictions, New Jersey has enacted an aggressive in-state solar RPS requirement. The solar renewable energy credits (SRECs) in New Jersey, which serve as a proxy for the subsidy required to make investments in in-state solar projects economical, have been trading in excess of \$600/MWh. This is nearly double what similar SRECs are trading for in neighboring states that have broader geographic eligibility requirements.

Nearby, Illinois also has an in-state mandate that provides an indication of how these sort of provisions can impact prices. The Illinois Power Agency (IPA) is responsible for procuring RECs to meet the RPS targets for default service customers of the two main investor owned utilities, ComEd and Ameren. The IPA is required to procure these RECs primarily from

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in-state resources. For the 2009/10 compliance year, the IPA purchased these RECs for approximately \$15-\$20/MWh. Other load-serving entities in Illinois (Retail Electric Suppliers) are permitted to procure RECs from a broader geographic area (within the PJM or MISO footprint). For the 2009/10 compliance year, the RECs within the broader PJM / MISO footprint were trading at approximately \$3-\$5/MWh. In this case, the in-state requirement resulted in a compliance cost to default service customers that was roughly four times the cost that would have been incurred had the RECs been sourced from the broader geographic region.

The variations among state requirements and the lack of liquidity in the REC markets make assessing the impact of specific RPS provisions on compliance costs challenging. However, a review of publically-available data regarding the efficiency and availability of certain renewable resources can provide insight into how in-state requirements might impact RPS compliance costs, specifically in Missouri.

The following table provides a comparison of hypothetical solar projects in both Columbia, Missouri and Flagstaff, Arizona.

Projected Annual Solar Output

<u>Location</u>	<u>Fixed Tilt (1 MW)</u>		<u>1-Axis Tracking (1 MW)</u>	
	<u>Total Energy (kWh)</u>	<u>Incremental Output</u>	<u>Total Energy (kWh)</u>	<u>Incremental Output</u>
Columbia, MO	1,320,650	-	1,677,639	-
Flagstaff, AZ	1,611,328	22.0%	2,138,568	27.5%

Source: <http://www.nrel.gov/redc/pvwatts/version1.html>

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As indicated in the table above, a 1 MW (DC) solar installation in Flagstaff, Arizona would produce up to 22% more power (for a fixed axis system) or 27.5% more power (for a single-axis tracking system) as compared to an identical installation in Columbia, Missouri. Neither the Flagstaff nor the Columbia project would be economically viable without the contribution of the revenue from RECs (assuming for simplicity that the RECs are traded separately), however, the REC value for the Columbia project would need to be as much as 27.5% higher to provide sufficient incentives to ensure that an in-state solar requirement is achieved.

A review of wind project potential in Missouri indicates a similar disadvantage to states with more favorable renewable resources. The following table compares the total wind energy potential for all land within the respective states that could be developed as a wind resource.

Wind Energy Potential at 80 Meters

<u>State</u>	Areas with >30% Capacity Factor			Areas with >40% Capacity Factor		
	<u>Installed Capacity (MW)</u>	<u>Output (GWh)</u>	<u>Avg. Cap. Factor</u>	<u>Installed Capacity (MW)</u>	<u>Output (GWh)</u>	<u>Avg. Cap. Factor</u>
Missouri	249,882	763,529	34.9%	4,501	15,942	40.4%
Kansas	952,371	3,646,590	43.7%	760,323	3,024,280	45.4%
Texas	1,901,530	6,527,850	39.2%	826,983	3,240,930	44.7%

Source: *National Renewable Energy Laboratory*

While Missouri does have some potential resources in areas that would achieve greater than 30% capacity factors, the generation potential is significantly less than in Kansas or Texas. Wind generation potential in Missouri is only 21% of the potential in neighboring Kansas at a



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greater than 30% capacity factor and is less than 1% for areas with a greater than 40% capacity factor.

This comparison clearly indicates that the wind resource potential in Kansas and in Texas significantly exceeds that of Missouri both in availability, as well as efficiency. Both the greater supply and higher efficiency will result in a lower cost to develop wind resources in Kansas and in Texas than in Missouri.

In addition to increasing the cost of compliance, tighter restrictions on resource eligibility may also reduce the effectiveness of the RPS thereby increasing the likelihood that the cost cap would be reached. Requiring compliance entities to support inefficient generation resources is not only a poor use of capital, but also jeopardizes the ability of the state to achieve the renewable targets.

And, if the primary goal of an RPS standard is to reduce the greenhouse gasses (GHGs) produced through the generation of electricity, then the program should be designed to use the available funds (i.e., revenue generated from ratepayers up to the cost cap) to maximize the reduction in GHGs. Limiting the eligibility of out-of-state resources would result in less environmental benefit at a higher economic cost.

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