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September 24, 2009

## MEMORANDUM

**TO:** Power Committee

**FROM:** Jeff King, Senior Resource Analyst

**SUBJECT:** Assessment of impacts of California RPS on the Northwest Power System

On September 15, Governor Schwazenegger signed Executive Order S-21-09 increasing the California Renewable Portfolio Standard (RPS) to 33% by 2020 and extending the requirement to publically-owned as well as investor-owned utilities. Because of the magnitude of California retail sales, the increase from the previous 20% and mandated compliance by publically-owned utilities will greatly increase California demand for qualifying renewable resources. Council staff's preliminary estimate suggests that this demand will increase from about 1,000 aMW to about 5,700 aMW of new qualifying resources by 2020.

A substantial portion of this energy will likely be provided by Northwest resources. The "green" output of nearly 50 percent of the wind capacity installed in the Northwest in 2008 is contracted to California utilities, as is the output of at least an additional 1,200 MW of wind capacity planned or under construction. The extent to which Northwest renewable energy projects serve California RPS requirements over the longer-term will depend on yet-to-be-adopted California RPS policies. On one hand, one contingent including the Legislature favors in-state development with accompanying constraints on qualifying out-of-state resources; another, including the governor favors a more open market with fewer import restrictions.

Concerns regarding the impacts of California RPS policy on the Northwest Power system initially surfaced with respect to the impact on regional energy prices of sales of "null" energy - energy from wind or other renewable projects from which the RECs had been "stripped" (sold separately). Further consideration suggests a much wider array of possible effects, both positive and negative and accordingly an action item calling for assessment of these effects (GEN-8b) was included in the draft Sixth Power Plan.

Because of rapidly-evolving California RPS policy, the Power Committee, at its September meeting, called upon the staff to commence work on this issue before adoption of the Sixth Power Plan. The attached background document describes the situation and possible effects in greater detail. Staff proposes to discuss objectives, key issues, approaches and schedule at the Ketchum meeting with the objective of refining the attached document into a work plan.

# The threat of unbundled RECs and Null-Power: Looming Calamity or just One More Thing?<sup>1</sup>

September 23, 2009

## BACKGROUND

A potentially significant uncertainty associated with the recommended resource portfolio of the Sixth Power Plan is the role of Northwest wind power in satisfying California renewable portfolio standards, and the resulting cost and availability of new wind power to Northwest utilities. The recommended portfolio includes essentially all of the low-cost “local” (non-imported) wind currently estimated to be available for development. The value of this wind to Northwest utilities stems from its relatively low cost, short lead time, low carbon content and ability to satisfy regional renewable portfolio standards. In practice, however, an increasing share of Northwest wind power (nearly 50 percent of the wind capacity installed in 2008) is contracted to California utilities to help meet California renewable portfolio standards (RPS).

This trend is fostered not only by the prospect of greatly increased demand for qualifying renewable resources to meet California’s 33% by 2020 RPS but also by the practice of employing unbundled renewable energy credits (RECs) to satisfy California RPS obligations. RECs are created simultaneously with the generation of energy from qualifying power plants and represent the “green” qualities of the energy. RECs are separable; a product from the associated energy and REC transactions can take several forms, including the following:

**Fully Bundled** - RECs are delivered to the purchasing entity simultaneously with the associated energy.

**Partly Bundled** - RECs are delivered as produced but the associated energy can be delivered as transmission capacity is available off-peak.

**Fully Unbundled** - RECs are delivered as a fully independent product. The associated energy “stripped” of RECs (“null” power) is sold into the local market. Null power sold on long-term contract may be of greater value than commodity energy because of the absence of fuel price uncertainty risk.

The effects and impacts of unbundled REC transactions may include the following:

- ***Expansion of the REC market:*** Utilities and other entities seeking RECs to meet RPS obligations have a larger pool of qualifying projects to choose from including, in theory, better and less expensive sources of RECs. Likewise, the developers of qualifying projects see a larger pool of potential customers.
- ***Increased market flexibility & liquidity:*** RECs can be purchased on short-term contract, with or without call-back provisions, whereas the bundled output of wind and other

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<sup>1</sup> Title credit to Howard Schwartz.

renewable energy projects is normally secured by long-term (10 to 20-year) power purchase agreements or by equity participation. However, it is questionable that a new project could be financed purely on the basis of revenue from forecast short-term, or even long-term, REC purchases plus null energy sales and state and federal incentives.

- ***Effective greenhouse gas reduction:*** Because greenhouse gas (GHG) reduction efforts are not location-dependent, the climate change objectives of RPS are secured providing offsetting changes in the dispatch of fossil-fuel plants are not incurred.
- ***Loss of fuel price risk hedge:*** The fuel price risk reduction value of renewable resources is lost to the purchaser of unbundled RECs.
- ***Reduced need for long-distance transmission:*** The cost, losses and environmental impacts of long-distance transmission are avoided.
- ***Local economic benefits shift:*** The local economic benefits of wind and other qualifying resources (e.g., land rent, employment, and property taxes) shift from locations near the purchasing entity to the Northwest and other remote sources of RECs.
- ***Increased local demand for balancing reserves:*** Resources needed to integrate wind and other variable qualifying resources must be provided by the balancing authority to which the project is interconnected. Lack of transmission capacity may preclude use of balancing resources located within the receiving area through dynamic scheduling.
- ***Need for equitable integration cost recovery mechanisms:*** Mechanisms for recovering the cost of balancing services must ensure that the net cost of integration is borne by the purchasers of RECs and null energy.
- ***Commodity energy market prices may decline and volatility increase:*** Null power sales to the local market may depress commodity energy prices and increase market volatility. Utilities and others customarily selling into the market (e.g., secondary hydropower sales) may suffer a reduction in revenues. Utilities and others normally purchasing may see cost savings. The latter situation may be especially appealing to utilities and other entities, e.g., industrial purchasers, not subject to RPS.
- ***Increased cost of low-carbon resources:*** The cost of securing RPS-qualifying and other low-carbon resources may rise for Northwest utilities because of increased competition from California.

The importance of these issues are affected by numerous uncertainties. This includes the demand for qualifying resources to serve California RPS needs, California policy regarding use of unbundled RECs, the cost of other alternatives for meeting California RPS requirements including bundled RECs from remote sources and local development of qualifying resources, and by REC banking provisions.

It is certain that the demand for RECs by California utilities will increase substantially, as the governor through Executive Order S-21-09 signed September 15, 2009, increased the California RPS to 33% by 2020 and extended the requirement to publically-owned as well as investor-

owned utilities. Council staff's preliminary estimate suggests that this will increase demand for new qualifying resources from about 1,000 aMW to about 5,700 aMW by 2020.

California policy and regulations regarding permissible means of meeting RPS targets remains unsettled. Current policy requires associated energy to be delivered into the state, but appears to allow partial unbundling. The legislature, perhaps motivated by local economic interests, prefers development of qualifying resources within California, and thus more restrictions on imports. The governor prefers a more open market that might include a substantial allowance for unbundled RECs. Executive Order S-21-09 shifts the responsibility for RPS regulations from the PUC and Energy Commission to the California Air Resources Board (CARB), in association with CARB's GHG regulatory mission. EO S-21-09 directs CARB to adopt RPS regulations by July 31, 2010. The PUC and Energy Commission remain in advisory roles.

The extent to which the unbundled REC market continues to develop is also a function of REC-stripping project economics. If project revenue requirements can be recovered through unbundled REC and null energy sales with a high degree of certainty, new projects using this model will continue to move forward. If these conditions are not met, the phenomenon will be limited. A related issue is qualifying project development in advance of need, where Northwest utilities develop wind and other qualifying projects in advance of native REC need, sell the RECs in the interim, use or sell the null energy, then call back the RECs when needed to meet their own RPS standards. Competition for better sites, available lower-cost transmission and rate-based investment potential motivates this course of action.

Because REC banking disconnects the production of associated energy from REC delivery, provisions for REC banking are tantamount to unbundled RECs.

Other uncertainties playing out in the longer-term include the success of proposals to construct new long-distance transmission into the Northwest from California and commercialization and improving cost-effectiveness of alternative low-carbon technologies that may be abundant in California such as wave energy, deep-water wind, enhanced geothermal and solar generation.

## **POSSIBLE WORK PLAN ITEMS**

### ***How big is the potential demand?***

How much unbundling will California allow? Both the PUC and the legislature have proposed to allow only small percentage of the renewable targets to be met with unbundled RECs. Still, a small percent of a very large number could be a large percentage of the much smaller Northwest market. We need to estimate the amount of unbundled RECs that would be allowed and how much could come from generation in the Northwest.

### ***How compelling are the economics?***

What is the business model that supports unbundled RECs? Even if unbundled RECs are allowed by California regulators, can the underlying generation be financed and costs recovered? Generally, independent wind developers need long-term power sales contracts in order to attract investors. Utilities that develop wind for their own use might sell RECs or power until they need it themselves. In either case, how much revenue do developers (either independent or utility)

need to cover their costs and can that revenue requirement be met by selling unbundled RECs and null power plus federal and state incentive revenues? Long-term bundled power-sales contracts in the Northwest have been going for upwards of \$100/MWh. How much would unbundled RECs and associated power fetch? Is it enough to attract investors and cover project costs?

### *How significant are the potential impacts?*

Finally, if the potential demand is large and project economics workable, the potentially significant impacts on the Northwest power system need to be examined. These might include:

- Impacts on the Northwest wholesale market and the competitive position of other Northwest generating resources.
- Impacts on the supply and cost of low-carbon resources to meet Northwest needs, including accelerated needs to develop additional transmission.
- Impacts on the availability and cost of balancing services.
- Environmental implications. What would be the impact, if any, on the dispatch and consequent environmental impacts of fossil resources, including those that might supply balancing services?
- Impacts on the voluntary renewables market. To some extent, the voluntary market, which almost exclusively is based on RECs, is a microcosm of what might happen if there is an explosion of unbundled RECs. We should try to understand how it functions and what future it has.
- Non-power economic consequences. The non-power economic consequences of power system policy has typically not been a topic of Council investigation, but could be of considerable interest in certain quarters. The Council assessment could supply the basis for further assessment of non-power economics by those interested in this issue.

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## **APPENDIX: PROPOSED ACTION ITEM GEN-8B**

- b. **Effects of an unbundled REC market.** A renewable energy credit (REC) generally represents the environmental and renewable attributes of renewable energy production as a separate commodity from the associated energy. RECs can be transacted as “bundled” (i.e., with the associated energy) or “unbundled” (separate from the associated energy. Some states credit unbundled RECs (also called “tradable RECs”) to meeting a portion of renewable portfolio standards. Unbundled sale of RECs allows utilities to acquire the attributes of renewable power without securing transmission from the renewable energy plant to the utility’s service territory. To the extent that the renewable energy benefits are not location-specific (e.g., avoided carbon dioxide production), tradable RECs can

reduce the cost to utilities of securing these attributes by allowing a utility to avoid transmission wheeling charges and to purchase from a higher quality, lower cost renewable resource than might otherwise be available. Tradable RECs can also provide a revenue stream to utilities choosing to develop renewable resources in advance of need without having to establish transmission to the customer utility, and can foster the non-power economic benefits of renewable energy resource development. Stimulating additional development of variable-output resources in the Pacific Northwest without corresponding inter-regional transmission connections may, however, create challenges for the region. The residual (“null”) power will be marketed locally and may depress the value of competing, non-RPS-qualifying energy. Integrating the additional variable-output resources that may be developed to export unbundled RECs will increase the demand for integration services, thus possibly increasing the costs of such services. This could have the effect of driving up costs of integrating variable-output resources needed to comply with RPS requirements within the region, even for variable-output resources where RECs will not be unbundled, but consumed in the region. The purpose of this review will be to identify and articulate the costs and benefits of the unbundled REC market and to suggest modifications, if any, needed to remedy significant inequities or perverse incentives.