STATE RPS COLLABORATIVE

Call #3 Summary - Methods and Results of Evaluating RPS Costs and Benefits

June 7, 2005

Participants: 33 participants joined the call representing 15 states and related state NGO representatives (see the attached participant list)

RPS Collaborative Summary & Next Steps -- Julie Rosenberg, EPA

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This was the third and final Resource Portfolio Standard (RPS) Collaborative call sponsored by the EPA Climate Protection Partnerships Division. Julie Rosenberg reviewed some of the major themes that have emerged, including use of RECs for tracking and verification, importance of preventing green washing and various RPS design issues. She also highlighted some upcoming resources for additional technical assistance.

1) EPA will be releasing its "Guide to Action" this summer with 15 best practices for advancing clean energy include many that relate to RPSs.
2) Technical assistance on specific RPS questions is available on a limited basis and states should contact Tom Kerr (Kerr.tom@epa.gov) to learn more.
3) EPA plans to have additional peer exchanges at the regional or state-to-state level and welcomes feedback on what areas of discussion would be most helpful.
4) DOE's Technical Assistance program (TAP) is also designed to provide targeted assistance to states.

RPS Costs and Benefits: Methodologies and Results -- Ryan Wiser, Lawrence Berkeley National Labs

(See PowerPoint presentation "An Overview of the Results and Methods of State RPS Cost-Benefit Projections")

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Ryan provided an overview of an on-going LBNL study that summarizes state approaches and results for estimating the costs and benefits of RPS policies**:**

- Projected costs of RPS programs are relatively modest; higher cost programs correlate with more aggressive targets**.**
- Rate impacts tend to be less than 5% and there were some rate reductions
- Impact on typical residential customers varies by region because of difference in availability of Renewable resources.

- Wind power is the big winner – accounting for 55% of the projected RPS power
- A number of studies have looked at benefits such as risk mitigation (measured by reduction in natural gas prices), economic and environmental benefits.
- 4 general modeling approaches:
  - **Category A:** Linear spreadsheet model of both RE and avoided utility cost
  - **Category B:** Linear spreadsheet model of RE and generation dispatch model of avoided utility cost with base-case resource mix
  - **Category C:** Linear spreadsheet model of RE and generation dispatch model of avoided utility cost with implied RPS mix
  - **Category D:** Integrated energy model
- More comprehensive studies don't stop at bus bar costs, but look at capacity value of renewable energy, transmission costs and benefits and transactions costs.
- Uncertainty of cost projections can be captured through scenario analyses
- Sophistication of analyses is often a function of funding available and purpose. A standard approach has not emerged; in fact, states use different approaches to define utility avoided costs.
- Areas for greater attention:
  - Improved Treatment of Transmission Costs Competing RPS Requirements
  - Coal as the marginal price setter
  - Greater Use of Scenario Analysis
  - Consideration of Future Carbon Regulation
  - More Robust Treatment of Public Benefits
  - The assumptions are likely to be more important than the models

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New York's RPS Cost Analysis – Wayne Furhman & Joseph Parella, NY Department of Public Service

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(See PowerPoint presentation "NYS RPS Overview of Cost Analysis").
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Components of cost NY RPS cost analysis include:

- Cost Premium for Renewable Generation (recovered through RECs market)
- Annual Increments of Chosen Resources based on lowest cost resources first
- Prices Paid Under Long-Term Contracts (assumed cost-based price for lower bound and market clearing price for upper bound)
- Aggregate Compliance Costs (based on cumulative long-term contract costs)
- Wholesale Price and Air Emissions Reductions (based on avoided resources & emissions)
  - NOx 2,000 tons- 5.22%
  - SO2 7,000 tons- 6.04%
  - CO2 3,683,000 tons- 7.43%
- UCAP Revenues (wholesale market capacity value) based on 10% capacity factor for wind
- Net Ratepayer Bill Impacts –e.g. Cumulative bill impacts by 2013:

    - Residential -1.38%-+2.66%
    - Commercial -1.19%-+3.29%
    - Industrial -2.36%-+5.31%
- Administrative Costs primarily NYSERDA's costs; Budget of $3.2 million per year, on average, through 2013
- Difference between projected and actual costs:
    - Assumed long-term contracts- Actual contracts up to 10 years
    - Assumed ample time for projects to come on line- Actual results effected by rush to capitalize on PTC
    - Assumed cost assumptions in late 2003- Actual costs likely higher due to:
        - Increased costs of steel
        - Effects of a weak dollar
        - Turbine availability
- Analysis of in-state vs. out-of-state RPS market showed lower costs because of broader portfolio of renewable energy resources.

Texas RPS Cost Analysis – David Hurlbut, Texas Public Utilities Commission

(See White Paper "Transmission Issues Associated with Renewable Energy in Texas")
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- TX legislative 79th session just finished without taking a position on several proposals to increase RPS targets over the current ones. The Legislature held two weeks of public participation process; but won't revisit issue until legislature reconvenes in 2 years.
- TX PUC and ERCOT developed estimates of costs of meeting proposed targets. Transmission is the biggest cost that had not been included in past studies. The White paper focuses primarily on transmission expansion needs and associated costs.
- Study estimated that increased RPS would require anywhere from $1-$7 Billion of transmission expansion.
- The increased RPS would cost between $0.70 -$0.85 on an average monthly bill for every $ 1 billion of investment in transmission needed to meet the target.
- Study also pointed out that additional thermal resources are needed to offset the intermittency of wind capacity. This is complicated by the fact that the more wind generation on-line the less opportunity the thermal generation has to recover it's costs; therefore the market price of electricity might increase as wind power increases if the thermal units are the marginal source of power for ERCOT.
- There is not ICAP market in Texas, but a lot of discussion of wind's contribution to reserve requirements. ERCOT recently reduced wind's capacity credit to 2% of rate capacity because much of the wind resource is not coincident with Texas summer peak.
- David agreed with Ryan Wiser's conclusions about the existing cost analyses.

Questions & Discussion

Have the models accurately captured the difference in the competitive wholesale market and regulated retail market?

- One difference captured in some of the models in the impact of trading RECs and long-term contracts for RECs

How accurate have the projected cost studies been?

- Cost Studies may have underestimated renewable energy costs by assuming that long-term contracts would be prevalent, but in fact, they have not. The unpredictability of production tax credits have also contributed to price spikes for wind turbines.
- Texas is somewhat unique in that the costs are easier to predict because of self-contained electricity market; avoided cost are typically $13/MWh
- Texas administrative costs are lower than NY estimates; ERCOT administered the RPS and already had data system in place

How was risk mitigation captured in the cost analyses?

Primarily in terms of RPS's impact on the cost of natural gas, using an integrated energy model.

Why is there less attention to the benefit side of the analysis?

- There is already a strong political rationale (resource diversity and air quality) driving the RPS policy, so legislature is less interested in quantification of benefits. In Texas, dependence on natural gas is the main policy driver behind RPS.
- UCS analysis tried to quantify benefits of Texas RPS using EIA model (http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=1644)

Other state cost analyses:

- **Rhode Island** – Department of Energy Management Greenhouse Gas Stakeholder site (http://www.dem.ri.gov/programs/bpoladm/stratpp/greenhos.htm) provides more information
- **New Jersey** – Rutgers website and NJ BPU (http://www.state.nj.us/bpu/cleanEnergy/cleanEnergyProg.shtml) have posted cost analysis of RPS expansion to 20% indicating 3.7% rate impact but substantial jobs benefits.