Right of First Refusal; Wind Integration Costs

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ROFR Paper – Scope

• February 2013 NRRI Board Meeting Questions:
  ○ Which States have adopted statutory ROFR?
  ○ Do State ROFRs raise Commerce Clause Concerns?

• States Adopting ROFR

<table>
<thead>
<tr>
<th>Full ROFR</th>
<th>Partial ROFR</th>
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<tbody>
<tr>
<td>Minnesota (2012)</td>
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• Dormant Commerce Clause
  ○ “the Congress shall have Power…to regulate Commerce...among the several states” Art. I, §8
  ○ Negative aspect denying states power unjustifiably to discriminate against or burden interstate flow of articles of commerce; denied economic protectionism

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Legal Standard

- Facially Discriminatory Laws receive “Strict Scrutiny”
  - *per se* invalid unless
    - Justified by factor other than economic protectionism
    - No other means to advance a legitimate state interest
- Neutral Laws with discriminatory effects receive “Pike” Scrutiny

Conclusion

- Statutes examined are facially discriminatory
- Factors other than economic protectionism include:
  - Obligation to serve
  - Reliability
  - Knowledge, familiarity, economies of scale, experience, access to funds
- States are encouraged to analyze the competitive solicitation model envisioned in FERC Order 1000 balanced against the incumbent preference model
- Such an analysis could help ROFR statute withstand court scrutiny
Further Considerations

I. Federal v. State Jurisdiction
   - SCE&G Order 1000 Compliance Order, FERC Docket No. ER13-107-001 (April 18, 2013), striking right-of-way language in contradiction with FERC Order 1000
   - MISO, PJM March 22nd Orders striking references to state ROFR laws and indicating that ROFR agreements were not protected by Mobile-Sierra doctrine
   - ISO New England May 17, 2013 Order invalidating ROFR agreement as within Mobile-Sierra but violating public interest standard
   - Commissioners Clark and Moeller Dissents (litigation between state law and federal rules)

II. 7th Circuit US Court of Appeals Decision upholding MVP, April 10, 2013
   - Contains reference to Michigan state RPS “violating the Commerce Clause of Article I of the Constitution, discriminate against out-of-state renewable energy.”
   - Issue not before court in this case, but this language could be seen in challenges to state ROFR statutes

III. Future Research
   - Analysis under Supremacy Clause of U.S. Constitution
   - “Matching” Requirement under traditional ROFR agreements
   - Narrow line of cases upholding statute even under strict scrutiny (quarantine)
Wind Integration Cost Challenges

I. Overview of FERC Order 764 and 764-A
   A. Intra-hour Scheduling
   B. Provision of Forecasting Data
   C. Guidance on Regulation Charges

II. Discussion of Wind Integration Cost Studies
   A. Cost Drivers
   B. Six Service Territories
   C. Organized Market Regions
   D. Energy Imbalance Market

III. Regulatory Challenges in BPA Region
    A. Dispatch/Curtailment protocols
    B. Reciprocity

IV. Conclusions and Recommendations
Intra-hour Scheduling:
- FERC adopted ancillary services schedules in Orders 888 and 890.
  - Schedule 3 – Regulation & Frequency Response
  - Schedule 4 – Energy Imbalance Service
  - Schedule 9 – Generator Imbalance Services
- Adopting intra-hour scheduling rule will enable transmission customers to mitigate these ancillary services charges

Data and Forecasting Reform
- Accuracy of wind power forecasts is directly connected to the amount of balancing energy needed and hence the cost of wind power integration
- Meteorological data requirements from wind/solar:
  - Wind - temperature, wind speed, wind direction, and atmospheric pressure
  - Solar - temperature, atmospheric pressure, and irradiance
- New definition of VER: energy source that: (1) is renewable; (2) cannot be stored by the facility owner or operator; and (3) has variability that is beyond the control of the facility owner or operator.

Generator Regulation Service
- Proposed Schedule 10 - generic rate schedule Generator Regulation and Frequency Response Service
- Proposed Schedule 10 would have provided a mechanism through which TPs could recover the costs of providing regulation reserves associated with the variability of generation resources
Variations in cost drivers across service territories include:
  - Availability of transmission and types of generation;
  - Market conditions
  - Ancillary service cost determinations

Paper looked at Six service territories:

<table>
<thead>
<tr>
<th>Company</th>
<th>Penetration Level</th>
<th>Cost Model</th>
<th>Integration Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idaho Power</td>
<td>670-800 MWs</td>
<td>Systems Operations Model (internally-developed)</td>
<td>$16.70/MWh</td>
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<tr>
<td></td>
<td>800-1000 MWs</td>
<td></td>
<td>$22.42/MWh</td>
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<tr>
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<td>1000-1200 MWs</td>
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<td>$49.46/MWh</td>
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<tr>
<td>Portland Gas &amp; Electric</td>
<td>850 MW</td>
<td>Mixed-Integer Programming (MIP)-based Optimization Model</td>
<td>$11.04/MWh</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$915/MWh</td>
</tr>
<tr>
<td>Puget Sound Energy</td>
<td></td>
<td>AURORA Model Ancillary Valuation Model</td>
<td>$2.70/kW-month</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>$2.08/kW-month (reg. service for exports)</td>
</tr>
<tr>
<td>Bonneville Power Administration</td>
<td>5,100 MWs (approx.)</td>
<td></td>
<td>$1.23/kW-month</td>
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<tr>
<td>Public Service Company of Colorado</td>
<td>1140 MW</td>
<td>Cougar Unit Commitment &amp; Dispatch Model</td>
<td>$4.32/MWh</td>
</tr>
<tr>
<td>PacifiCorp</td>
<td>2126 MW</td>
<td>Planning &amp; Risk (PaR) Production Cost Model</td>
<td>$2.55/MWh</td>
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Regulatory Challenges in BPA

- **Procedural History**
  - 2011 Wind Coalition Complaint against Environmental Re-dispatch Protocol
  - December 7 2011, FERC grants petition under FPA Section 211A
  - BPA requests rehearing
  - March 2012 BPA files compliance with Oversupply Management Protocol
  - December 20, 2012, FERC denies rehearing and conditionally accepts OMP
  - February 2013, BPA petitions 9th Circuit for review of Dec 7 & Dec 20 orders
  - March 2013, BPA filed revised OMP

- **Regulatory Concerns**
  - ERP and OMP
  - Dispatcher Standing Order 216
  - Unilateral Amendments to LGIA
  - Risk of Reserve Capacity Procurement
  - Curtailment Practices

- **Reciprocity**
  - Petition for Reciprocity (2012) Under Order 888 “Safe Harbor” provision
  - Wind coalition asserts that December 7 2011 Order requires jurisdictional OATT under FPA 211A
  - BPA asserts that reciprocity request and OMP matters should be handled separately
VER Integration Orders
Compliance deadline – November 12, 2013

- Impacts of Order 764 reforms on VER integration costs known after:
  - state regulatory commissions take up dockets
  - investigating integration cost recovery proposals
  - accounted for the cost impacts of the Order 764 reforms

- Balanced approach that adopts regulatory reforms but also compensates TPs for ancillary services they provide:
  - “intra-hour scheduling will allow [TPs] to rely more on planned scheduling and dispatch procedures, and less on reserves, to maintain overall system balance” [Order 764, ¶22]
  - “forecasting tools...provide [TPs] to manage the variability of VER generation through the unit commitment and dispatch process, rather than.....through the deployment of reserve services” [Order 764 ¶45]

- Additional subject areas that may more accurately identify and/or moderate costs:
  - Forward market Structure & Reliability Commitment
  - Balancing Area Coordination/Consolidation
  - Capacity Market Reform
  - Re-dispatch and Curtailment Protocols
Recommendations and Conclusions

Wind Integration Cost Calculations

- Wind integration cost calculations are difficult undertakings
  - few metrics that lend themselves to meaningful comparisons across service territories
  - States/regions left to conduct studies based on tools, proprietary models & market data available to them
  - Comparisons between regions within and outside of organized markets add additional complexity

- Further Research could include:
  - Comprehensive look at cost models used to calculate integration costs
  - Purpose to extract usable metrics that can be compared against one another in a meaningful way
  - Collaborative effort among regulatory commissions, power companies and public utilities
  - Goal to identify at least some metrics across states and regions that could be standardized
  - providing state regulatory commissions a basis from which to evaluate integration cost figures placed before them for approval
  - Finally, state commission access to proprietary computer models that drive integration costs calculations and training on how to use the models and interpret their results

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Recommendations and Conclusions

Regulatory Challenges in BPA Region
(Takeaways)

• Balancing of benefits of reciprocity against sacrifices
  ○ Benefits: transparent, predictable, stable OATT; facilitates transmission across interchanges
  ○ Responsibilities: provision of any service to another TP that the nonpublic utility provides or is capable of providing on its system

• Will reciprocity require abandoning certain dispatch/curtailment protocols?
  ○ Exposure under Clean Water Act and Endangered Species Act
  ○ Unilateral Amendments to LGIA and DSO 216

• Challenge to applicability of FERC Comparability Principles
  OR

• Achievement of Balanced Operations: Reliable, Environmentally Responsible and Comparable
Proposed New Research

- **Order 1000 Interregional Compliance Filings**
  (Compliance Filings due July 10, 2013)
  - Interregional coordination and cost allocation
  - Look at iterative process within/across regions to provide context to tariff provisions
  - Focus on Southeast Regional Transmission Planning Region (SERTP)

- **Topics of Interest in NARUC Committee on Electricity**
  (April 19, 2013 Call with Chair Boyd)
  - Penetration of new resources at the distribution level and its impacts on the utility
    (economic and reliability consequences)
  - Hardening of the grid’s infrastructure in anticipation of snow storms, hurricanes, etc.
  - The application of PURPA and its enforcement by FERC in certain states
  - Gas & Electric coordination
  - Cyber-security and how new NERC standards will impact utility rate-structures
  - Whose job is it to educate consumers about new rate structures, costs, tools, etc?