Southern Company Transmission

FERC Technical Conference
Integrating Renewable Resources Into the Wholesale Electric Grid
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Southern Company Profile

- Owner of five electric operating companies in the Southeast
- 42,000 MW of generating capacity, 27,000 miles of transmission lines
- Serve 4.4 million customers; 120,000 square mile service territory

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Renewable Resource Development in the Southeast

Southern supports a diverse portfolio of generation technologies – nuclear, clean coal, natural gas, hydro, and renewables – to provide clean, reliable, and affordable electric service to our customers.

- Renewable power R&D Program –
  - Offshore wind feasibility study with Georgia Tech
  - Biomass re-powering of coal units; co-firing with switchgrass and wood chips
  - Hydrokinetics - Offshore wave & tidal study with EPRI
  - Solar – PV demonstrations; water heating; augmented steam cycle study
- Resource challenges – high capital costs, low capacity factors for wind & solar, biomass is more plentiful but there is competition for fuel and fuel transportation limitations
- Draft RES bills would require 4,000 to 8,000 MW's of renewables

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Consumer Benefits Should be Optimized

- Transmission reforms adopted to facilitate the integration of renewables should strive to optimize benefits to consumers and otherwise be done on a least-cost basis.

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Order No. 890 Product Reforms

- FERC adopted enhancements to open access rules in Order 890 to facilitate the integration of more renewable resources.
  - These Order No. 890 enhancements can be refined to further facilitate the integration of renewables.

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Order No. 890 Reforms

- Order No. 890 reforms included provisions to address renewable resources (or requests that required large scale improvements):
  - Refinements in Redispatch provisions and more transparency
  - Introduction of Conditional Firm Service:
- FERC held several caucus sessions for industry participants to discuss OATT changes
- Having participated in those discussions, I am somewhat concerned that the parties did not fully analyze and address the operation and operational impacts that large amounts of renewables would place on the transmission system.

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Low Capacity Factor and Off-Peak Nature

- Specifically, wind resources typically operate at 25-40% capacity factor and mostly during off-peak periods.
- Moreover, wind is often an off-peak resource, yet most of the Order No. 890 transmission discussions regarding renewables focused upon firm delivery, which is studied primarily as an on-peak product.
- The importance of these considerations is that a largely off-peak, low capacity factor product does not require that the transmission system be able to delivery all of its capacity at peak.

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An Off-Peak OATT Product

- Given these operational characteristics, some Tariff revisions/additional products could include:
  - An off-peak firm product could be developed. Such a product would seem to reduce the amount of new transmission capacity required to integrate renewables, thereby potentially providing substantial consumer benefits.
  - Credits for on-peak usage (subject to ATC on-peak).
  - Related ancillary services

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Other Operating Issues

- Other operating issues include:
  - Wind forecast uncertainty combined with load forecast uncertainty creates an additional ancillary services impact.
  - Delivery of wind in off-peak periods:
    - For PEHVs and PSH type applications.
    - Creates operating reserve/regulation challenges for both source and sink systems.
  - Wind variability is not conducive to long distance wheeling
    - Tagging practices, scheduling and balancing must be addressed to maintain reliability

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Reforms to Order No. 890 Planning Requirements

- The Order 890 Regional Transmission Planning Processes could be reformed to:
  - Provide a priority for the studies necessary to address the transmission improvements that are required to integrate renewables.
  - Require further regional and inter-regional coordination regarding the integration of renewables.
- These processes are already performing studies for renewables.
  - For example, in the Southeastern Regional Transmission Planning Process, 3 out of 5 of the stakeholder-requested studies for 2009 involve large imports of renewables from other regions.

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Benefits of Order 890 Approach

- Use of these Order No. 890 process would not suffer from implementation delays as they are “up and running”.
- Designed to conduct *Regional* Planning
  - Accommodates planning for interstate lines to integrate renewables
- Supports existing state-regulated IRP and RFP processes that would likely be used, at least for some utilities, to integrate renewables.
  - Keeps Focus on Customers!
- Planning performed by existing planners with experience in optimizing resource/transmission solutions

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Benefits of Order 890 Approach (continued)

- Process is open, transparent and avoids undue discrimination
- Avoids unnecessary layers of planning bureaucracy and associated costs and inefficiencies
- For areas where TP is LSE, planning will be performed by entity responsible to customers
  - Greater incentive to make least-cost decisions
  - Keeps Focus on Customers

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