Federal Transmission: Projects and Policy

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The Administration’s Guiding Energy Principles

- **Promoting Energy Efficiency.** Promote investments in the transportation, electricity, industrial, building and agricultural sectors that reduce energy bills.

- **Producing More Energy at Home.** Enhance U.S. energy supplies through responsible development of domestic renewable energy, fossil fuels, advanced biofuels and nuclear energy.

- **Closing the Carbon Loophole.** …immediate action to reduce the carbon pollution that threatens our climate and sustains our dependence on fossil fuels.  
  
  *Source: whitehouse.gov*
Includes Recovery Act Implementation

- $80B govt-wide of clean energy funds

Source: whitehouse.gov
One of many on a clean energy economy:

"We’ve also renewed our commitment to passing a comprehensive energy and climate bill that will safeguard our planet, and spur innovation and help us to compete in the 21st century.....I think we all understand that the task ahead is daunting; that the work ahead will not be easy, and it’s not going to happen overnight. – Earth Day 2010
Current Status of New Transmission

- New transmission is being built (uptick)---
  - Mostly local, regional
  - Distant renewables driving call for new long lines
- Lots of proposals in West for long distance lines
- Beginning proposals for several long Eastern lines
- Economic downturn & various uncertainties
- No grand solutions on siting and cost-allocation
  - Exception might be SPP Region with their overlay buildout plan – ie. something for everyone
- In meantime, a new PROCESS of interconnection-wide analysis/planning may help – only game in town?
Uncertainties for Transmission

• **Recession**: driving down electricity consumption and future load growth. Delays new utility purchases.
• **Demand side**: some say efficiency first/can meet load growth. Role of emerging generation like PV?
• **National**: what will rules of the road be on both climate and energy legislation?
• **Supply Mix**: variable renewables; what about baseload generation & diversity; reliability questions
• **Technology Change**: how will economics/performance of low and zero carbon technologies play out over time
• **Natural Gas**: some say new shale gas supply is game changer already here
Ex. of ONE Uncertainty: Shale Natural Gas Supply

Source: Energy Information Administration based on data from various published studies
Updated: May 28, 2009
FERC Transmission Activities

- Rates and Tariffs
- Transmission Planning (Order 890)
- Cost Allocation
- Defer to FERC speaker
Major Transmission Legislation

- Incent more transmission by reforms to planning, siting, and cost-allocation
- Purpose of each bill varies (accessing renewables and low carbon resources, reliability, reduce congestion, smart grid, backbone creation)
- All allow, or encourage, or require interconnection-wide planning of some sort (except Nelson bill)
- Some have FERC backstop siting with variations
- Deference to states varies
- **Bottom line: evolving as months go by (climate?)**
|                              | **Sen. Bingaman: (S. 1462)**  
|                              | “American Clean Energy Leadership Act” | **Reps. Waxman-Markey: (HR 2454)**  
|                              | **American Clean Energy and Security Act of 2009** |
| ---                          | ------------------------------------- | ------------------------------------- |
| **Plan Approval**            | FERC  
|                              | (interconnection-wide plans ENCOURAGED) | FERC  
|                              | (interconnection-wide plans MAY occur) |
| **REZ and/or Green Transmission Requirements** | Plans shall consider the location of generation and potential generation development  
|                              | Secretary of Energy will conduct nationwide location-constrained resources assessments.  
|                              | IS NOT a REZ requirement but suggests that potential renewable energy resources must be considered in planning | None |
| **Siting/Preemption Authority** | Must attempt to site through state processes  
|                              | No NIETC designation requirement but must be part of “high-priority national transmission project”  
|                              | FERC can preempt the state’s siting authority if the state:  
|                              | “Fails to approve” the project within 1 year,  
|                              | Rejects application, or  
|                              | Imposes unreasonable conditions on the permit | For Western Interconnection only  
|                              | FERC preemption vastly expanded:  
|                              | -- Must attempt to site through state processes  
|                              | -- No NIETC designation rqmt, but must be a multistate line in a regional plan  
|                              | -- Facility must be needed in “significant measure” to meet renewable demand under plan  
|                              | FERC can preempt the state’s siting authority if the state:  
|                              | -- Did not issue a decision within 1 year  
|                              | -- Denied the application  
|                              | -- Authorized project subject to conditions that “unreasonably” interfere with the project |
| **State Deference**          | FERC shall give due weight to the environmental record & state siting process | FERC shall consider & incorporate state-imposed constraints and mitigation measures |
| **Federal Funding**          | None | None |
| **Cost Allocation**          | FERC will establish cost allocation methodology  
|                              | FERC shall give deference to cost allocation proposals supported by state agreement  
|                              | Cost reasonably apportioned based on economic and reliability benefits | No provision |
| **Federal Agency Coordination** | Dept. of Interior is lead agency for coordinating federal agency environmental review | Same as stated in Energy Policy Act except DOE is replaced by FERC. |

*Source: Western Interstate Energy Board, with DOE mods*
Administration Transmission Activities

- Various POTUS Statements
- White House CEQ leading interagency review of transmission policy (& others)
- West: Joint attendance of DOE, USDA, Interior Secretaries and FERC Chair at June 09 Western Gov’s Annual Mtg
- Interior: emphasis on Fed land siting of renewables and transmission
- New Interagency MOU to better coordinate T siting on Federal lands
- Various Recovery Act Funds for Transmission
DOE Recovery Act Transmission Funding

- **$6.0 billion for loan guarantees for renewable technologies & transmission technologies**
  (July 29 notice: $2B for renewables & transmission; $750M for commercial transmission)

- **$3.25 billion in increased Bonneville Power Administration borrowing authority**
  (to be used for McNary-John Day 500kv 79 mile transmission line. Three other projects in NEPA review)

- **$3.25 billion in Western Area Power Administration borrowing authority**
  (determining project selections from March 09 RFI notice)

- **$80 million for facilitating the development of regional transmission/resource analysis/plans**
Non-Recovery Act
DOE Transmission Activities

• 7/09: $6M for 14 awards for wind trans analysis, planning & assessment

• Wind/solar transmission level integration studies

• Pending Solar Transmission Report to Congress

• July 09 Denver CO-NM-UT-WY PUC discussions on joint siting laws

• Long-time analytical support to West: “WGA/WIEB/CREPC”

• ARRA funds in these areas: BPA-WAPA borrowing authority & transmission included in loan guarantees/smart grid/utility worker training/PUC $
Non-Recovery Act
DOE Transmission Activities

- EPAct Sec. 368 Energy Corridors on Federal Lands
  - West is done. But under court challenge.
  - “Other than West” underway

- EPAct Sec. 1221h Coordination of Fed permits for lines on Federal Lands service is available

- Western Renewable Energy Zones project Phases I and II (III & IV under ARRA Interconnection)

- Various Recovery Act funding

- 2009 DOE Transmission Congestion Study

DOE’s Transmission Congestion Study Responsibilities

- **EPACT Requirement:** Conduct a national transmission congestion study every three years
  - First study published in August 2006

- **Recovery Act** directed DOE to include in 2010 study analysis of renewable resources blocked by lack of transmission

- **Optional under EPACT:** After considering public comment on a congestion study, DOE *may* designate National Interest Electric Transmission Corridors
  - Mid-Atlantic and Southwest corridors designated in October 2007
2007 DOE National Corridor in Southwest Area

Orange area: Critical Congestion Area (2006)

Shaded area: National Corridor (2007)
2010 DOE Study: Congestion in Western Interconnection

- DOE 2010 report retains the Critical Congestion Area as identified in 2006. If anything, congestion in Southern California has grown worse.

- DOE 2006 report identified Seattle-Portland, Phoenix-Tucson, and the San Francisco Bay area as Congestion Areas of Concern.

- DOE 2010 report lifts the identification for Phoenix-Tucson, based on improvements made. It retains the other two, while noting improvements are planned.

- DOE 2010 report does not identify any new problem areas
2007 DOE National Corridor in Mid Atlantic Area

Orange area: Critical Congestion Area (2006)

Shaded area: National Corridor (2007)
2010 DOE Study: Congestion in Eastern Interconnection

- DOE 2010 report retains the Critical Congestion Area as identified in 2006. Some improvements noted but not sufficient to lift identification.
- In 2006, DOE identified New England as a Congestion Area of Concern. 2010 DOE report lifts that identification, due to improvements made.
- DOE 2010 report does not identify any new problem areas.
- New York may assert it should have been treated in same manner as New England – but its problems have not been eased to the same degree.
2010 DOE Study: Constraints in MISO, PJM, and NYISO
2010 DOE Study: Conditional Constraint Area

CONCEPT: Green area contains large amounts of “locationally constrained” potential resources and development is inhibited chiefly by lack of transmission

- Responds to Recovery Act requirement
- Has information value but no legal effects
- Not based on nuclear, coal, or gas potentials – they are not locationally constrained. Though CCS may be included in future studies
- Does not include offshore non-wind resources because they are not yet ripe for development
Energy Policy Act
Energy Corridors on Federal Lands

Completed for the West – in USDA, DOI Land Use Plans
Rest of U.S. – underway
“Western Renewable Energy Zones”
– WGA’s Phase I “Hub” Map

“Hubs” are graphical representations of regional renewables potential for the purposes of evaluating interstate transmission lines in future WGA WREZ project phases.

Energy Zones to be done in East

Western Renewable Energy Zones Project Continues

- Phase II: WGA pledges to help with conversations between buyers & sellers
- Phase III: WGA pledges to help with multi-state conversations for any multi-state transmission lines on siting/cost-allocation
- Now part of Interconnection-Wide Planning Project
- East to do Energy Zones
“Interconnection-Wide” Funding: “Topic A” and “Topic B”

- DOE’s 6/09 “Funding Opportunity Announcement” said DOE wanted to fund two kinds of work, to be done by two kinds of entities:
  - Topic A: Inclusive, collaborative interconnection-level analysis and planning, to be done under the guidance of a “multi-constituency steering group.” At least 1/3 of the group must be state officials.
  - Topic B: Cooperation among states on electric resource planning and priorities (as input to Topic A work)
- FOA required close cooperation and coordination between Topic A and Topic B entities
- Objective is to enable Topic A groups to develop long-term analyses and plans that industry and states will find informative and useful
“Interconnection-Wide” Funding

- Recovery Act provided $80M for multi-year resource assessment and interconnection-level transmission planning
- This is “seed money” to create standing analytic capabilities for long term
- DOE is awarding $60M to five interconnection-level entities – utility planners & also states:
  - East: EIPC and EISPC
  - West: WECC and WGA
  - Texas: ERCOT
- $20M for requested technical support of THEM through National Laboratories
National Council on Electricity Policy Publications

- Updating the Electric Grid: An Introduction to Non-Transmission Alternatives for Policymakers
- Electricity Transmission: A Primer
- Coordinating Interstate Electric Transmission Siting: An Introduction to the Debate

http://www.ncouncil.org

(National Council is NARUC, NCSL, NGA, NASEO, NACAA working jointly and funded by DOE, EPA)
Appendix
Shale Basins and U.S. Pipeline Grid

Source: American Clear Skies Foundation
Renewable Technologies: Many Flavors

Variability and Predictability Differs!
Relative Predictability and Peak Availability

- Biomass
- Solar Thermal
- Ocean Energy
- Solar PV (Southwest)
- Offshore Wind
- Wind
- Solar PV (other regions)

Predictable Generation Output (at any given time)

Correlation to Peak Demand

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Many Flavors: Where We are Now & Potential

**U.S. Renewable Resources**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Solar PV/CSP</th>
<th>Wind</th>
<th>Geothermal</th>
<th>Waterpower</th>
<th>Biopower</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theoretical Potential</strong></td>
<td>206,000 GW (PV)</td>
<td>8,000 GW (onshore)</td>
<td>43 GW (conventional)</td>
<td>140 GW (Does not include 60 GW Bay of Fundy)</td>
<td>78 GW</td>
</tr>
<tr>
<td></td>
<td>11,100GW (CSP)</td>
<td>2,200 GW (offshore to 50 nm)</td>
<td>520 GW (EGS) looking at only west US!!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2008 US Electrical Capacity (net summer): 1010 GW

2008: 10.6% of total retail electricity sales (3.5% without hydro)

Source: National Renewable Energy Laboratory