

# ***THE ELECTRON SUPERHIGHWAY: NATIONAL POLICY AND PROSPECTS***

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- ***WHAT IS THE CURRENT NEED FOR, AND OBSTACLES TO, ELECTRIC TRANSMISSION INFRASTRUCTURE INVESTMENT, IN NEBRASKA AND NATIONALLY? WHAT ARE THE BENEFITS OF A STRONGER GRID?***
- ***WHAT ROLE DOES THE FERC SEEK TO PLAY IN PROMOTING TRANSMISSION INVESTMENT?***
- ***WHAT MIGHT THE PATH FORWARD LOOK LIKE?***

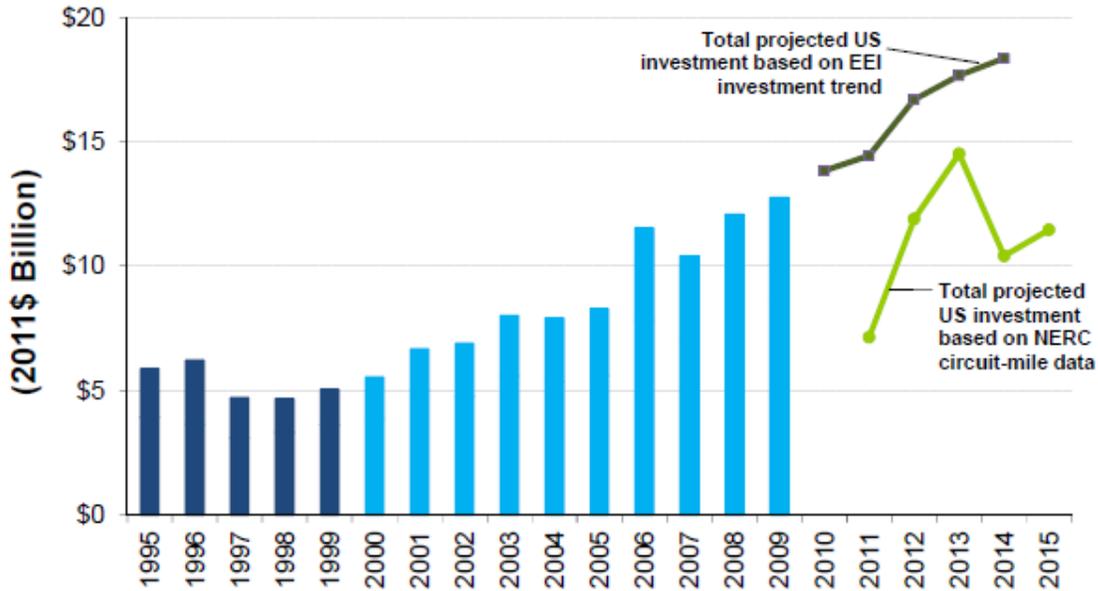
## **BASIC BACKGROUND**

### **Challenges and Barriers**

- Aging and deteriorating infrastructure
- More dispersed sources of generation, especially renewable energy
- Complex bulk power markets
- Wholesale competition among generators, and demand
- Arrival of the digital economy
- Electricity demand doubled between 1980 and 2007 –  
*So did reliability problems.*
- Lack of established regional and inter-regional transmission planning processes
- Unresolved cost allocation and recovery for multi-state and inter-regional projects
- Largely uncoordinated and uncertain state-by-state permitting
- Uncoordinated state public policy requirements

## Meeting the Challenge

- Projected transmission investment -- \$300+ billion by 2030
- Ramp up expenditures from \$5 billion/year (1999) to about \$12 - \$16 billion/year (2011-2030)

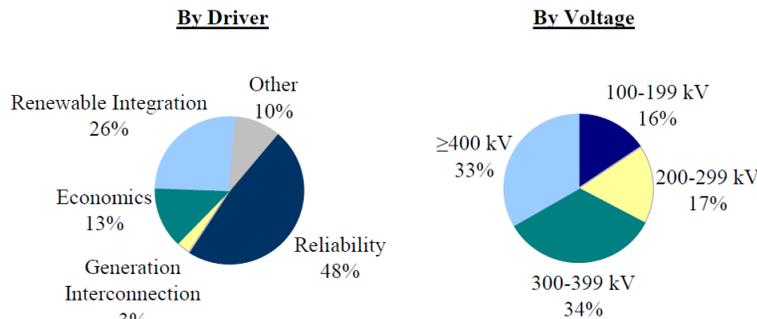


Source:  
 The Brattle Group, *Employment and Economic Benefits of Transmission Infrastructure Investment in the U.S. and Canada*, prepared by J. Pfeifenberger and D. Hou for WIRES, May 2010.

## Principal Drivers Of Transmission Development

Of the 39,000 circuit miles of transmission needed near-term, about one-third is needed to connect renewables. The majority of facilities are reliability-driven.

**Figure 3**  
**Reported Drivers of Projected Circuit-Miles of Transmission Additions**  
 (2011-2015 as reported voluntarily to NERC and in EIA Form 411 by IOUs, coop/munis, state/federal power agencies, ISOs/RTOs, and merchant developers)



Total 2011-2015: 22,669 circuit-miles

Sources and notes:  
 Based on drivers as report in EIA Form 411. No adjustments have been made to projects in one category (e.g., reliability) which may ultimately be built to satisfy more than one driver (e.g., renewable integration).

## **Benefits of More Transmission Investment**

- NREL: 20% wind by 2030 or roughly 300 GW – 2/3 of which require new transmission; implementation of 30+ state renewable portfolio standards
- Reduced transmission congestion and generation costs
- Increased system reliability; operational benefits; “insurance” benefits
- Reduced cost of new power plants
- Increased electricity market competition and liquidity
- Reduced emissions and fossil fuel consumption
- Tax benefits to states and local jurisdictions
- JOBS and ECONOMIC STIMULUS –
  - 150,000 -200,000 full-time jobs each year as construction proceeds
  - \$30-\$40 billion in annual economic activity (direct, indirect, and induced impacts of manufacturing and construction)
  - 20% wind would support 500,000 jobs annually (NREL)

## **THE ROLE OF FERC IN ADVANCING TRANSMISSION INVESTMENT**

- Federal Power Act – Concern for just and reasonable rates and non-discrimination in wholesale power markets. Jurisdiction: sales for resale and electric transmission in interstate commerce. Does not extend to most public power or to retail distribution.
- The “new” FERC of the past 20 years is focused on markets and how they operate
- **Order No. 1000**
  - Planning
    - Requires regional planning processes
    - Requires regions to coordinate on mutual solution
  - Cost allocation
    - Decided within the planning process
    - Regional solutions
  - Utility rights of first refusal to build (ROFR)
    - Incumbents still responsible for reliability
    - Does not affect local or state laws

- **Incentives (under EPAct 2005)** – a source of controversy
- **Reliability standard enforcement** – a source of controversy
- **Backstop siting (FPA sec. 216)** – a source of a lot of controversy

## **OTHER SIGNIFICANT INFLUENCES ON ELECTRICITY POLICY**

### **Legislation**

HR 3280 would give FERC authority to make determinations of need based on regional plans

S. 400 (Sen. Corker) would restrict FERC's authority to spread costs regionally to all beneficiaries, with probably impacts on transmission for renewables; would reverse the cost allocations adopted by SPP and MISO

### **Regional Challenges**

California wants its RPS met with instate resources only

Northeastern Governors reject large-scale imports of Midwestern renewable resources

State regulators are protective of their jurisdiction and worry about costs to consumers

### **Federal Administration Actions**

Obama's "Rapid Response Team" focused on reforming siting on federal lands

EPA's new Clean Air Act regulations (e.g., Cross-State Air Pollution Rule) will lead to retirement of coal-based generation and billions of dollars in retrofits, complicating transmission planning but accelerating the need for renewables integration

Eastern Interconnection Planning Collaborative – interconnection-wide scenario planning funded by the stimulus legislation

## **POLICY FORMATION IS TOUGH. THE POLITICS OF INFRASTRUCTURE ARE EVEN TOUGHER**

- Is transmission an enabler (e.g., of new resources and technologies) or a competitor?
- Do we want a grid that is strong and extensive like other networks (e.g., highways) or should it remain localized to serve local needs?
- Is planning driven by generation investment and public policies like RPS or on the assumption that, if we build it, they will come?

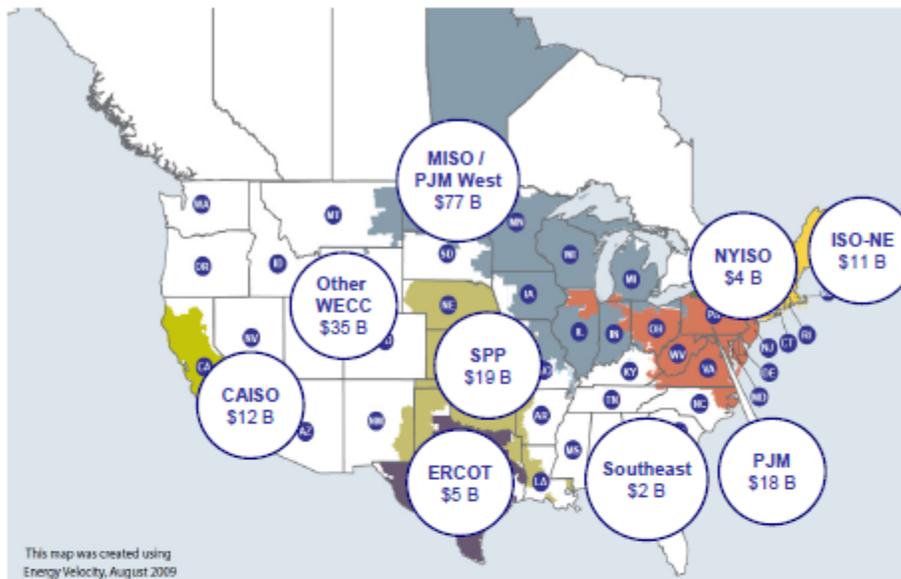
## **WHAT'S THE ELECTRICITY POLICY PRESCRIPTION FOR THE U.S.?**



**TRANSMISSION INVESTMENT REQUIRES ACKNOWLEDGEMENT OF ITS BENEFITS, RESOLUTION OF THESE CHALLENGES, AND ELIMINATION OF BARRIERS.**

There are plenty of lines being drawn on the map

**Figure 4**  
**\$180 Billion of Planned and Conceptual U.S. Transmission Projects**



Source: Map from FERC. Project data collected by *The Brattle Group* from multiple sources and aggregated to the regional level. Updated as of April 17, 2011.

	<u>\$ Billion</u>	<u>Share of Total</u>
[1] Total Projects Shown	\$182	100%
[2] Projects Approved in RTO Plans	\$26	14%
[3] Projects Not Yet Approved by RTOs	\$156	86%
[4] Adjustment for Overlapping Projects Not Yet Approved by RTOs	(\$73)	
[5] Total Net of Overlapping Projects	\$109	60%

**Sources and Notes:**

- [1]: Project data collected by *The Brattle Group* from multiple public sources and aggregated to the regional level
- [2]: Projects approved in RTO plans are a subset of [1]. Percentage is of total in [1].
- [3]: Projects not yet approved in RTO plans are a subset of [1]. Percentage is of total in [1].
- [4]: Based on analysis by *The Brattle Group*, the total costs of overlapping projects not yet approved by RTOs was divided by the number of such projects. No analysis was performed on the likelihood of success for each project.
- [5]: [1] + [4]

**Here's the question: will the investment show up and will these proposed projects be built? If we continue to lack an energy delivery policy that favors a national market for power in which all resources can compete, the outlook is clouded. An interstate highway for electrons requires interstate – at least regional – solutions. Unless Nebraska's resources can reach load for the benefit of consumers (and the environment), they are trapped.**

**We now have the ingredients of a potential solution:**

- a focus on the nation's infrastructure, energy independence, and job creation;
- technologies that are bringing the cost of all forms of energy down, including natural gas that can help integrate variable renewable resources;
- federal agencies that (somewhat hesitantly) are forcing a regional and inter-regional planning approach;
- capital markets that will participate if regulatory certainty is provided;
- grid entrepreneurs who take development risks with no guaranteed return; and
- state governors and other policymakers who are actively engaged in the issue of energy.

***“The Nation's infrastructure crisis is no less serious for being silent. [Fixing it] will improve our quality of life, our standard of living and our competitiveness.” (Warren Rudman and Felix Rohatyn, 2005)***