

Regional Transmission Issues: *Planning and Cost Allocation*

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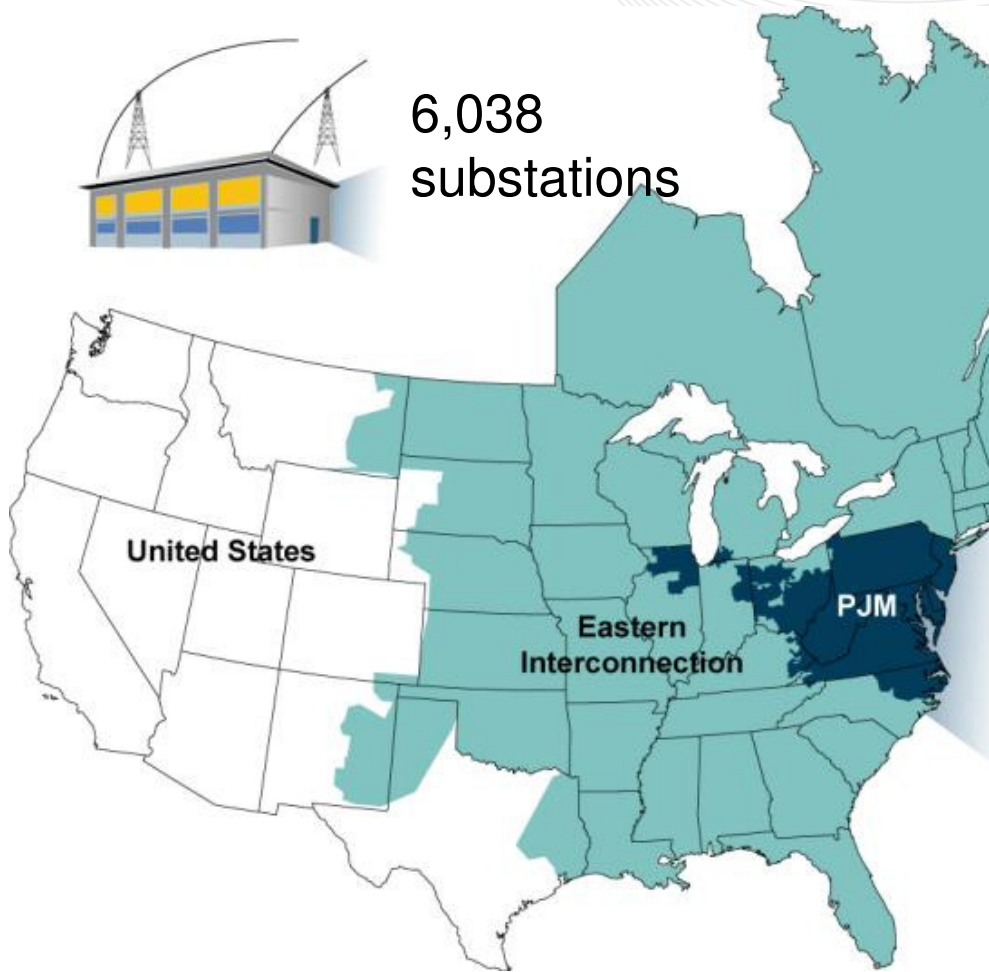
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6,038 substations



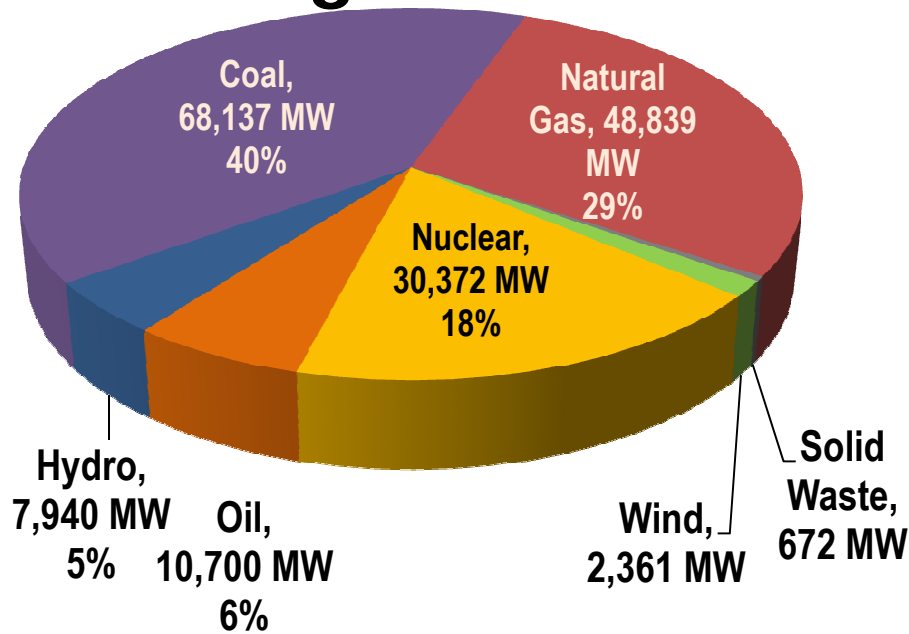
KEY STATISTICS

PJM member companies	600+
millions of people served	51
peak load in megawatts	144,644
MWs of generating capacity	164,905
miles of transmission lines	56,250
GWh of annual energy	729,000
generation sources	1,310
square miles of territory	164,260
area served	13 states + DC
Internal/external tie lines	250

- 26% of generation in Eastern Interconnection
- 23% of load in Eastern Interconnection
- 19% of transmission assets in Eastern Interconnection

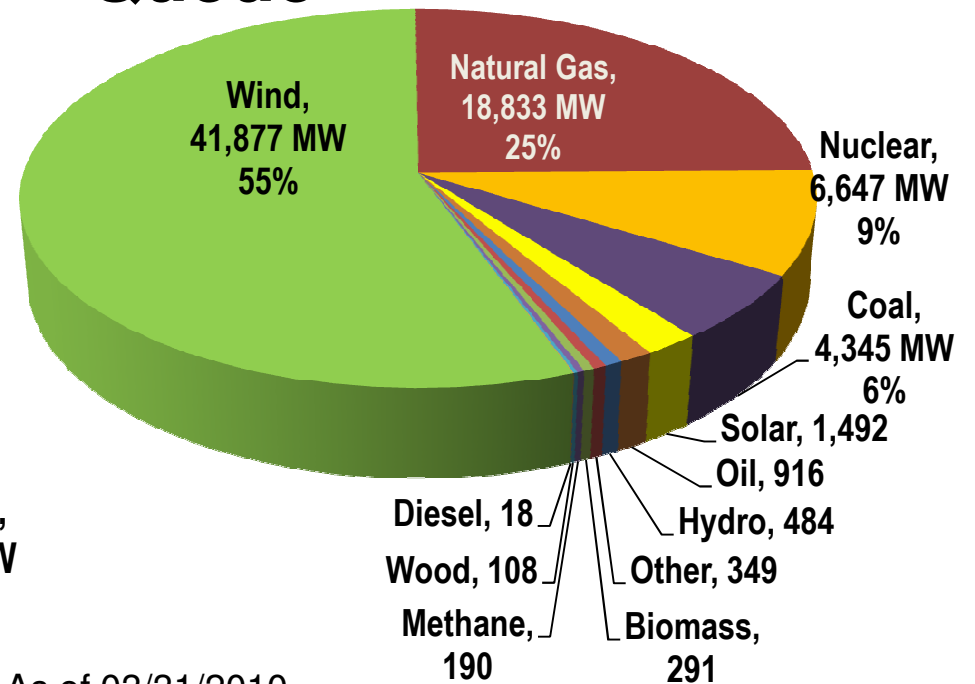
19% of U.S. GDP produced in PJM

Existing

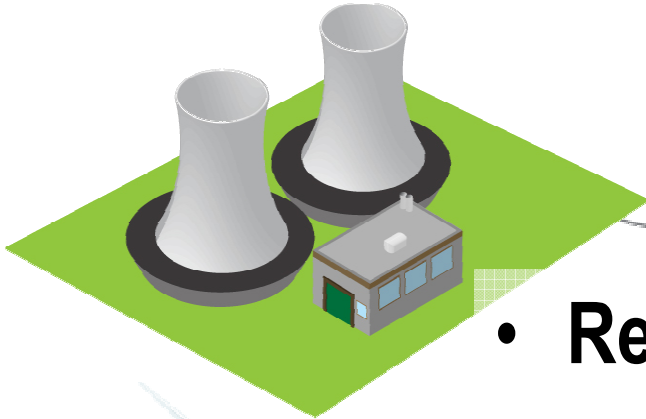


As of 12/31/2009

Proposed Queue



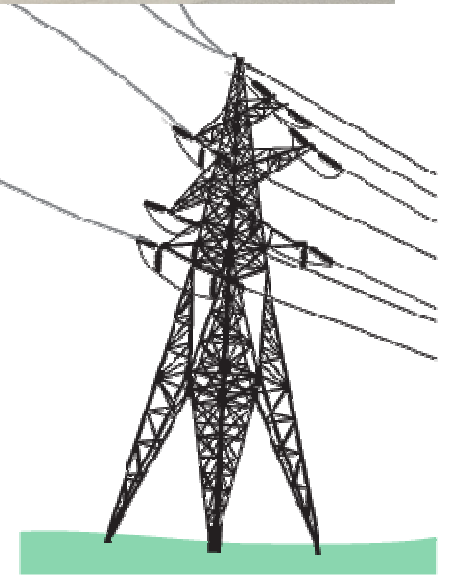
As of 03/31/2010



- **Reliability**



- **Improved economics by relieving congestion**

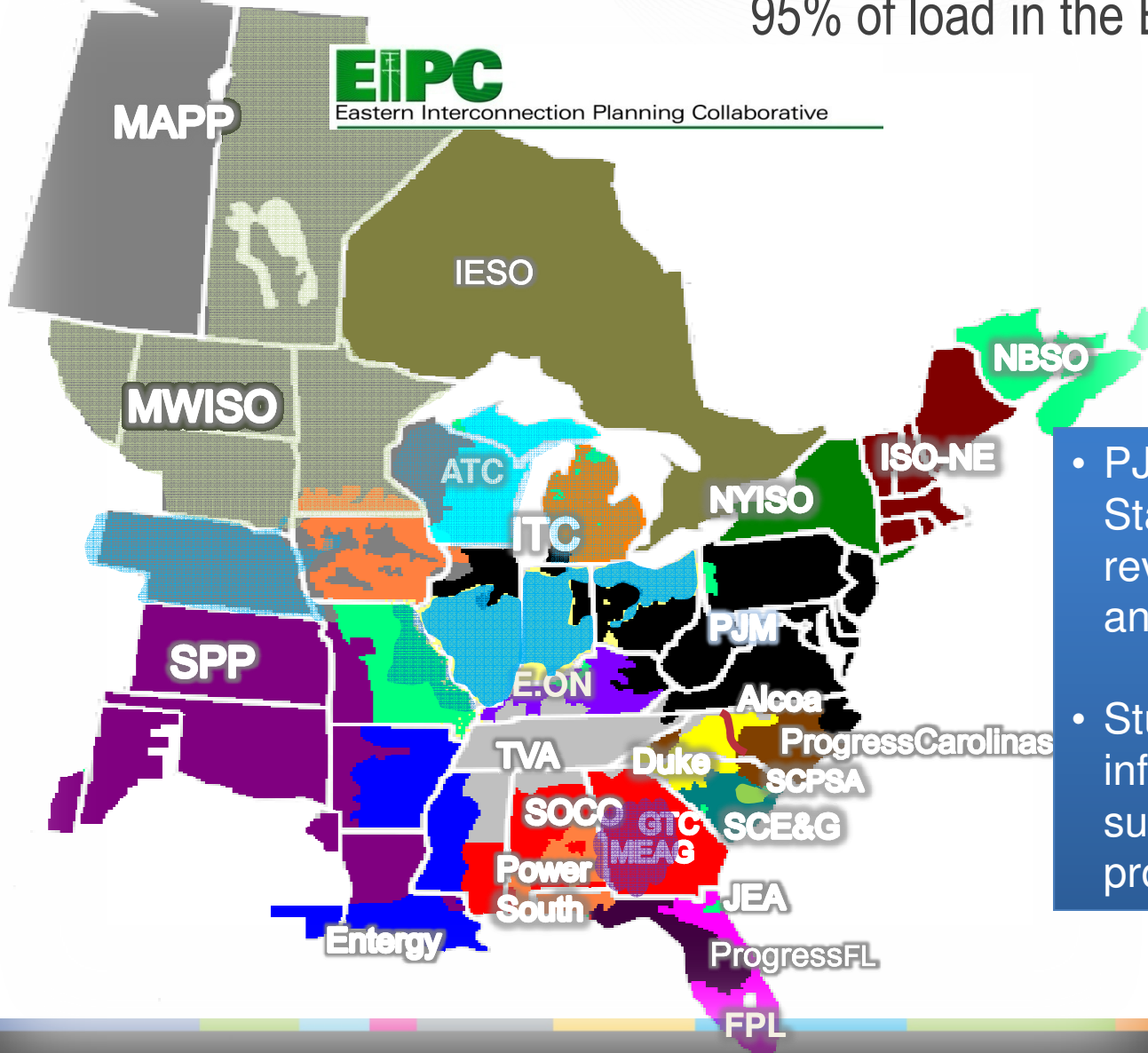


- **Access to renewables**

- Technical assessment of needed upgrades
 - *Reliability criteria*
 - *Market efficiency analysis*
- PJM's Regional Transmission Expansion Plan (RTEP)
 - *5-year and 15-year horizons*
 - *Evolving from "bright-line" test to probabilistic assessment*

- 1) **Regional Planning** -- required
- 2) **Cost Allocation**
 - “*roughly commensurate with estimated benefits*”
- 3) **Equal Treatment for Non-Incumbents**
 - Utilities do not have a Right of First Refusal for facilities in a regional transmission plan
- 4) **Interregional Planning** – required for neighboring regions
- 5) **Consideration of Public Policy**
 - Planning processes must “*take into account*” RPS and other requirements established by law

26 Planning Authorities in 40 states covering 95% of load in the Eastern Interconnection



- PJM participates on Stakeholder Committee that reviews modeling, scenarios and roll-up of plans
- Study results will provide information but do not supplant regional planning processes

- *“Survey of Issues, Methods and Practices”*
<http://www.pjm.com/documents/~media/documents/reports/20100310-transmission-allocation-cost-web.ashx>
- Transmission costs:
 - 8-10% of the overall retail bill.
 - Impact on the total cost of wholesale power is relatively small.
- Who pays?
 - “Beneficiary pays” vs. “Socialization”

Transmission costs can be allocated:

- 1) *Between load and generation*
 - Generally, load pays in the U.S.
- 2) *By amount of usage*
 - Per Megawatt Hours
- 3) *By peak consumption or generation*
 - Coincident or non-coincident to the system peak
- 4) *By flow-basis*
 - Relative impact on transmission facilities
- 5) *By a monetary impact basis*
 - Who gains financially?

- PJM

- *For 500 kV and above:* Load pays based on non-coincidental peak
- *For below 500 kV:* Load pays using flow-based method (reflecting users' impacts)

- Midwest ISO

- *For 345 kV and above:* Load pays partly (20%) on peak share, partly (80%) on flow-based methods (using distribution factors to determine users' impacts.)
- *100 to 345 kV:* Load pays based on distribution factors

- ISO New England
 - Load pays based on its share of the system's monthly peak.
- ERCOT (Texas)
 - Load pays based on system peak between June-Sept.
- California ISO
 - *For 200 kV and above: Load pays based on MWh basis*
 - *Special class of transmission is paid by load system-wide, then renewable generator assumes its share of costs upon interconnection*

- Combination of methods is common practice
 - *In U.S. and internationally*
- A societal decision
 - *Cost allocation is public policy mixed with engineering, economic and political considerations*
- *Art as well as science.*