Growing the Grid

How Regional Transmission Development Impacts Our Energy Future

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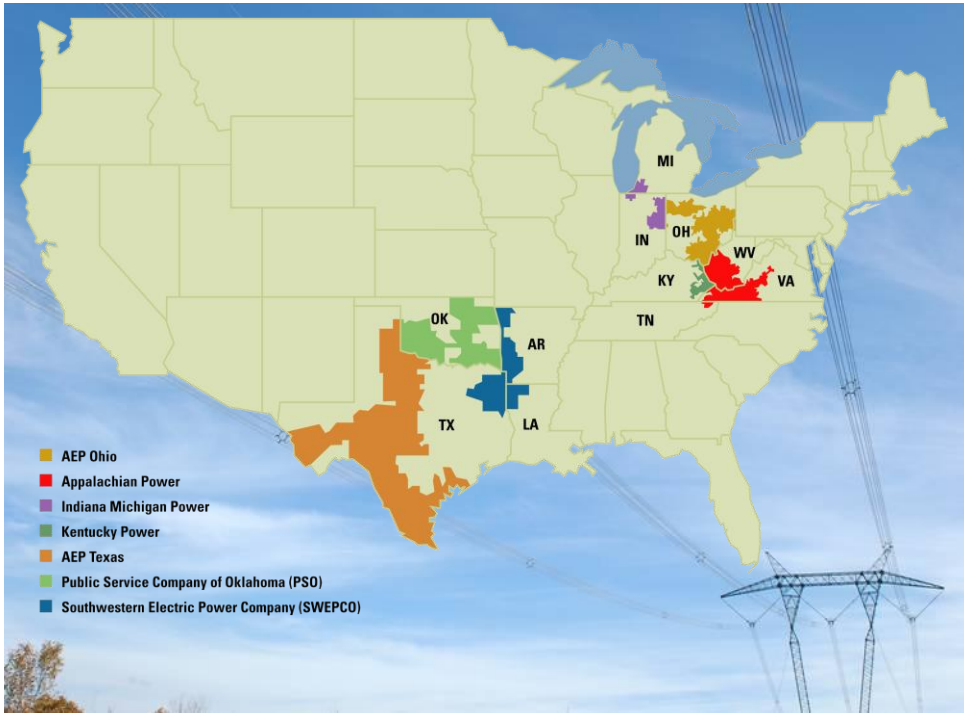
AEP AMERICAN® ELECTRIC POWER

American Electric Power

- 5.1 million customers across 11 states.
- 39,000-mile transmission network, including over 2,100 miles of 765 kV.
- Over 38,000 MW of generation.
- Assets and operations in three RTOs.



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Electric Transmission America, LLC

- Formed in 2007.
- 50/50 joint venture between AEP and MidAmerican Energy Holdings Company.
- Investing in large-scale transmission projects in North America, outside of ERCOT.
- Goal is to build Extra High Voltage (EHV) transmission, today driven largely by renewable integration.

ETA℠
ELECTRIC TRANSMISSION AMERICA, LLC

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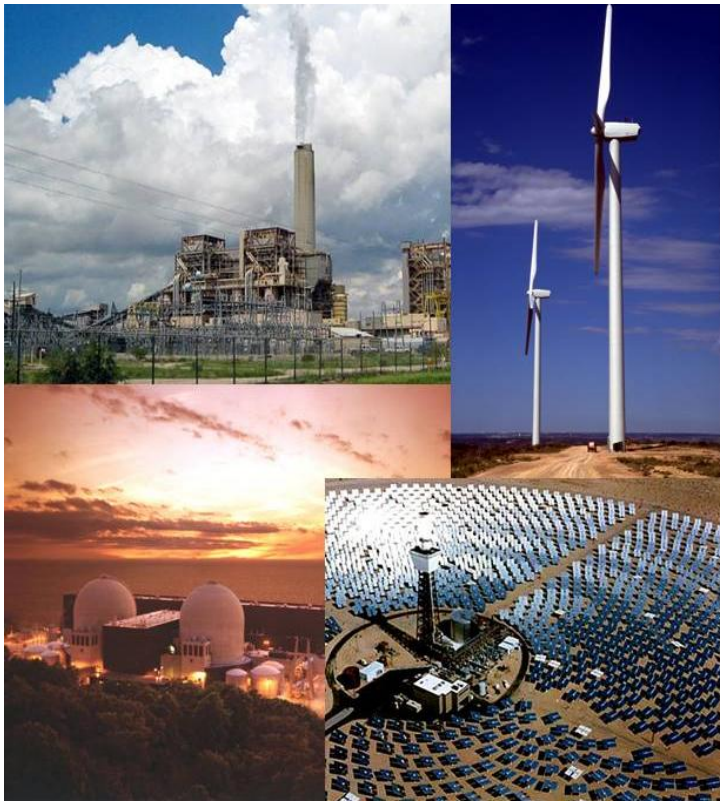
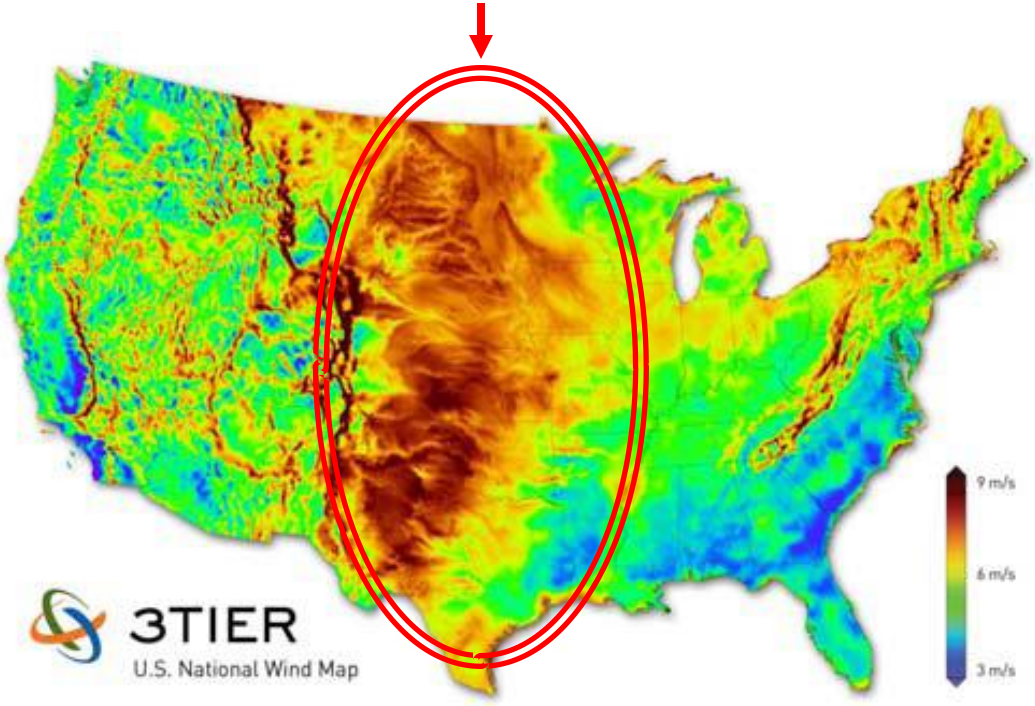
Industry Landscape



- **What's Changing Now?**
  - Dramatic shifts in generation profile.
  - Renewables waiting to be interconnected and efficiently delivered – once a *want* issue, now a *need* issue.
  - Environmental requirements are likely to force retirement of many large fossil units.
  - Energy markets blurring lines between reliability and economic transmission projects.
- **What Needs to Change?**
  - Planning for a new energy supply paradigm.
  - Cost allocation principles to encompass a strategic expansion of transmission.
  - Siting processes which are aligned with state, regional and national energy policy objectives.
- **"What got us here won't get us there."**

Today's Challenge

47% of Nation's Generation Interconnection Queue



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Importance of Regional Planning

- Overarching Goal: Electric energy resources must be connected and delivered to customers in an efficient and economic manner.
  - Energy markets facilitate transactions across and between regions, however current infrastructure designed under a different paradigm.

- Regional and interregional planning is critical:
  - Electric grid “borders” are arbitrary.
  - Major transmission projects impact a multitude of stakeholders.
  - Accounts for state by state differences in load and resource potential but with larger goals in mind.
  - Encourages development of most economical projects.

- Broad, collaborative approach to transmission planning is widely beneficial:
  - Allows cohesive plans to be developed, balancing emerging issues with traditional reliability and economic aspects.
  - Shows the full scope of benefits that can be achieved.
  - Ensures stakeholder participation.
  - Industry as a whole dealing with a complex set of issues.

Importance of Regional Planning

- While renewables are important, we must not lose sight of transmission planning's primary issues:
  - System must remain reliable, and mandated reliability standards are increasingly strict.
  - Congestion must be mitigated.
  - Existing infrastructure largely utilized and aging.

- Status quo does not fully consider all aspects of renewable development.
  - Location often remote, requiring expansion.
  - Operation of variable resources presents unique challenges.
  - Societal benefits of development versus costs.
  - Changing economic conditions.
    - Demand loss due to economic downturn.
    - Lower natural gas prices.

Transmission planning must look at all "what if…" scenarios, and needs to consider renewables, "whether you like it or not."

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Key Policy Decisions

- If policymakers and industry desire a new energy mix, there are necessary steps to make it happen.
  - Primary obstacles largely non-technical.

- Energy policies can have dramatic impacts on transmission plans.
  - State/National RPS.
  - Environmental policy (incl. CO_2 regulation).
  - Incentives for development (incl. transmission, smart grid, etc.).

- New EHV transmission to support energy goals can be facilitated by:
  - Changes in project planning and approval processes.
  - Alignment of cost allocation to support EHV transmission.
    - Both within and between regions.
  - Streamlined siting processes.
  - Full consideration of economic impacts.
    - Focus tends to be on transmission cost with less consideration for the potential benefits.

Coordinated Planning – Example

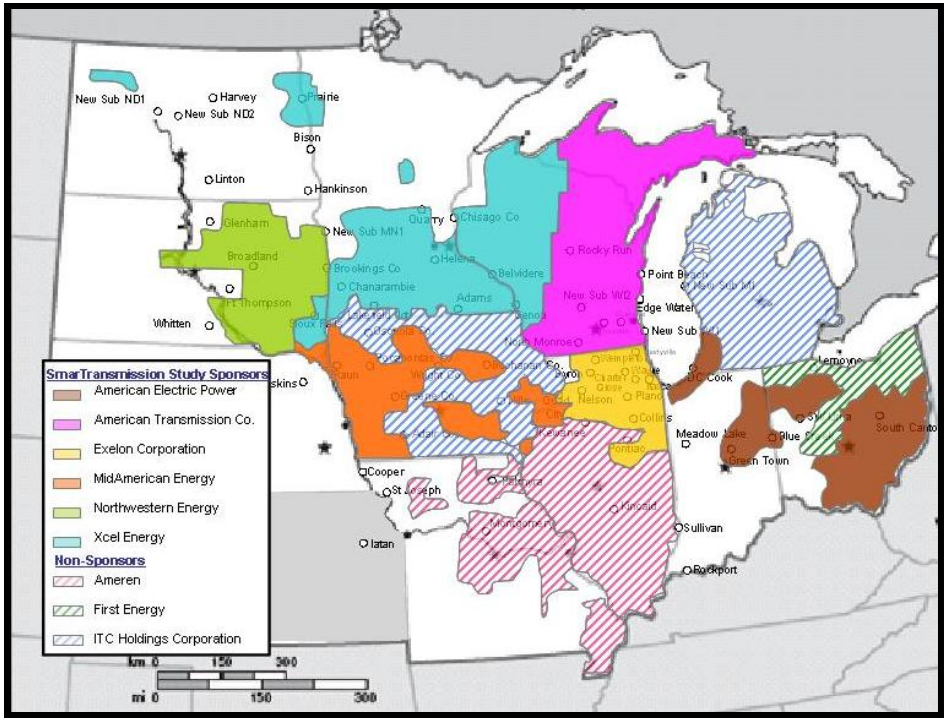
- ETA's philosophy is based on building strong partnerships with like-minded utilities.
  - EHV transmission projects often span individual utility footprints.
  - Local utilities understand local issues.
  - Expertise, capital availability, and risk tolerances vary widely.

- Partnerships can provide significant benefits.
  - Balance of local and regional interests.
  - Sharing of resources, expertise and viewpoints.
  - Multiple levels of support at RTO, State, and FERC.

- As stakeholders, we have the responsibility to craft our own future, in coordination with the RTOs.

Coordinated Planning – Example

- The SMARTransmission study is an example of a comprehensive study of the region's transmission needs.
- Led by Quanta Technology.
- Sponsored by several Midwest utilities:
  - American Transmission Company (ATC)
  - Electric Transmission America, LLC (ETA)
  - American Electric Power (AEP)
  - MidAmerican Energy Holdings Company
  - Xcel Energy
  - Exelon Corporation
  - MidAmerican Energy Company
  - Northwestern Energy



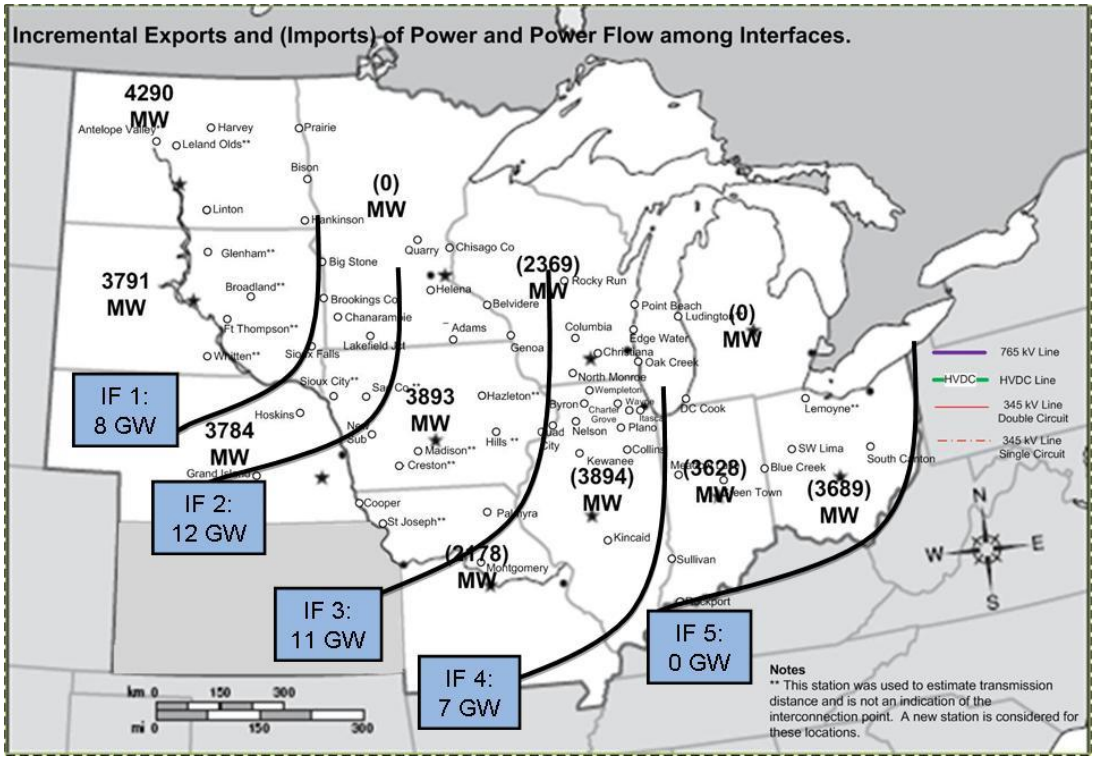
SMARTransmission Study

- Study Objectives:
  - Development of EHV transmission alternatives that ensures reliable service for sponsors' communities, is environmentally friendly, and supports energy policy.
  - A reliability analysis for technically sound solutions for integration of EHV transmission into the existing transmission system.
  - An economic analysis to demonstrate the benefits of EHV transmission to the study regions.

- Key Drivers:
  - Open and transparent process.
  - Steering committee with project sponsors.
  - Stakeholder input.
    - Including RTOs, regulators, co-ops, municipals, environmental groups, NGOs, and non-sponsor utilities via phone, online, and in person.
  - Multi-regional transmission focus consistent with national, regional, and local energy policies.
  - Technical and economic based alternatives.

SMARTransmission Study

- Phase One: Identify Alternatives
  - Steady-state analysis
  - Develop several alternatives
  - Develop performance metrics
  - Identify top performing alternatives
- Phase Two: Societal Benefits Evaluation
  - Security-constrained economic dispatch
  - Develop societal benefits metrics
  - Evaluate top performing alternative
  - Provide final ranking and recommendation



Map of SMART study region that shows power flows at different interface points. The analysis assumes all renewable energy is utilized within the region, with consideration for all existing plans and individual state RPS rules.

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SMARTransmission Study

Next Steps:

- Collect input from stakeholders and finalize Phase 1 Study
  - Due April 30, 2010.
- Under the assumptions of the Phase 1 study, alternatives will be developed further and analyzed for economic impact.
  - Develop final score and ranking (March 12, 2010).
  - Phase 2 anticipated to be complete June 30, 2010.
- Results will be provided to RTOs for consideration in their respective planning processes.

Information can be found at www.smartstudy.biz

Q&A

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