



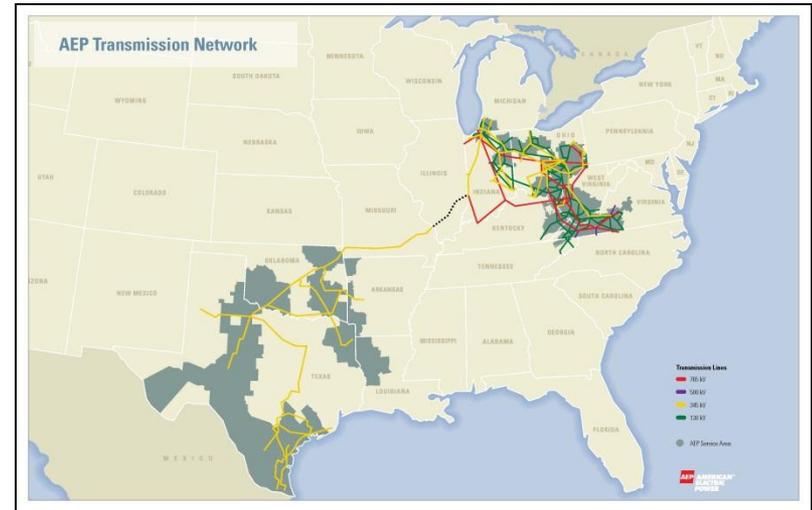
Electric Transmission Infrastructure Development

2014 NCSL Meeting

December 2014

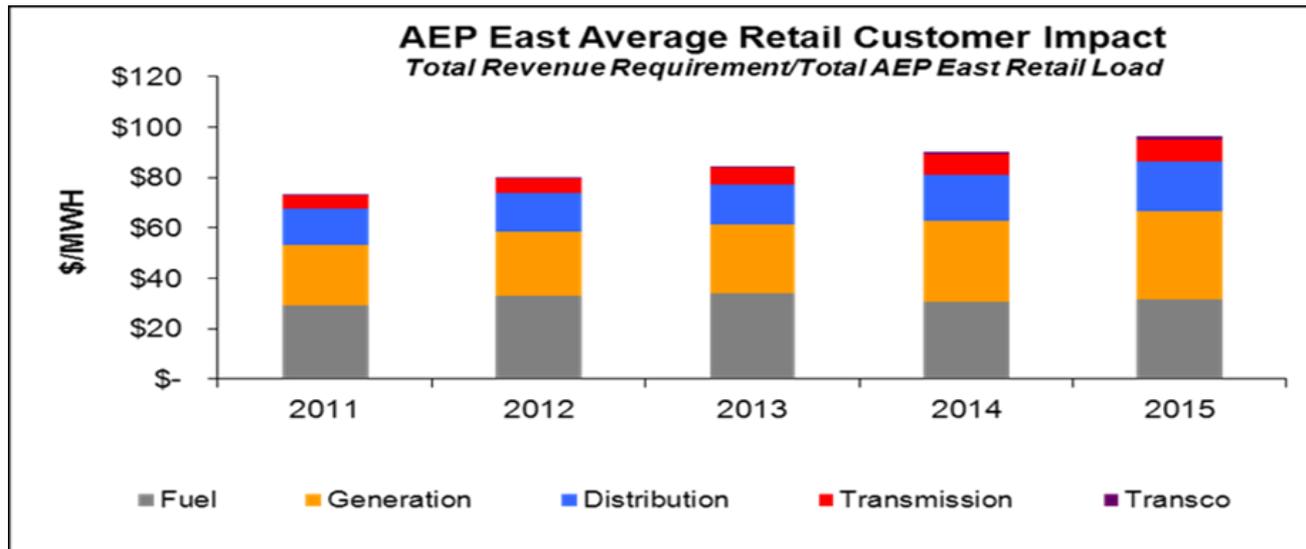
Introduction to AEP Transmission

- AEP is one of the largest electric utilities in the United States, producing and delivering electricity to more than 5 million customers across a 200,000 + square mile service territory
 - 38,000 MW of generating capacity
 - 39,000 miles of electric transmission lines
 - 215,000 miles of electric distribution lines
- AEP is the largest owner of electric transmission in the United States
 - AEP owns, operates or is currently developing transmission facilities in four RTO / ISOs and maintains system reliability and expansion through a variety of transmission companies
 - AEP's transmission system supplies approximately 10% of the demand in the Eastern Interconnection (the transmission system that serves 38 states and eastern Canada)
 - Transmission system supplies approximately 11% of the demand in ERCOT (Texas)
 - Own, operate, and maintain transmission across every voltage class, including 2,100 miles of 765 kV and HVDC
 - Own or currently developing RTO-approved transmission projects in 13 states (Arkansas, Indiana, Kansas, Kentucky, Louisiana, Michigan, Missouri, Ohio, Oklahoma, Tennessee, Texas, Virginia, West Virginia)
 - AEP has a 100+ year history of providing low-cost, reliable transmission service to customers, and is at the forefront of technology development in the transmission industry



Electric Transmission Infrastructure: Relative Customer Impact

- Electric transmission infrastructure investment represents a relatively small component of the overall cost of electricity to customers while delivering tremendous benefits
 - The relative cost of electric transmission infrastructure is very small compared to building new electric generation infrastructure
 - Robust and efficient electric transmission networks reduce system congestion, provide access to “trapped” generation resources, and lowers the cost of energy production to customers



Electric transmission investment provides extraordinary value to customers, and we must continue to find ways to develop efficient, regional electric transmission infrastructure solutions

1. Aging Infrastructure

- Cyclical nature of investment

2. Changes in Generation Resources & Load-driven Projects

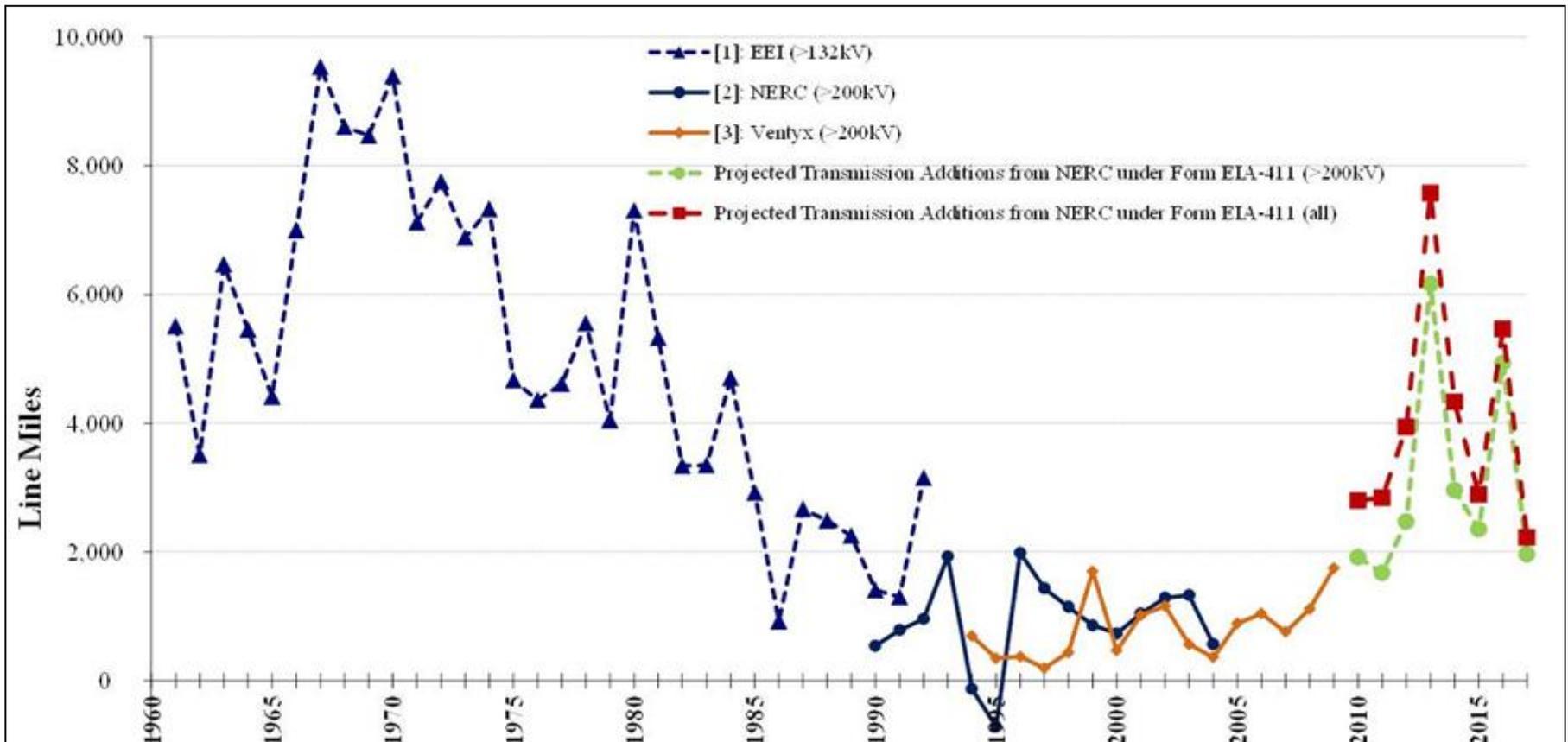
- Coal generation retirements
- Development of renewable energy resources
- New customer interconnections

3. Market Efficiency Projects

- Projects approved on the basis of a net reduction of costs to customers
- Benefit / Cost ratios generally > 1.25x

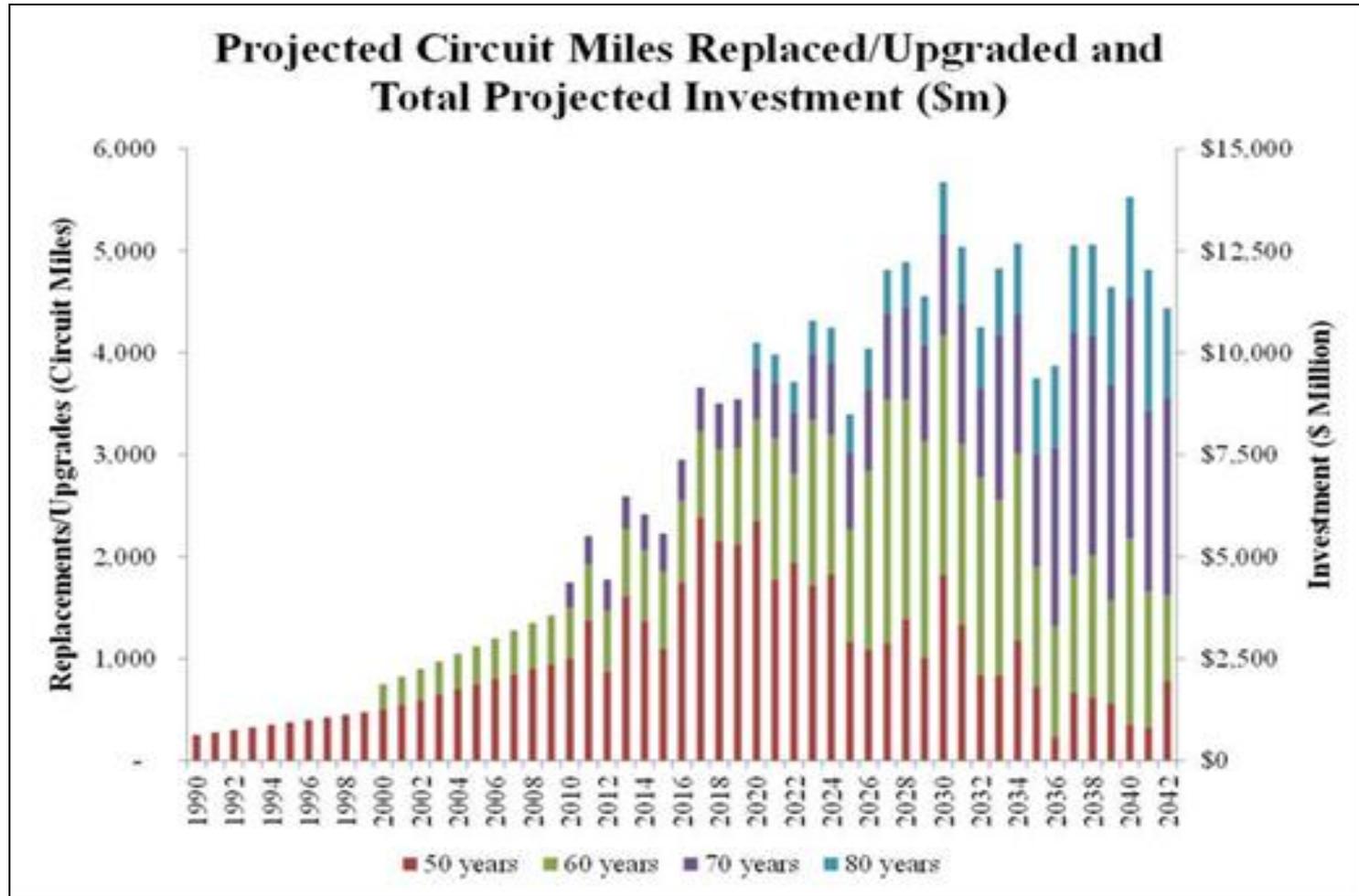
Cyclical Nature of Transmission Investment

Historical & Projected U.S. Transmission Investment



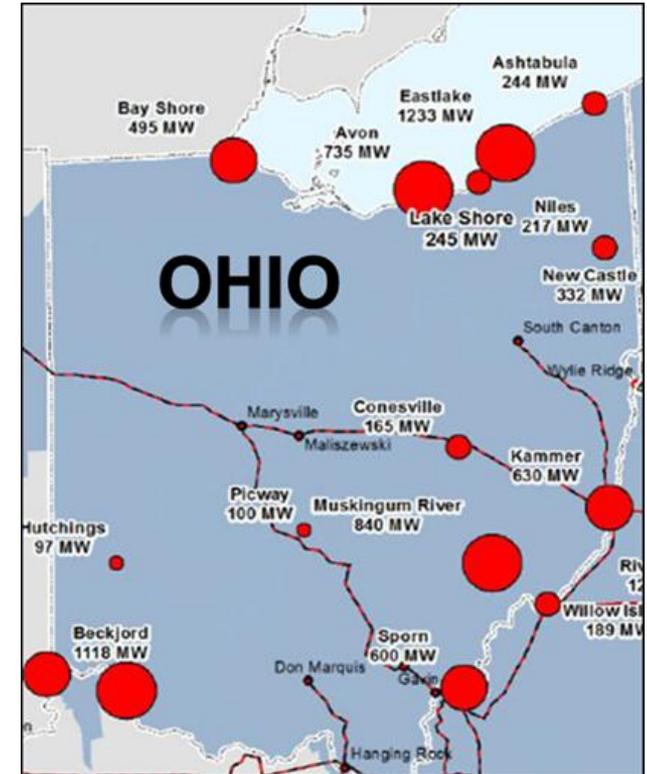
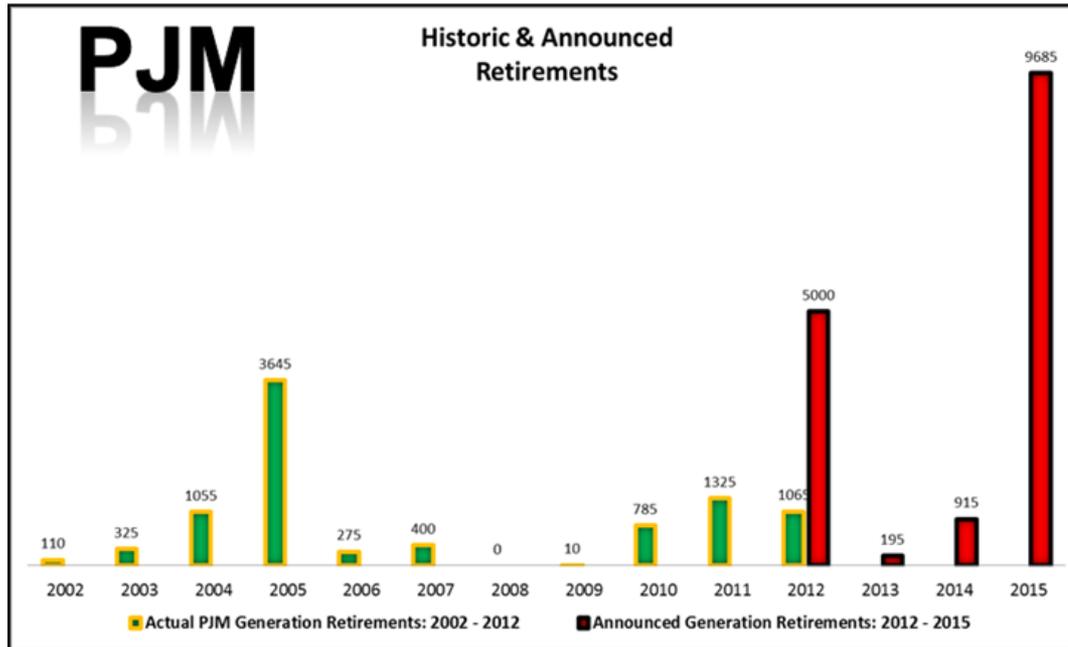
Source: The Brattle Group, September 2013

Replacement of 25% of U.S. transmission facilities after 50, 60, 70, and 80-year lives



Source: The Brattle Group, September 2013

Changes in Generation Resources: Recent Example



- A total of approximately 9 GW of generation retired in PJM in the previous decade
- 16 GW of generation retirements recently announced in the near-term
 - 7 GW retiring in the state of Ohio alone
 - 3 GW retiring on the shores of Lake Erie
- These generation retirements have caused system reliability concerns, resulting in approximately \$2 billion in transmission investment in Ohio to address system impacts

Game-Changing
Industry Shift



Competition for Rights to Develop *Regulated* Transmission Projects

- FERC Order 1000 eliminates incumbent utility “Rights of First Refusal” for projects with regional cost allocation
- Competitive projects will be, generally: higher voltage (<300 kV), greenfield (new ROW) , long-lead time (<3 years)
- Each region has developed its own unique rules for competition

Current Status



PJM Region

- Sponsorship Model (idea-based)
- Competition started in mid-2013
- First projects awarded in 2015
- Expect significant competitive opportunities in 2015

SPP Region

- Competitive Bidding Model (RFP)
- Incentive to propose projects in the planning process (10% bonus in RFP scoring criteria)
- First RFPs issued in early 2015

MISO Region

- Competitive Bidding Model (RFP)
- Incentive to participate in the planning process (up to 5% bonus in RFP scoring criteria)
- First RFPs issued in early 2016

How Can State Legislatures Impact Development?

1. State siting processes, procedures, and outcomes

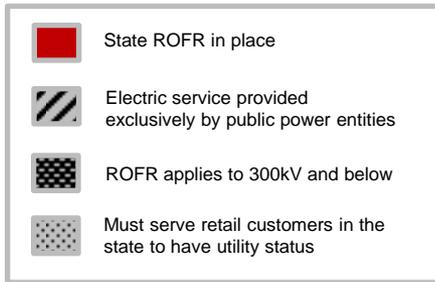
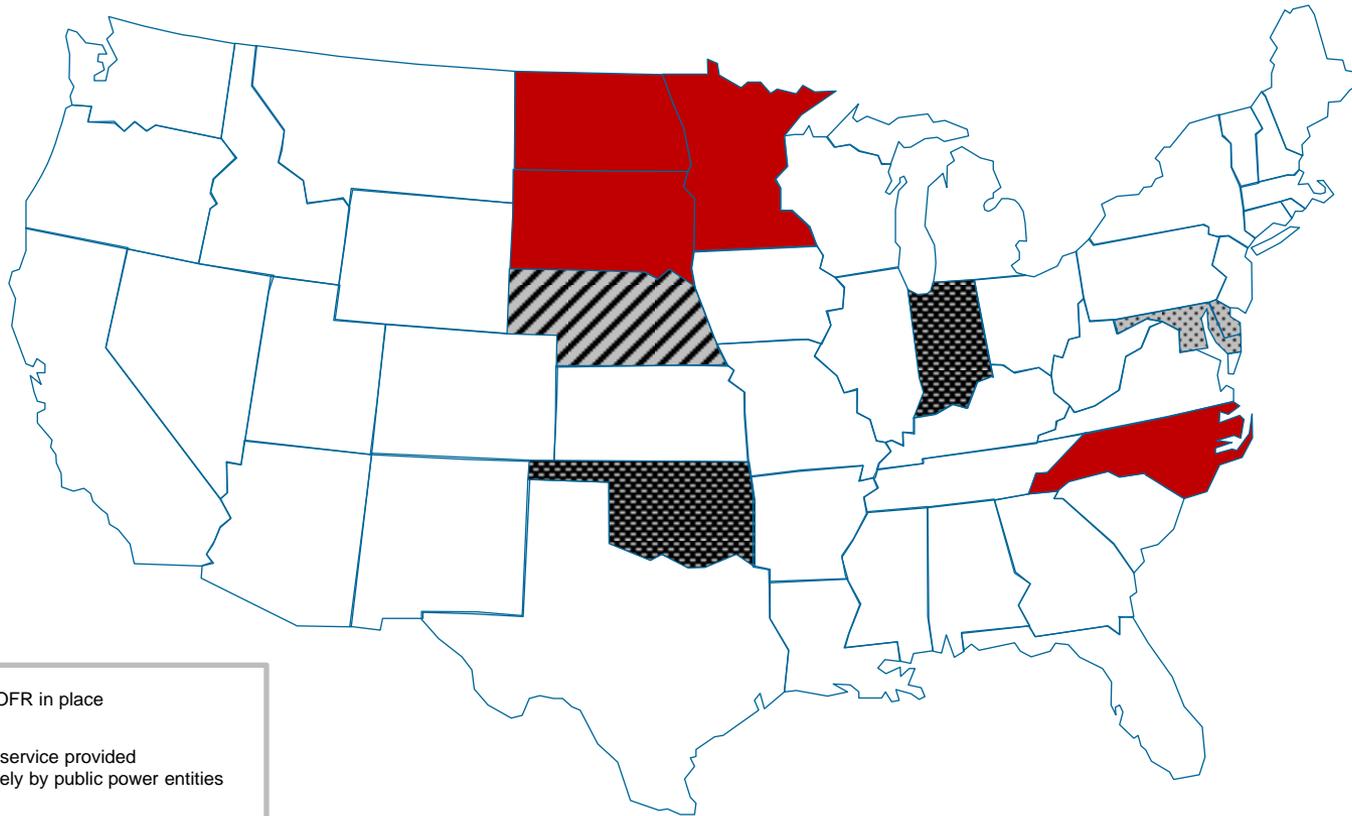
- Ensure that state siting processes are appropriate from a timing and procedural standpoint
- Ensure that broader benefits of infrastructure investments are recognized and valued appropriately relative to NIMBY concerns
- Additional consideration for efficient, large-scale regional projects which are often times the most efficient solution for the system, customers, and the environment

2. Eliminate existing “Right of First Refusal” legislation that prohibits competition (MN, ND, SD & NC), or not permit proposed “Right of First Refusal” legislation to pass

- Wait and see approach is prudent as FERC Order 1000 matures
 - Absence of competition can potentially lead to higher transmission infrastructure costs
 - Absence of competition can also potentially impact power market fundamentals, resulting in higher energy costs to customers
- Utilities that have secured, or are currently proposing state legislation to block competition in their native states are currently promoting competition in other states in an effort to simultaneously protect their investment and benefit from FERC Order 1000

Implementing state-level legislation that eliminates competition closes the door on benefits to customers at a time when unprecedented levels of investment is required

States Currently Preserving Utility Rights of First Refusal



The Value of Electric Transmission Investment

- Investing in the transmission grid provides important benefits including:
 1. Increases in system reliability
 - Reduced loss of load probability
 2. Enhances grid security
 3. Lowers the overall electricity costs to customers via reductions in generation costs (typically the largest portion of customer billings)
 - More efficient utilization of the existing generation fleet
 - Reduced generation planning reserve margin, which can defer the need for new generation capacity investments
 - Improved power market fundamentals
 4. Access to lower-cost, more efficient renewable generation and associated emissions reductions
 5. Transmission investment is estimated to stimulate \$30 billion to \$40 billion in annual economic activity and support 150,000 to 200,000 full-time jobs each year over the next 20-years period. Once operational, these facilities will also enable another 130,000 to 250,000 full-time jobs each year in related activities such as construction of renewable projects *

* Source: The Brattle Group, Employment and Economic Benefits of Transmission Infrastructure Investment in the U.S. and Canada, prepared in conjunction with WIRES (Working group for Investment in Reliable and Economic Electric Systems).

Taken together, these benefits are estimated to more than offset the customer rate impacts of investment cost recovery