

# GRID MODERNIZATION FROM THE PERSPECTIVE OF LARGE CONSUMERS

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A presentation by:

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# What Is ELCON?

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- ❑ The national association for large industrial users of electricity in the U.S.
- ❑ Founded in 1976
- ❑ Members from a wide range of industries from traditional manufacturing to high-tech



# What I Plan To Do Today

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- Review the need for grid modernization
  - My presentation is from a national perspective
  - However, I think that most of the general points I make also apply to the Mid West
- Discuss the challenges we presently face in trying to fix the transmission grid
- Outline five necessary actions that we believe must be taken if we are going to be able to fix the transmission grid
- Present a few concluding remarks



# Do We Need Grid Modernization?

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- The transmission infrastructure in the US today is in need of serious modernization:
  - 70% of the transmission lines are 25 years or older
  - 70% of power transformers are 25 years or older
  - 60% of circuit breakers are more than 30 years old
- There are many interfaces with very serious congestion
  - This certainly is true in the Mid West



# Do We Need Grid Modernization? (Cont.)

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- The US has underinvested in transmission:
  - Investment in transmission has steadily fallen each year since around 1975
- While demand has continued to grow:
  - Annual electricity demand has doubled since 1980
- Technological developments increasingly are resulting in a more electricity-intensive economy
- Increasingly, we are experiencing expensive power outages:
  - Costs from the August 2003 outage are in the \$4 - \$10 billion range



## NERC's 2006 Long-Term Reliability Assessment (In Part)

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- Electric capacity margins continue to decline – For a variety of reasons including:
  - Short-term investment strategies of generators
  - The growing percent of “uncommitted resources”
  - Inadequate transmission transfer capability
  - The under-developed use of demand-side resources



## NERC's 2006 Long-Term Reliability Assessment (In part)

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- Construction of new transmission is still slow and continues to face obstacles:
  - Enhancements to the transmission system continue to lag demand growth
  - The designation of certain proposed transmission facilities as National Interest Electric Transmission Corridors may help
  - Transmission planning by RTOs and ISOs may help provide a "long-term vision"



# DOE's National Electric Transmission Congestion Study

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- Title XII of the EAct 2005 required DOE to conduct a National Electric Transmission Congestion Study (Study)
  - DOE released the Study on August 8, 2006
  - DOE identified three classes of congestion areas that merit further federal attention:
    - Critical congestion areas
    - Congestion areas of concern
    - Conditional congestion areas
- This Study suggests that the Mid West is not in as bad a shape as other parts of the country
  - However, that in no way suggests that the transmission infrastructure in the Mid West is not without problems



# Critical Congestion Areas

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- Critical congestion areas are:
  - Parts of the country where it is critically important to remedy existing or growing congestion problems because the current and/or projected effects of congestion are severe
  - DOE identified two such areas:
    - Southern California
    - The region stretching from metropolitan New York to northern Virginia



# Congestion Areas of Concern

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- ❑ Congestion areas of concern:
  - Exhibit large-scale congestion problems or the potential for such issues
    - ❑ However, more information and analysis is necessary to determine the size of the problem and how new transmission could address it
  - DOE listed the following areas as such areas:
    - ❑ New England
    - ❑ Phoenix-Tucson
    - ❑ Seattle-Portland
    - ❑ San Francisco area



# Conditional Congestion Areas

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- Conditional congestion areas are where transmission congestion is not acute at present but could become exacerbated if significant wind, coal or nuclear generation is built without simultaneous development of associated transmission capacity
- The conditional congestion areas listed by DOE include:
  - Montana-Wyoming
  - The Dakotas-Minnesota
  - Kansas-Oklahoma
  - Illinois
  - Indiana
  - Upper Appalachia
  - The Southeast



# We Face Great Challenges In Fixing Transmission

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- It is difficult to determine the amount of transmission we actually need in the future until we decide at least three things:
  1. The structure of future electricity markets – and the amount of distributed generation, cogeneration, energy efficiency and demand response
  2. The type or location of future generation
  3. The purpose or purposes for which new transmission is to be built
- These factors certainly apply to the Mid West transmission infrastructure



# First: The Structure of Future Electricity Markets

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- If we decide to have competitive electricity markets in the future we may need increased transmission capabilities:
  - To mitigate market power and to allow significant increases in transactions
  - This is especially true if we decide to use LMP as LMP is a significant barrier to the mitigation of congestion
- On the other hand:
  - If we decide not to restructure in areas now still characterized by traditional regulation, or
  - We decide to have considerable distributed generation, cogeneration, energy efficiency and demand response,
  - The need for new transmission may be substantially reduced



## First: The Structure of Future Electricity Markets (Cont.)

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- Further, we don't know today who will be expected to build, own or operate transmission resources:
  - Most transmission today is owned (and, to a lesser degree operated) by IOUs – Many of which are vertically integrated
    - Although both ATC and ITC provide a positive and vivid comparison to the vertically-integrated model
  - Vertical integration:
    - Often creates disincentives for new transmission that would alleviate known constraints
    - Further, it creates significant opportunities for discrimination in the offering of transmission to third-parties
  - While theoretically the “independent” operation of transmission by ISOs and RTOs removes some of the potential for discrimination, today's ISOs and RTOs introduce many problems of their own



## First: The Structure of Future Electricity Markets (Cont.)

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- Stand-alone transmission companies are very attractive in many ways:
  - Since their only business is transmission, they do not have the motivation to try to protect high cost generation that is located behind a known congestion interface
  - They do not appear to have as many problems siting or financing new transmission assets
  - And they don't seem to need as high a return on equity
- However, stand-alone transmission companies may be motivated to select the transmission "fix"
  - Rather than considering either the generation or demand response options
- Further, it does not seem likely that stand-alone transmission companies will be mandated
  - And their voluntary creation is severely limited



## Second: The Type Or Location Of New Generation

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- We know where today's generation constraints are located and basically what is needed to fix them:
  - Most recently the National Electric Transmission Congestion Study highlighted today's congestion areas
    - But we really have known where they are for many years
  - However, if we decide to promote renewables and other less conventional generation in the future
    - We may need substantially more transmission than earlier studies indicated
    - The locations of these resources (e.g., wind, mine mouth generation, etc.) often are located in areas that are not now well connected to the high voltage transmission network and are far from load centers
    - This issue certainly is relevant to the Mid West as MISO estimates a 16,000 MW potential for wind in the MISO footprint



## Third: The Purpose or Purposes For Which Transmission Is Built

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- Transmission can be built for:
  - Reliability and/or
  - Economic reasons
- Building a transmission network strictly for reliability reasons will require far less transmission than also building for economic reasons
  - However, we face substantial differences of opinion over payment methods for transmission construction for economic reasons
  - We can't simply say that those that benefit today from such construction should pay for it – as those that advocate “participant funding” often argue
  - Many folks that will benefit in the future may not benefit today



# We Face A Real Dilemma

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- Until we resolve at least these unknowns:
  - We will have continuing problems meeting future transmission needs
- Unfortunately, the resolution of these unknowns:
  - Is neither easy – nor quick
- We must move carefully:
  - As significant costs are involved
  - And consumers will demand that the expenditures are truly necessary
- I suggest five necessary actions



# The First Necessary Action

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- We must find ways to remove or reduce today's very significant obstacles to transmission development:
  - Building transmission is always difficult – especially siting
    - We all know of NIMBY – but how about Banana (build absolutely nothing anywhere near anything), NOPE (nowhere on planet earth), etc.?
  - However, the obstacles are made even more significant with both:
    - Joint ownership of generation and transmission and
    - Locational marginal pricing
    - Both of which are present throughout the Mid West



# The First Necessary Action

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- Title XII of the Energy Policy Act of 2005 may provide some help:
  - § 1221 created the new “National Interest Electric Transmission Corridors”
  - And § 1241 gave FERC some new “incentive” authorities
- The designation as a critical corridor certainly will bring attention to needed transmission:
  - However, with LMP, the incentives must be very large if the new construction mitigates a congestion that is protecting a high-cost generator that is owned by the same utility that also owns the congestion



## Additionally, FERC Issued Order 679

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- FERC issued Order 679 in July 2006 which provides for:
  - ROR at the high end of the zone of reasonableness
  - Recovery of prudently incurred CWIP
  - Use of a “hypothetical” cost structure
  - Accelerated depreciation
  - Recovery of abandonment costs
  - Deferred cost recovery with rate freezes
  - Single issue ratemaking
  - Transmission-only companies
- These provisions certainly have the potential for lots of “FERC candy”



# FERC's First Action Using Order 679

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- On October 31<sup>st</sup>, FERC issued an Order affecting the owners of the NE transmission grid
  - Chairman Kelliher said that the Order "...recognizes the need to strengthen the NE interstate transmission grid in order to assure reliability and relieve congestion that results in higher prices for consumers."
- That Order:
  - Began with a base-level ROE of 10.2%
  - Plus 50 basis points for transferring operational control to ISO NE
  - Plus 100 basis points as an incentive to encourage expansion
  - Plus 74 basis points reflecting "updated bond data"
- Thus, the 12 transmission-owning utilities in ISO NE will get 12.4%
  - This is not bad for investments with very low risk



## FERC's Recent Transmission Order (Cont.)

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- The Order reverses the Initial Decision of the FERC ALJ
  - The ALJ said that the utilities were committed to building the facilities with or without the 100 basis points incentive
  - The ALJ's Decision was supported by a group of consumer advocates, municipal utilities and cooperatives in NE
- Two Commissioners dissented in part:
  - Commissioners Kelly and Wellinghoff protested the 100 basis point adder
  - Commissioner Kelly noted, with some passion, that the utilities' had failed "...to provide credible record evidence of any link between the proposed incentive adder and alleged barriers to transmission expansion."
- While it is possible that such FERC action will stimulate additional transmission investment
  - It probably is not enough "incentive" to offset the benefits to the owners of generation protected behind the congestion
  - And further, it certainly has attracted the attention of consumers



# The Second Necessary Action

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- Develop a good working relationship between federal and state regulators
  - Certainly regarding transmission – But also on other electricity issues
  - We certainly commend you in the Mid West for the establishment of the OMS
- As long as federal and state regulators have significantly different views of the future
  - It will be difficult to agree on how to site and/or build new transmission infrastructure
- EPCRA gave FERC new “backstop” siting authority
  - Basically, if the states do not “act” within a year, FERC can step in and site electric transmission as it does with gas pipelines
  - But only time will tell what “act” means
  - If a state denies a proposal, has that state “acted”?
  - And, will FERC actually act given the possible political ramifications?



# The Third Necessary Action

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- Assure long-term transmission rights for transmission users
  - Long-term transmission rights today are limited in number, transmission path and direction
  - They are tied to the physical capability of the transmission system under conditions that are specified and controlled by the transmission owner or operator
- Major future transmission investments will not be undertaken
  - Unless those responsible for the payment of the costs are assured that they will get their power to their load
  - FERC is working on long-term FTRs, but it has a long way to go



# The Fourth Necessary Action

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- Create an environment where both suppliers and consumers
  - View short-term spot or balancing market transactions in very negative ways
  - Such conditions will motivate both suppliers and consumers to negotiate long-term bi-lateral contracts that will actually reflect the advantages of fuel diversity
  - Such contracts will give assurances to Wall Street that revenues will be available to recover the costs
  - It is very difficult to obtain financing for long-term assets when most transactions are in spot markets
    - In this regard, we compliment MISO for focusing on an “energy-only” market and emphasizing the need for extensive use of bi-lateral contracts



# The Fifth Necessary Action

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- This may be the most important and valuable action:
  - Regulators should treat transmission owners as regulated public utilities with public interest responsibilities
  - They should be held accountable for assuring that adequate transmission infrastructure is in place
  - And regulators should be sure that the financial rewards represent the risk actually incurred
  - We certainly question whether FERC's recent Order is consistent with these goals
- It seems to us that transmission owners should look at transmission as a business
  - And want to grow the business
  - To do so, they would **WANT** to build
- However, all too often transmission owners also own generation
  - To the extent congestion protects generation, there is a significant disincentive to mitigate the congestion
  - Such a "no build" scenario is one with very low risk
  - And the returns should reflect this risk – and no more



# Concluding Thoughts

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- Assuring a transmission infrastructure for the future that will provide an adequate and reliable supply of electricity is not easy
  - If it were, it would have been done a long time ago
- Electricity consumers most certainly will pay for transmission infrastructure that assures them:
  - An adequate and reliable supply of electricity
  - At competitive prices
- The transmission costs aren't that large



## Concluding Thoughts (Cont.)

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- However, there presently is a lot of consumer dissatisfaction over problems in the electric industry
  - Most notably in the “organized markets” – but in other areas as well
  - The easy response by angry consumers when presented with proposals that cost money is to “just say no”
- Regulators and other policy makers must identify and understand the needs and desires of consumers
  - The will and wherewithal to modernize the transmission infrastructure will follow from this new focus
- Finally, regulators also should work hard to assure consumers that the financial rewards for transmission owners should reflect the actual risk incurred
  - Investors deserve no less – but consumers demand no more



## To Contact ELCON

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