



ELECTRIC TRANSMISSION: THE KEY TO OUR CLEAN ENERGY FUTURE

***Presented to ELCON's "Low Carbon Electricity:
Will the Technology Shift Be There?"
October 21, 2008***

Presented by WIRES - a national coalition of entities dedicated to investment in a strong, well-planned and environmentally beneficial electricity high voltage transmission system in the US.

Why We're Here



- A stronger, “smarter” grid for the US must be a national priority**
- Investment in the domestic power sector, including ‘green’ generation, will increase by over \$1 trillion in the next 20 years**
- Electric transmission is an “enabling” technology that offers solutions for our energy future**
- A call to action**

Transmission Connects the Nation



Before 1950:

- Utilities served local needs - virtually no interstate grid
- No bulk power markets.
- Only a few thousand miles of high voltage lines

Today:

A nationwide 164,000-mile, highly-integrated network of transmission lines and control facilities, interconnecting . . .

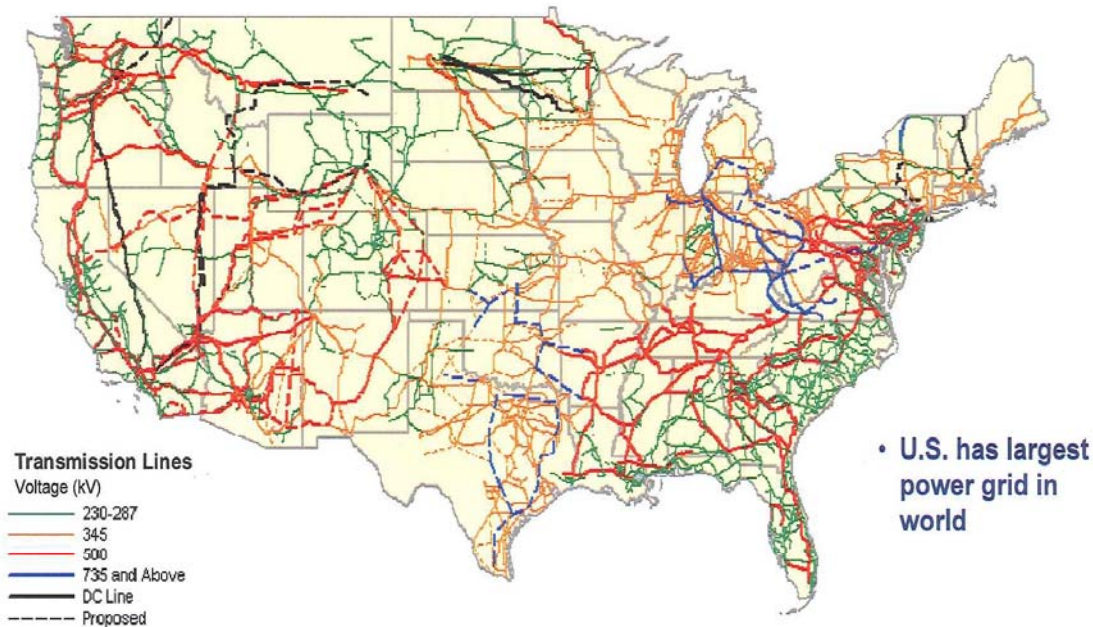
- 750,000 MW of generating capacity to millions of customers in all regions, and
- 200+ investor-owned utilities; over 1,800 municipal utilities; 900 cooperatives; and 37 federal utilities

Large-scale interconnection and interregional coordination has created the world's largest grid and extensive markets ₃

The Nation's Grid



- A shared network, similar to highways, rail, pipelines, the Internet, and communications . . .
- An essential – and often unrecognized -- key network infrastructure vital to the nation's economy



Source: Based on data from Global Energy Decisions, LLC, Velocity Suite, June 2008

Transmission Investment Was Overtaken by Events

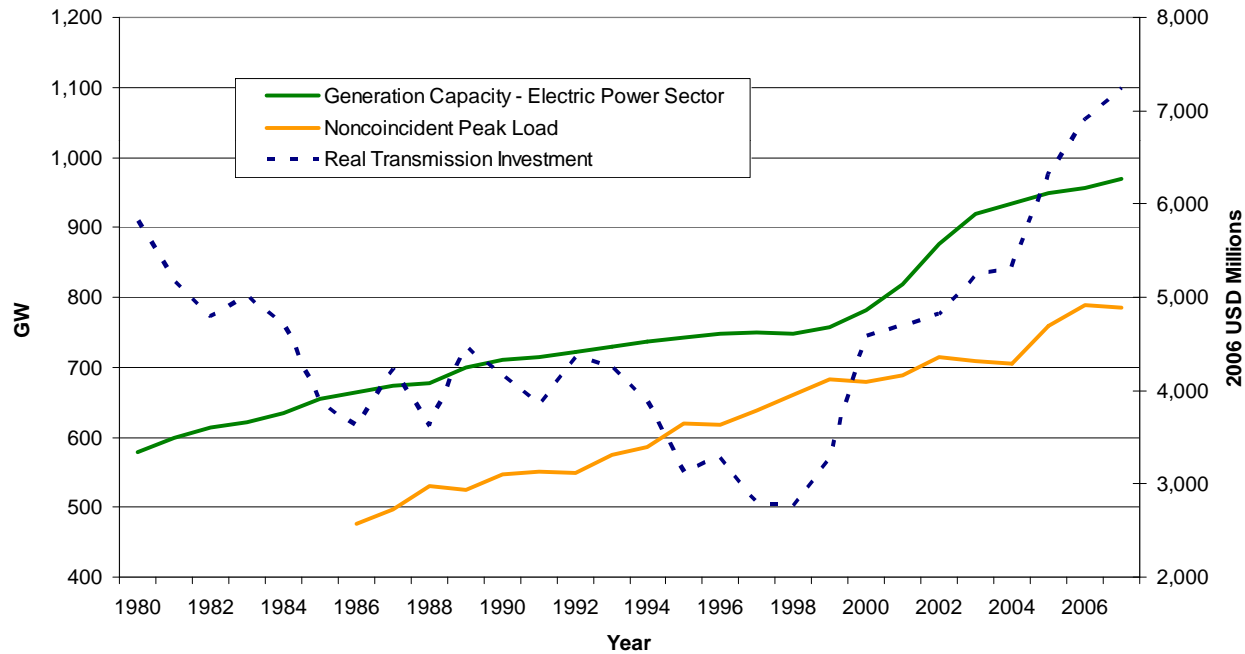


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- **Aging and deteriorating infrastructure**
 - **More dispersed sources of generation**
 - **Wholesale competition among generators**
 - **Complex bulk power markets**
 - **Arrival of the digital economy**
 - **Electricity consumption doubled after 1980; consumer electronics increase**

Transmission Investment Has Played Catch Up . . .



**U.S. Transmission Investment (Real) vs Peak Load
vs Generation Capacity, 1980 to 2007**



Sources and Notes:

For Peak Load, see EIA Annual Energy Review, Table 8.12. Represents the Peak Load of the 48 contiguous states.

For Transmission Investment, see EEI Statistical Yearbook, 2006.

For Installed Generation Capacity, see EIA Annual Energy Review, Table 8.11b.



. . . While the Challenges Keep On Coming . . .

- **Regional deficits in transmission investment of up to 30% relative to electric load**
- **Growth in transmission loading relief orders (TLRs) in the Eastern Interconnection (as a measure of congestion)**
- **Rising cost of construction; international competition for resources; unprecedented capital constraints**
- **Estimated \$1.2T-plus investment by 2030 in a capital constrained market**
- **Wholesale price differentials signal infrastructure needs**
- **Another one-third increase in demand for power by 2030**



*Why is New Grid Investment
So Important **Now**?*

An Expanded Grid System Enables . . .



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- **Delivery of clean, renewable, and “location-constrained” energy resources to consumers –**
 - wind
 - biomass
 - solar
 - geothermal generation
 - **Utilities to consider remote clean coal-based power at carbon sequestration sites and additional nuclear capacity as viable low-carbon options**

Substantial Additional Transmission Investment Is Essential to . . .



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- **Any U.S. energy effort or program that aims to mitigate the causes and effects of climate change**
 - **Deliver major new but remote renewable and other clean power resources to distant customers safely and efficiently**
 - **Ensure a healthier, more efficient, secure, innovative, and fuel-diverse electricity future**

Transmission Investment Enables . . .



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- **Economic growth and creation of skilled jobs in many sectors**
 - **Deployment of new technologies including demand response, enhanced energy efficiency, and plug-in hybrid vehicles**
 - **The U.S. electricity supply to become more secure and more flexible**
 - **Greater domestic energy independence**

Investment In The Grid Enables . . .



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- **Electricity consumers to manage electricity costs and reduce their own carbon footprints**
 - **Consumers, utilities, and businesses to make more efficient use of existing generation assets**
 - **Distributed electrical generation to be more widely utilized**

Join Us In . . .



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- ❑ **Ensuring** that the investment in the transmission system is fully supported in climate change legislation
 - ❑ **Encouraging** regulators to support grid expansion and upgrades to meet the needs of renewable energy and energy markets are concerned
 - ❑ **Supporting** fair cost allocation and efficient and environmentally sensitive siting policies
 - ❑ **Revitalizing** this major piece of our national infrastructure - for a fraction of the typical electric bill!

For More Information or To Join WIRES



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*WIRES (Working Group for Investment in Reliable and Economic Electric Systems)
is a national coalition of entities dedicated to investment in a strong, well-
planned and environmentally beneficial electricity high voltage transmission system in the U.S.*