What Would You Do?: The *Trillion* Dollar Question

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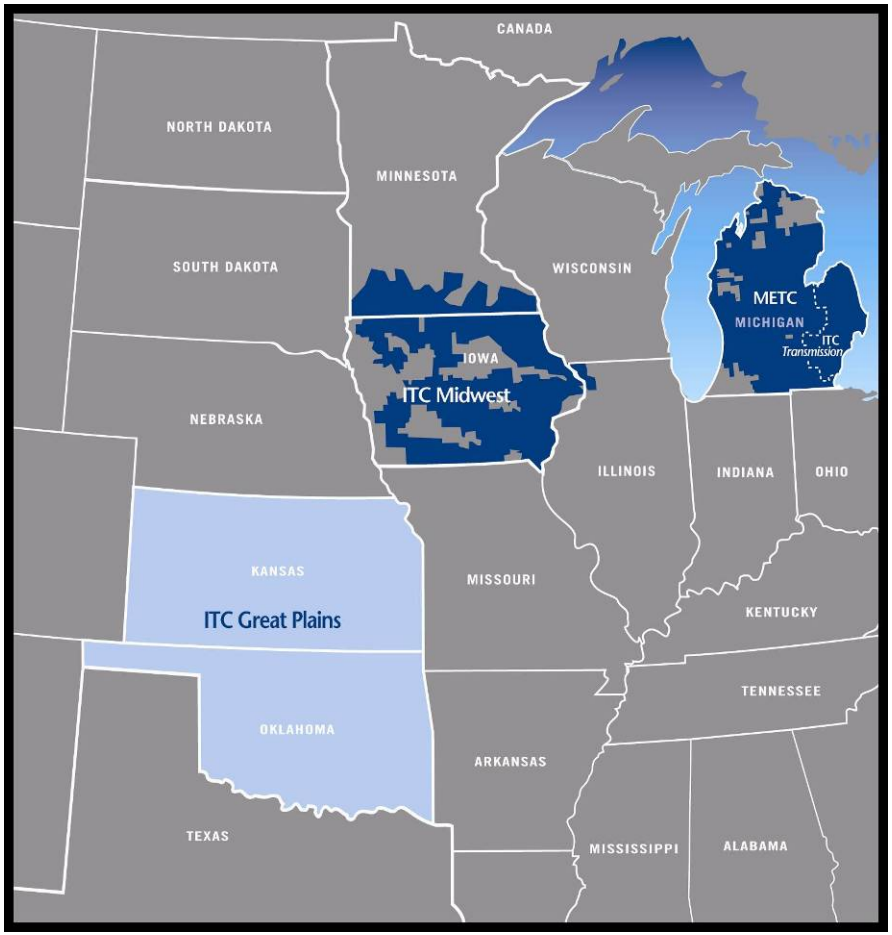
Agenda

- Who is ITC?
- Changing Landscape, Industry
- Future Vision
- The Trillion Dollar Question

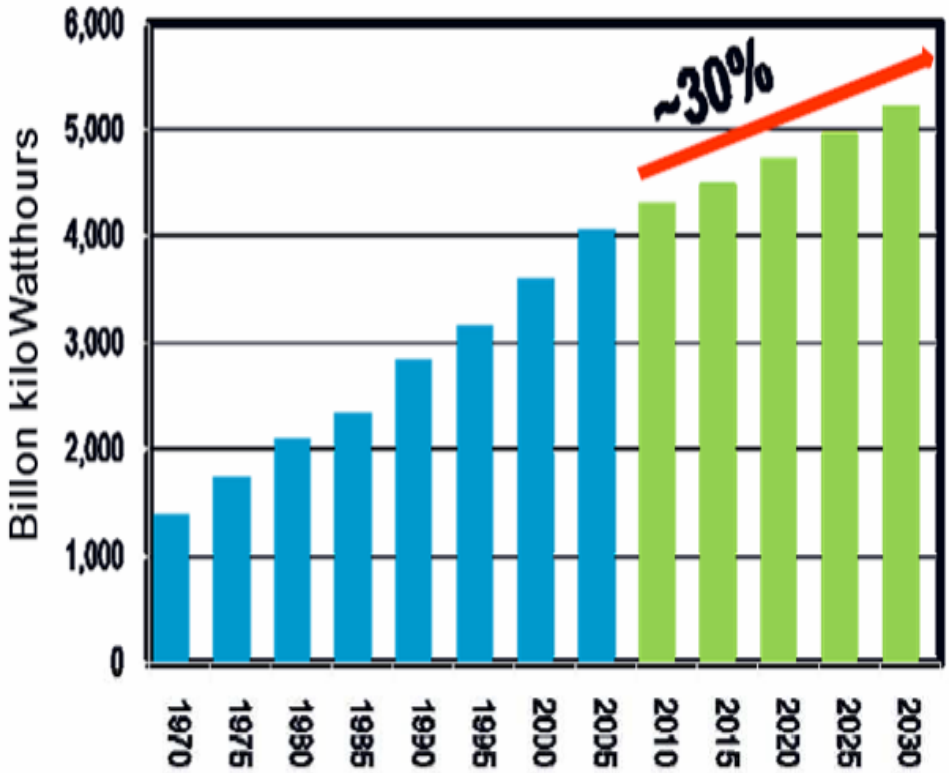
Who is ITC



- ITC is the first and largest fully independent transmission company in the U.S.
- ITC is the sixth largest transmission-owning company in the U.S.

Changing Industry, Landscape

Growing Demand



- Demand for electricity continues to grow; expected to increase 30% by 2030.
  - Increasing population
  - Shifting population centers / urban sprawl
  - Increased dependence on electricity for every-day lives

Sources: U.S. Department of Energy, Energy Information Administration, Annual Energy Review 2006 and Annual Energy Outlook 2008 Early Release

**** Electricity demand projections based on expected growth between 2006-2030***

Aging Infrastructure

- There has been a 30-year trend of underinvestment.
  - 70% of 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.

Source: http://www.globalenvironmentfund.com/GEF%20white%20paper_Electric%20Power%20Grid.pdf

Underinvestment

Underinvestment

Underinvestment

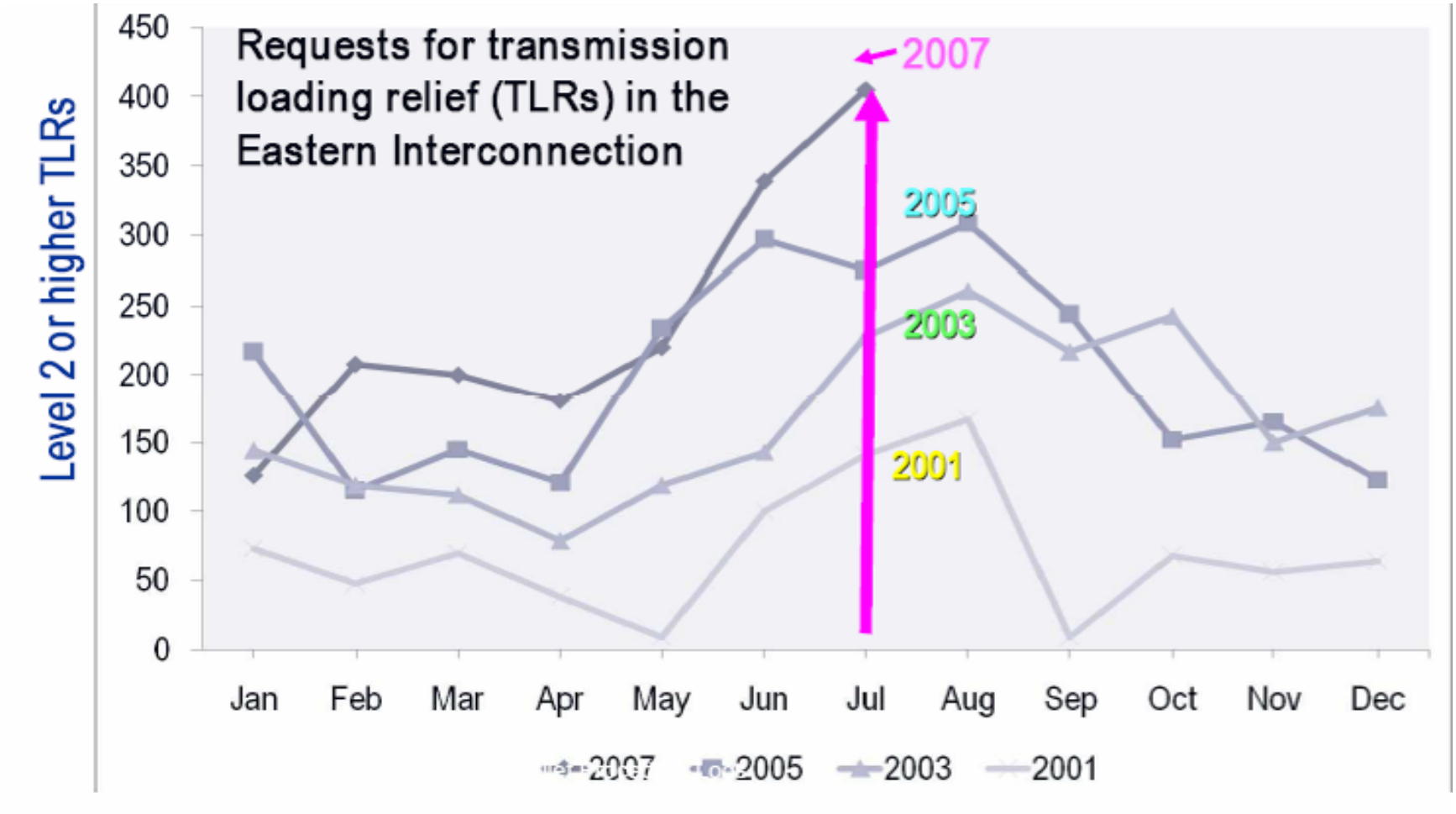
Don’t Take My Word For It…

We have an **elephant-sized problem** and I’ll try to describe that to you in five bites:

1. We **operate** today’s system **closer to the edge** than ever before…
2. **Demand** for electricity is **growing**…
3. We’re already **heavily dependent on natural gas** in some regions of the country with respect to reliability...
4. We **need a transmission network** to support the amount of renewable energy options that are available to us…
5. We’re sitting on the **precipice of climate change legislation**, which will change all of that. So, it is in that context that we believe that the grid will be **threatened unless we build the transmission** infrastructure that is necessary to **support renewable resources like wind**, that will enable us to locate new **clean coal facilities** -- or even the gas facilities -- to **locate them in places in which the grid will be able to withstand** that so that we can meet the load requirements as they grow and have a **reliable system**…

- Richard P. Sergel, president and CEO of the North American Electric Reliability Corporation (NERC)

Mounting Reliability Issues



Source: http://www.eia.doe.gov/conf_pdfs/Monday/owens.pdf

Inefficiencies

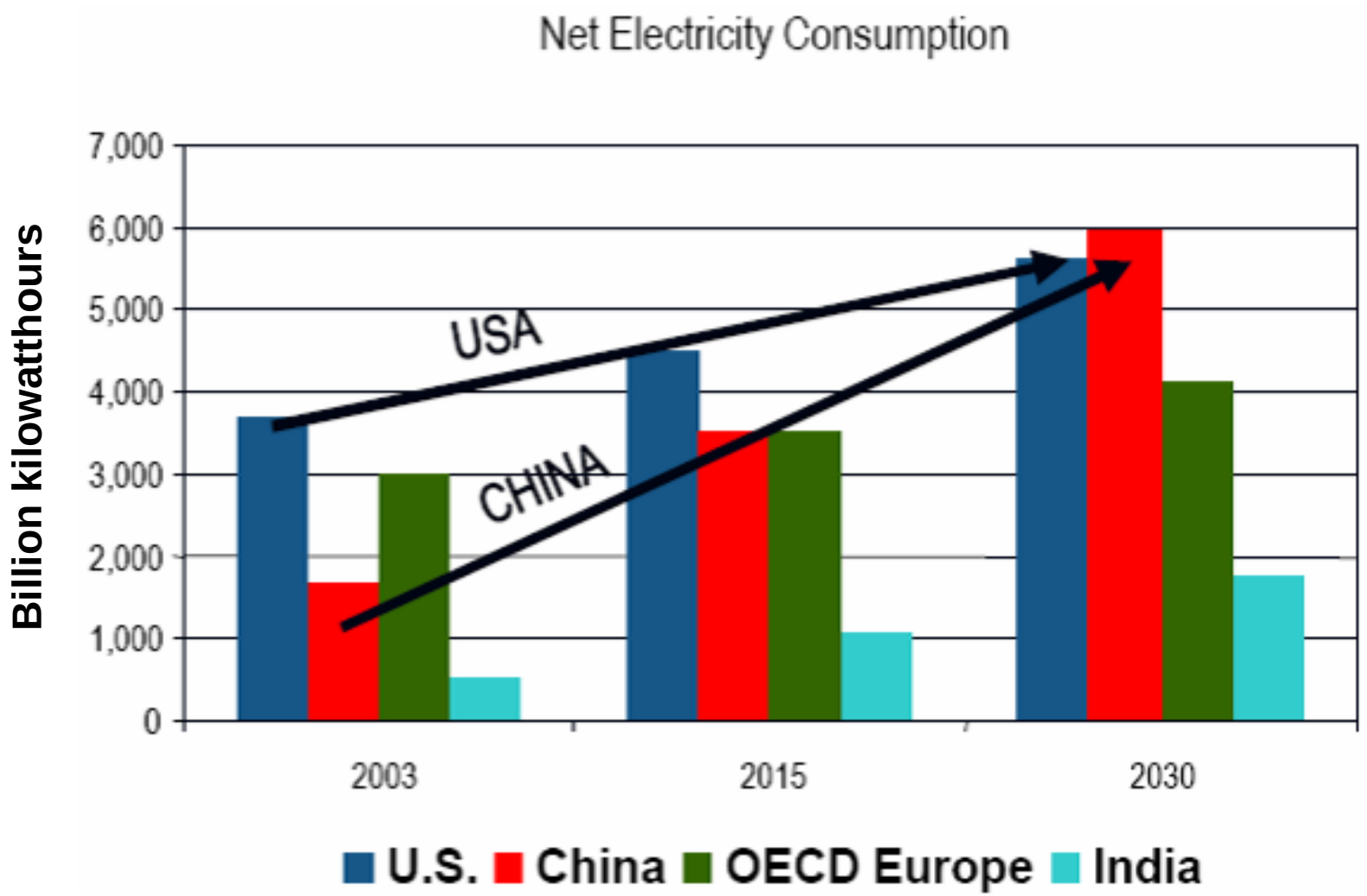
- Lack of system investment has led to increased congestion.
- With increased congestion comes inefficiency.
  - In 1970 transmission and distribution losses were about 5%.
  - In 2001 losses grew to 9.5%, due to heavier utilization and congestion.

Source: http://www.energetics.com/gridworks/grid.html (A DOE website)

Changing Landscape

- Blackout of 2003
- Changing Use of the Grid
  - No longer local use
- Increased attention to global warming and energy policy
- U.S. is no longer only significant influence in energy consumption

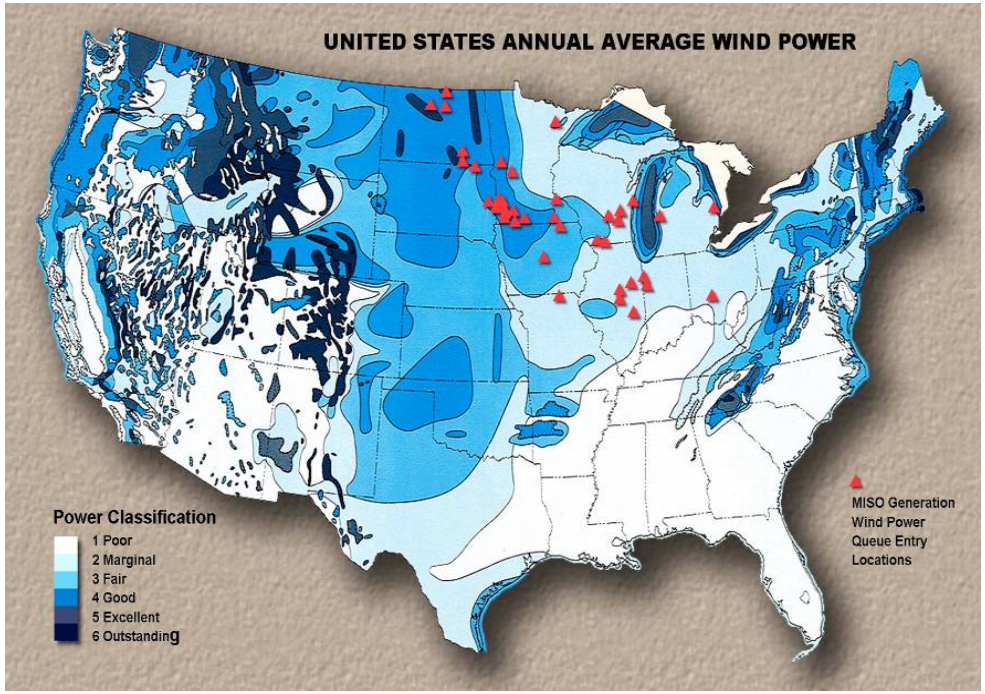
Emergence of China, India



Source: Energy Information Administration, International Energy Outlook 2006

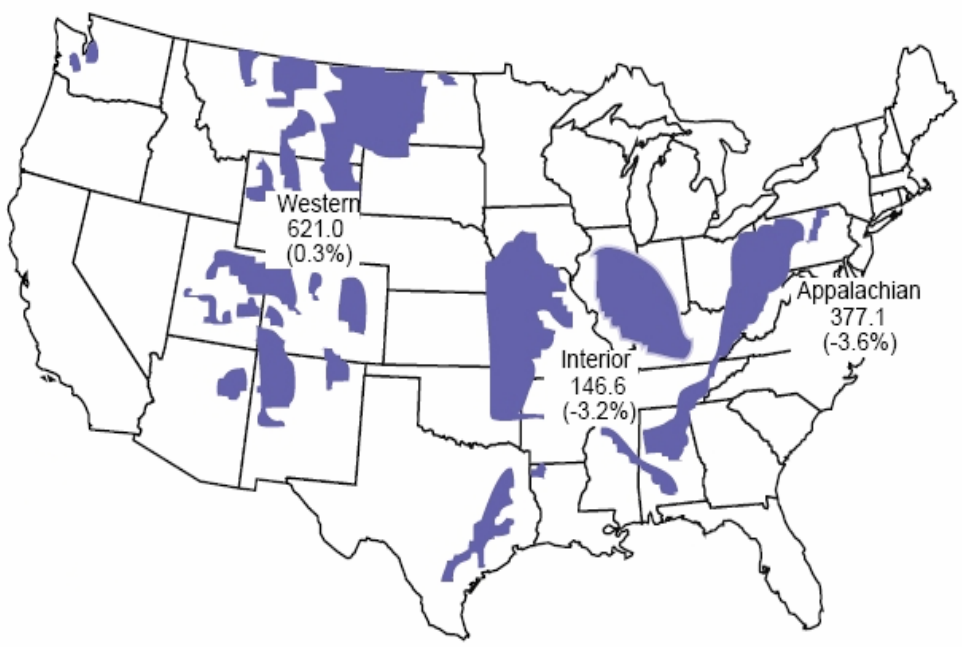
Future Vision

Wind – Renewable But Variable



- Wind has been made popular with this changing landscape, but it requires transmission and does not come without challenges.
  - Resource rich regions vs. states without wind
  - Individual state RPS goals
  - Variability of wind
  - Significant barriers to entry

Mine-Mouth Coal



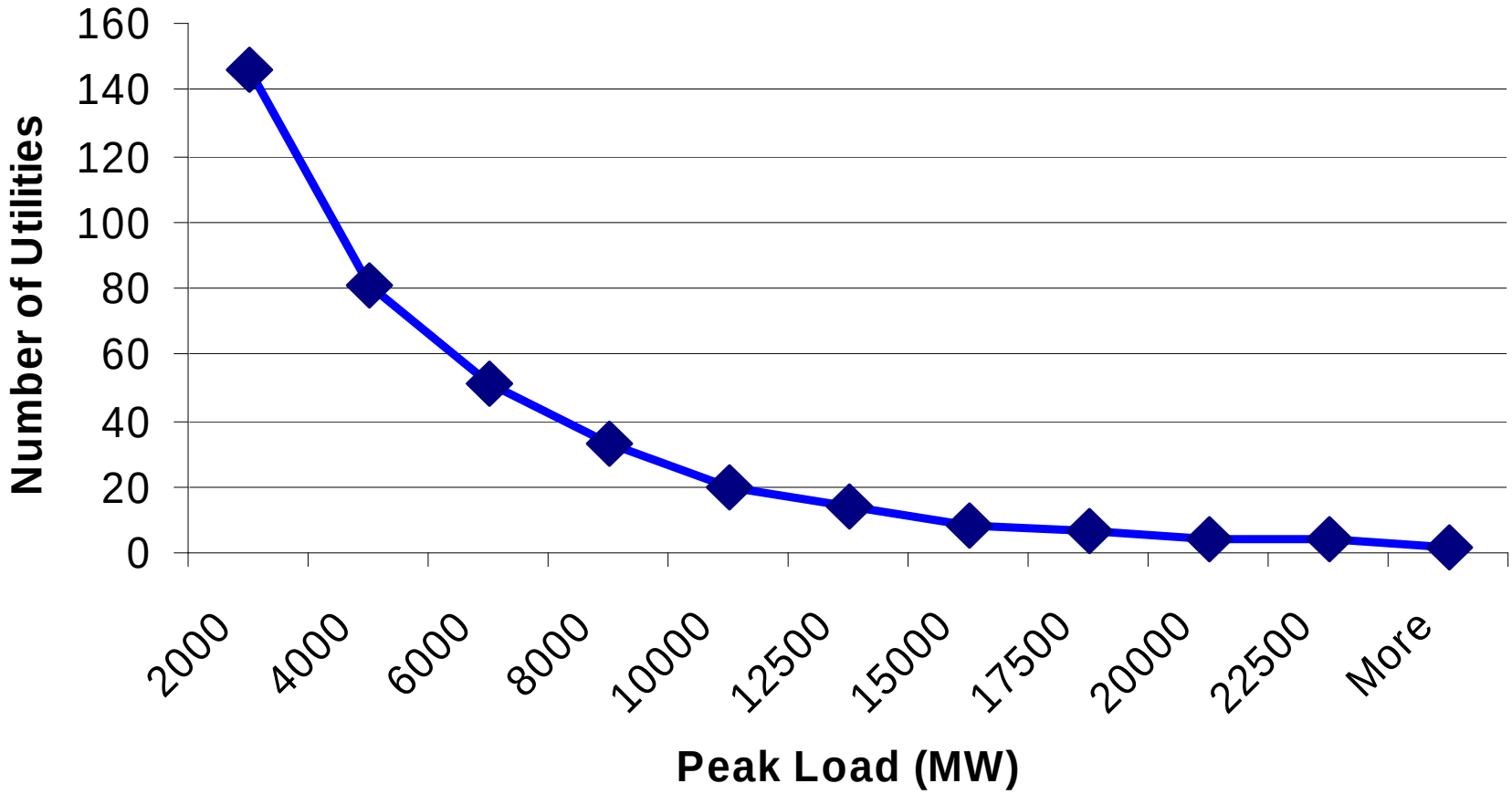
Source: Energy Information Administration, *Quarterly Coal Report*, October-December 2007, DOE/EIA-0121(2007/Q4)

- Public sentiment shift against coal, but eliminating all usage of coal is not the answer.
- Grid can make coal more efficient, more environmentally friendly.
  - Mine-mouth coal
  - Requires grid
  - Less wasted in transport
  - Environmental mitigation

Nuclear

- Nuclear requires robust transmission grid.
  - Must be located near water
  - France and Japan have developed model for grouped, modular facilities
- However, not many utilities have capital resources to build nuclear facilities.

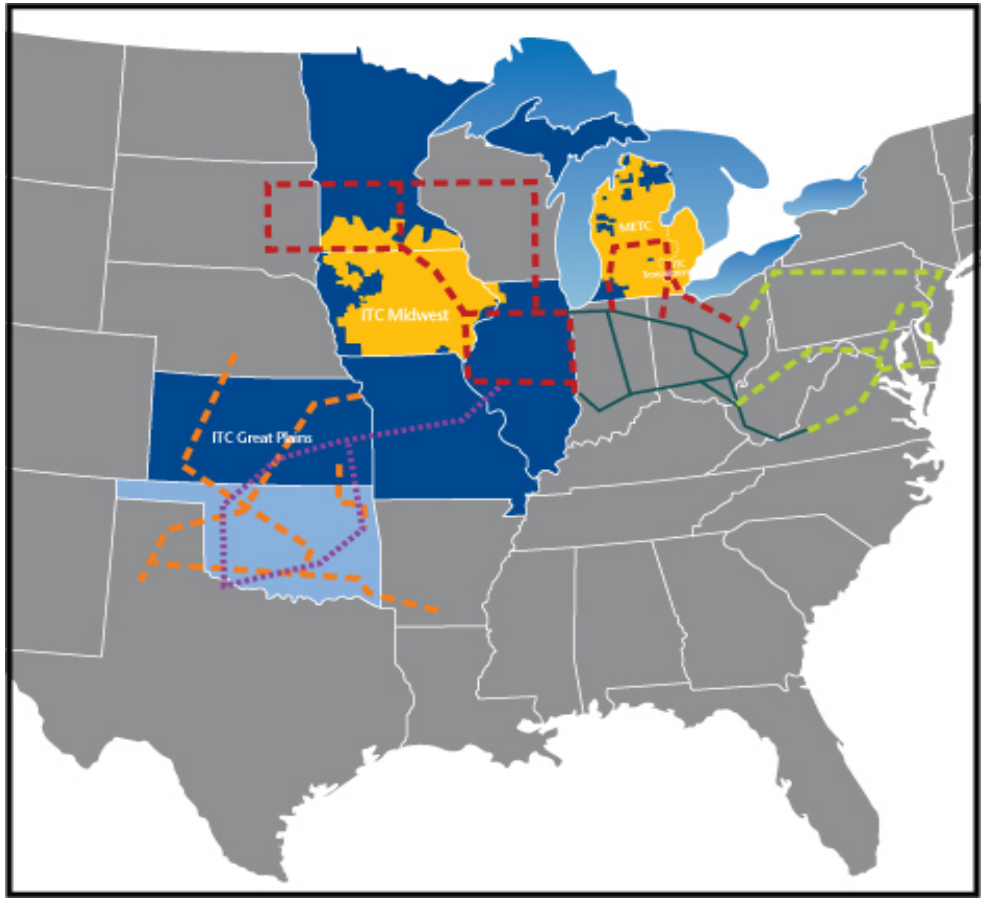
Significant Capital Required to Build Generation



Source: Edison Electric Institute, FERC Form 1

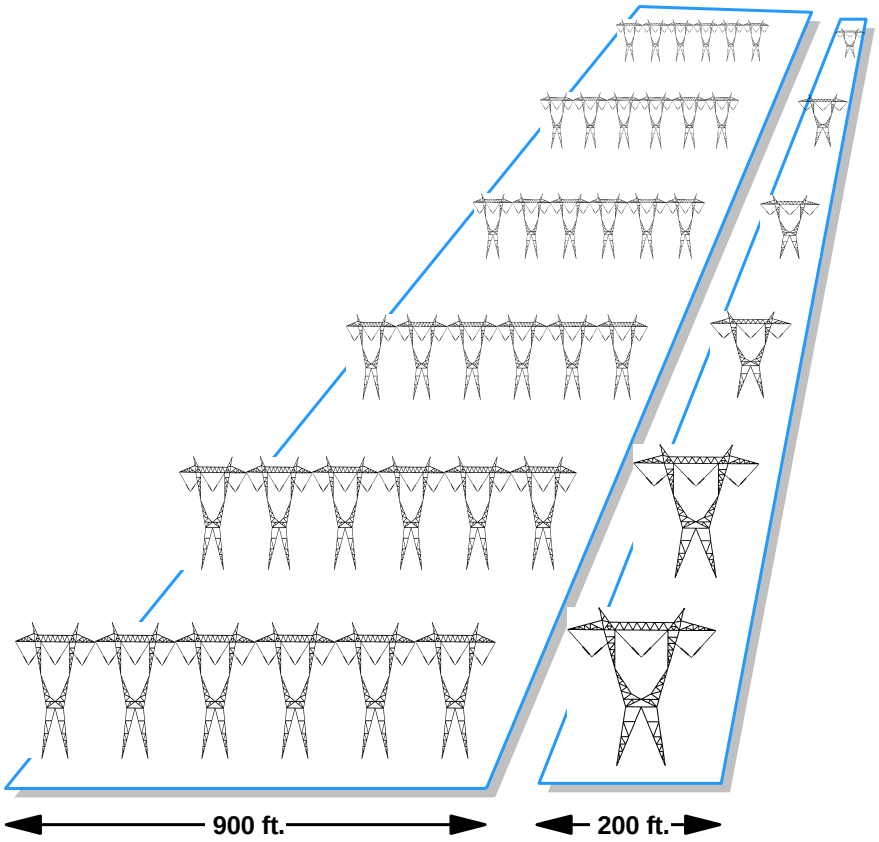
Future Vision

Regional Transmission Vision



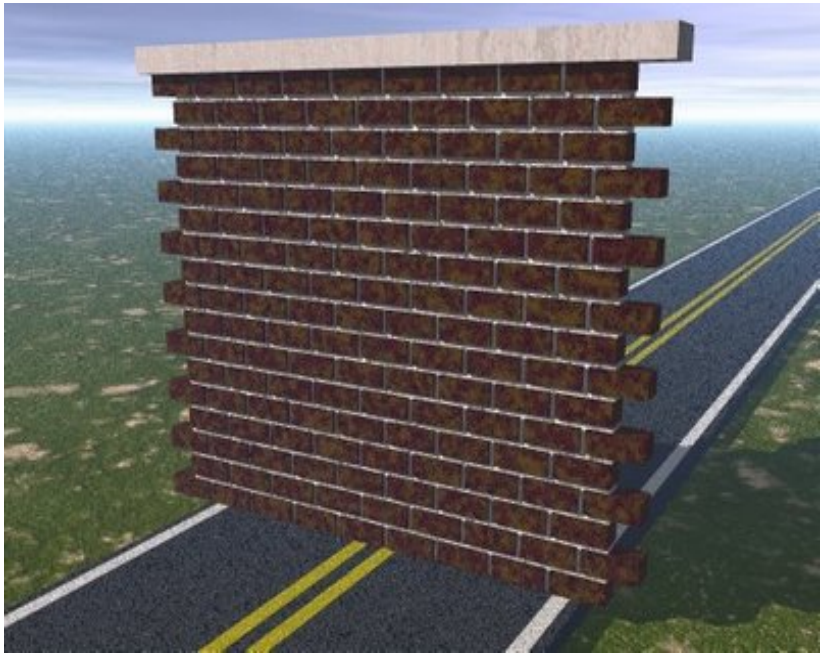
- ITC is looking at ways to address the issue in the long-term.
- Studying benefits of a extra-high voltage, such as 765kV, regional transmission network.
- Actively working to get those projects identified and built.

765kV = Green Power, Greater Efficiency



- 765 kV reduces line losses, which means less burning of fuel and reduced air emissions.
- 765 kV provides greatest capacity increases with least land consumption.
- One 765 kV facility can carry as much power as six 345 kV lines.
- Reduced right-of-way need lowers cost as well as impacts to consumers and to environment.

Impediments to Regional Transmission



- Divergent interests of market participants
- Fallacy of generation vs. transmission debate
- Sandbox mentality
- Siting challenges
- Lack of regional cost recovery mechanism for regional projects
- Voluntary nature of RTO membership
- Lack of collective industry vision / stated energy policy
  - We have a ***national*** problem – we need a ***national*** solution

The Trillion Dollar Question

The Trillion Dollar Question

- According to some estimates, the U.S. will require $1 trillion dollars to rebuild the energy infrastructure (generation, transmission and distribution).
- If you had $1 trillion, what would you do?
  - Would you perpetuate an inefficient and imbalanced system?
  - Or, would you take a fresh look at how to make the best use of resources?

Moving Forward

- Once you have answered the trillion dollar question, there are still some remaining questions.
- Here are the answers:
  - National RPS, energy policy
  - Streamlined siting process
  - Improved RTO governance / processes
  - Robust regional transmission network
  - Effective regional cost allocation mechanism