



The Honorable Philip D. Moeller
Federal Energy Regulatory Commission

Asia Pacific Energy Regulatory Forum
Washington D.C.

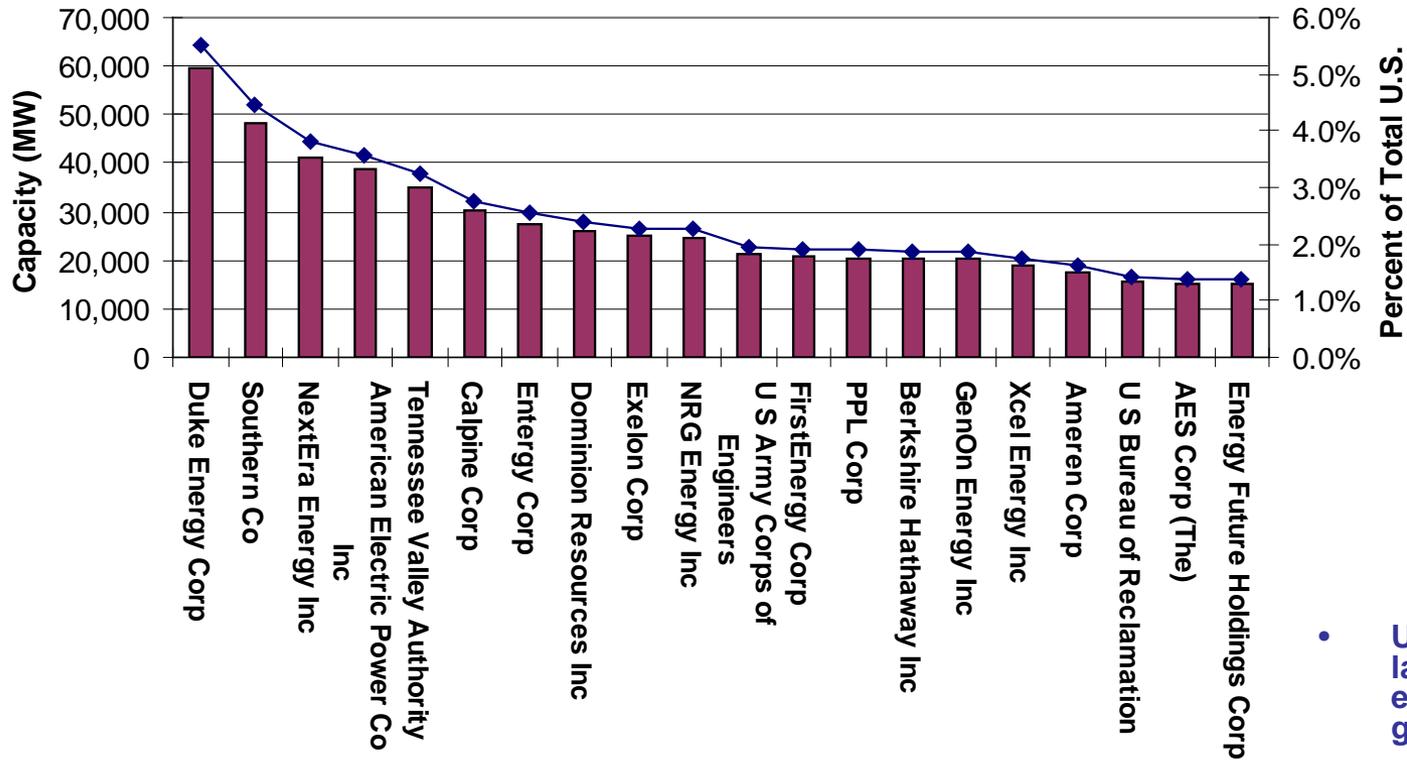
August 1, 2012



Overview of U.S. Electricity Markets



U.S. Electric Generation Ownership Profile

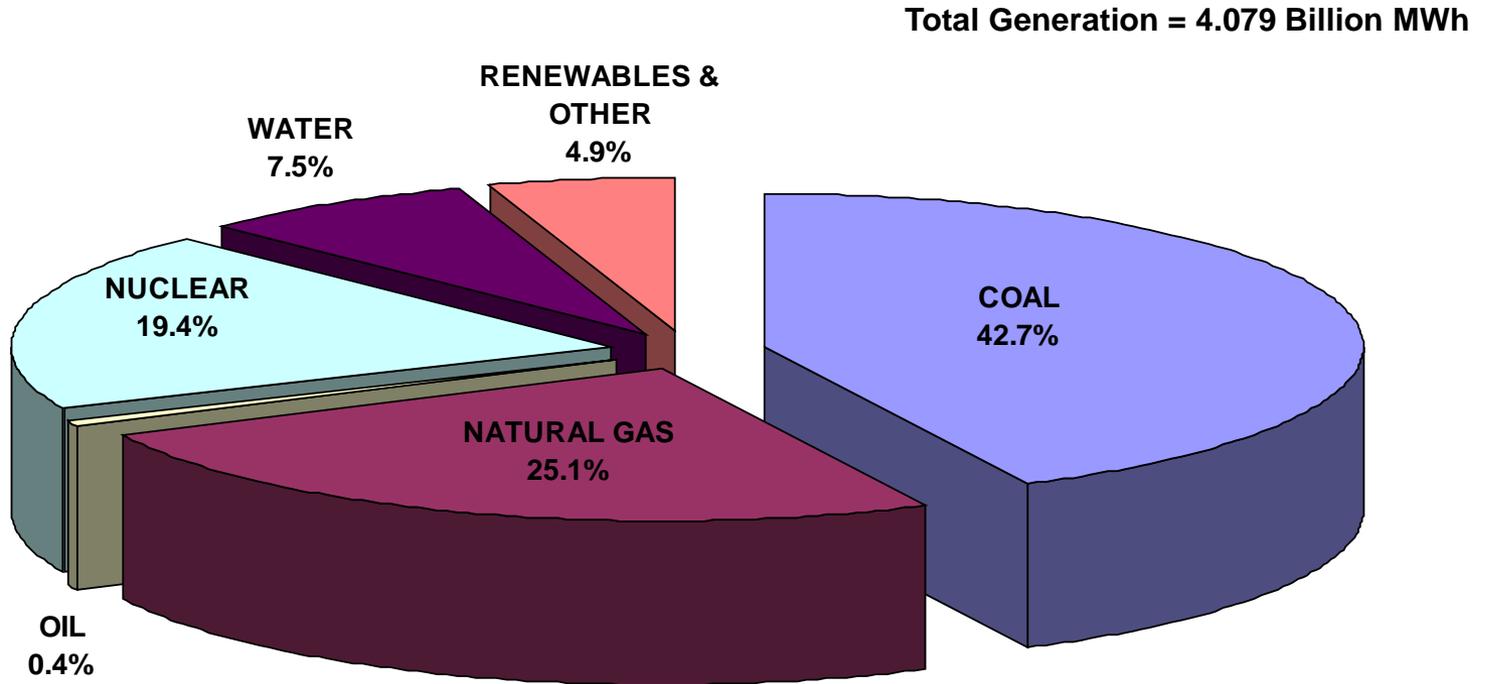


- U.S. is world's largest electricity generator
- Ownership is disaggregated

Source: Based on data from Ventyx, Velocity Suite, July 2012



U.S. Electricity Supply Mix 2011

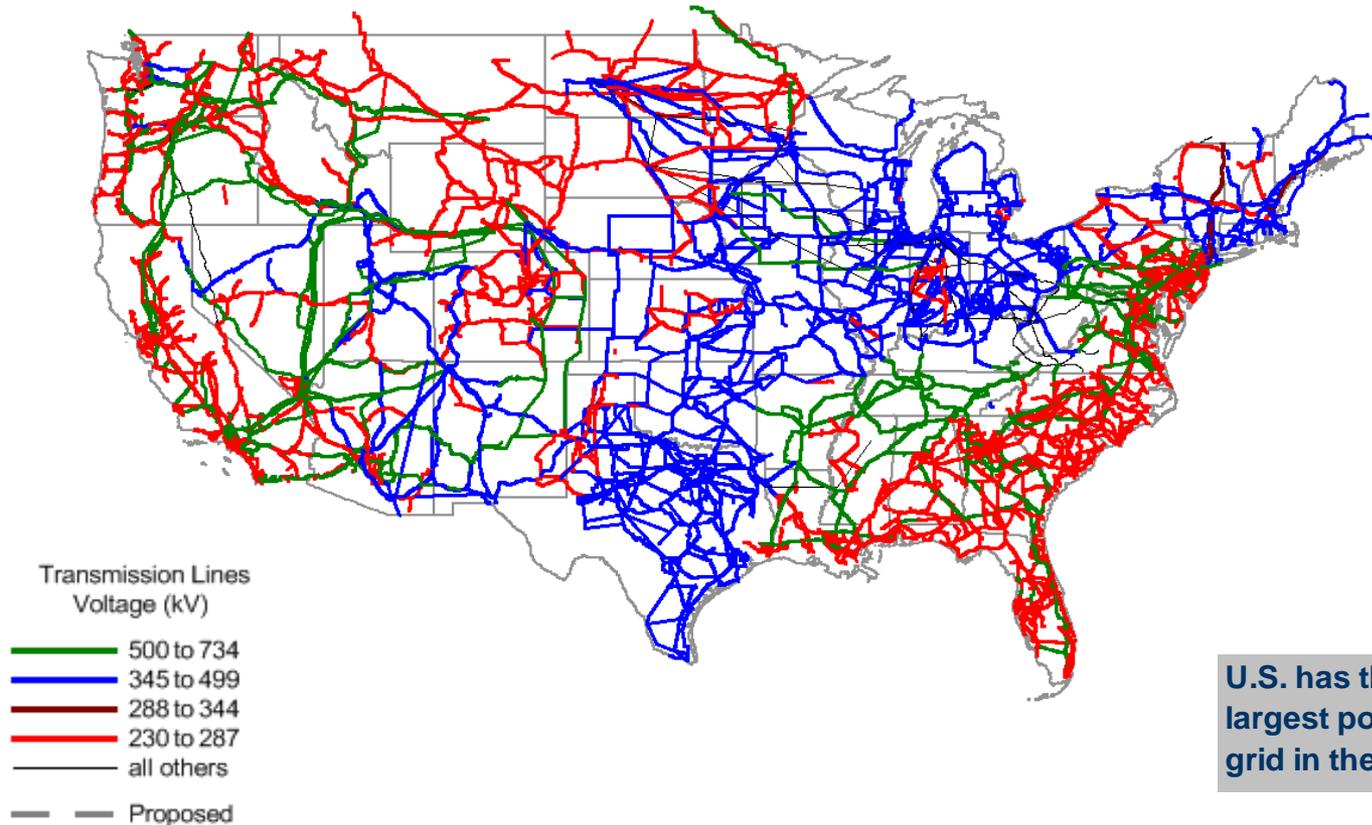


Source: Based on data from Ventyx, Velocity Suite, July 2012



U.S. Power Grid

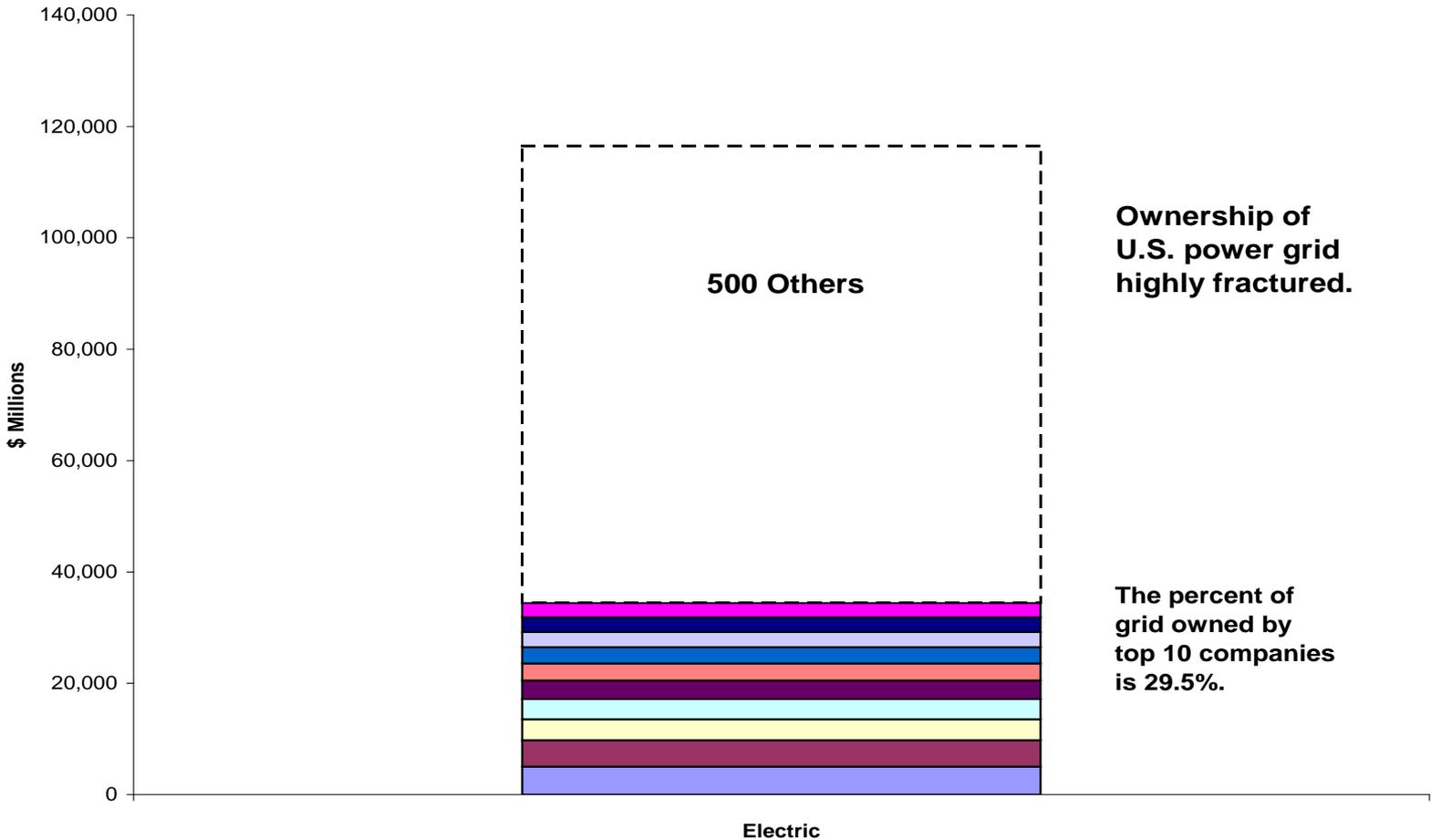
(251,129 Circuit Miles or 404,152 Km)



NOTE: Total circuit miles/ Km includes operating transmission lines greater than or equal to 115KV
Source: Based on data from Ventyx, Velocity Suite, July 2012



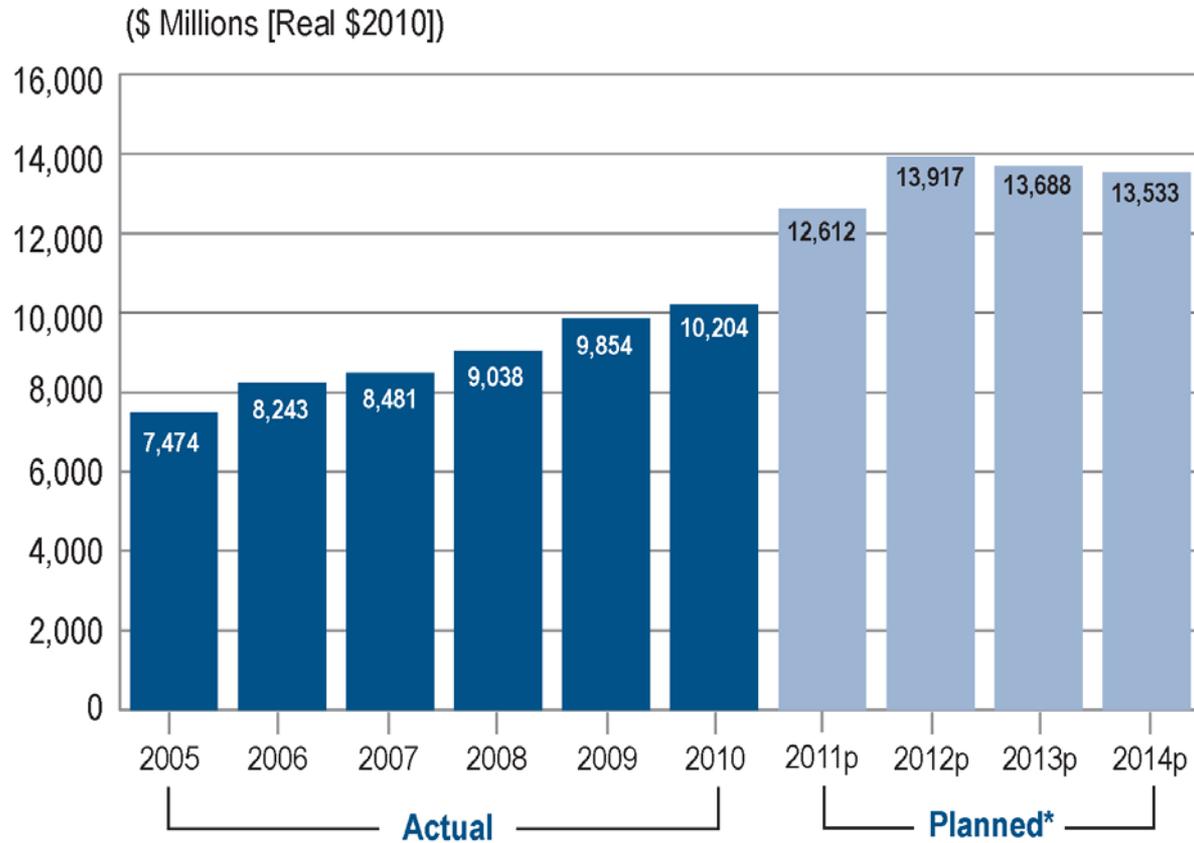
U.S. Electric Transmission Ownership



Source: Based on data from Ventyx, Velocity Suite, October 2010



U.S. Transmission Investment



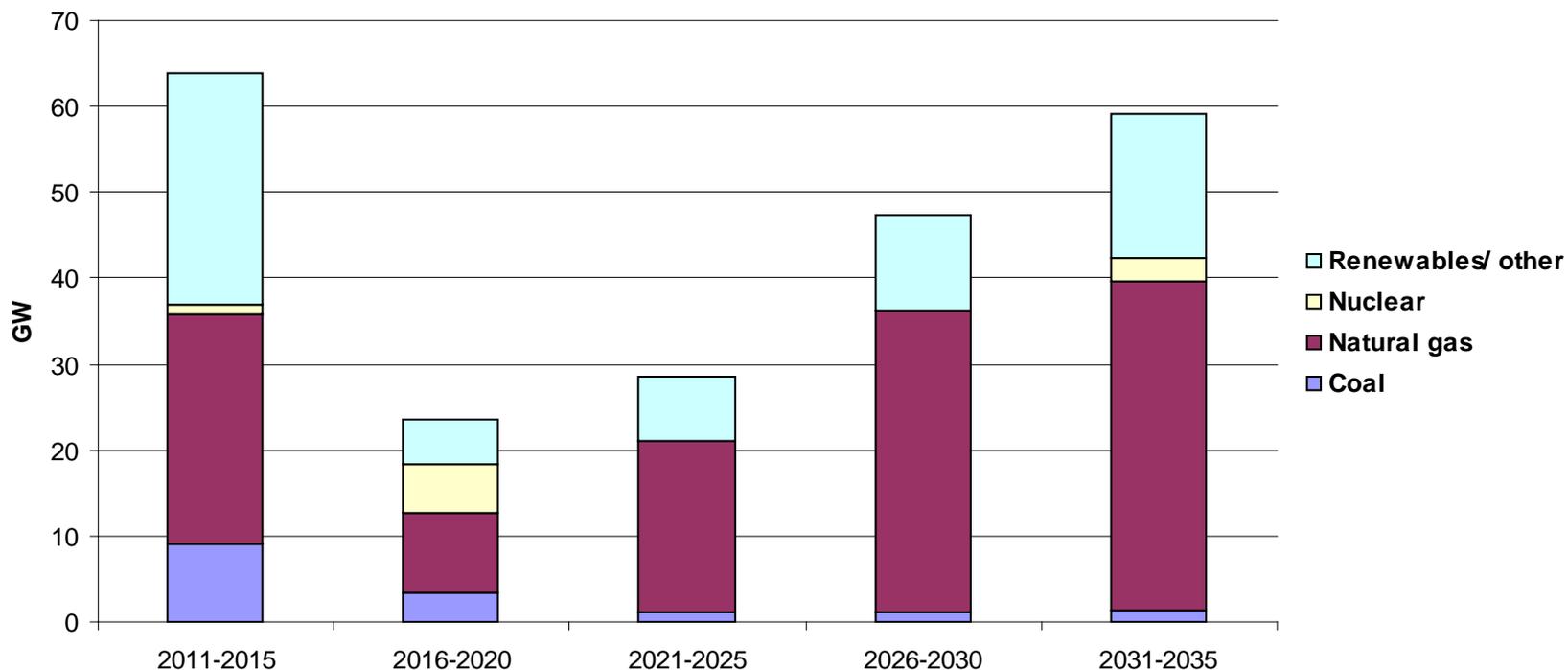
- Sustained period of marginal investment
- “SmartGrid” initiatives
- Policies designed to encourage greater grid investment
 - Rates of return
 - Regional transmission planning
 - Regional cost allocation
 - Federal siting

Source: Edison Electric Institute (Sept 2011)

(http://www.eei.org/ourissues/ElectricityTransmission/Documents/bar_Transmission_Investment.pdf)



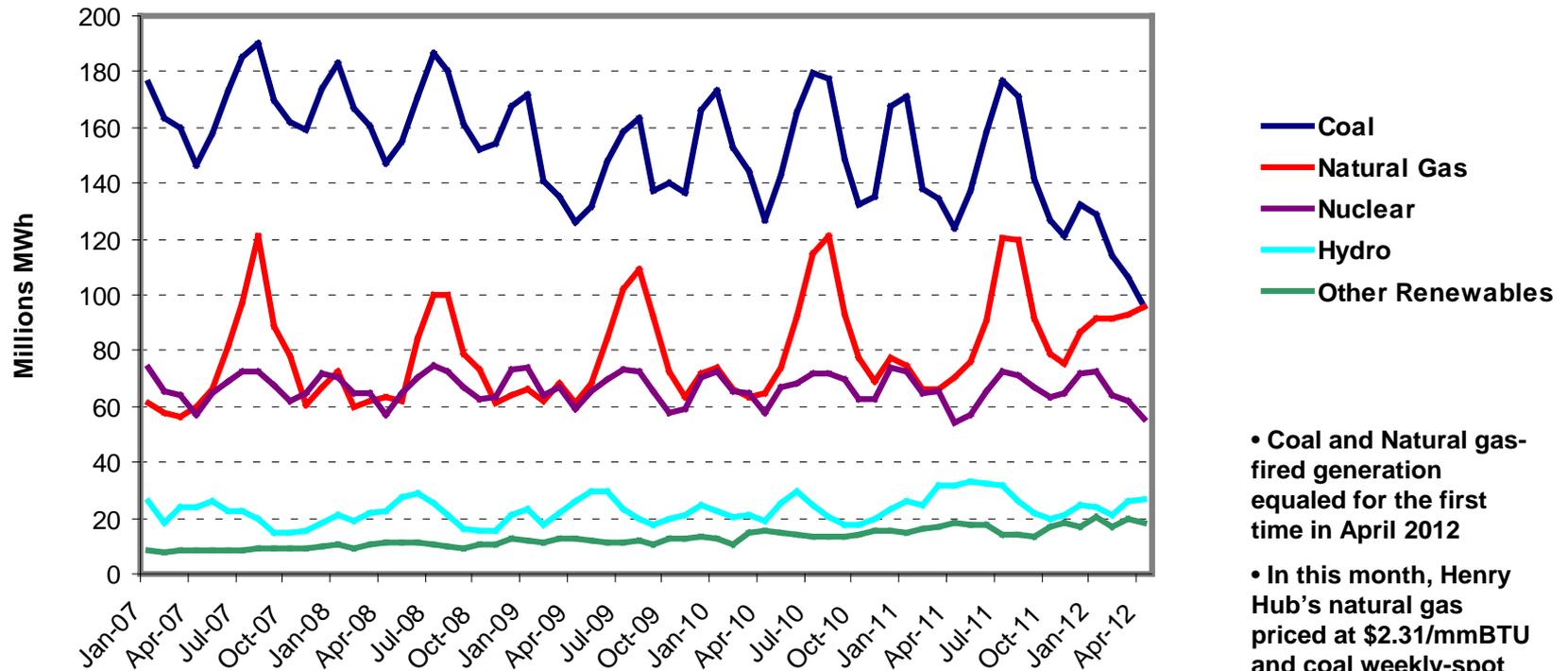
Projected U.S. Electricity Generation Capacity Additions



Source: EIA- Annual Energy Outlook 2012 Figure 95 Data (.xls).



Monthly Generation by Fuel Type

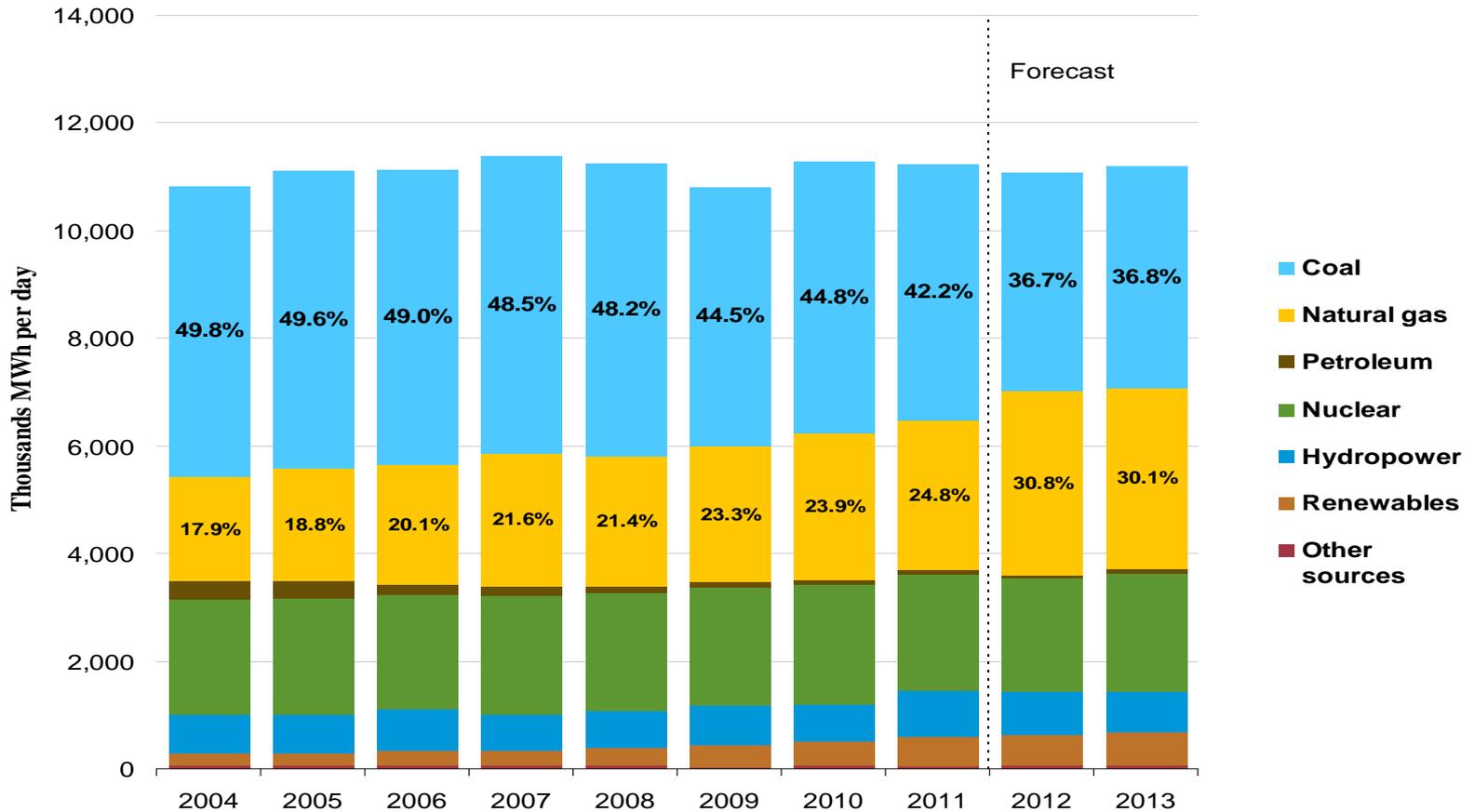


- Coal and Natural gas-fired generation equaled for the first time in April 2012
- In this month, Henry Hub's natural gas priced at \$2.31/mmBTU and coal weekly-spot prices ranged from \$0.51-2.55/mmBTU.

Source: EIA data from *Today in Energy* (July 6, 2012)



U.S. Electricity Generation by Fuel, All Sectors



Source: chart provided by EIA, Short-Term Energy Outlook, July 2012



U.S. Regional Power Markets

- U.S. does not have a national electricity market
- Regional power markets – some of which are also international
- Three different wholesale market regimes
 - RTOs/ISOs: centralized day ahead markets, bilateral markets, financial trading, large trading volumes, good transparency
 - West: bilateral spot markets, large trading volumes, good transparency
 - Southeast: bilateral spot market for residual power, low trading volumes, poor transparency



Electric Industry Structure

- Competition
 - Generators – utilities and independents
- High level of vertical integration
- Diversity
 - Investor owned utilities
 - Federal utilities
 - State and municipal utilities
 - Rural electric cooperatives
 - Independent power producers
 - Transcos
 - Traders and marketers



Competitive Markets

- Two great challenges facing U.S. electricity sector
 - Infrastructure investment
 - Environmental compliance (climate change and new regulations)
- Competition policy a success
- Some failures: California and Western crisis
- Difficult to define “success” – what is proper benchmark?
 - Cost to end-users
 - Infrastructure development
 - Security/reliability of supply



Competitive Markets

- Characteristics of competitive markets
 - Generation entry
 - Market access and grid access
 - Robust power grid, with sufficient investment
 - Market transparency
 - Demand response
 - Efficiency/operating performance
 - New technologies and services
- U.S. wholesale markets have most of these characteristics



Security of U.S. Electricity Supply

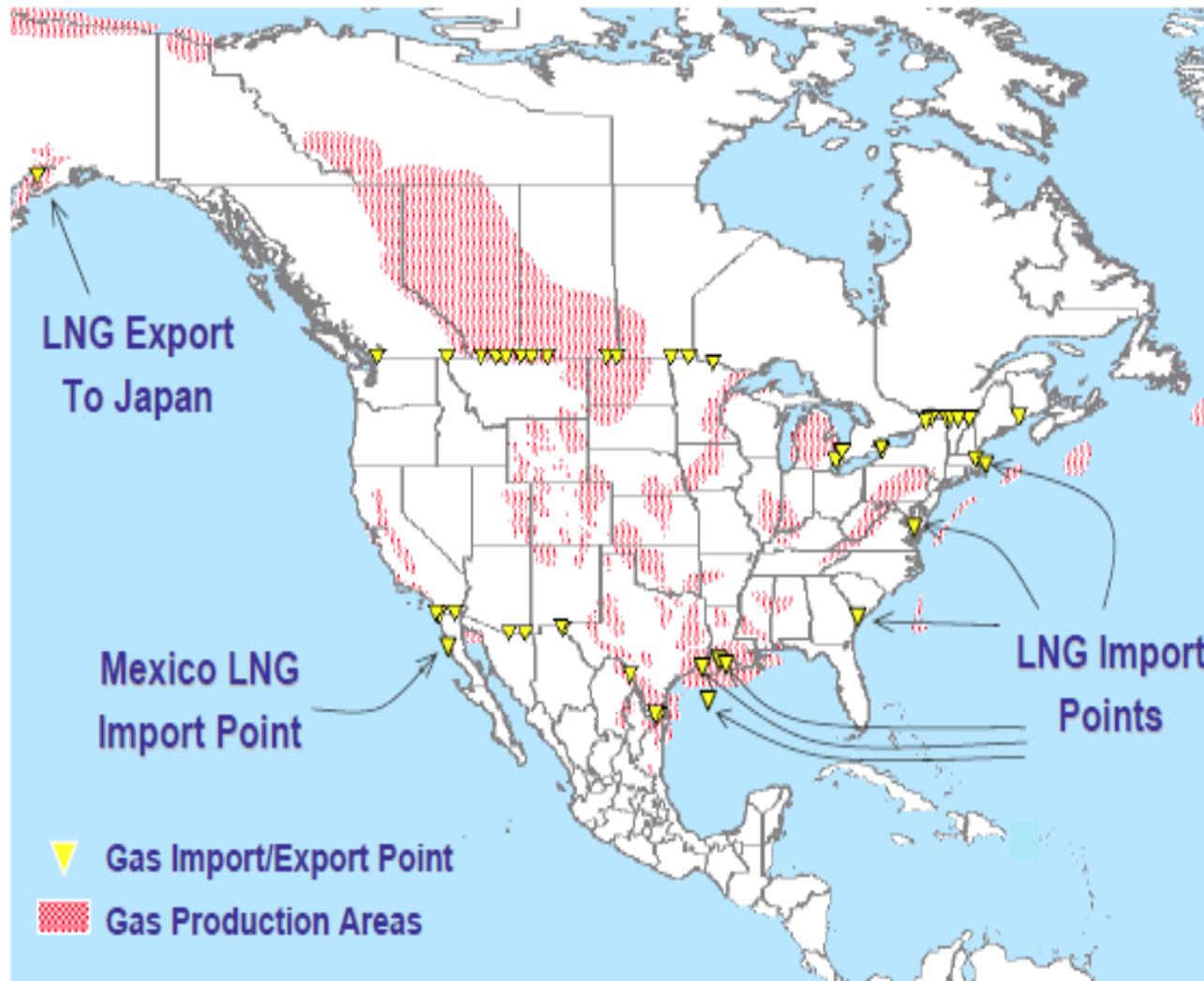
- The U.S. electricity sector faces a challenge in infrastructure investment
- Competition policy best suited to assure security of electricity supply at reasonable cost – not low cost
- U.S. generation security benefitting from expansion of natural gas production and major investments in renewables



Overview of U.S. Natural Gas Markets



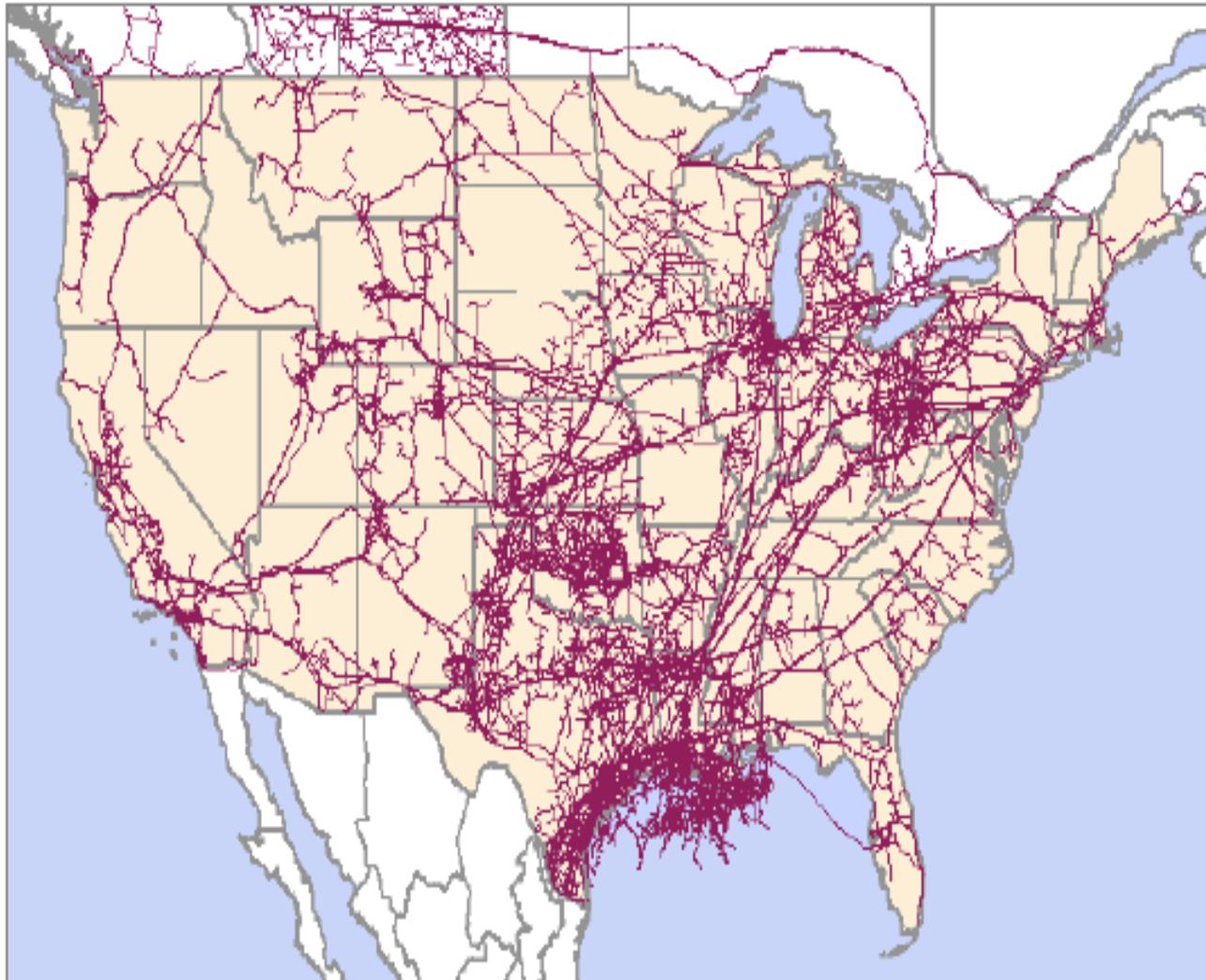
US Sources of Gas Supply



- Largest gas consumer and second largest producer
- Relatively self-sufficient—U.S. produces 92% of supply
- Canadian imports declining
- New technologies expanding recoverable supplies (primarily shale)



U.S. Natural Gas Pipeline Network



Gas Market:

- Largest, most liquid, and most transparent

Pipeline Network:

- Largest gas pipeline network (306,000 miles or 492,400 km)
- Interconnected with Canada and Mexico and rest of world through LNG import terminals

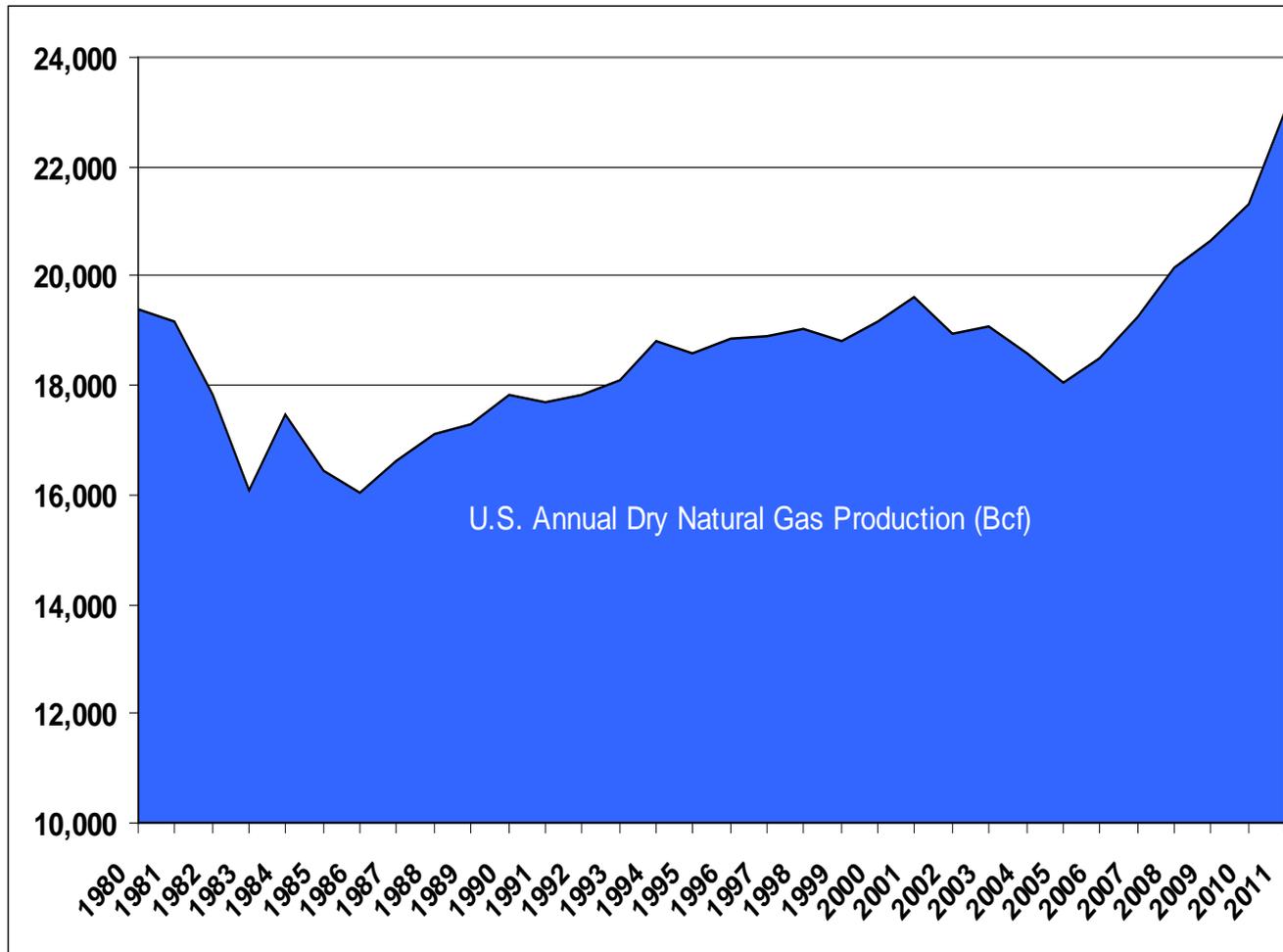


Gas Industry Structure

- Disaggregation of gas production
- Much lower level of vertical integration
- Ownership separation of pipelines from producers and distribution
- Ownership of gas pipelines more concentrated



U.S. Gas Production from 1980 through 2011



- Success of competition policy on U.S. natural gas production
- Price controls led to steady decline in gas production
- Decline not caused by declining reserves but by regulatory policy
- Price decontrol led to continuing rebound of U.S. gas production
- New technologies have fostered recent increases



Security of U.S. Natural Gas Supply

- U.S. domestic production growing
- Very active exploration and development
- Shale gas supplanting Canadian gas and LNG imports in supply mix
- U.S. demand growing primarily from power sector
- One strength of U.S. gas market –robust infrastructure
- Development of robust pipeline network
 - Efficient administration by FERC
 - Good rates of return
 - Functional unbundling
 - pipeline competition
 - ownership separation



Wholesale Gas Markets

- U.S. wholesale gas market working very well as consumption increases to record highs
- New pipelines have created a more uniform national market
- Shale gas production has revolutionized U.S. gas market
 - Large resource base and low production costs with new technology
 - About 38% of total U.S. natural gas production and increasing
 - US EPA studying environmental issues—to be completed in 2012
- Canadian imports down 14% since 2005 peak
- LNG supply mostly limited to contract deliveries and New England winter demand
 - North America prices well below world LNG market
- Convergence between gas and power markets
- Convergence between gas physical and financial markets
- Divergence between U.S. gas and oil markets



Conclusion

- Policy choices governed by industry structure and regulatory regime
- Competition policy has followed different courses in power and gas markets, given differences in these markets
- U.S. experience: competition policy has been a success
 - assured security of electricity and gas supply at reasonable cost for 25 years
- U.S. remains committed to competition policy
- Focus at FERC – strengthening competitive wholesale power and gas markets, through steady reform