



**ENERGY REGULATORY AND MARKET  
DEVELOPMENT FORUM**

**November 4, 2010**

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**“ENERGY COMPETITION AND  
REGULATION:  
THE U.S. EXPERIENCE”**

**The Honorable Philip D. Moeller  
Commissioner**

**Federal Energy Regulatory Commission**

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# Competition Policy

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- Competition is at heart of U.S. energy policy relating to wholesale power and gas markets
- Competition policy not new – established 30 years ago
- Competition policy not “deregulation”
- FERC never stopped regulating wholesale power and gas markets
  - Nature of regulation changed
  - FERC role different – larger in some respects
- Competition policy has been success in both power and gas markets
- Competition assured security of U.S. electricity and natural gas supply at reasonable cost for 25 years



# Competition Policy

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- Competition policy involves mixture of competition and regulation – seek best possible mixture
- Competition and regulation have different objectives
  - Costs: profit level regulation vs. cost control
  - Investment: regulatory risk vs. contract certainty and reliance on market rules
  - Risk allocation: end-use consumers vs. market participants
- Competition policy not an event – it is a process



# Competition Policy

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- How FERC introduced competition into wholesale power and gas markets
  - Open access to the networks
  - Functional unbundling
  - Deregulation of most wholesale gas sales
  - Market based pricing for wholesale power sales
  - Encourage greater infrastructure investment
  - Encourage new entry by power generators and gas producers
  - Increased transparency
  - RTOs/ISOs



# Competition Policy

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- Power and gas markets highly dynamic – static regulatory policy unlikely to succeed
- FERC pursues steady reform to strengthen competitive markets
  - Encourage entry
  - Improve market access and grid access
  - Establish good market rules
  - Prevent market power exercise and market manipulation
  - Assure effective enforcement
  - Improve market transparency
  - Provide contract certainty
  - Reinforce the networks
  - Improve demand response



# FERC Regulatory Role

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- U.S. electricity regulation – federalist
  - Federal and state regulation
- FERC has five principal missions:
  - Economic regulation
  - Infrastructure development
  - Safety (hydro, LNG)
  - Grid reliability
  - Enforcement
- FERC regulatory authorities
  - Wholesale power and natural gas sales
  - Electric transmission and gas transportation
  - Electricity mergers and corporate transactions
  - Regional power market rules
  - Natural gas pipeline, storage, and LNG siting
  - Limited authority to site electric transmission
  - Police market manipulation
  - Grid reliability standards

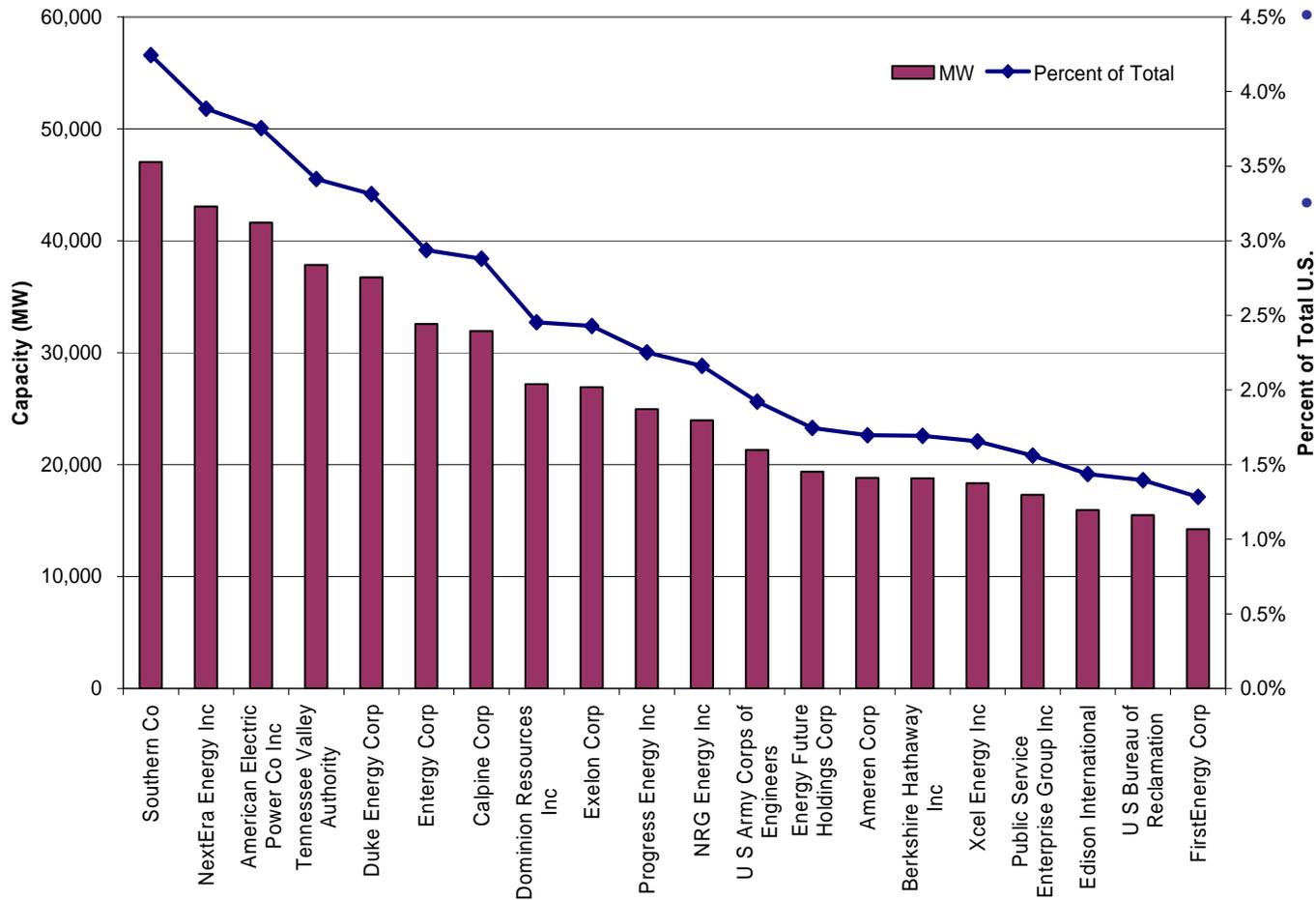


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# Overview of U.S. Electricity Markets



# U.S. Electric Generation Ownership Profile



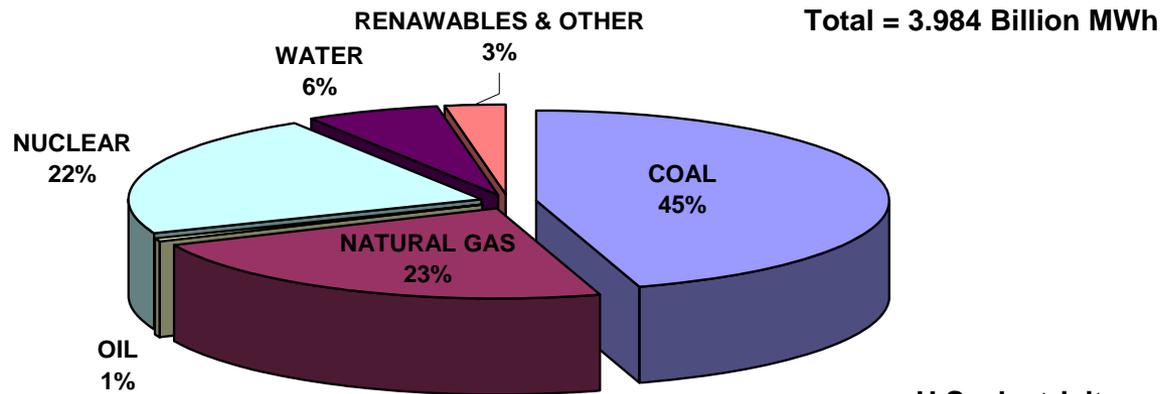
U.S. is world's largest electricity generator

Disaggregation of generation ownership

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



# U.S. Electricity Supply Mix 2009

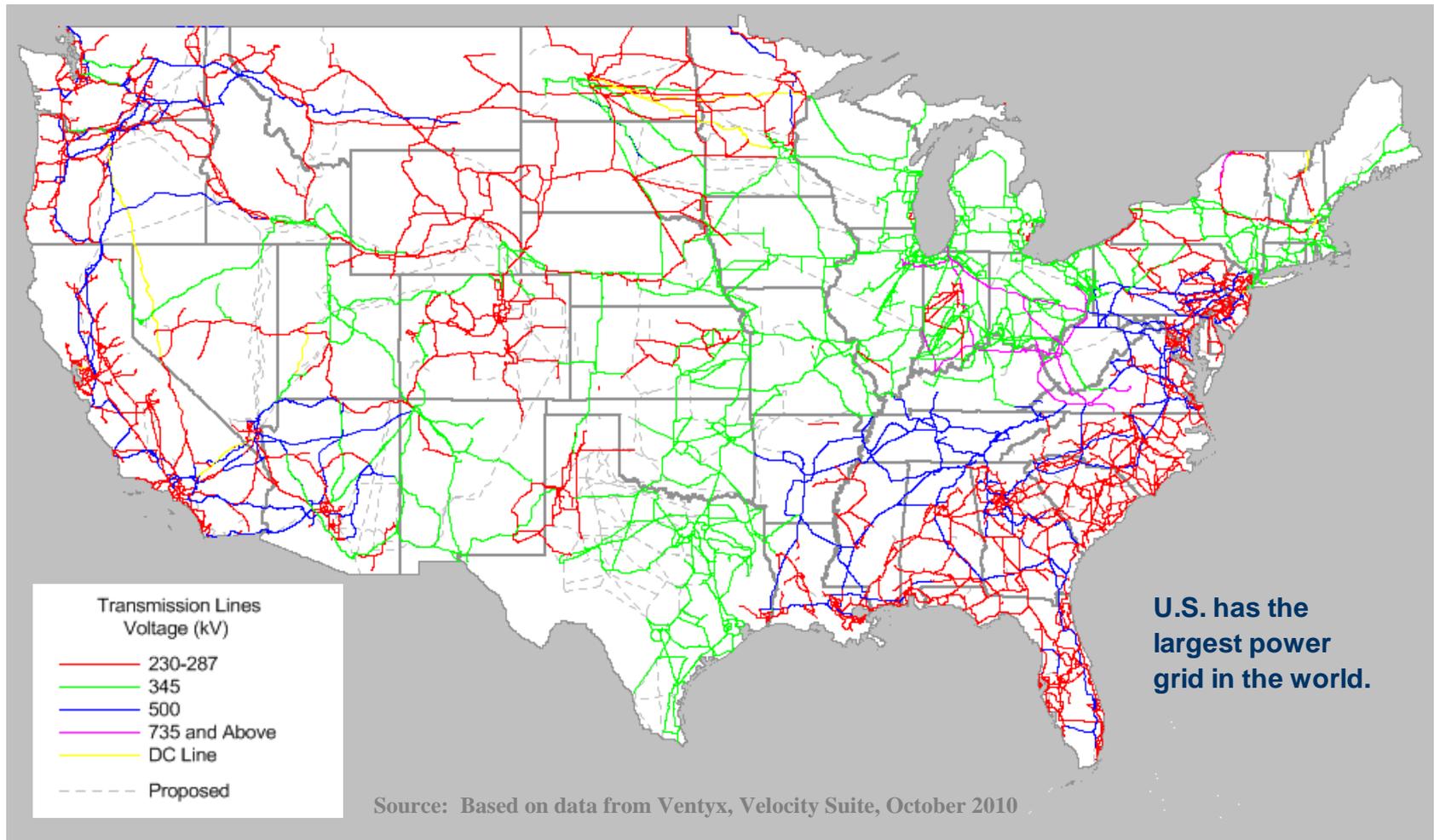


U.S. electricity supply  
relies heavily on  
fossil fuels

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

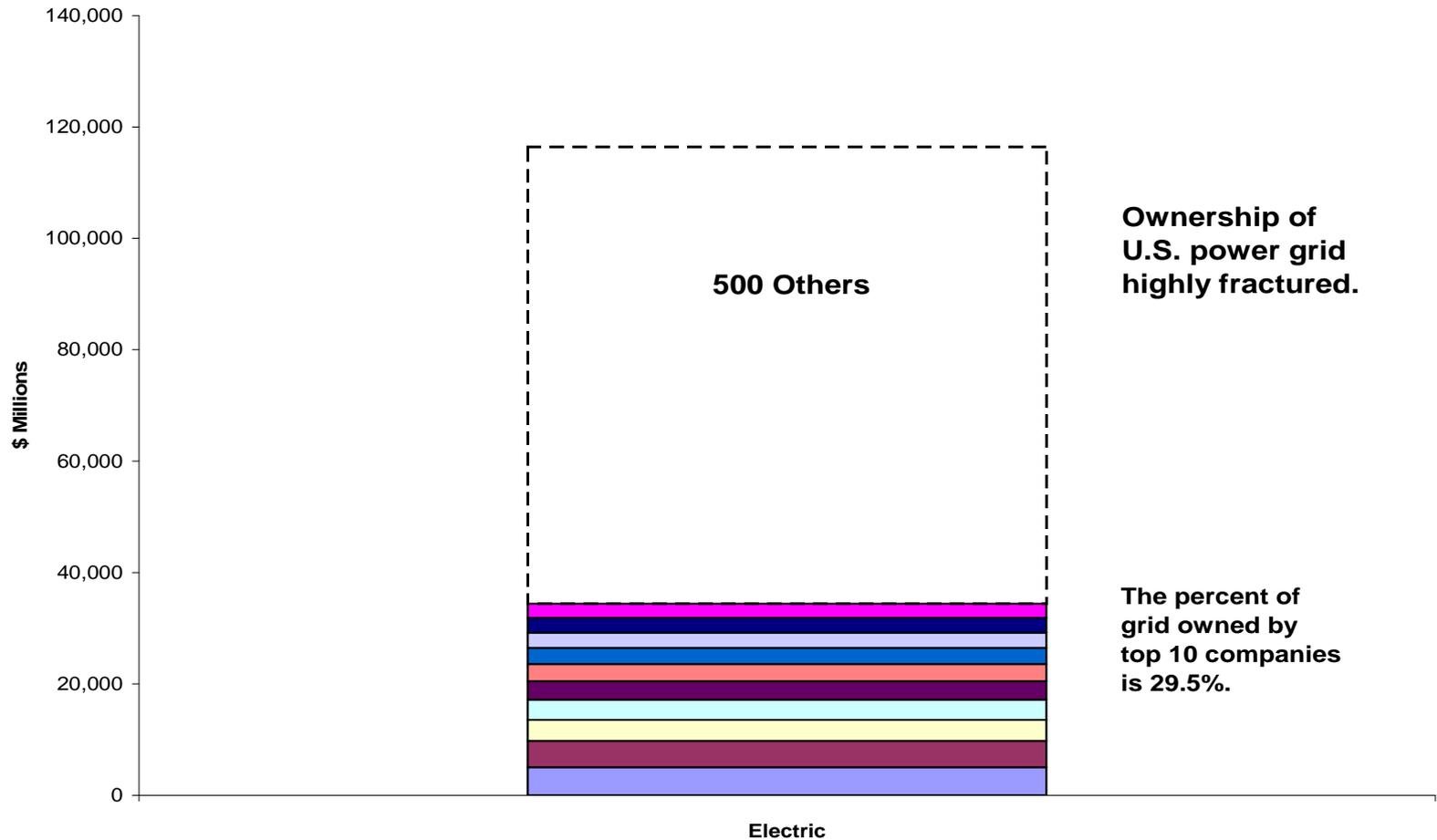


# U.S. Interstate Power Grid (235,721 Circuit Miles or 379,356 Km)





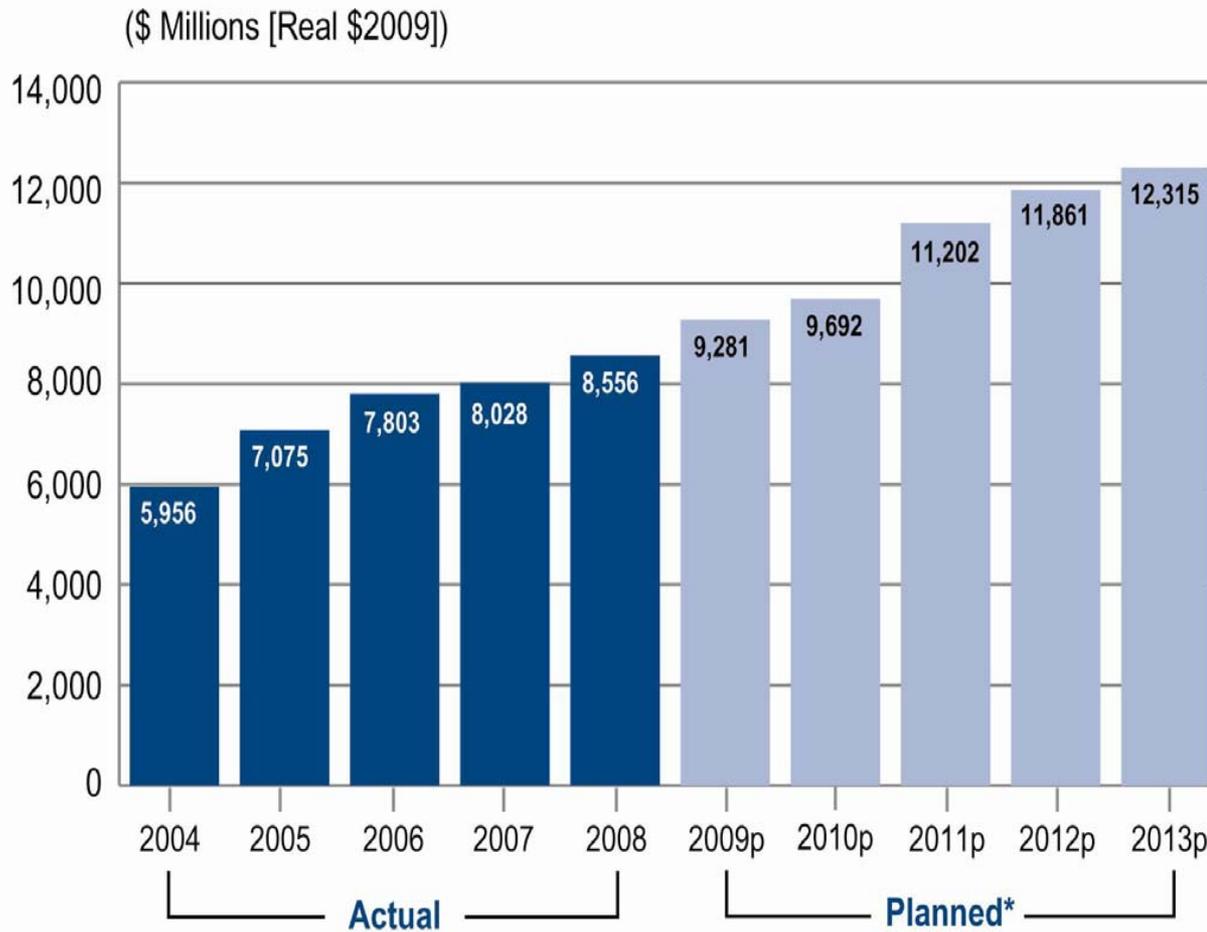
# U.S. Electric Transmission Ownership



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

([http://www.eei.org/ourissues/ElectricityTransmission/Documents/bar\\_Transmission\\_Investment.pdf](http://www.eei.org/ourissues/ElectricityTransmission/Documents/bar_Transmission_Investment.pdf))



# U.S. Regional Power Markets

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- 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

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- 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

- **U.S. wholesale power markets working well**
- **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

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- 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



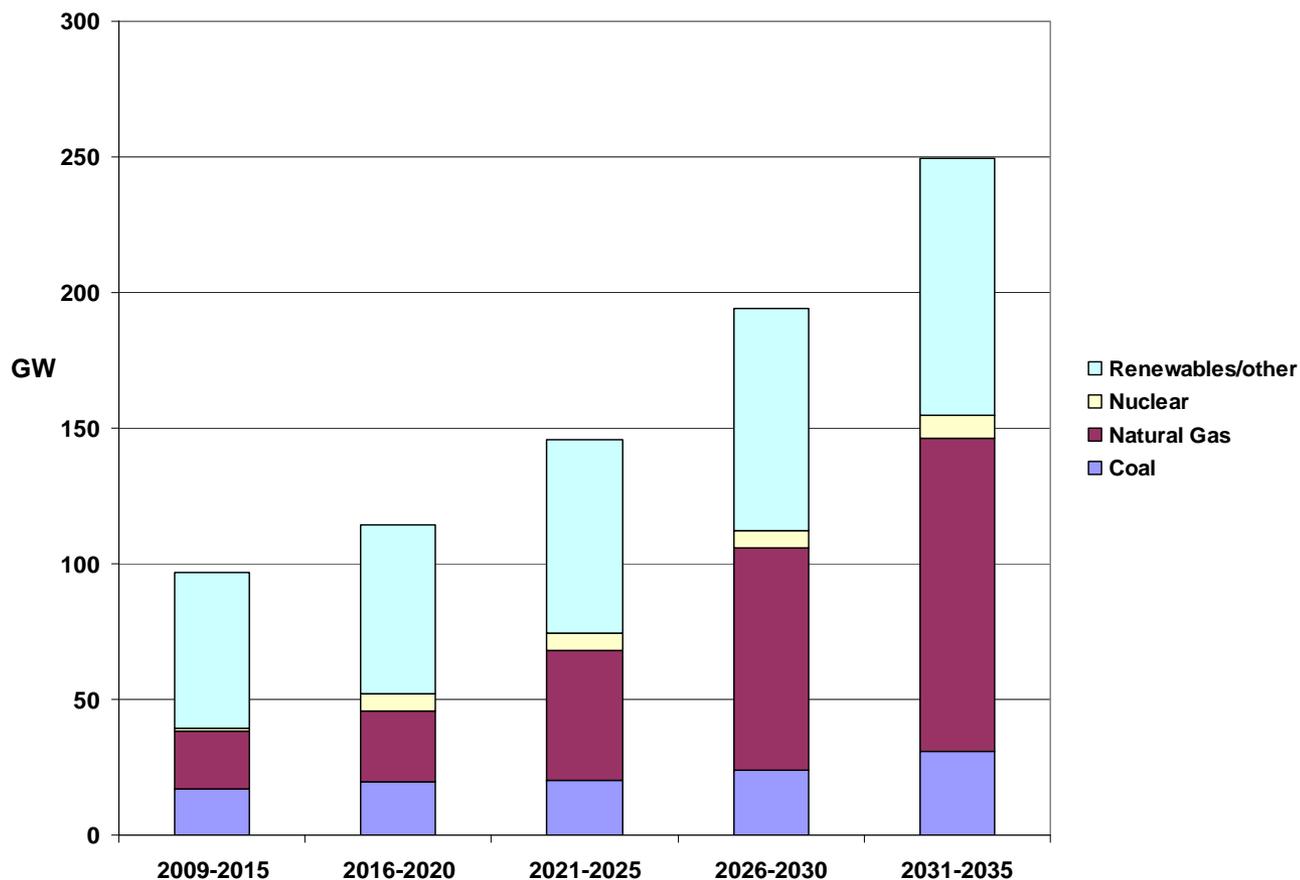
# Security of U.S. Electricity Supply

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- Two great challenges facing U.S. electricity sector
  - Climate change
  - 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



# Projected U.S. Electricity Generation Capacity Additions



Source: EIA "Annual Energy Outlook 2010", Figure 62.



# Climate Change

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- U.S. actively engaged in climate change legislative debate
- Tension between assuring security of electricity supply and climate change
- Uncertainty about climate change policy comes at cost
- What must U.S. do well to meet climate change challenge?
  - Energy efficiency and demand response improvements
  - Technology development and deployment
  - New generation entry
  - Generation fuel diversity
  - Improvements in operating performance
  - Infrastructure expansion – wind, solar, transmission

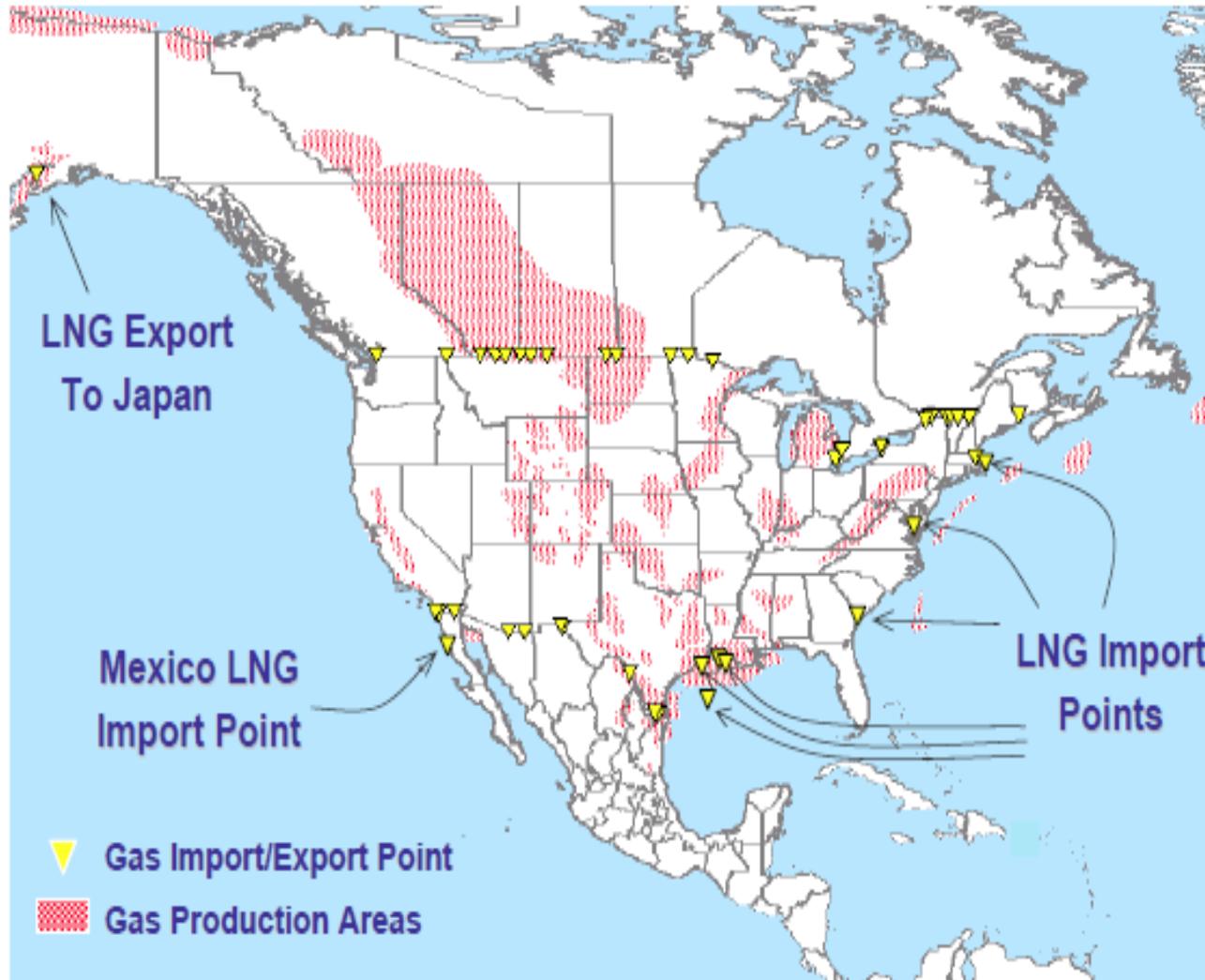


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# Overview of U.S. Natural Gas Markets



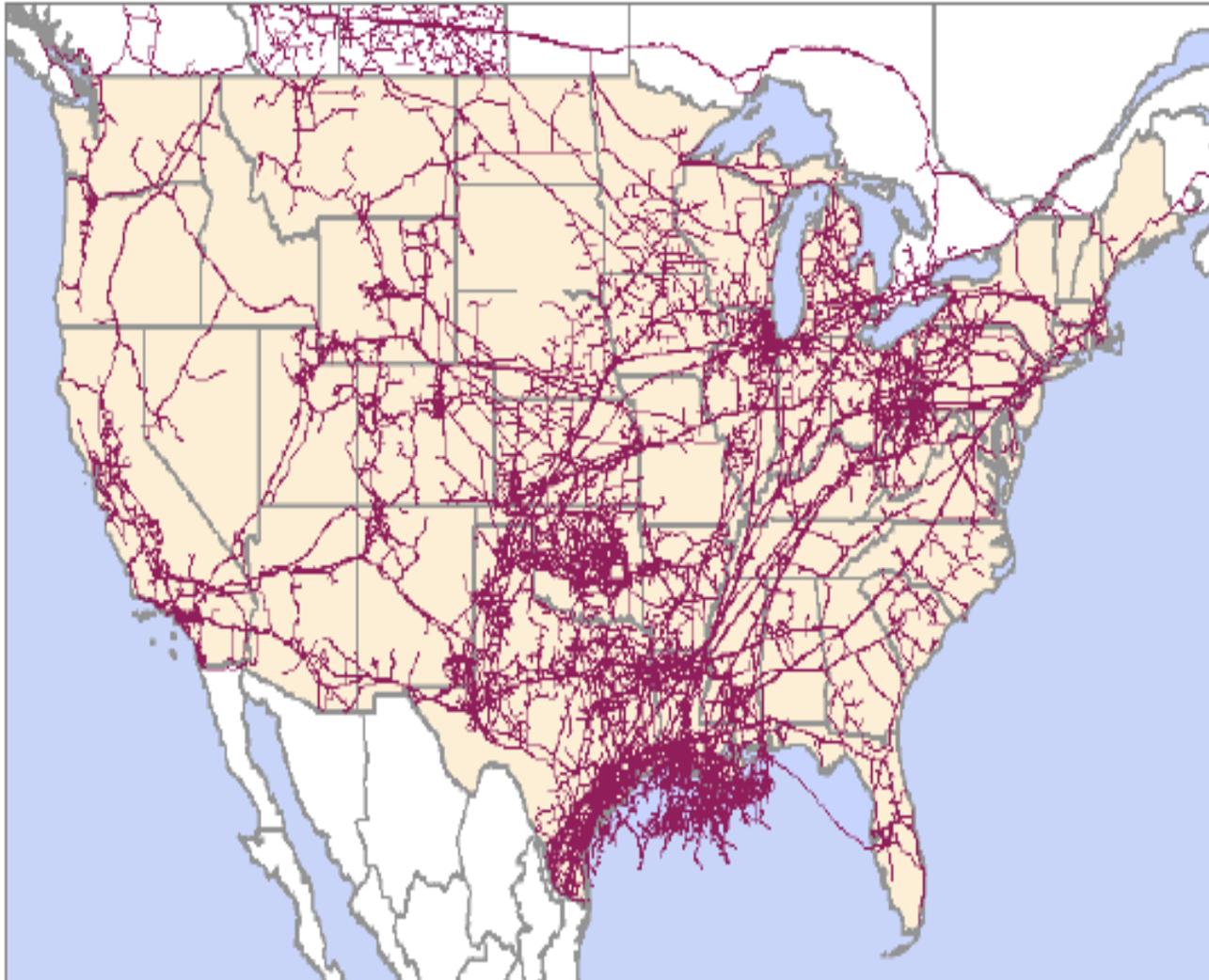
# US Sources of Gas Supply



- Largest gas consumer and second largest producer
- Relatively self-sufficient— U.S. produces 88% 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



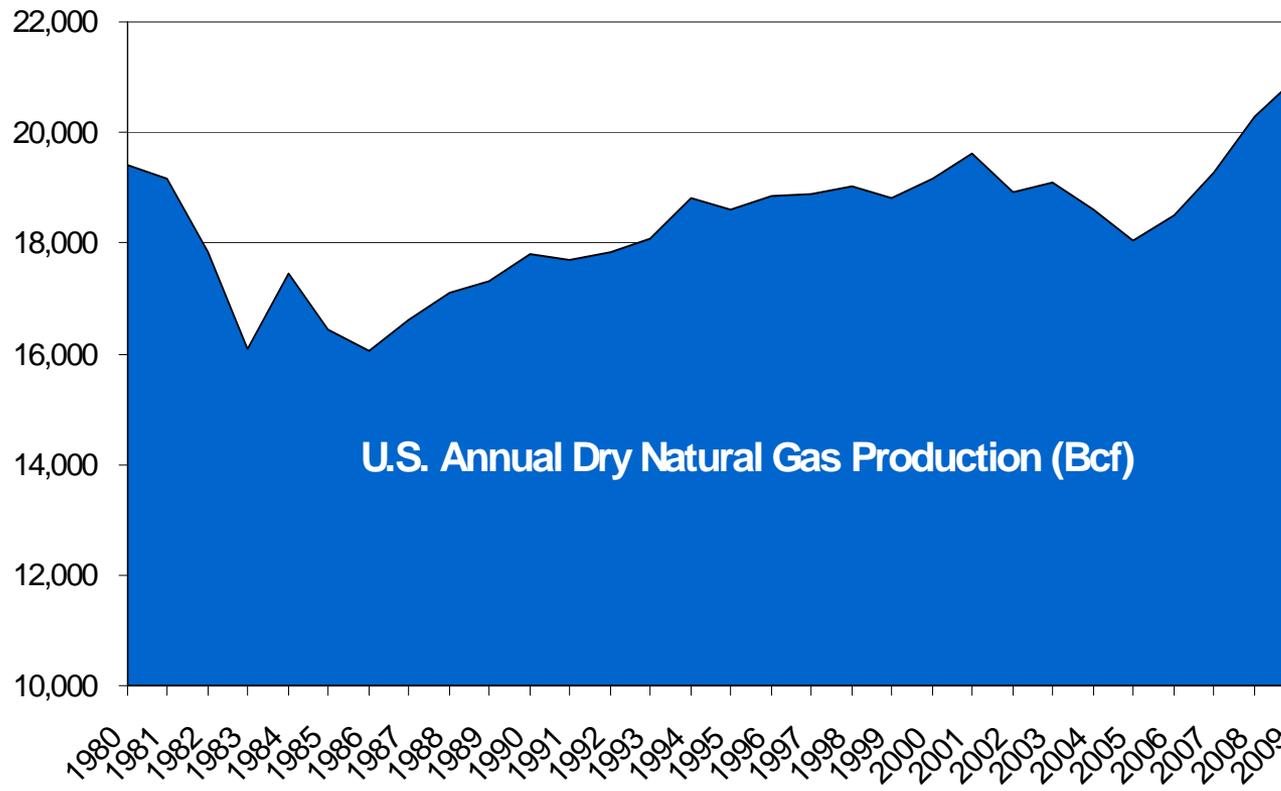
# Gas Industry Structure

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- 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 2009



Source: Energy Information Administration

- 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

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- 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

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- U.S. wholesale gas market working very well
- Shale gas has revolutionized U.S. gas production
  - Shale gas now accounts for about 23% of total U.S. natural gas production, up from 4% in 2005
  - Share of production is expected to increase significantly
  - Large resource base and low production costs
  - Environmental concerns, water use, and regulatory regimes still need to be clarified
- LNG supply shifting toward peaking applications in areas remote from production fields.
  - North America in competition with Europe and Asia/Pacific for LNG supply
- Convergence between gas and power markets
- Convergence between gas physical and financial markets
- Divergence between gas and oil markets



# Conclusion

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- 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