

# **Electricity and Other Non-Transport Energy Issues: The Impacts of Fuel Prices and Climate Policies**

**for  
Energy Summit  
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New Orleans, Louisiana**

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**Energy Information Administration**  
*Official Energy Statistics from the U.S. Government*

# Outline

## 1. BACKGROUND

- Review of the Electricity Supply Mix
- Past and Projected Demand Trends

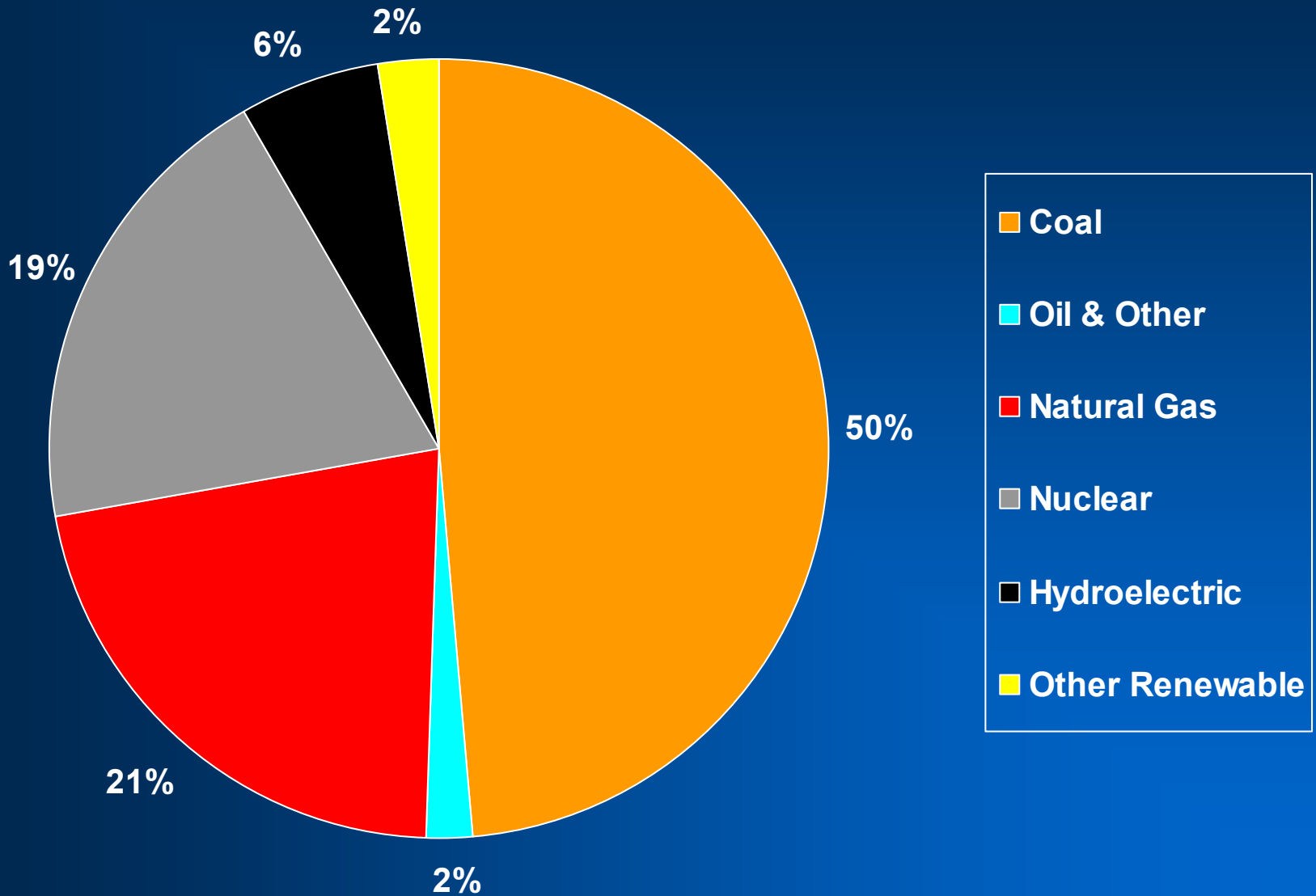
## 2. SHORT VIEW TOPIC

- Fuel Prices and The Near-term Outlook for Electricity and Heating Costs

## 3. LONG VIEW TOPIC

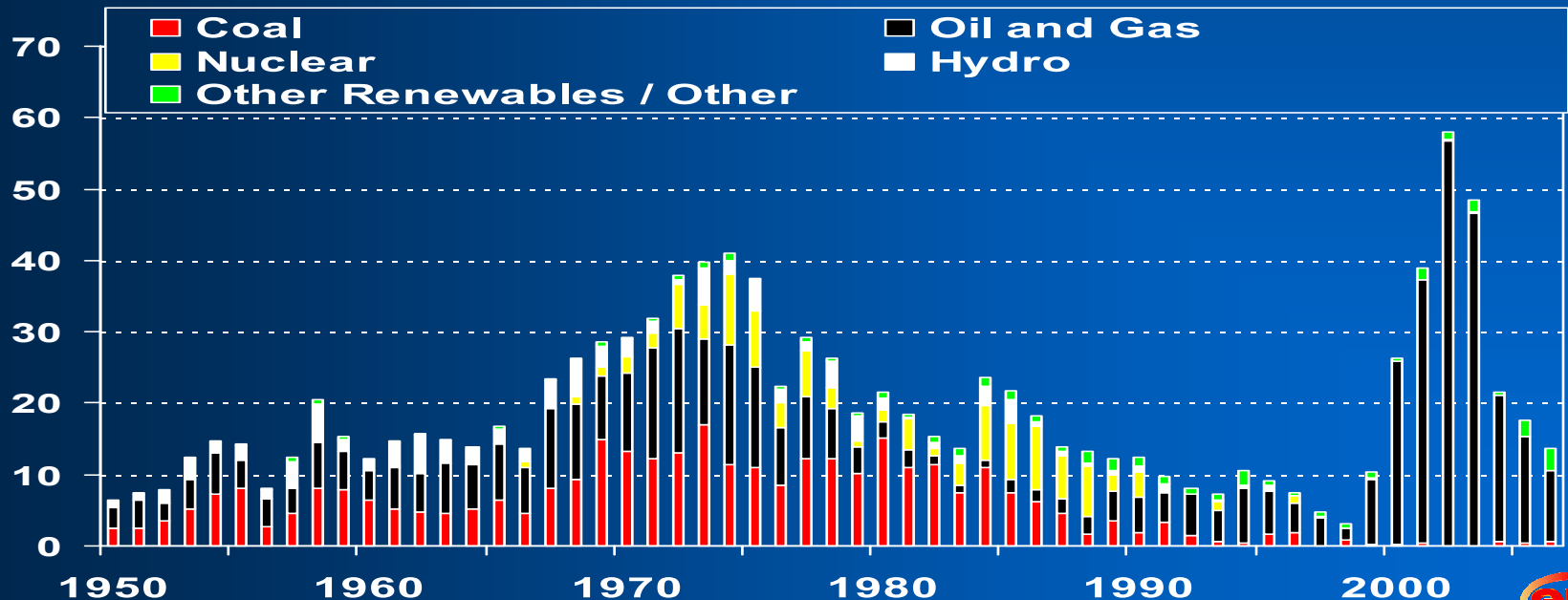
- Greenhouse Gas Reduction – Implications for Electricity Supply and Prices

# Coal Continued to Dominate the U.S. Generation Mix in 2007



# Electric Generating Capacity Additions, 1950-2006 (gigawatts)

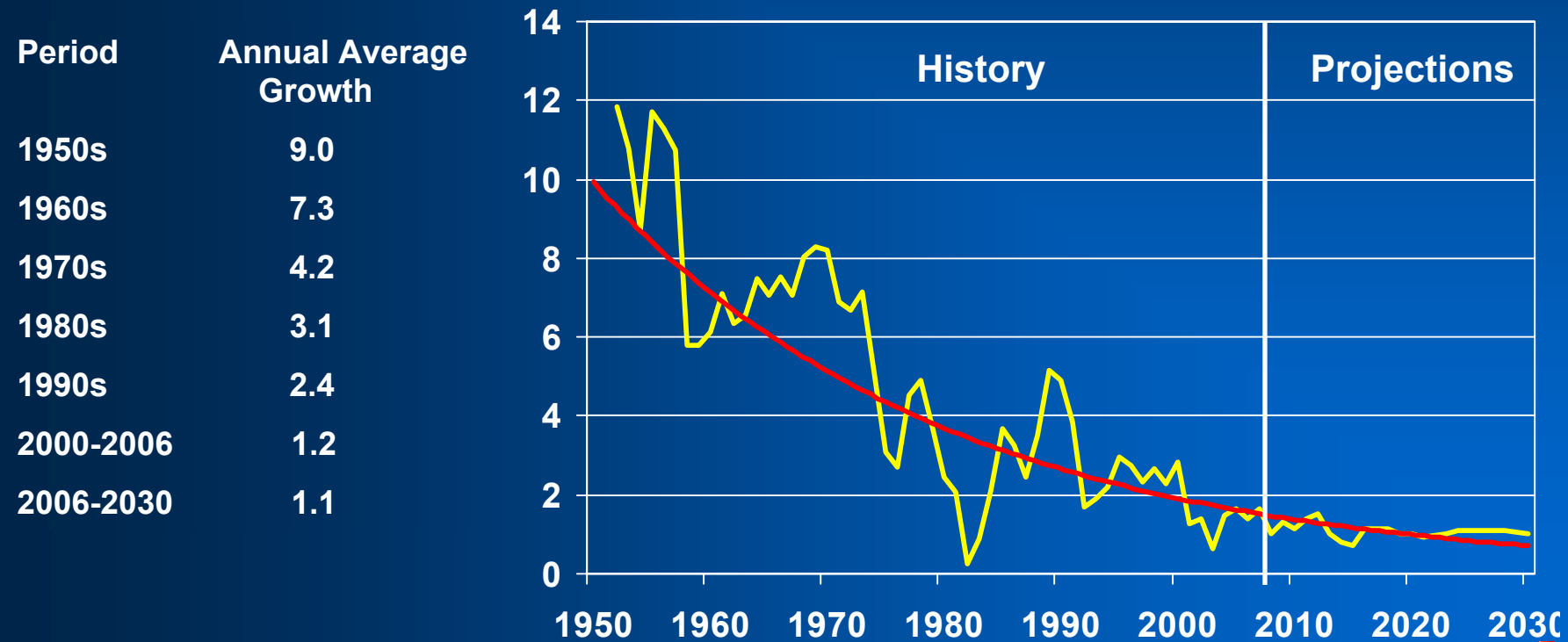
- Significant amounts of coal and nuclear capacity, which have relatively low operating costs, were added in the 1980s. The utilization rate for existing coal and nuclear capacity has increased steadily over the past 15 years, and is now getting closer to physical limits.
- Large amounts of natural gas-fired generating capacity have been added since 1999. The rise in natural gas prices has made it more expensive to operate these plants.



# Electricity Demand Growth Continues to Slow

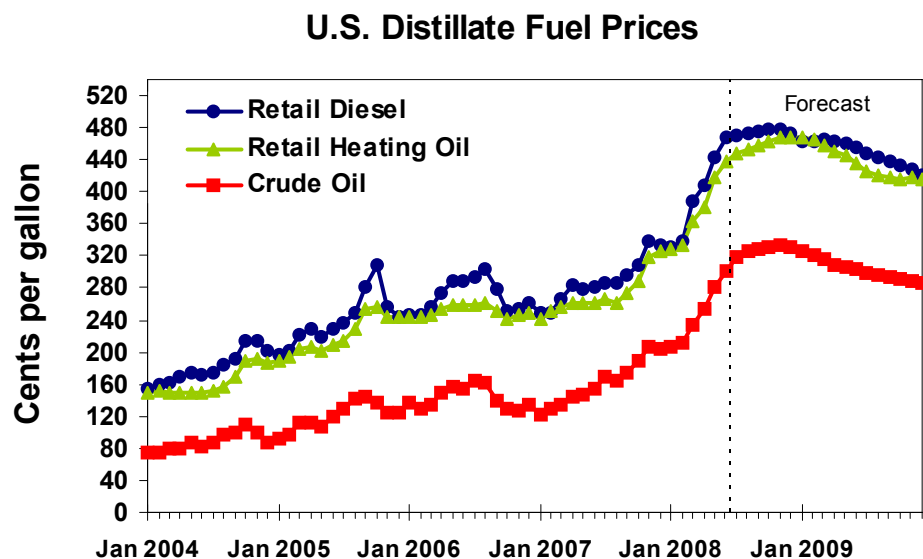
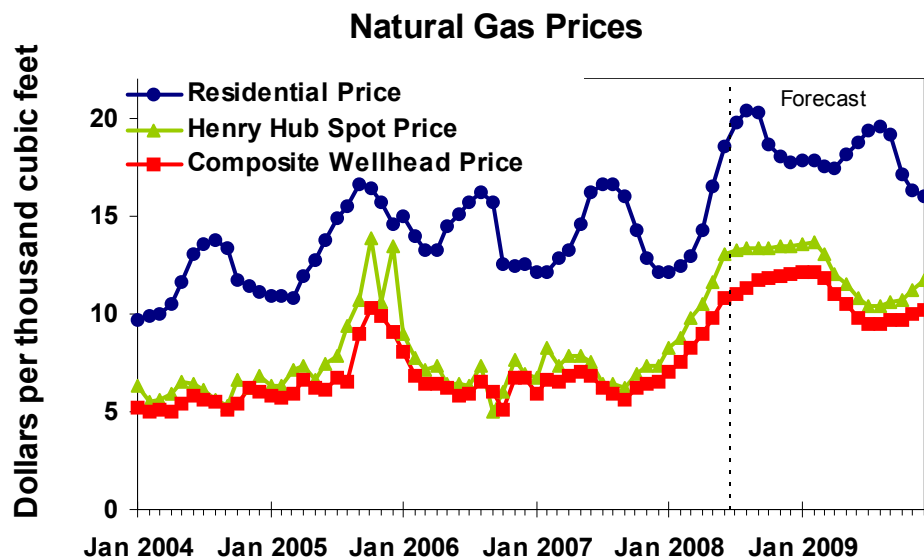
(3-year rolling average percent growth)

- Electricity demand growth has slowed over time.
- However, electricity demand is still expected to grow more than 25% above today's level by 2030



# Fuel Prices and The Near-term Outlook for Electricity and Heating Costs

# Prospects for Oil and Natural Gas Prices



*Retail prices include State and Federal Taxes*

- Higher natural gas prices will affect both heating bills and electricity prices
- Higher distillate oil prices will affect heating oil customers
- Heating oil customers will be affected first, and see the largest impacts

# Fuel Prices Drive Heating Energy Costs

	2004	2005	2006	2007	2008
<b>PRICES</b>					
<b>WTI Oil (\$ / barrel)</b>	41.44	56.49	66.02	72.32	127.39
<b>HH Nat Gas (\$ / million Btu)</b>	5.90	8.68	6.73	6.96	11.51
<b>ENERGY EXPENDITURES</b>					
<b>Avg Oil Heat Cost* (\$ / hhold)</b>	1,199	1,432	1,468	1,976	2,858
<b>Avg Gas Heat Cost* (\$ / hhold)</b>	737	941	813	852	1,216

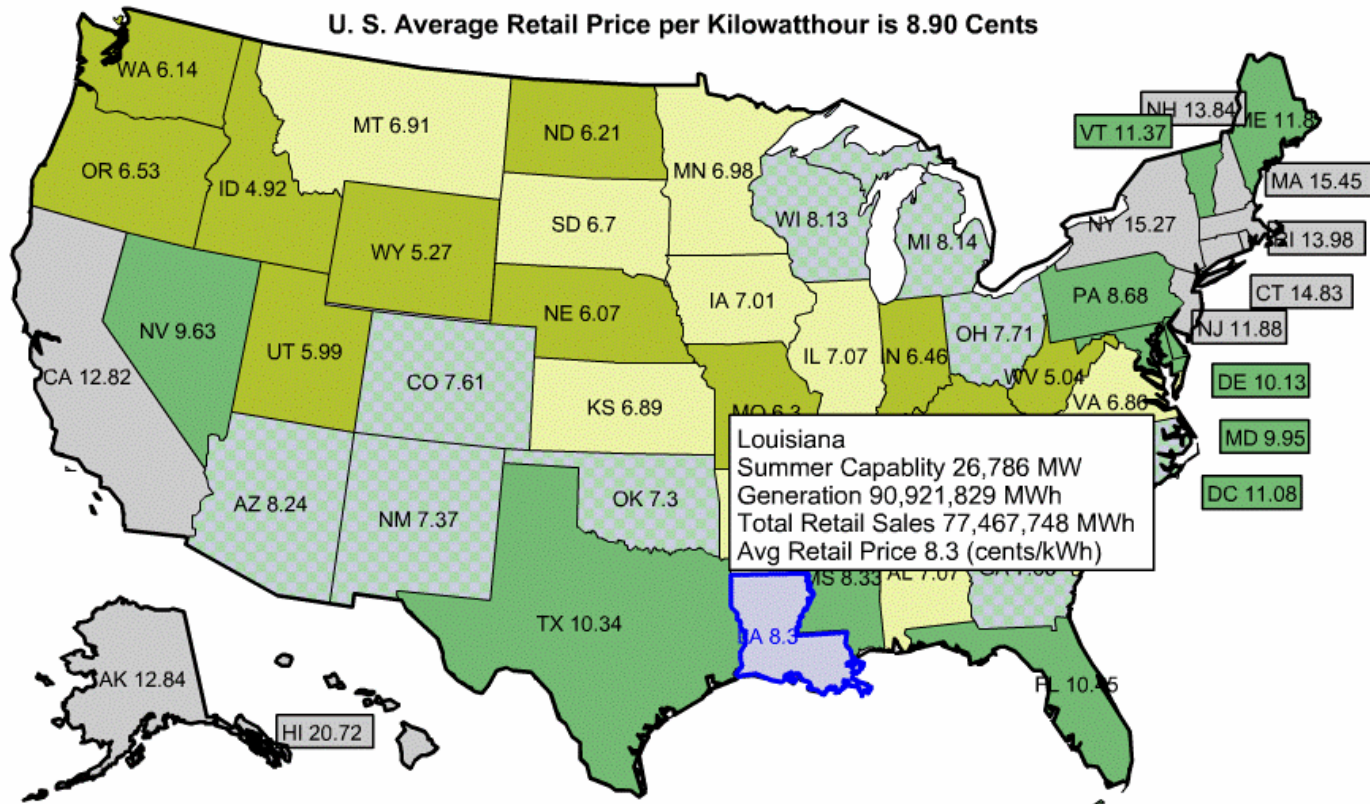
Note: Average Oil and Natural Gas heating costs are for the heating season that starts in the year in the column – for example the 2008 column contains projected costs for the 2008/2009 winter heating season

# Projected Electricity Prices and Expenditures

	2004	2005	2006	2007	2008
<b>ELECTRICITY PRICES – cents per kwh</b>					
<b>All Sectors</b>	7.6	8.1	8.9	9.1	9.6
<b>Residential</b>	8.9	9.4	10.4	10.6	11.2
<b>ELECTRICITY EXPENDITURES -- \$ billion</b>					
<b>All Sectors</b>	268	296	327	327	359
<b>Residential</b>	116	128	141	148	156

Source: EIA, *Short-Term Energy Outlook*, July 2008; EIA, *Electric Power Monthly*, May 2008.

# Variation Across the States



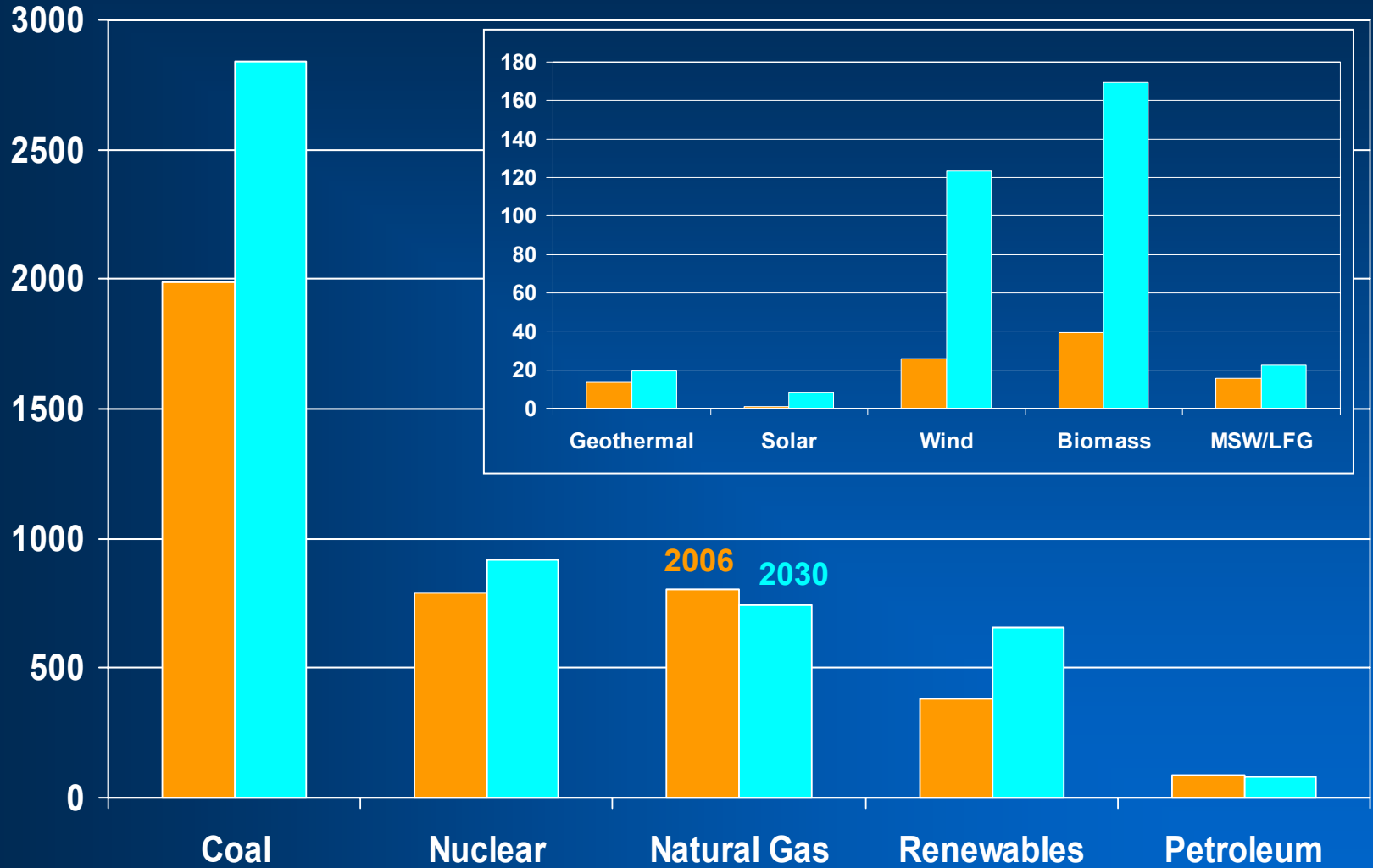
**Average Retail Price (Cents per Kilowatthour)**

- 4.92 to 6.53
- 6.70 to 7.07
- 7.30 to 8.30
- 8.33 to 11.80
- 11.88 to 20.72

Note: Data is displayed as 5 groups of 10 States and the District of Columbia. Source: Energy Information Administration, Form EIA-861, "Annual Electric Power Industry Report."

# **Greenhouse Gas Reduction: Implications for Electricity Supply and Prices**

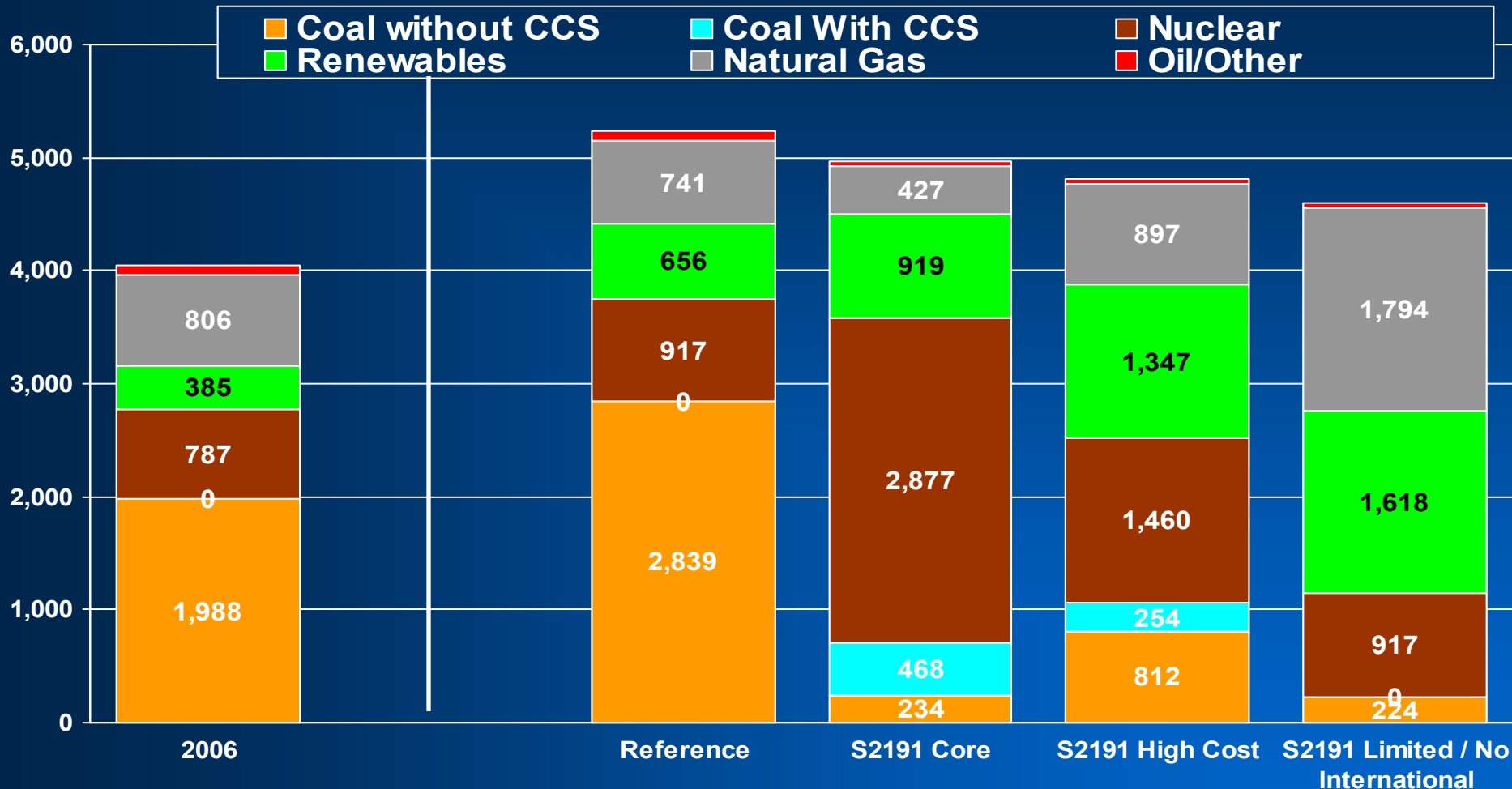
# Electricity Generation Mix in 2006 and 2030, Assuming No Policies to Limit Greenhouse Gas Emissions (billion kilowatthours)



Actions to limit energy-related greenhouse gas emissions could significantly change the outlook for generation in 2030.

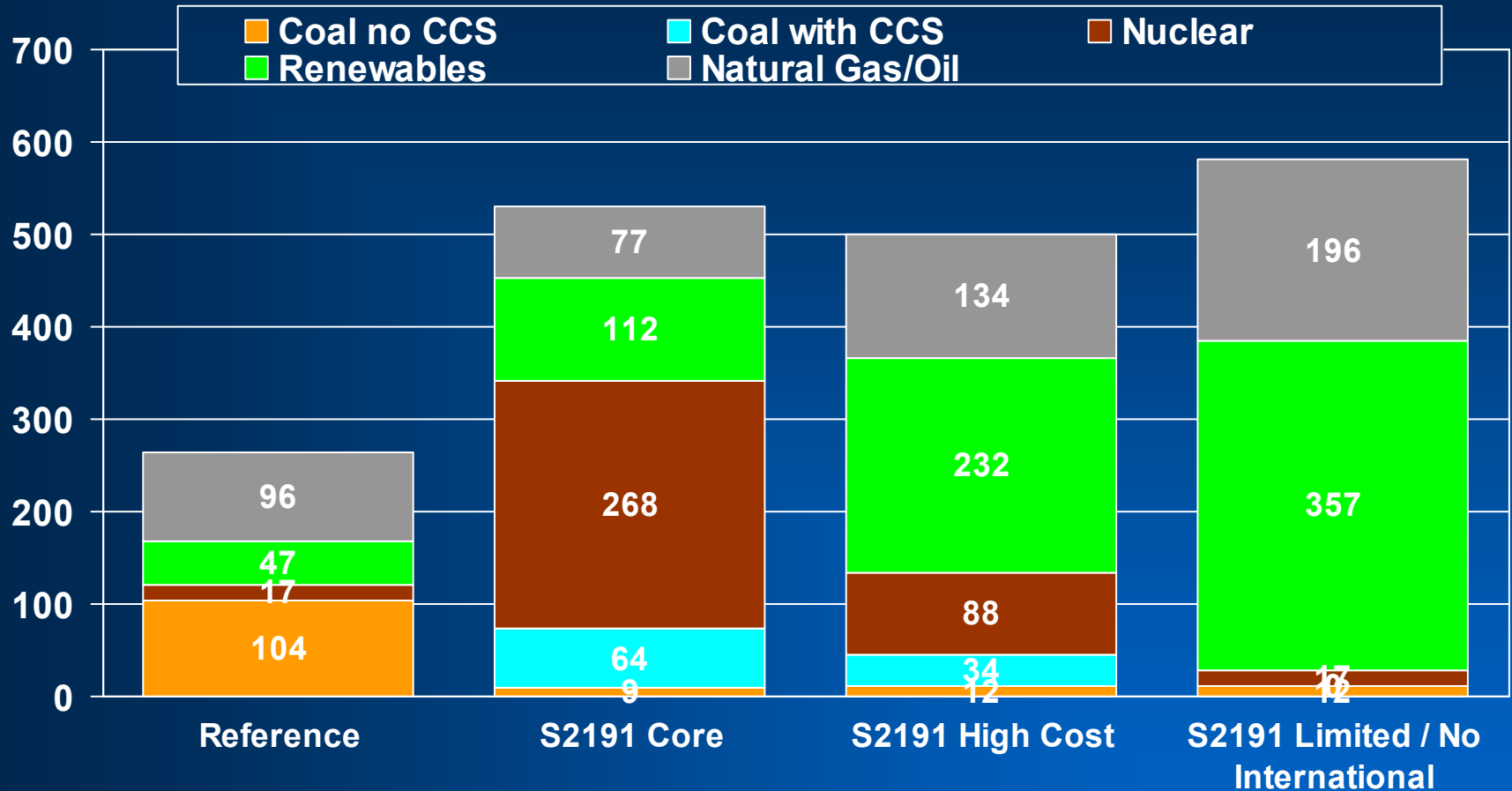
# 2030 Electricity Generation by Fuel

(billion kilowatthours)



- Coal generation declines significantly in all cases, while nuclear, renewables, and coal with CCS grows.
- Natural gas generation more than doubles if nuclear, renewables and coal with CCS are limited.

# Cumulative Electric Capacity Additions, 2007-2030 (gigawatts)

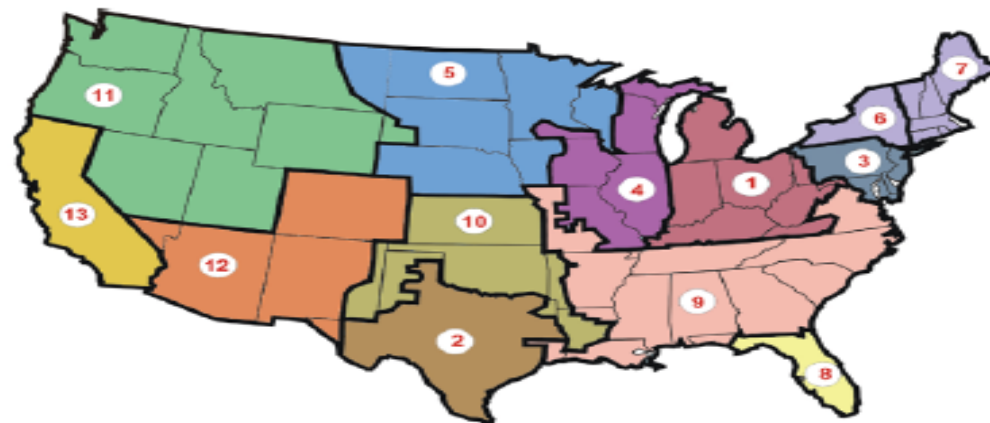
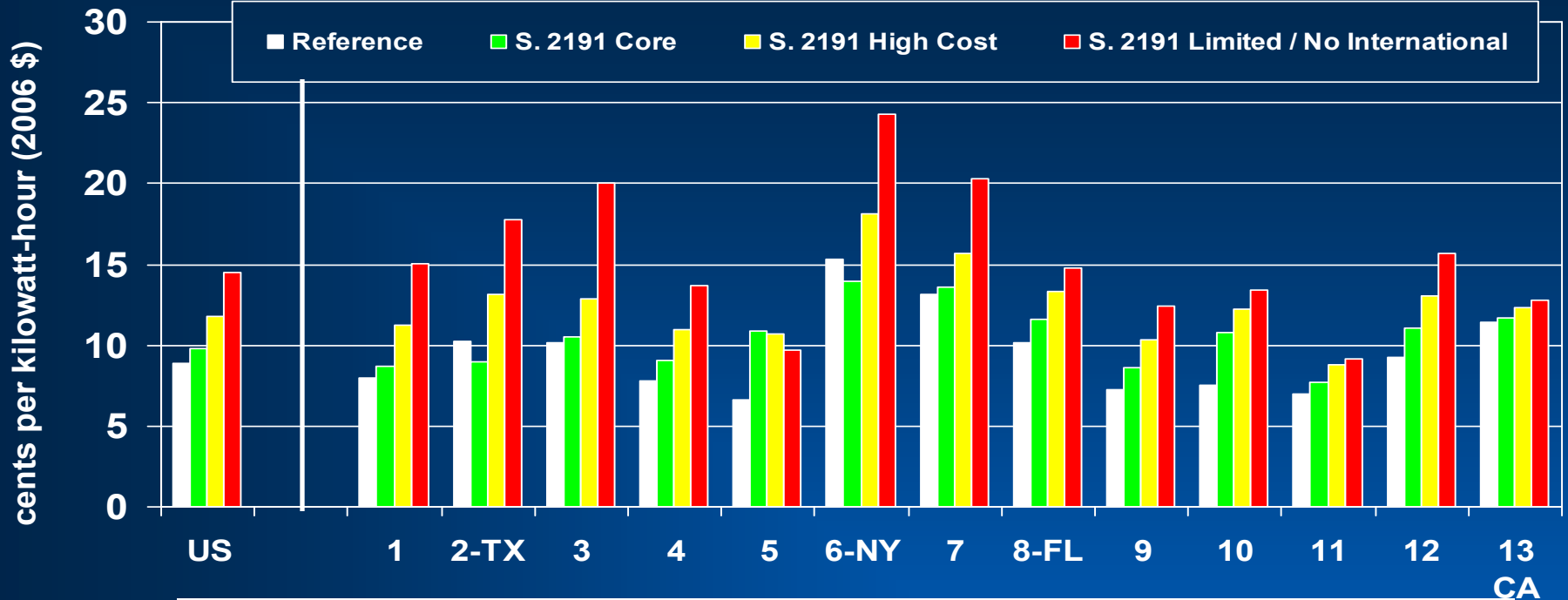


Additions of coal plants without CCS are virtually eliminated in the S. 2191 cases.

When nuclear, renewables and coal with CCS are all available at an economical cost, these technologies are used for new capacity and to replace existing conventional coal plants.

When the capital costs of these options are higher or other alternatives are limited, more natural gas plants are added.

# 2030 National and Regional Electricity Price Impacts

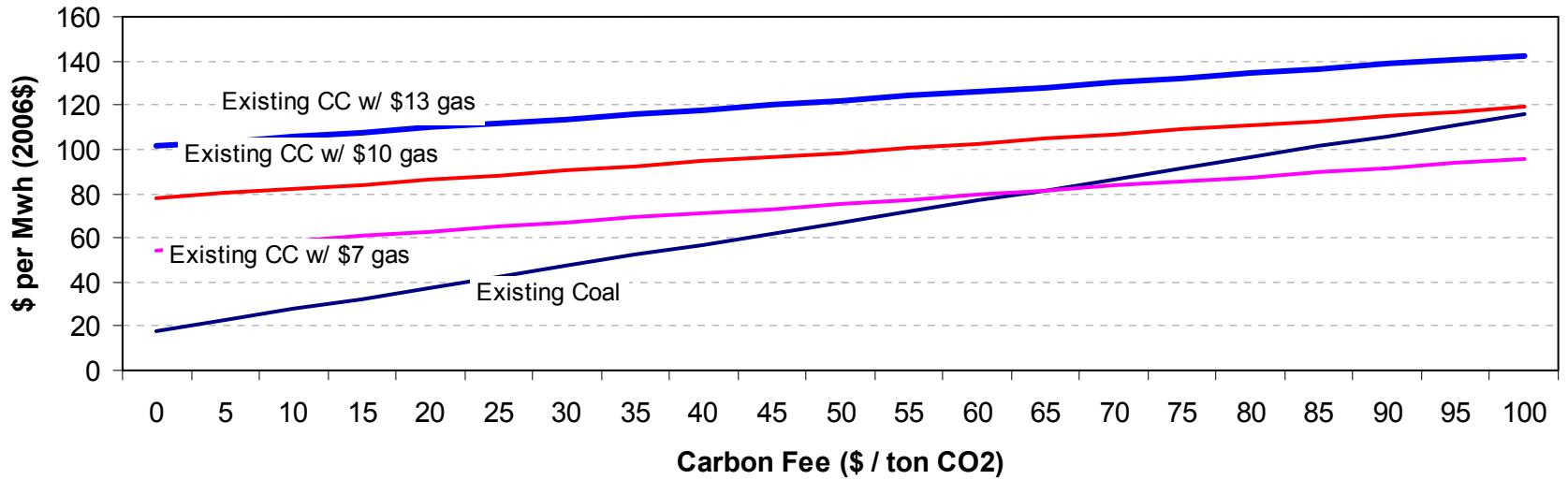


- 1 East Central Area Reliability Coordination Agreement (ECAR)
- 2 Electric Reliability Council of Texas (ERCOT)
- 3 Mid-Atlantic Area Council (MAAC)
- 4 Mid-America Interconnected Network (MAIN)
- 5 Mid-Continent Area Power Pool (MAPP)
- 6. New York (NY)
- 7. New England (NE)

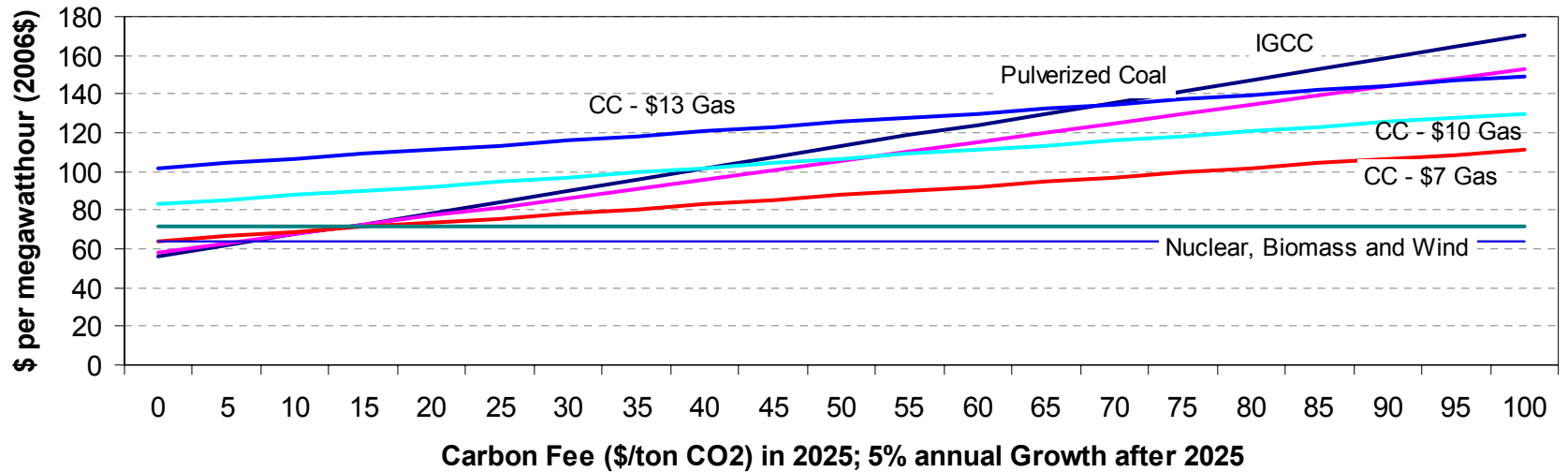
- 8. Florida Reliability Coordinating Council (FL)
- 9. Southeastern Electric Reliability Council (SERC)
- 10. Southwest Power Pool (SPP)
- 11. Northwest Power Pool (NWP)
- 12. Rocky Mountain Power Area, Arizona, New Mexico, and Southern Nevada (RA)
- 13. California (CA)



### Fuel Cost For Current Coal and CC Gas w/ Carbon Value



### Total Levelized Costs - New Plants in 2025 (AEO2008 costs) w/Carbon Value



# EIA and the States: Progress and Partnerships

- Recent improvements in state energy data at EIA include:
  - State Energy Profiles (new in 2007)
  - State Electricity Profiles (new in 2008)
  - Regional Short-term Energy Outlook (new in 2006)
  - State Energy Data (more timely releases)
- EIA has a strong partnership with the National Association of State Energy Officials (NASEO) and work with state regulators (NARUC) and governors (NGA). We would like to work more closely with NCSL.
- The new Energy Independence and Security Act (EISA) seeks expanded collaboration between EIA and the states, particularly in terms of data collection.
  - EIA is developing a plan to reach out to organizations, like NCSL, to solicit views on what data EIA could be collecting to better meet the States' needs.

Thank You



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