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# Commodity Market Impacts of EPA's Clean Power Plan

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# Goal: assess the impacts of EPA's proposal on the US energy system

### EPA Clean Power Plan (CPP) Proposal



- Emissions rate targets
- Building blocks
- Compliance timeline


### National and Regional Results



RHG and CSIS  
interpretation of proposal

RHG and CSIS analysis of  
outputs

### National Energy Modeling System (NEMS)



- Industry standard multi-sector energy system model
- Detailed data on US technology costs and performance, energy supply and demand, electric power markets, macroeconomic factors, etc.
- Solves for the least-cost pathway to meet a given policy goal

# Scenarios

**Reference Case:** AEO2014 plus EPA’s proposed New Source Performance Standards (coal plants must meet emissions rate of 1,100 lbs./MWh).

**Policy Scenarios:** CPP represented as an emission rate-based tradable performance standard. Scenarios explore the impacts of two key decisions for CPP implementation: *Multi-state Cooperation* and *Crediting of Demand-side Energy Efficiency*

Policy Scenarios		
	National Cooperation	Regional Fragmentation
No States Include EE in Plans	National w/o EE	Regional w/o EE
All States Include EE in Plans	National w/ EE	Regional w/ EE

**Sensitivity Scenarios:** Explore the impacts of the CPP (National w/o EE scenario) under different natural gas futures:

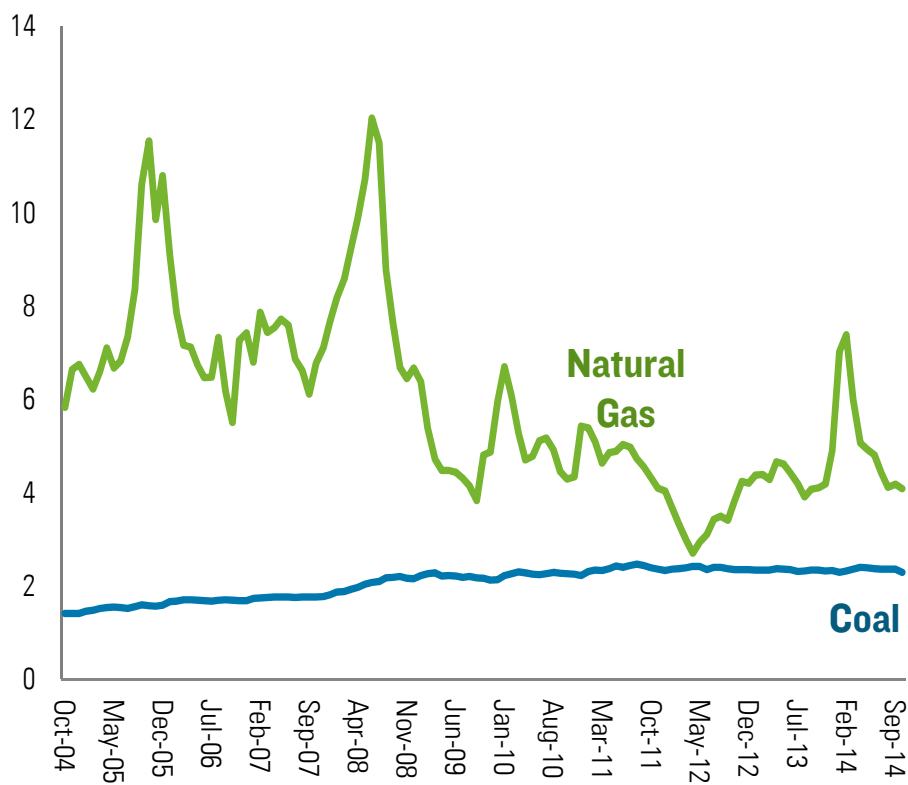
- Low oil and gas resource
- High oil and gas resource
- High LNG Exports (9 bcf/day by 2020, 18 bcf/day by 2030)

**Full Report:** <http://csis.org/program/remaking-american-power>

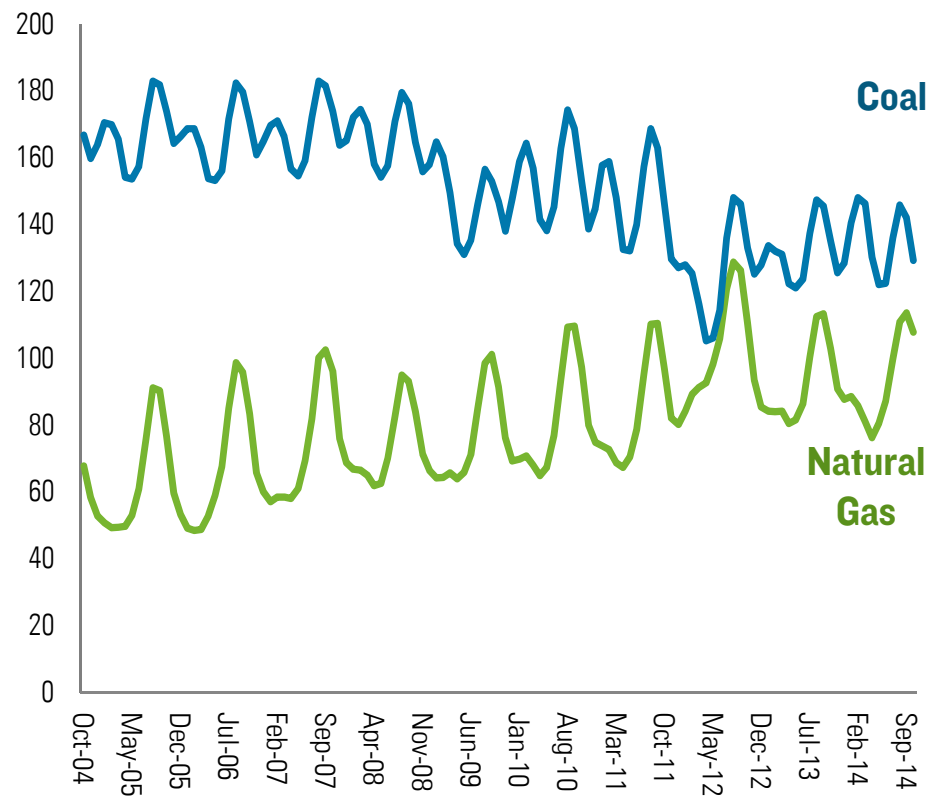
# Fuel prices and power generation

USD per MMBTU delivered to power plants and billion kWh 3mma

### FUEL PRICES



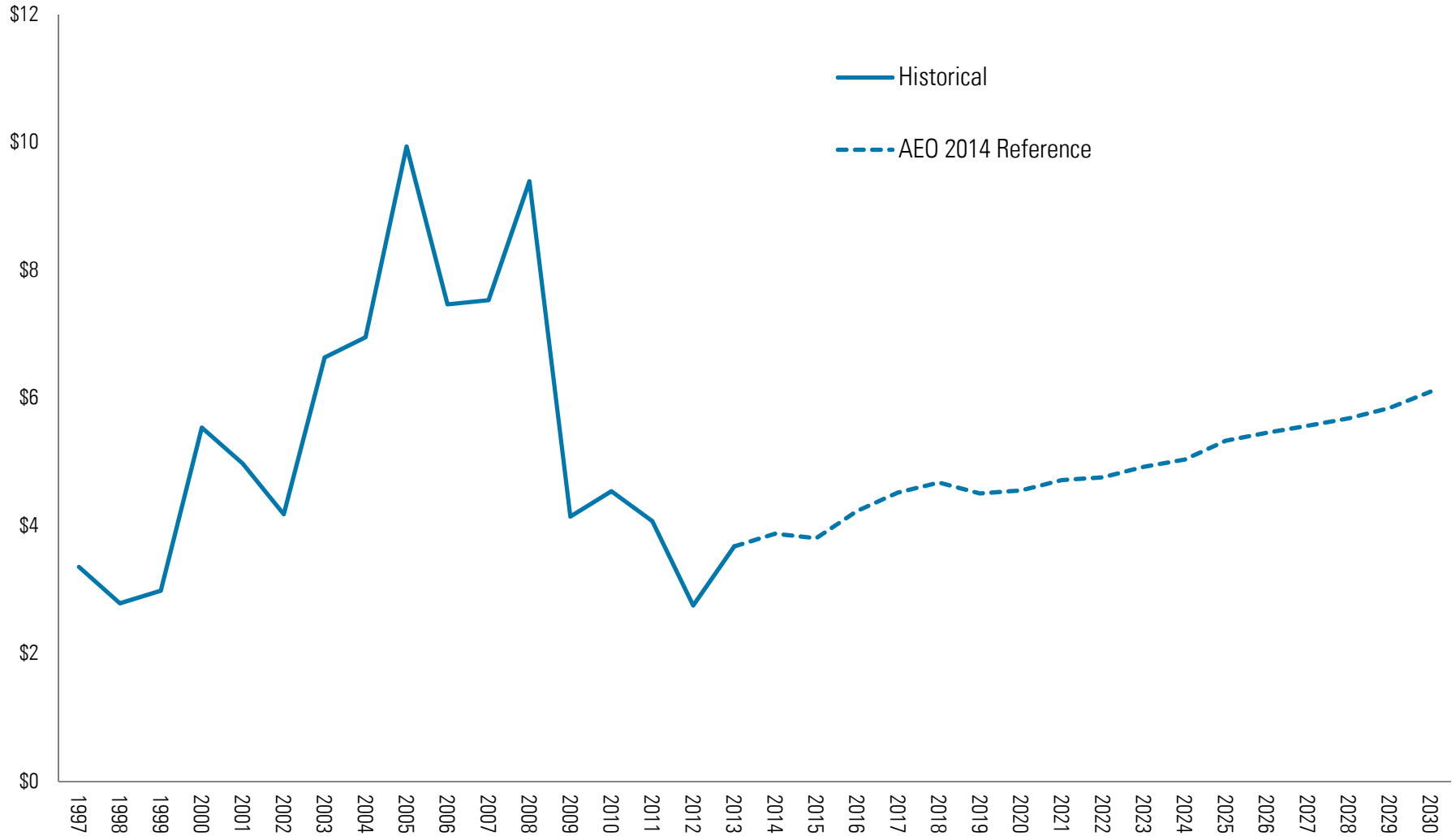
### POWER GENERATION



Source: EIA

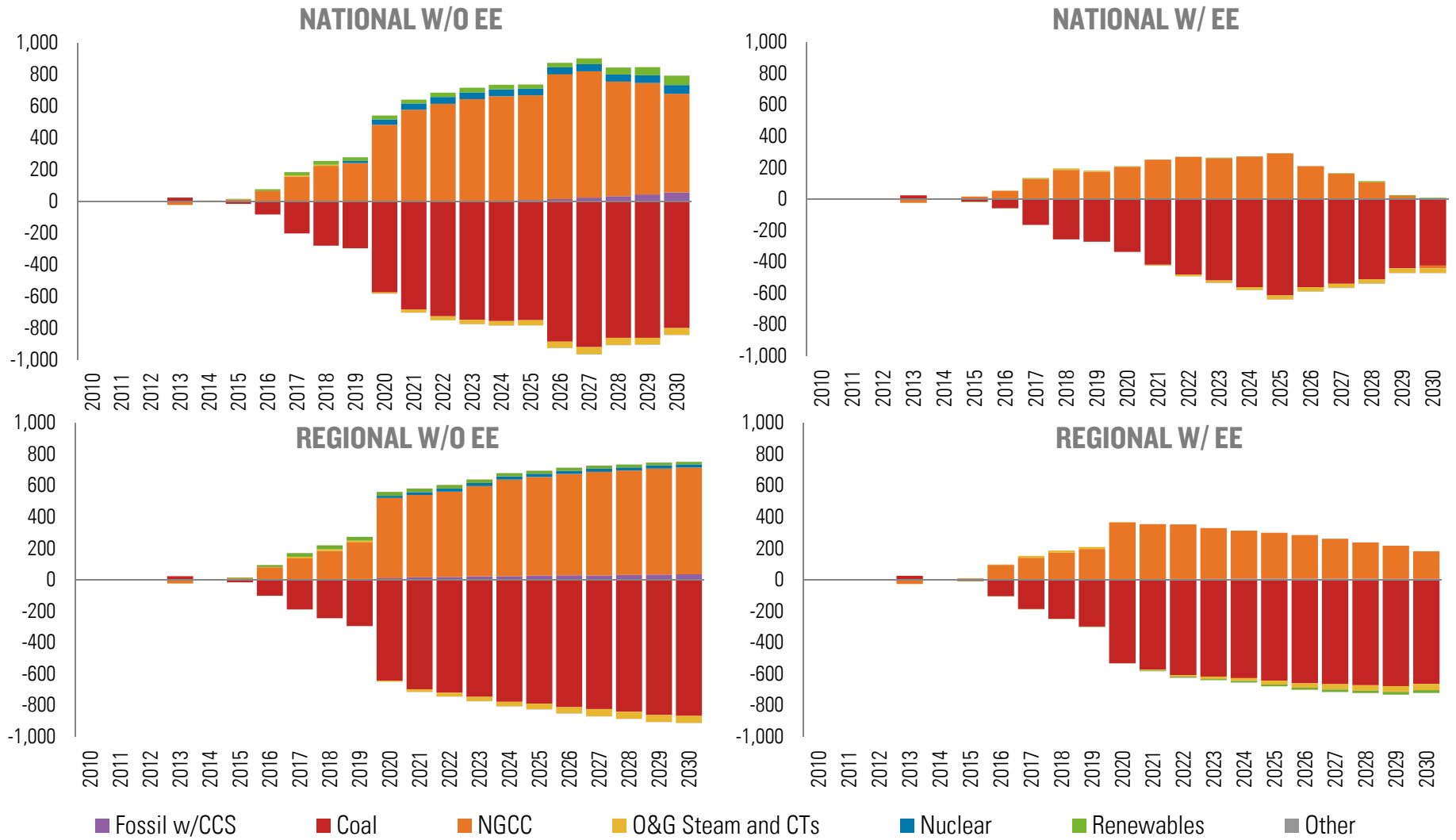
# Natural gas prices

2012 USD per MMBTU at Henry Hub



# Electric generation change from AEO 2014 Outlook

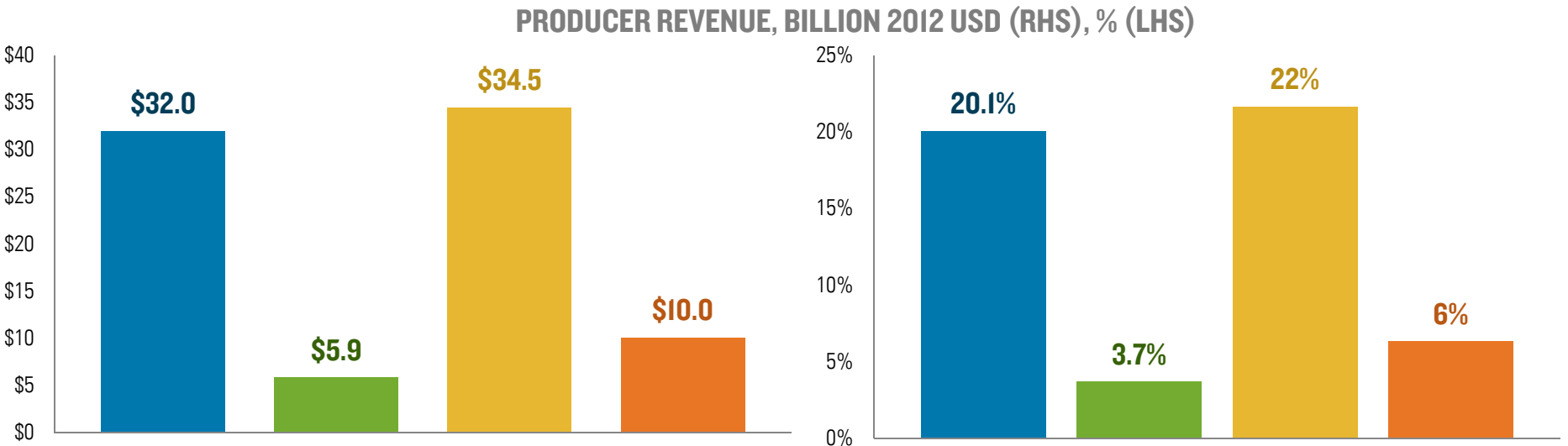
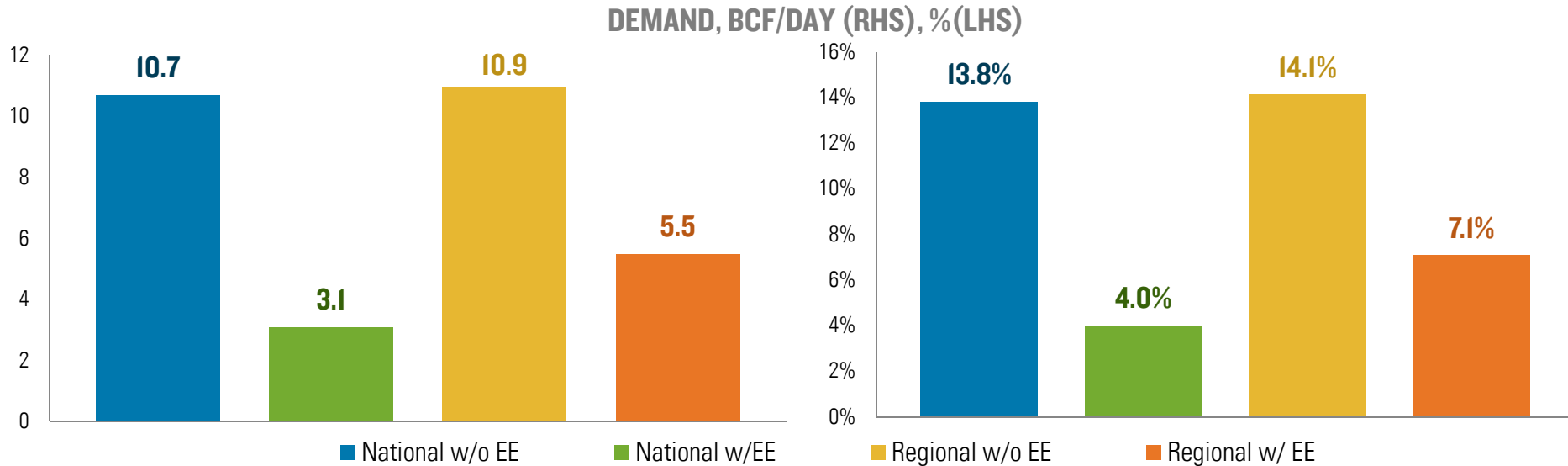
Billion kWhs



Source: Rhodium Group/CSIS.

# Natural gas demand and producer revenue, 2020-2030

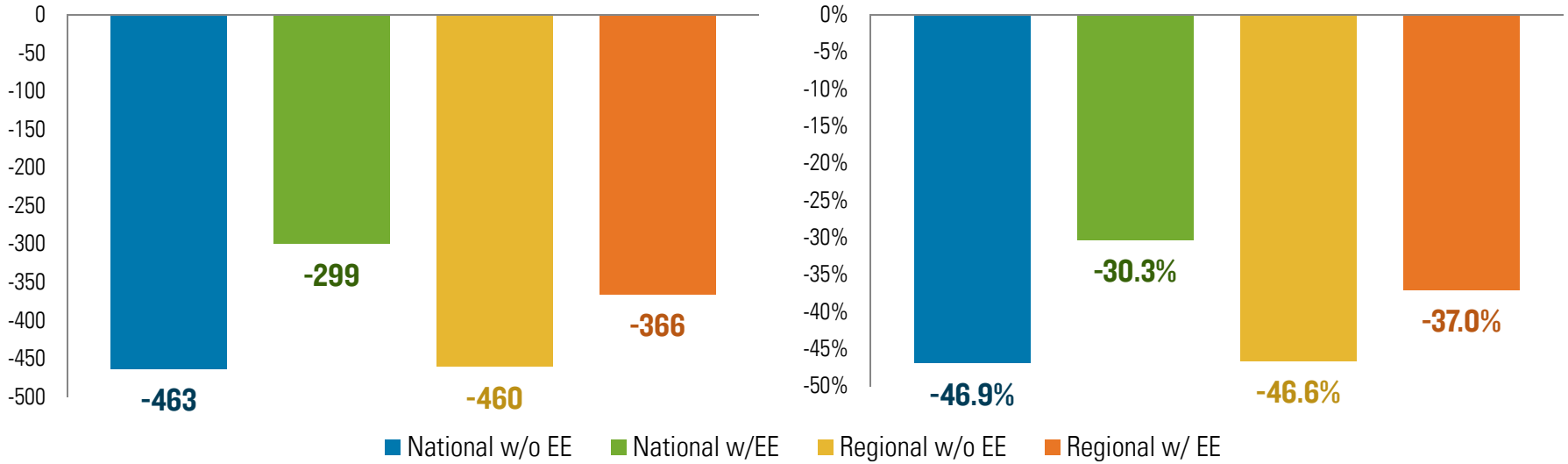
Annual average change from reference



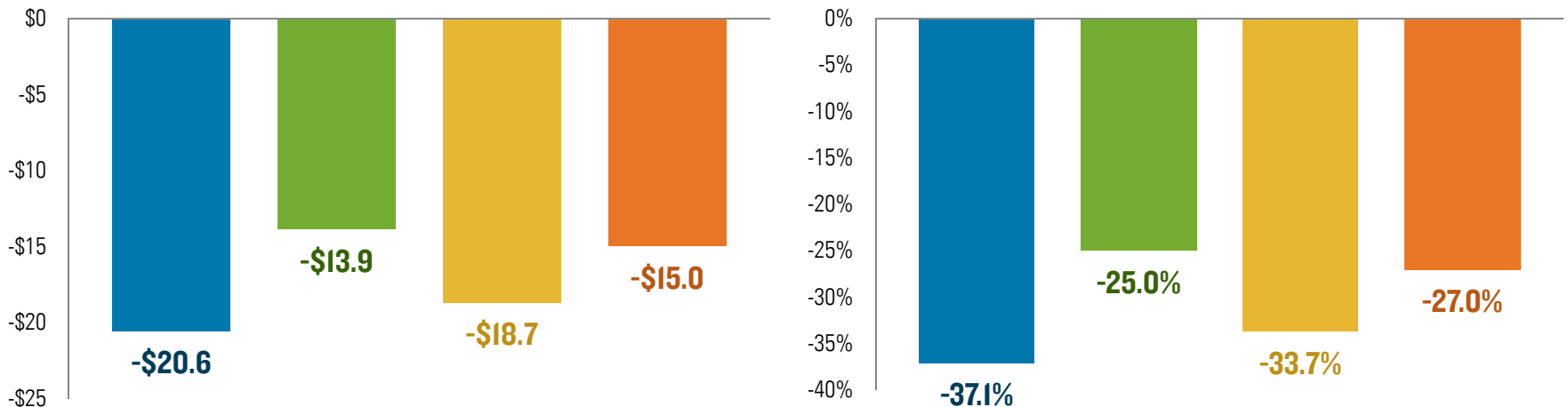
# Coal demand and producer revenue, 2020-2030

Annual average change from reference

DEMAND, MILLION SHORT TONS (RHS), % (LHS)



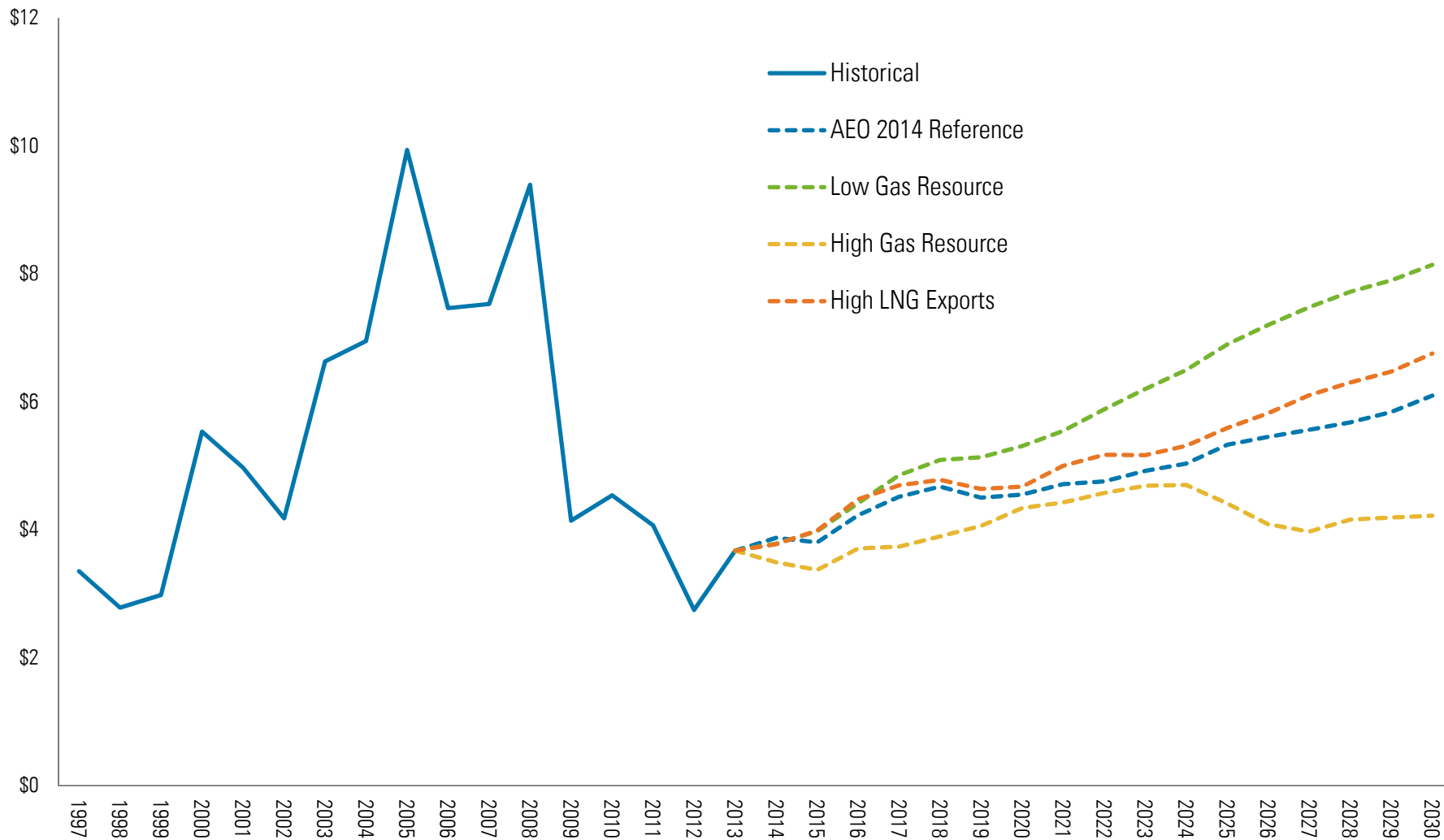
PRODUCER REVENUE, BILLION 2012 USD (RHS), % (LHS)





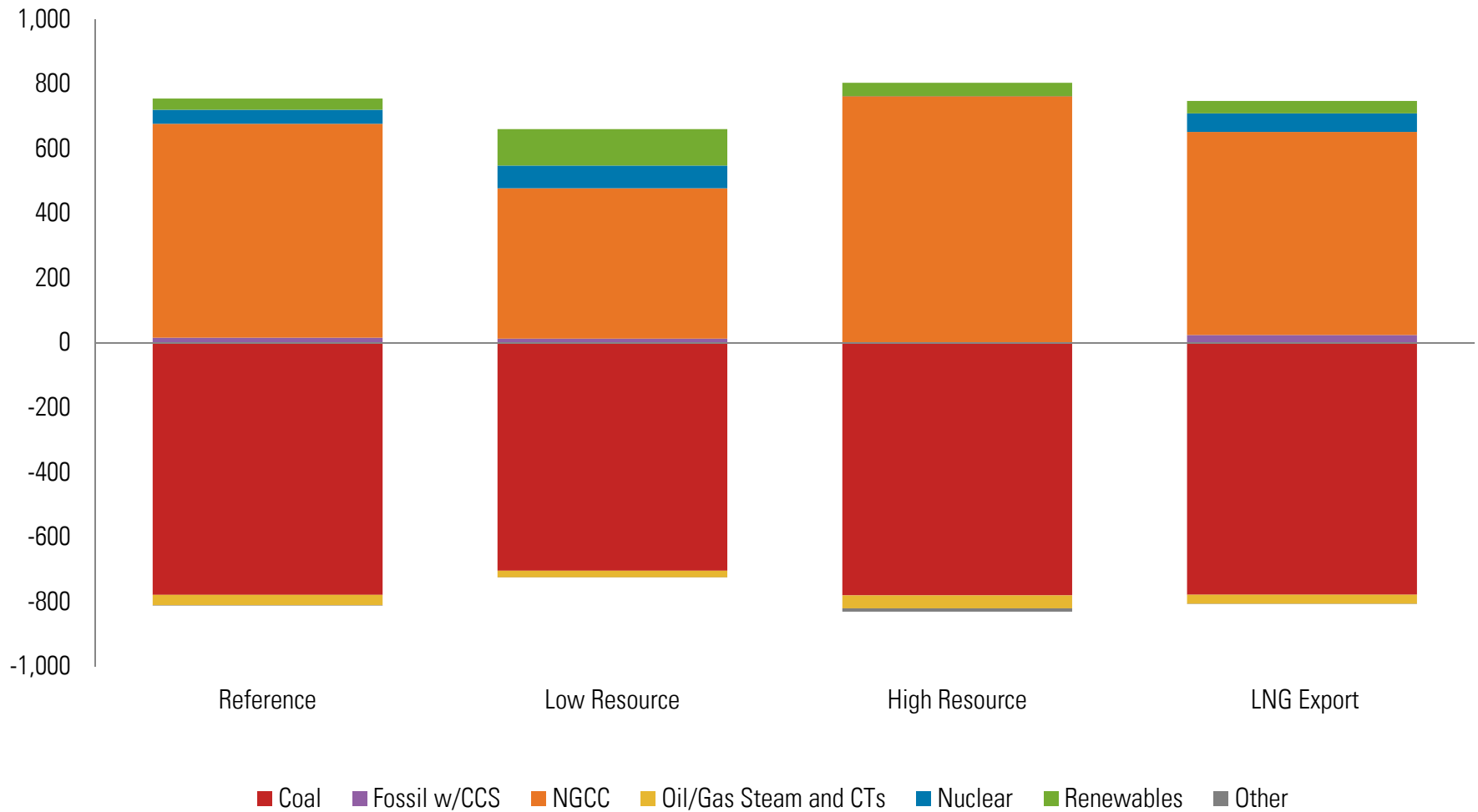
# Alternative gas price futures

2012 USD per MMBTU at Henry Hub



# Dispatch change under different gas futures

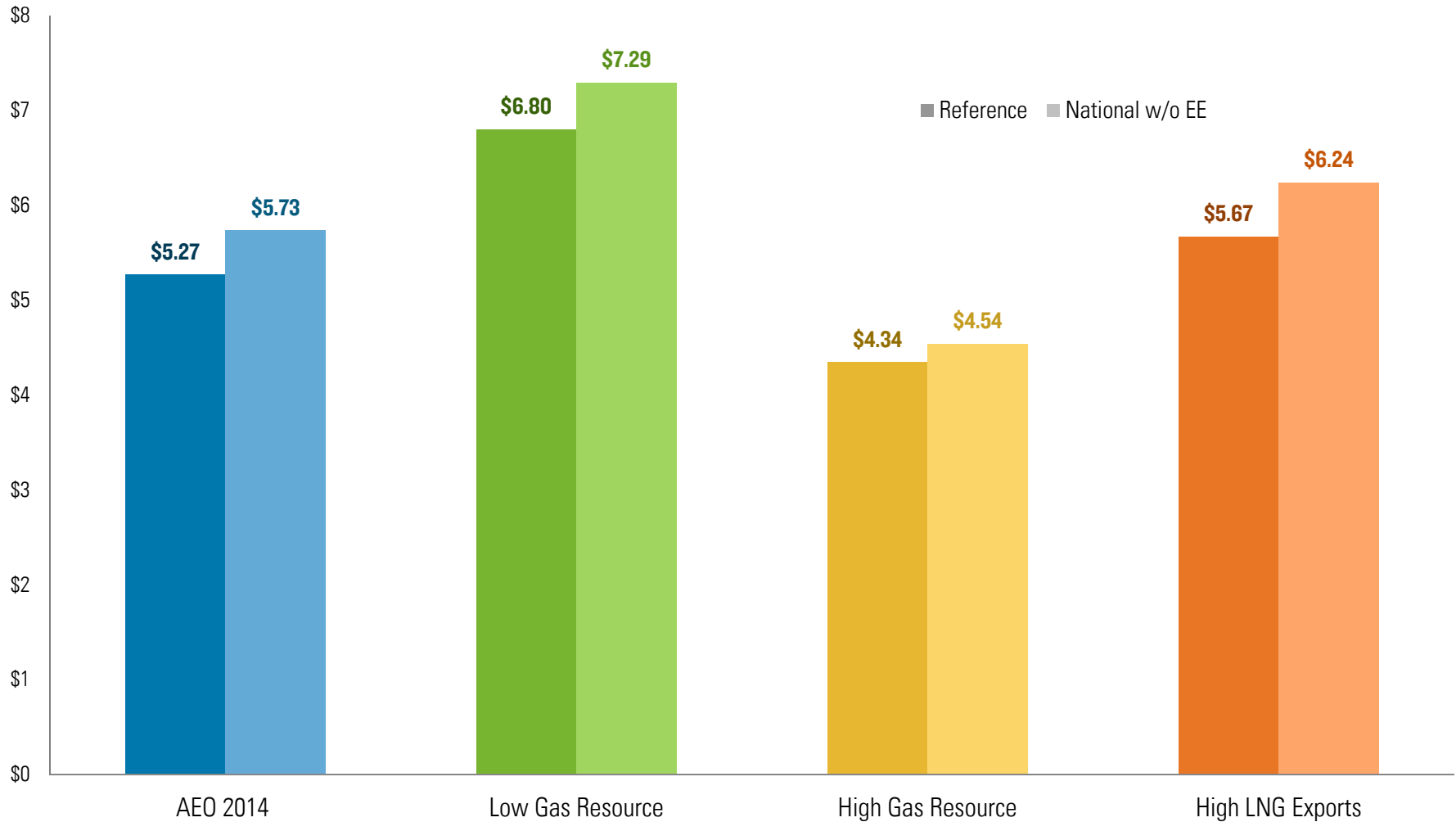
Average annual change in generation, National w/o EE scenario under AEO 2014 Reference and alternative scenarios, 2020-2030, billion kWhs



Source: Rhodium Group/CSIS.

# Natural has price impacts of CPP

2012 USD per MMBTU, 2020-2030



Source: Rhodium Group/CSIS.

# Projected inter-regional natural gas pipeline capacity additions

Bcf/d

Originating region	2014-2035
<b>US</b>	<b>39.9</b>
<b>Central</b>	<b>7.2</b>
<b>Midwest</b>	<b>3.5</b>
<b>Northeast</b>	<b>10.1</b>
<b>Southeast</b>	<b>7.9</b>
<b>Southwest</b>	<b>10.2</b>
<b>Western</b>	<b>1.0</b>

Source: ICF/INGAA

# What Comes Next

## *Design:*

- **December, 2014:** EPA CPP comment period ended
- **Summer 2015 (expected):** EPA finalizes CPP

## *Implementation:*

- **Summer 2016:** Initial deadline for state plan submittal
- **Summer 2017:** Extended deadline for state plan submittal at states' request
- **Summer 2018:** Extended deadline if states choose to submit multi-state plans

## *Compliance:*

- **January 2020-December 2029:** States meet interim CPP goal on average
- **January 2030:** States must meet final CPP goal

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