

Energy Policies ~~Could~~ ~~Might~~ Will Change

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Policy Change Possibilities

**Renewable
Standards**

Production Tax Credits

**Appliance Efficiency
Standards**

Greenhouse Gas Cap and Trade

Investment Tax Credits

**Corporate Average Fuel
Economy Standards**

Recent EIA Policy Analysis

- Energy and Economic Analysis of S. 2191, America's Climate Security Act of 2007 - ongoing
- Energy and Economic Analysis of S. 1766, the Low Carbon Economy Act of 2007
- Proposal requiring 25 percent renewable fuels in the motor vehicle transportation and electricity markets by 2025
- Analysis of S. 280, the Climate Stewardship and Innovation Act of 2007
- Impacts of a 15-Percent Renewable Portfolio Standard, June 2007
- All available at:
 - http://www.eia.doe.gov/oiaf/service_rpts.htm
 - <http://www.eia.doe.gov/oiaf/analysis.htm>

Key GHG Policy Analysis Factors

- Stringency of emission limits
- Coverage
 - What gases? What sectors?
- Timing / Banking
- Treatment of offsets
 - Foreign and domestic -- Agricultural and forestry
- Safety Valve / Technology Accelerator Payment
- Allowance allocation methodology
- Use of allowance revenue and other supporting programs

Climate Stewardship and Innovation Act of 2007 (S. 280)

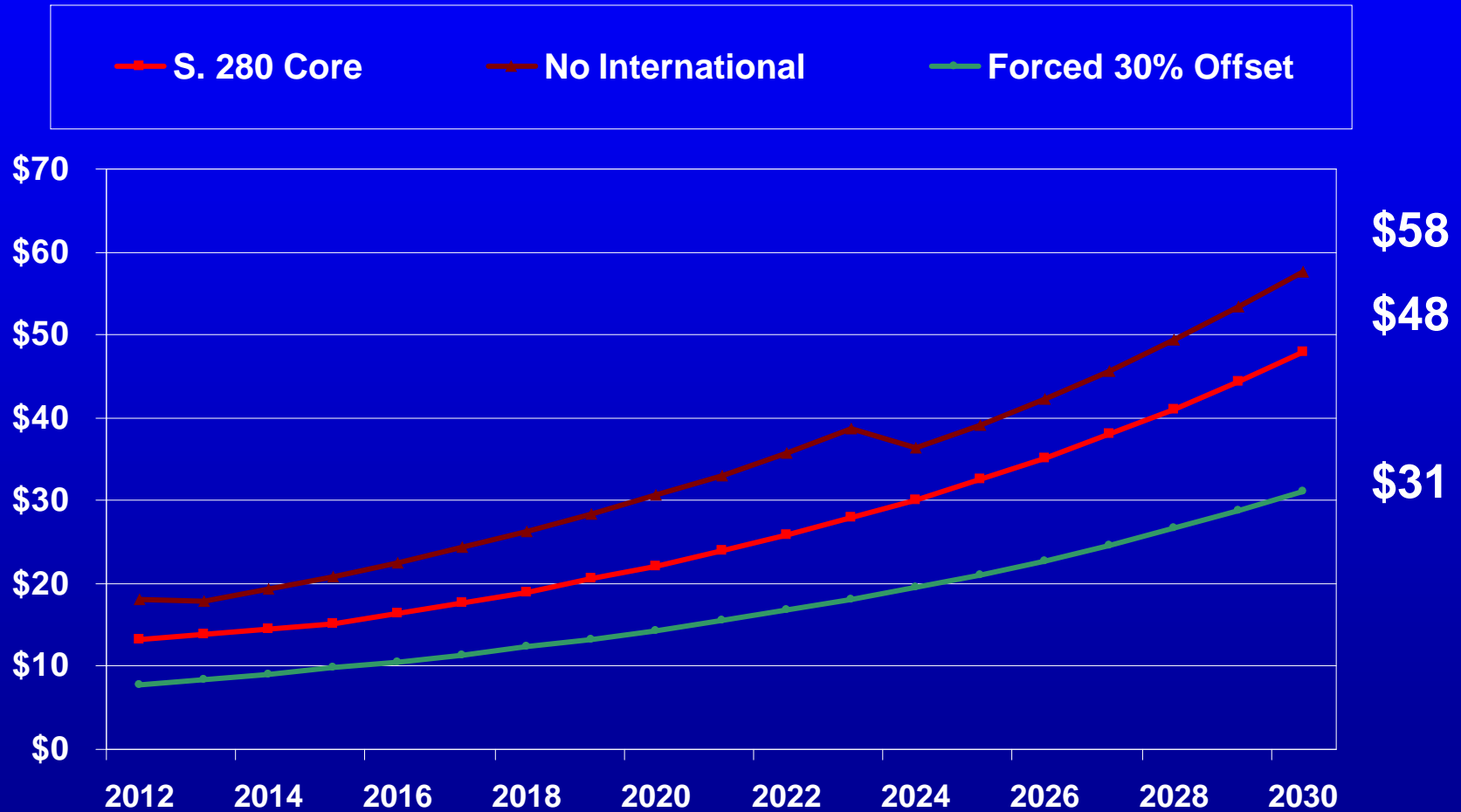
- Caps GHG emissions on covered entities in the electric generation, commercial, and industrial sectors, together with producers and importers of hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and petroleum refiners and product importers.
- Covered entities include all entities in covered sectors that own or control a single facility with emissions of 10,000 metric tons or more.
 - Emissions of covered entities accounted for an estimated 78 percent of total U.S. GHG emissions in 2004.
 - As emissions by covered entities are subject to limits that tighten over time under S.280, their share in total U.S. GHG emissions falls.

- Covered Entity Emission Limits

<u>Time Period</u>	<u>Limit Description</u>
2012 through 2019	2004 level
2020 through 2029	1990 level
2030 through 2049	18 percent below 1990 level
2050 and beyond	60 percent below 1990 level

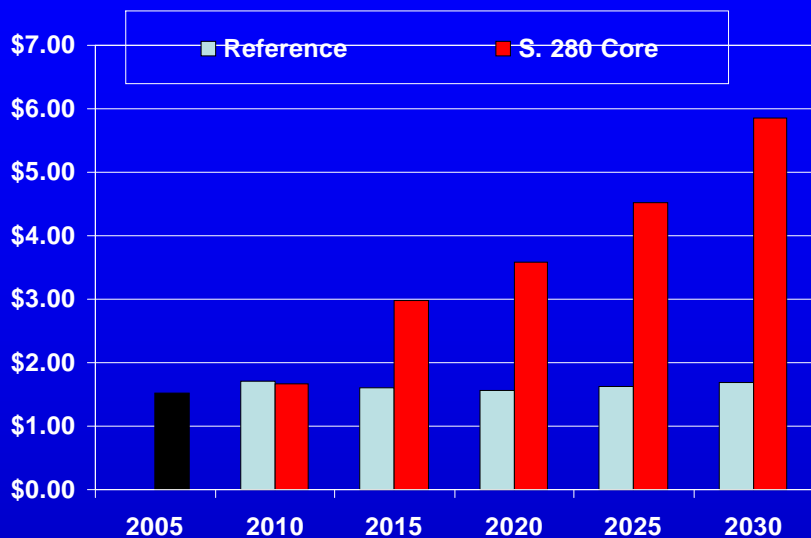
- Offsets (domestic or international) can be used in an amount equivalent to up to 30 percent of the allowance obligation

Projected Allowance Prices (2005 dollars per metric ton carbon dioxide equivalent)

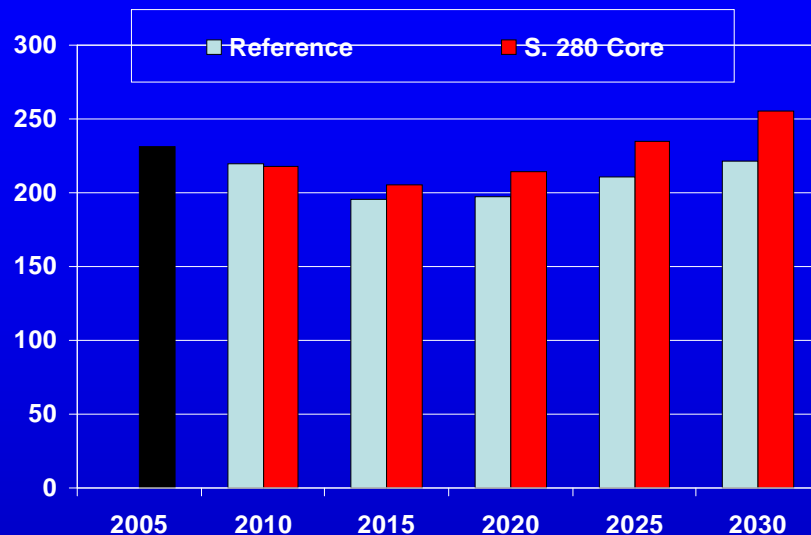


Energy Prices

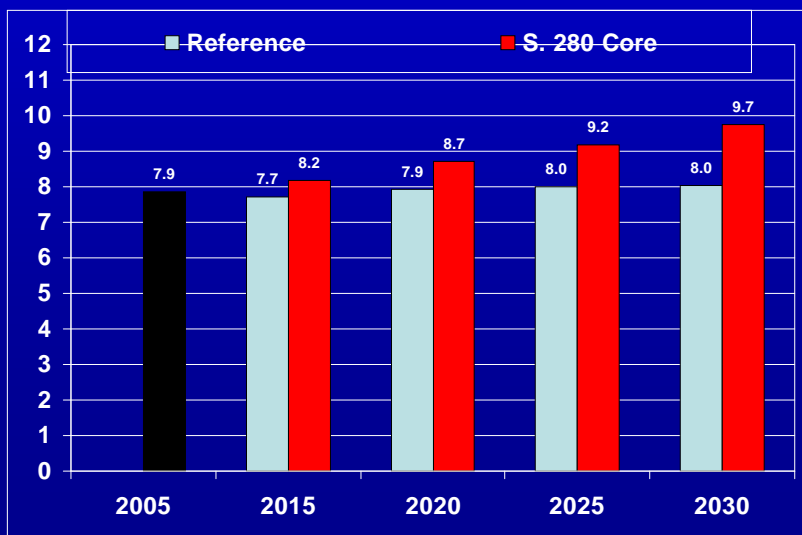
Coal Prices (real \$ per million Btu)



Motor Gasoline Prices (real cents per gallon)

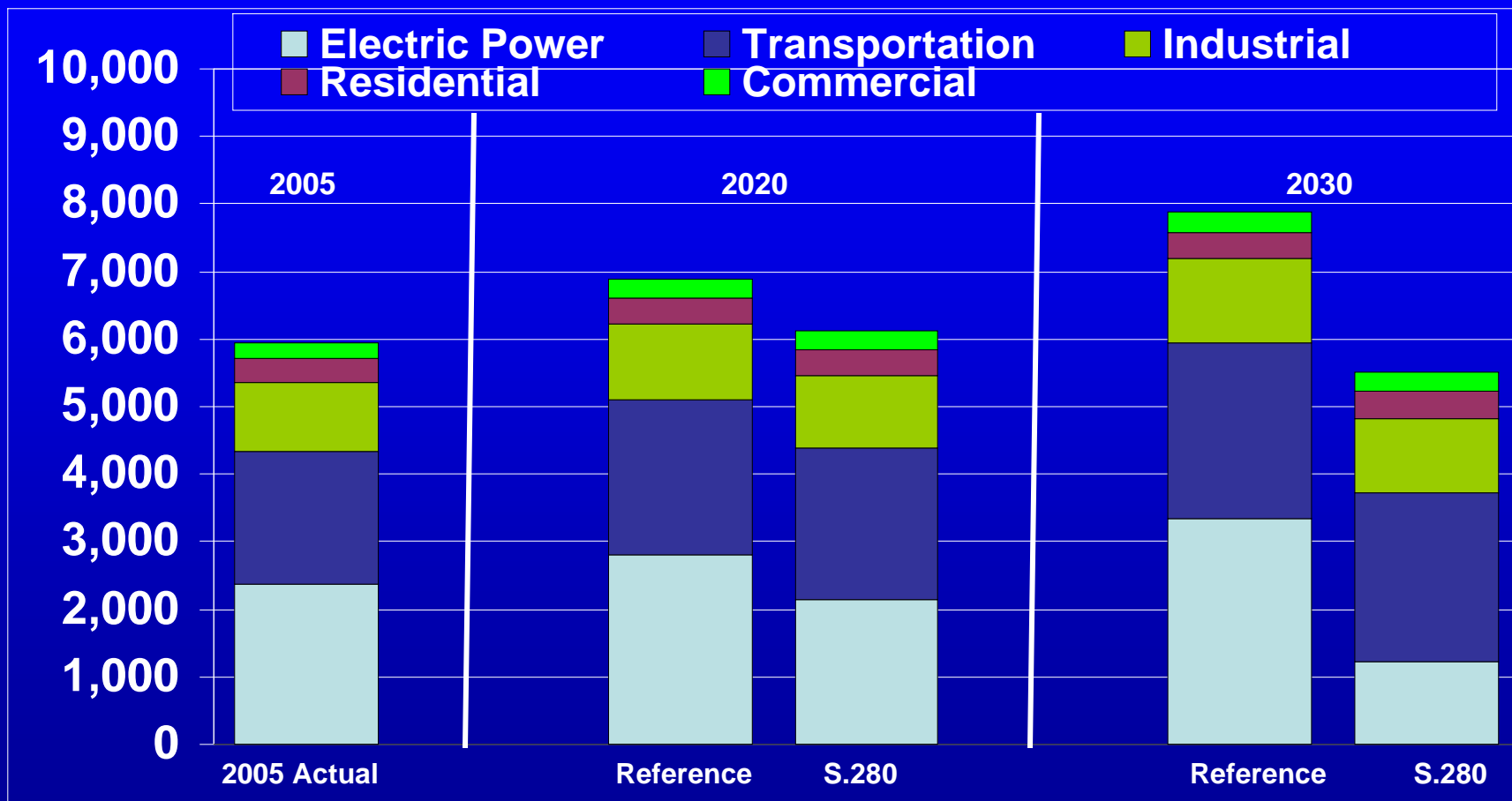


Electricity Prices, (real cents per kilowatthour)



- In EIA's S.280 Core Case, the delivered price of coal in 2030 in 2005 dollars, more than triples relative to the projected baseline level (\$1.70 to \$5.85).
- The retail price of gasoline in 2030 is 16 percent (34 cents per gallon) above baseline, while the average delivered electricity price is 21 percent higher (1.7 cents per kilowatt hour).
- Electricity price impacts differ widely by region, reflecting differences in the generation mix.

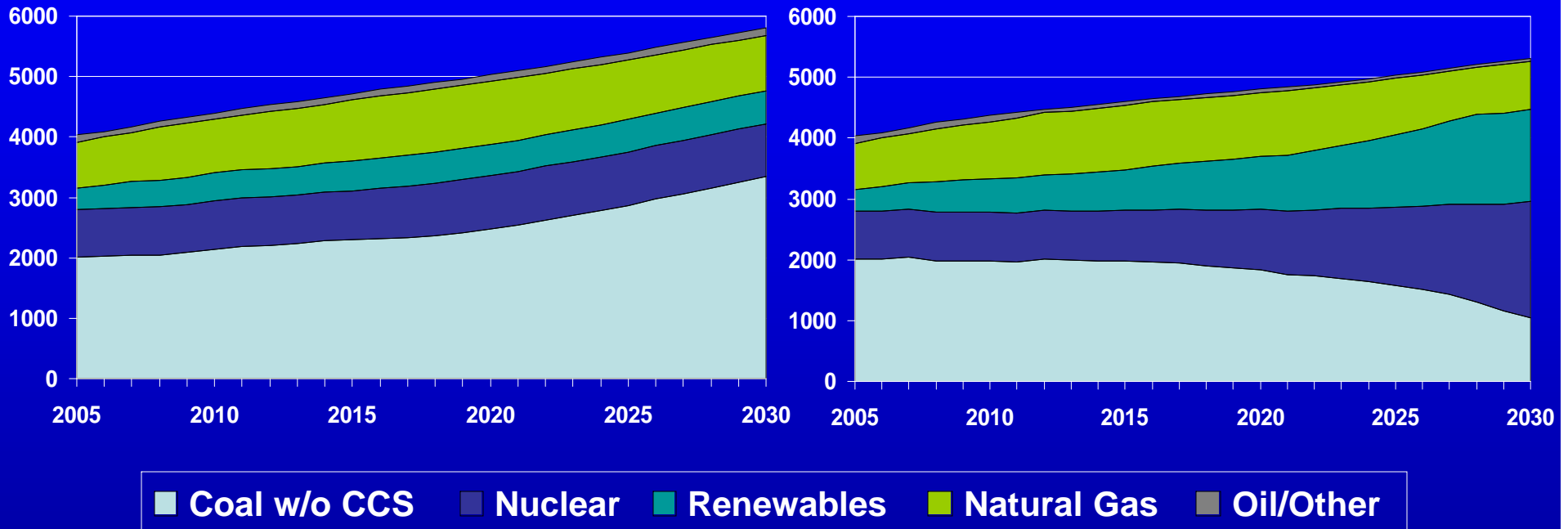
Energy-Related CO₂ Emissions (million metric tons)



Electricity Generation by Fuel (billion kilowatthours)

Reference Case

S. 280 Core Case



- Nuclear and renewable generation grows , displacing coal-fired generation. Nuclear and renewables are generally less expensive than coal with carbon capture and sequestration (CCS) without any special incentives.
- S.280 is also projected to reduce electricity demand growth, reflecting both higher electricity prices and targeted support of high-efficiency equipment

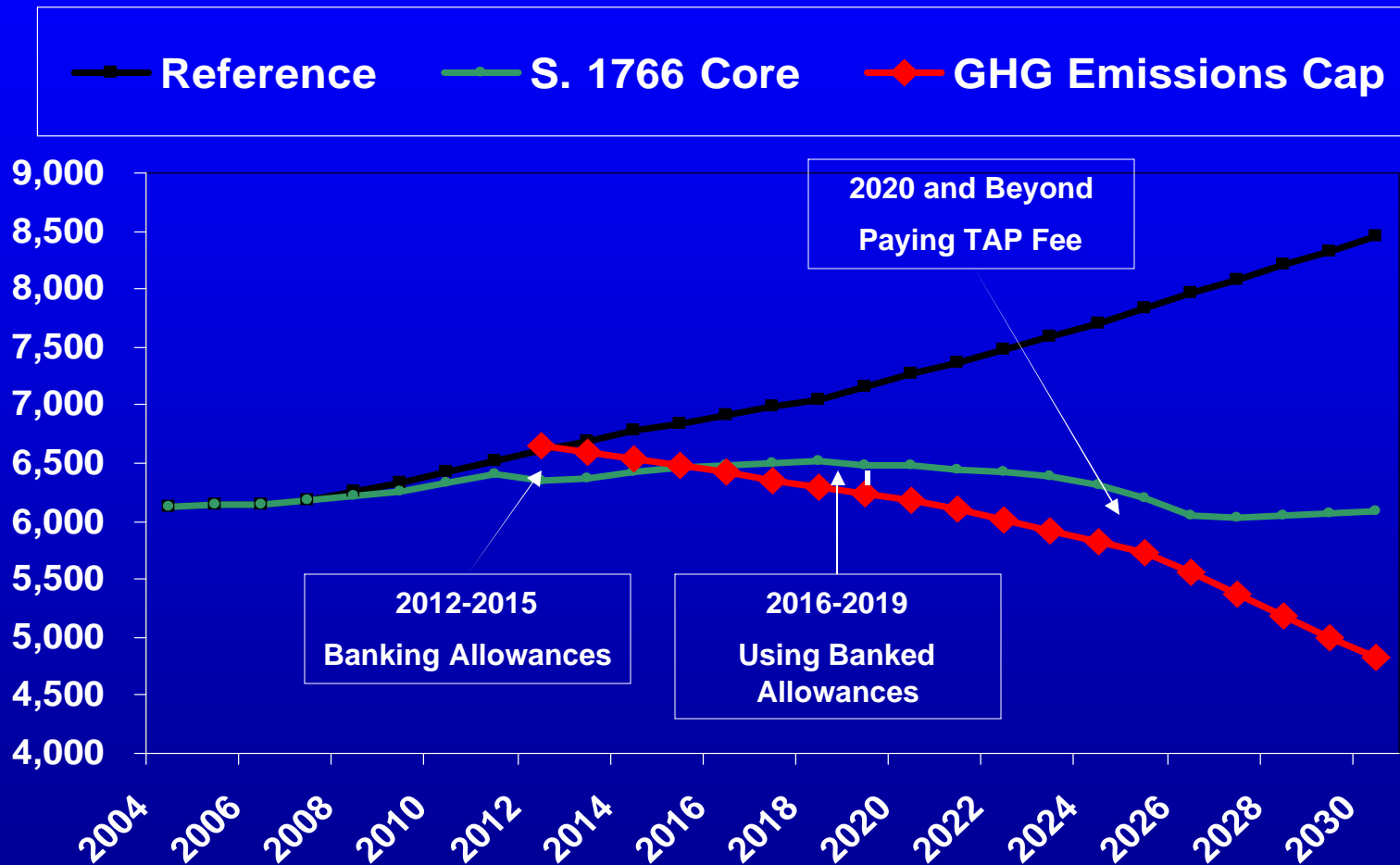
Low Carbon Economy Act of 2007 (S. 1766)

- Establishes a cap on GHG emissions covering CO₂ from fossil fuels, 3 classes of fluorinated gases, and nitrous oxide from adipic and nitric acid production
- Suppliers of natural gas and petroleum submit allowances reflecting combustion emissions (upstream regulation)
- Large coal consumers submit allowances for their CO₂ emissions (downstream regulation)
- Offsets allowed from some domestic sources: nonfuel uses of oil and natural gas, CCS, fuel exports, landfill and coal mine methane capture.
- Allowance incentive given for agricultural carbon sequestration, but not as counted as offset
- Covered Emission Limits

2020	6188 million metric tons CO ₂ equivalent	about the 2006 level
2030	4818	about 1990 level
2050	unspecified	“at least 60 percent below 1990 level”

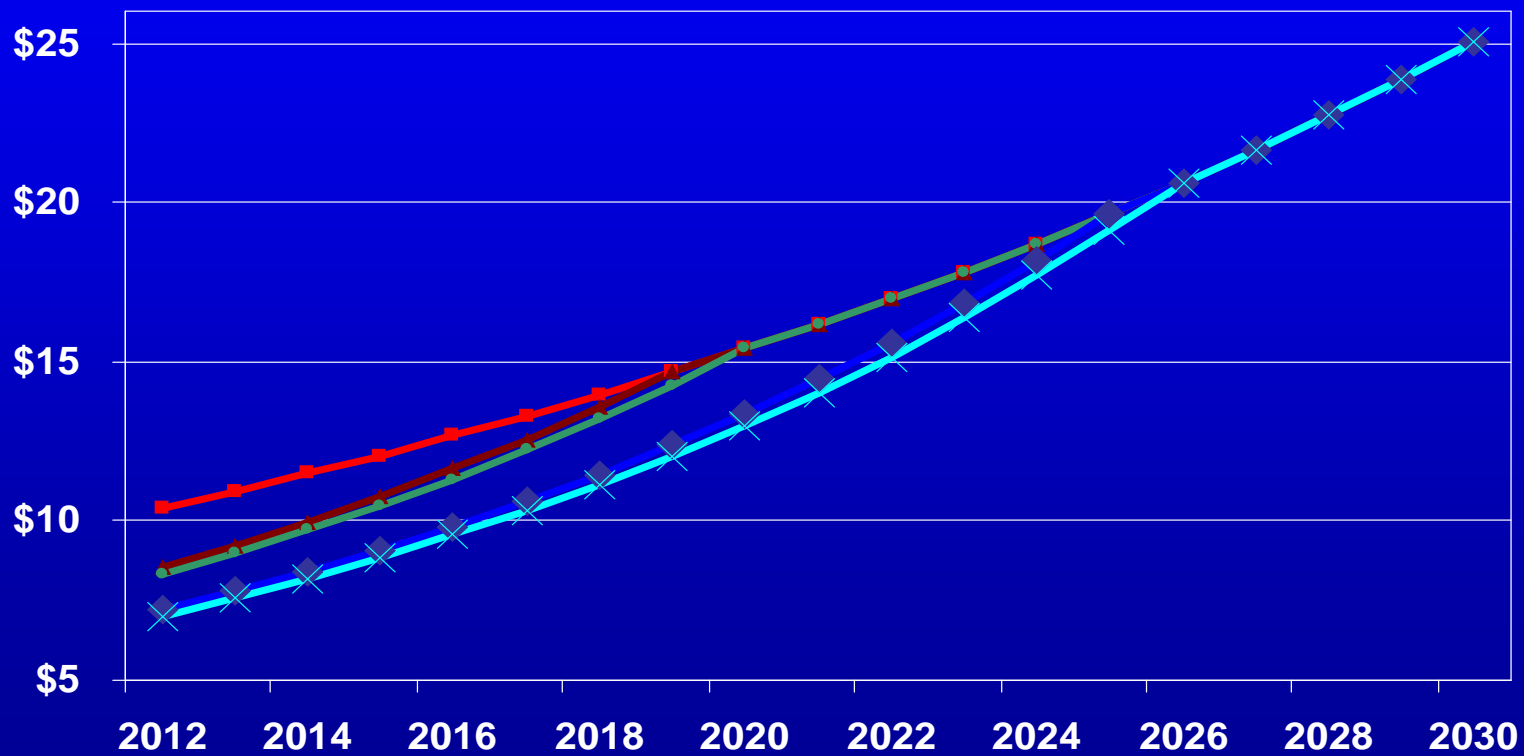
- About three-fourths of the allowances are initially allocated for free, but the auction share grows over time. Revenue from the auctions is used to fund technology programs, climate adaptation programs, and low-income assistance.
- Bonus allowances are provided for plants with carbon capture and sequestration. The bonus starts at 3.5 per ton sequestered in 2012, falls to 0.9 per ton sequestered in 2030, and ends in 2039.
- In lieu of submitting allowances a covered source can pay a Technology Accelerator Payment (TAP) which is set at \$12 in 2012 (\$10.42 in 2006 dollars), rising 5 percent per year above inflation (to \$25.07 in 2030 in 2006 dollars)

Covered Greenhouse Gas Emissions (Net of Offsets) (million metric ton carbon dioxide equivalent)



Covered entities are expected to over comply and bank allowances through 2015, use the banked allowances to comply through 2019 and then comply by paying the TAP.

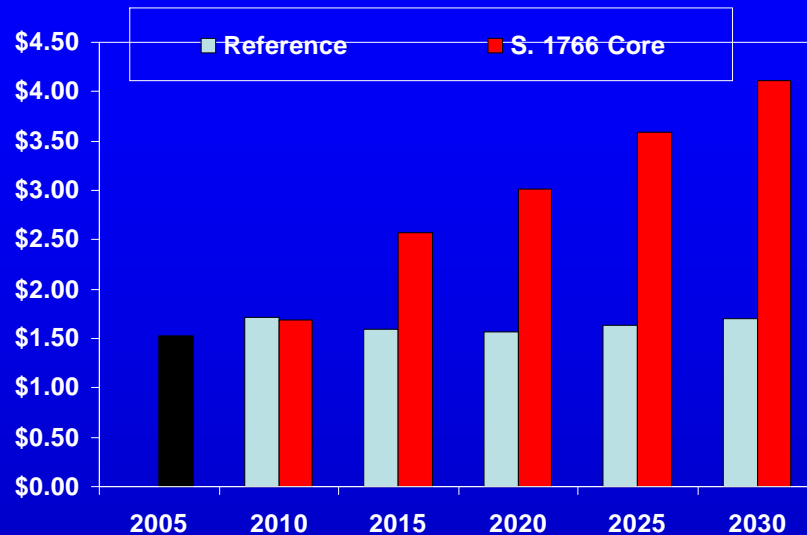
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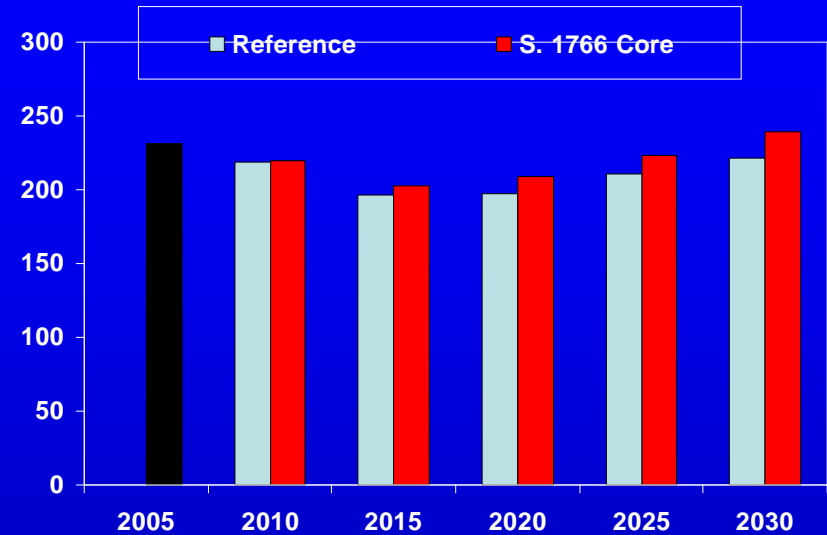
The TAP is used in all cases, but more rapid technology improvement delays the reliance on it.

Energy Prices

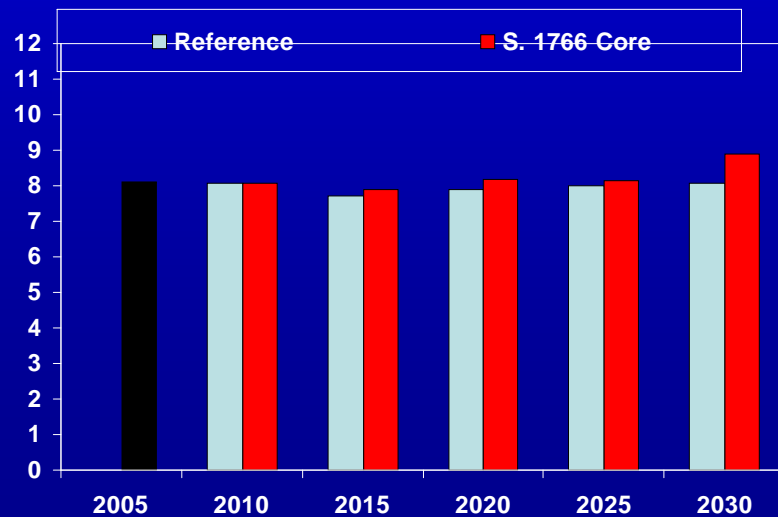
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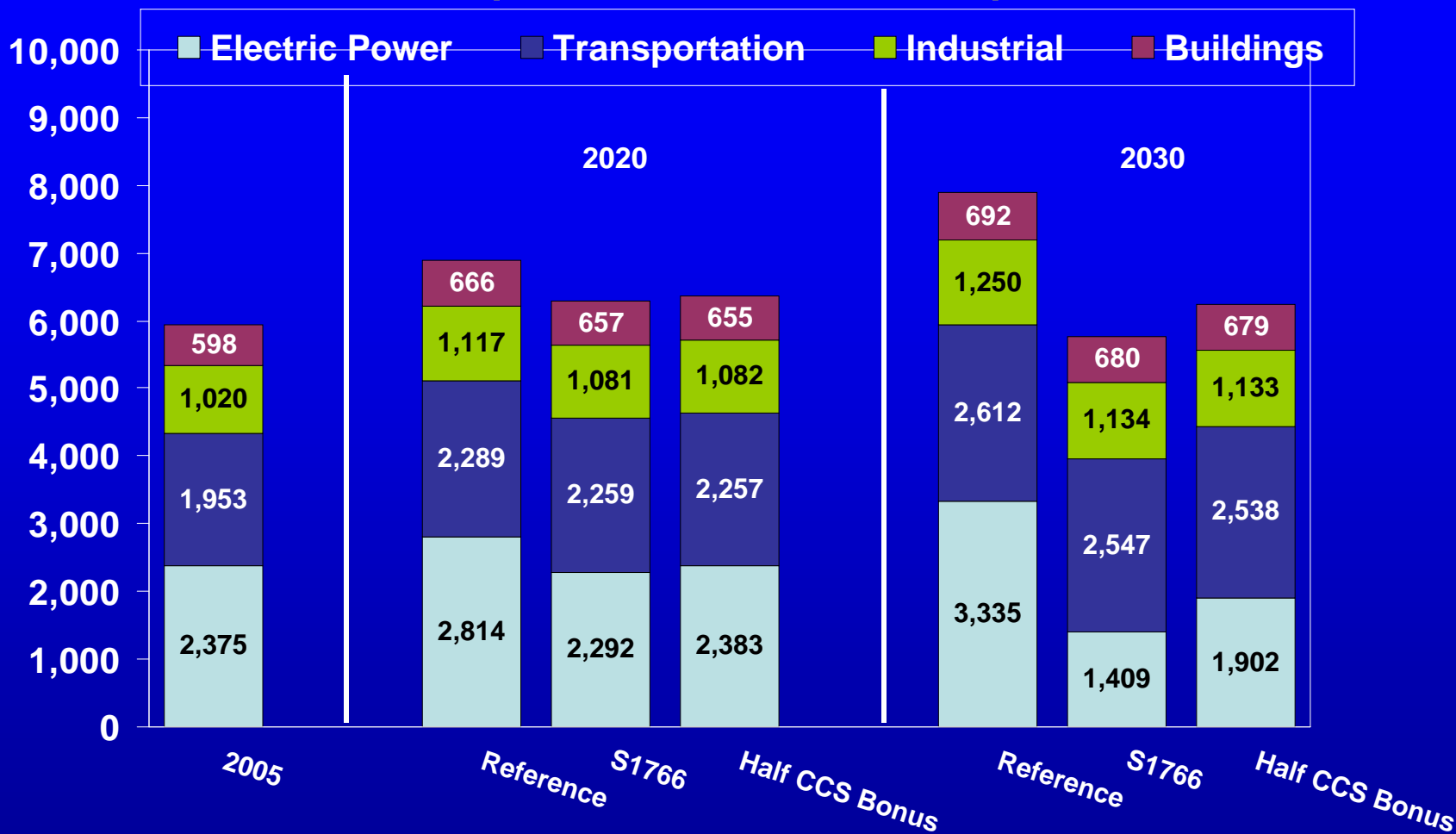


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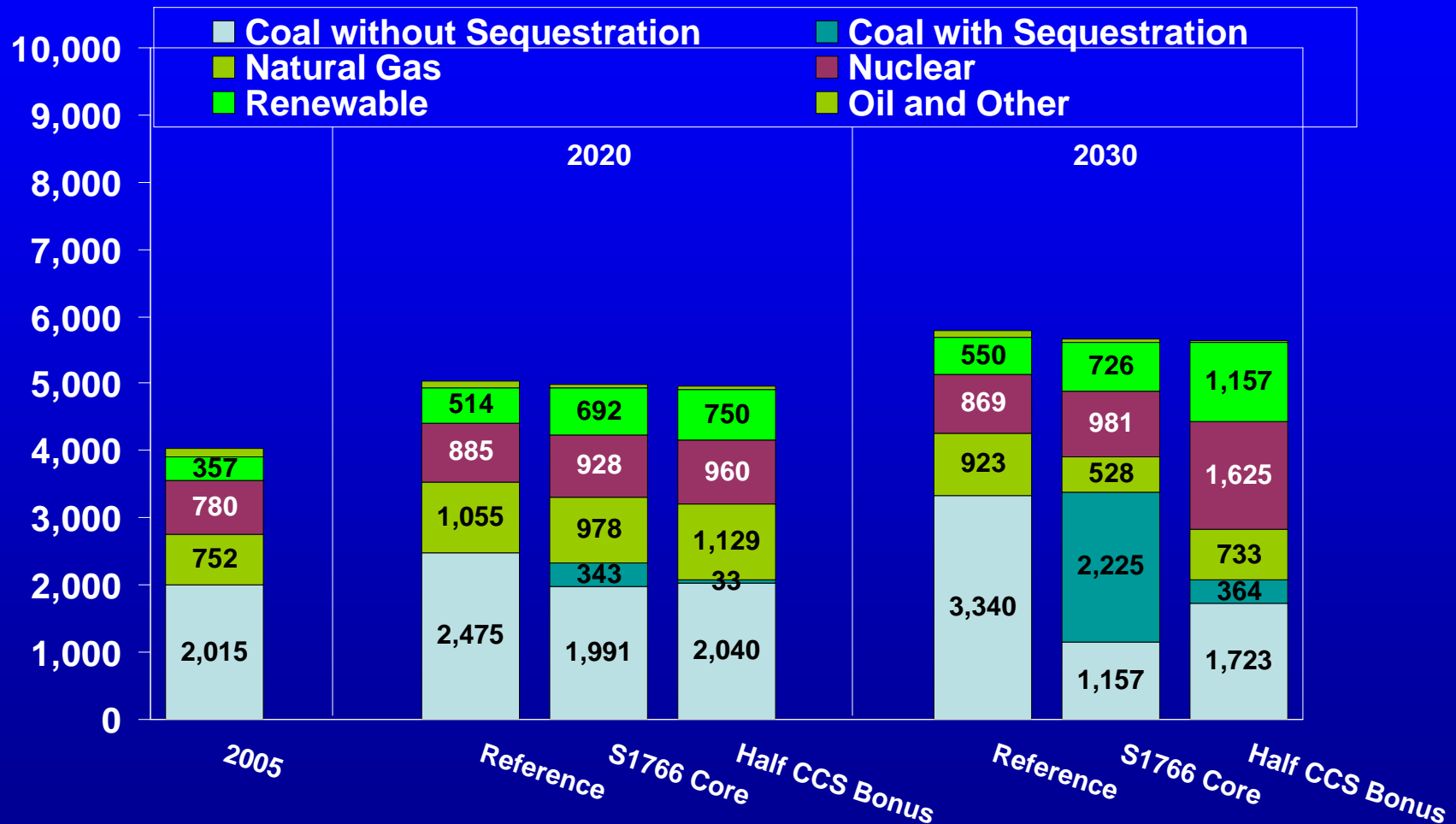
- In EIA's S. 1766 Core Case, the delivered price of coal in 2030 in 2006 dollars, more than doubles relative to the projected baseline level (\$1.70 to \$4.11).
- The retail price of gasoline in 2030 is 8 percent (19 cents per gallon) above baseline, while the average delivered electricity price is 10 percent higher (0.8 cents per kilowatt hour).
- Electricity price impacts differ by region, reflecting differences in the generation mix.

Energy-Related CO₂ Emissions (million metric tons)



- The electric power sector dominates energy-related CO₂ emission reductions.
- Other sectors play a relatively small role unless other policies are included.

Electricity Generation by Fuel (billion kilowatthours)



Coal generation in 2030 is near reference case levels when full CCS bonus is assumed. When half the bonus rate is assumed, coal generation in 2030 is close to the 2005 generation level. 15

Summary

- **What would a greenhouse gas cap and trade program do to the AEO projections?**
- **The impacts depend on the specifics of the proposal but the likely impacts include:**
 - Lower coal generation
 - Greater nuclear, renewable, and natural gas (under some circumstances) generation
 - Reduced energy demand
 - Higher energy prices
- **Key uncertainties include:**
 - Cost, performance and feasibility of rapidly commercializing and deploying key low-carbon generating technologies
 - Cost and availability of domestic and foreign offsets
 - If these technologies can not be deployed in a timeframe consistent with the emission reduction requirements, allowance prices, energy prices and the use of other low-carbon fuels, particularly natural gas, will be higher

Contact Information

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