

Analysis of Multi-Pollutant Initiatives in Electricity Markets

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By

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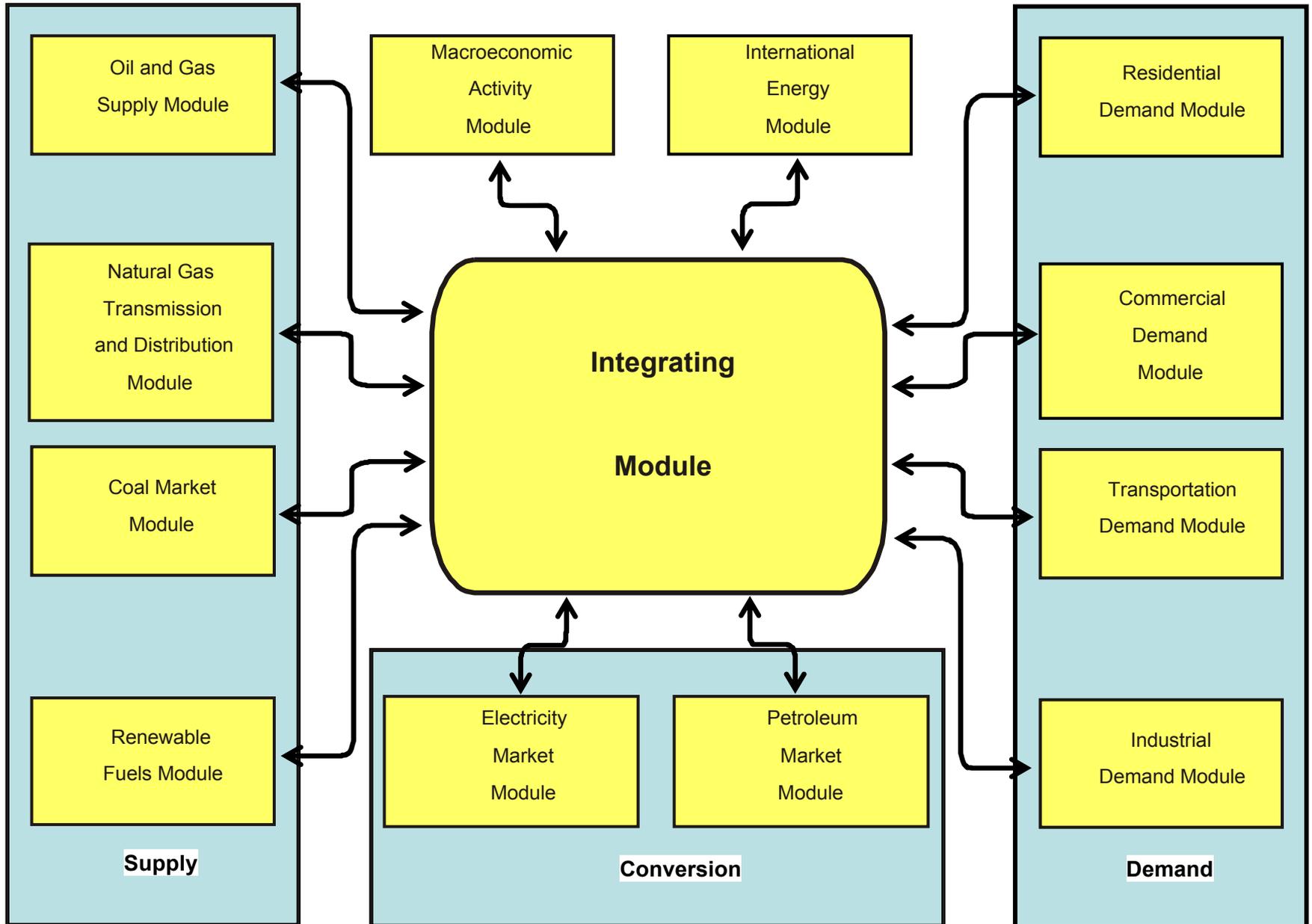
**Energy Information Administration
U.S. Department of Energy**

September 19, 2005

Emission Targets in S.366, S.843, and S.1844

Emission	S. 366, Clean Power Act (Jeffords)	S. 843, Clean Air Planning Act (Carper)	S. 1844, Clear Skies Act (Inhofe)
Nitrogen Oxides (NO _x)	1.51 million tons in 2009	1.87 million tons in 2009 1.7 million tons in 2013	2.19 million tons in 2008 1.79 million tons in 2018 ^a
Sulfur Dioxide (SO ₂)	2.25 million tons in 2009 ^b	4.5 million tons in 2009 3.5 million tons in 2013 2.25 million tons in 2016	4.4 million tons in 2010 3.0 million tons in 2018
Mercury (Hg)	5 tons in 2008 ^c	24 tons in 2009 10 tons in 2013 ^d	34 tons in 2010 15 tons in 2018
Carbon Dioxide (CO ₂)	1,863 million metric tons CO ₂ (508 million metric tons carbon equivalent) in 2009 ^e	2,332 million metric tons CO ₂ (636 million metric tons carbon equivalent) in 2009 2,244 million metric tons CO ₂ (612 million metric tons carbon equivalent) in 2013 ^f	No cap

National Energy System Modeling



Clear Skies Act

- Emissions cap and trade
- Safety valve
- Grandfathering (based on fuel consumption)
- Covers plants 25 megawatts and larger

Clean Air Planning Act

- Covers facilities 25 megawatt and greater
- Minimum removal rate for mercury
- Emissions cap and trade
- Grandfathering (output based)

Clean Power Act

- Covers facilities 15 megawatts and larger
- Emissions cap and trade except for Hg
- Maximum emissions rate specified
- Birthday provision (best available control technology)

Analysis of Clear Skies Act (Inhofe)

- Add emissions control equipment
- Use early credit program for mercury
- Emissions targets not met for SO₂ or Hg
- Lowest resource cost and smallest price increase
- CO₂ emissions increase over time

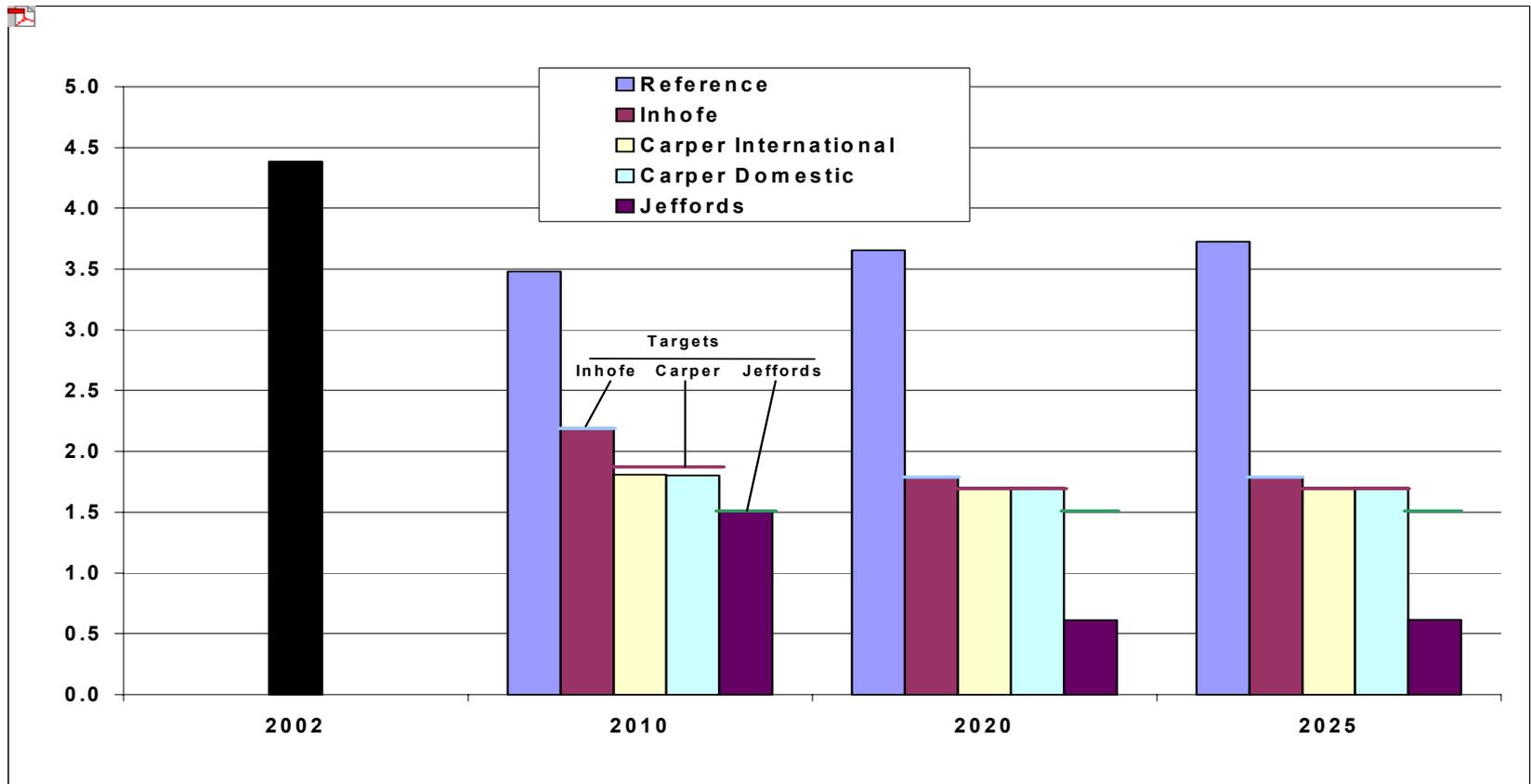
Analysis of Clean Air Planning Act (Carper)

- Additions of emissions control equipment
- Switch into natural gas and renewables
- Sensitive to availability and cost of offsets
- Higher resource costs than Clear Skies Act
- CO₂ Emissions increase

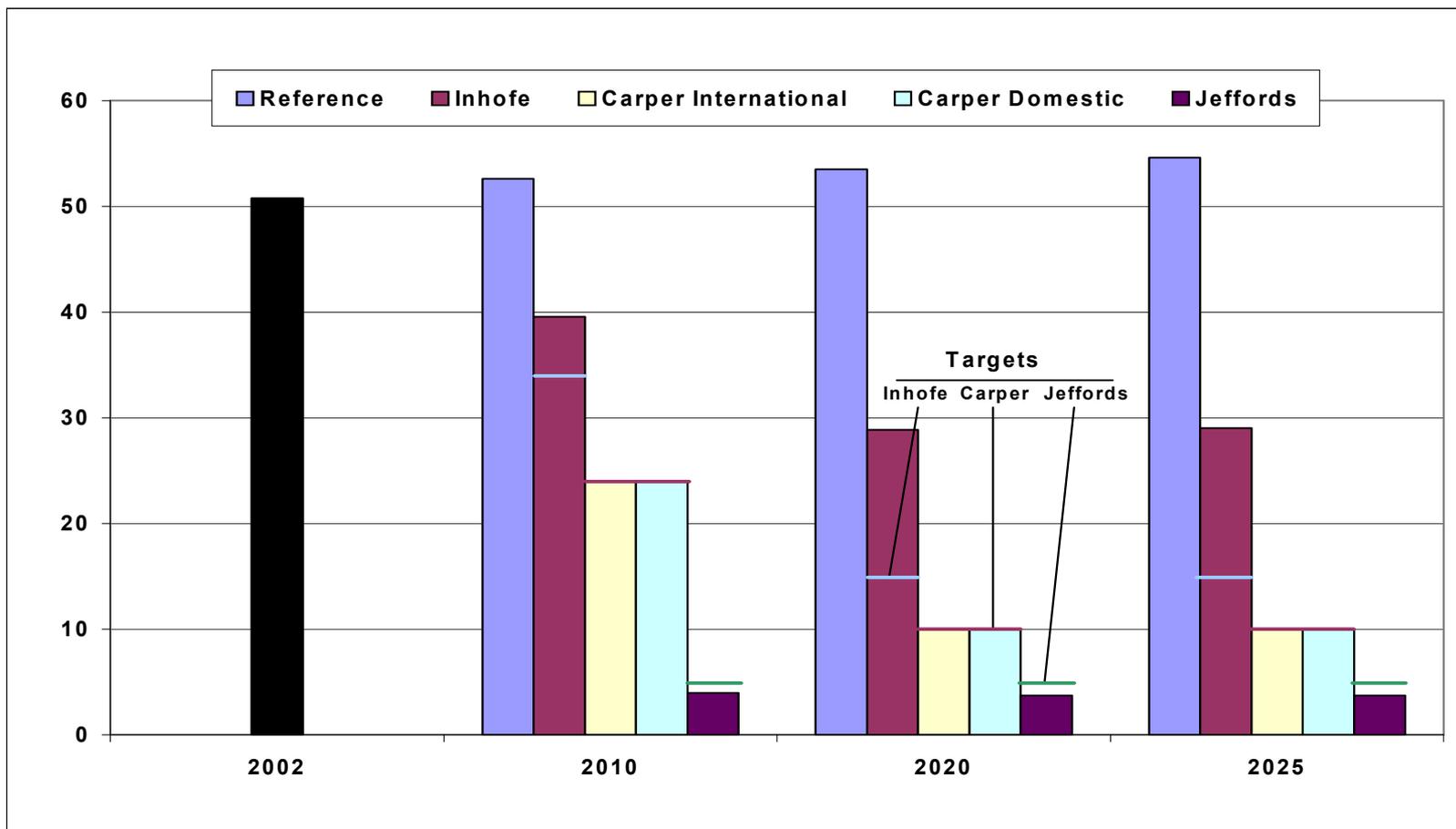
Analysis of Clean Power Act (Jeffords)

- Switching to gas, renewables, and nuclear
- Birthday provision causes emissions for NO_x, Hg and SO₂ to fall below targets
- Has highest resource costs

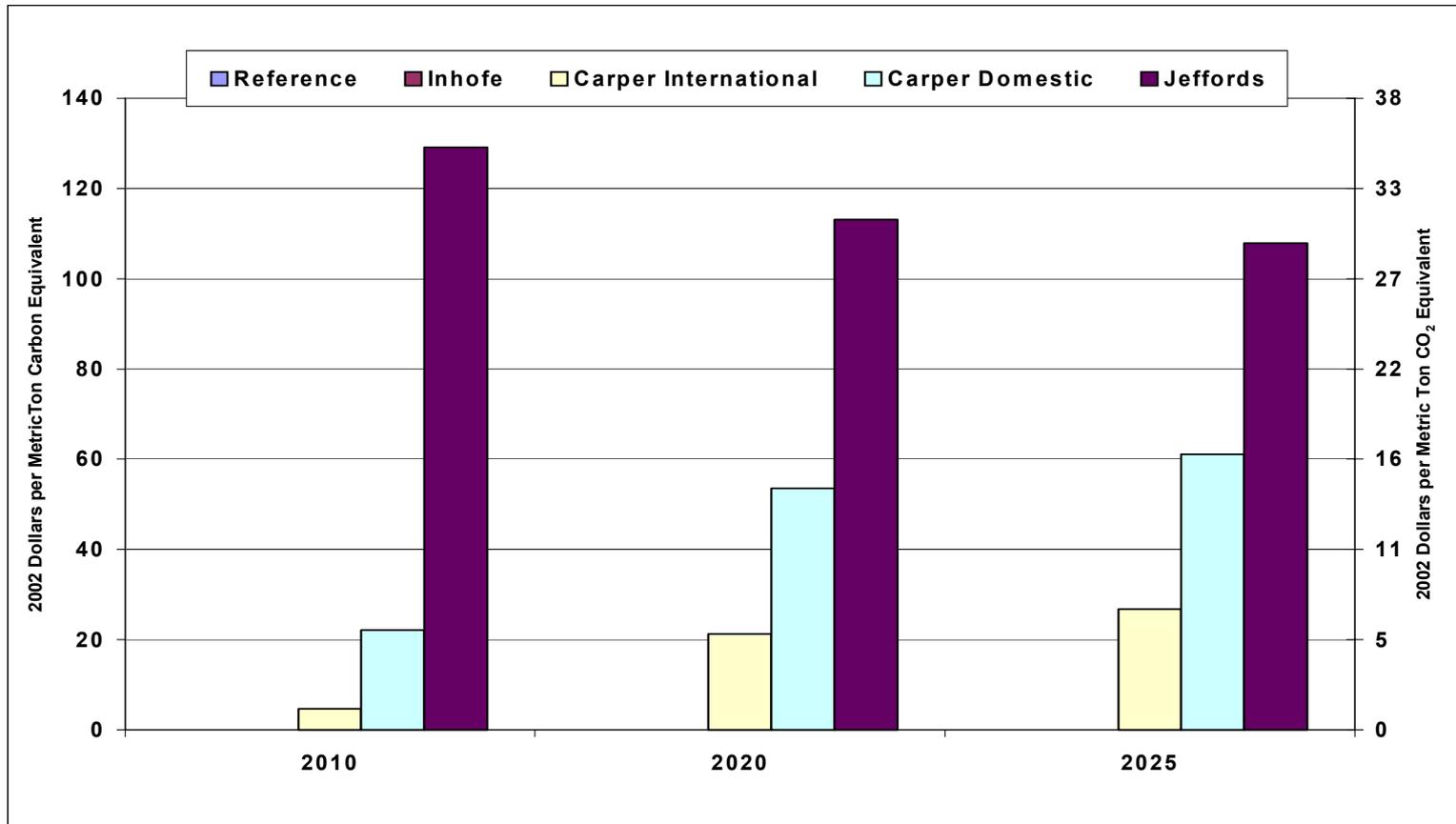
Nitrogen Oxide Emissions in Alternative Cases (million tons)



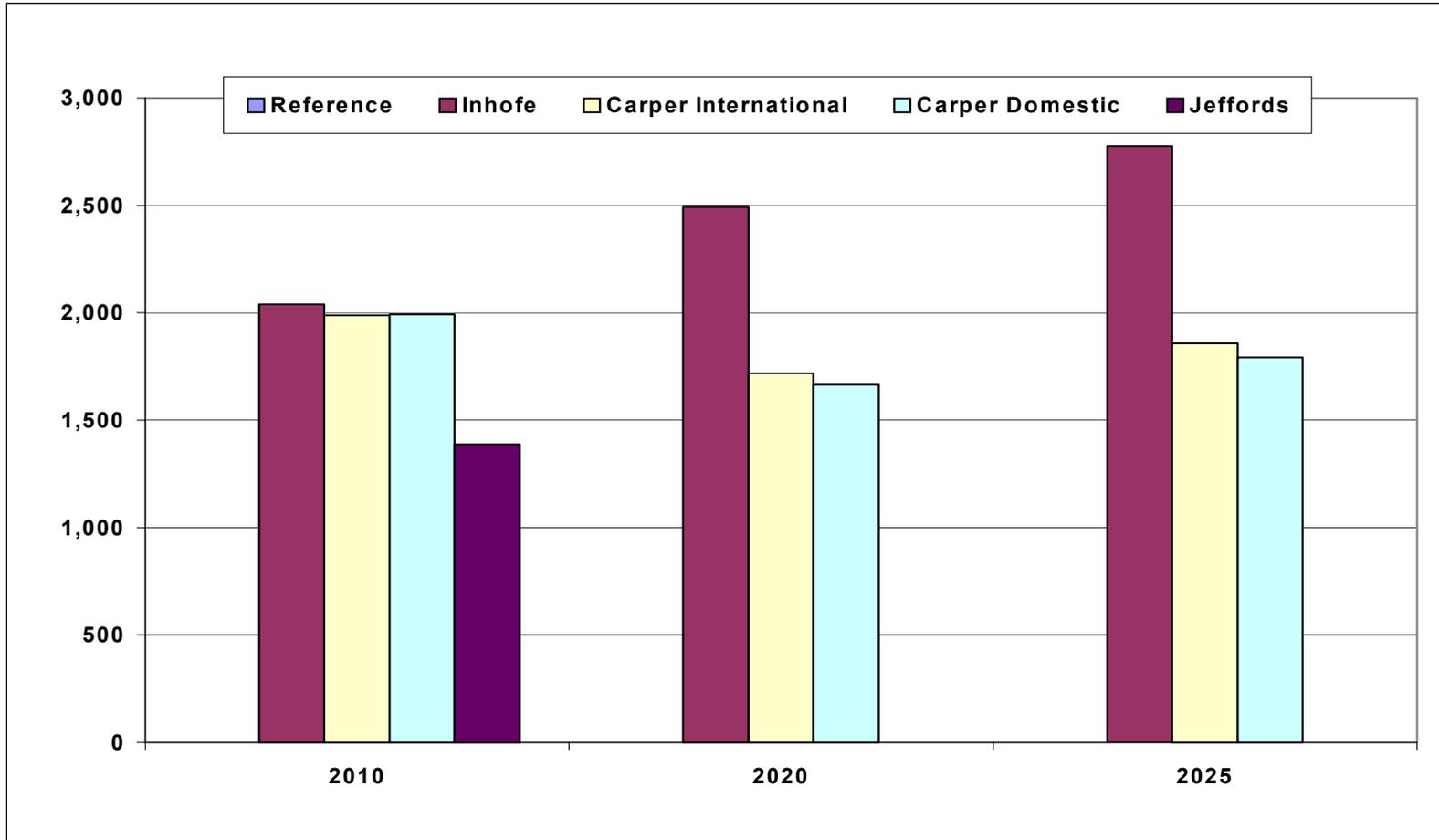
Electricity Sector Mercury Emissions in Alternative Cases (tons)



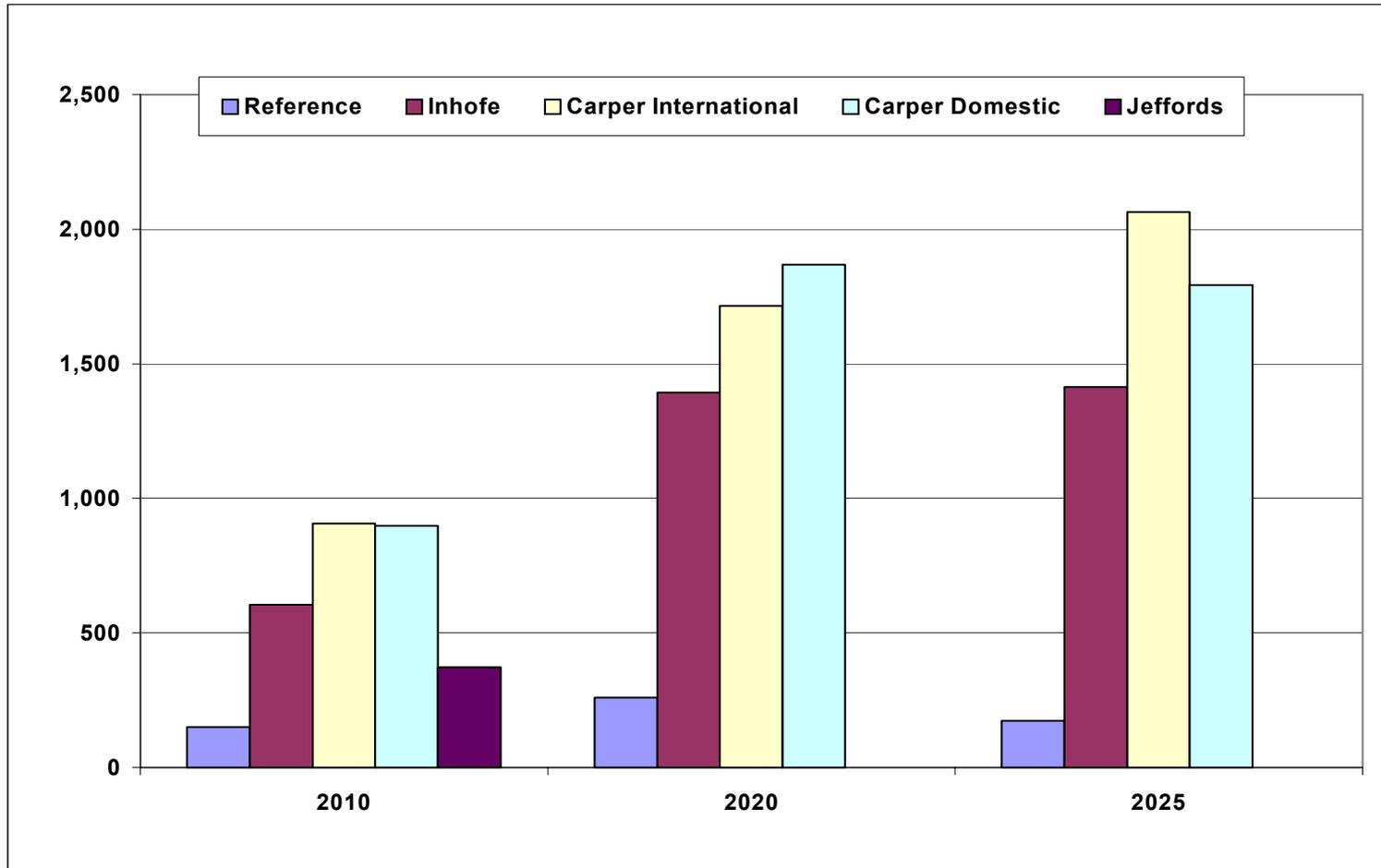
Electricity Sector Carbon and Carbon Dioxide Emissions in Alternative Cases



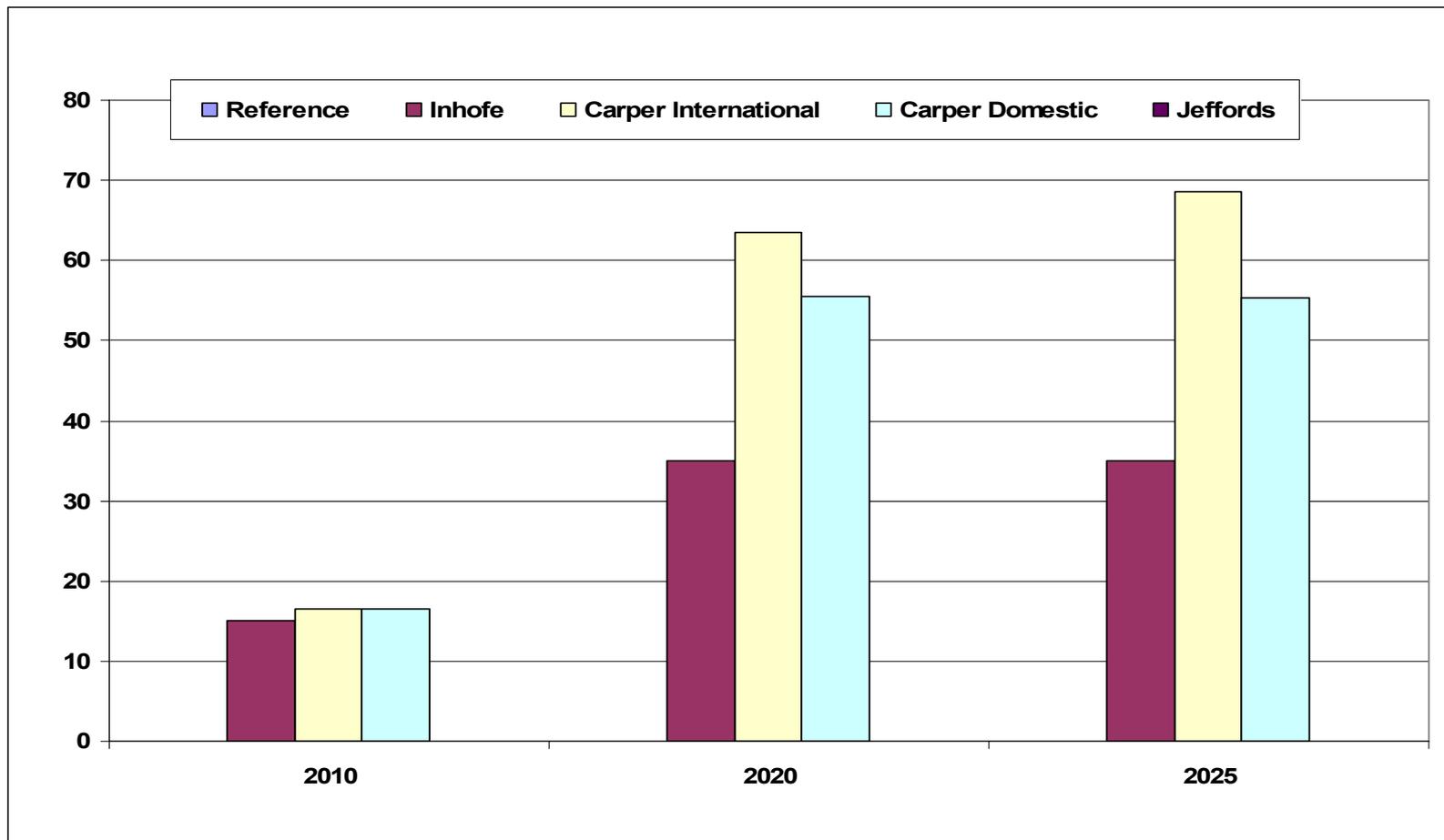
Nitrogen Oxide Allowance Price in the East (2002 dollars per ton)



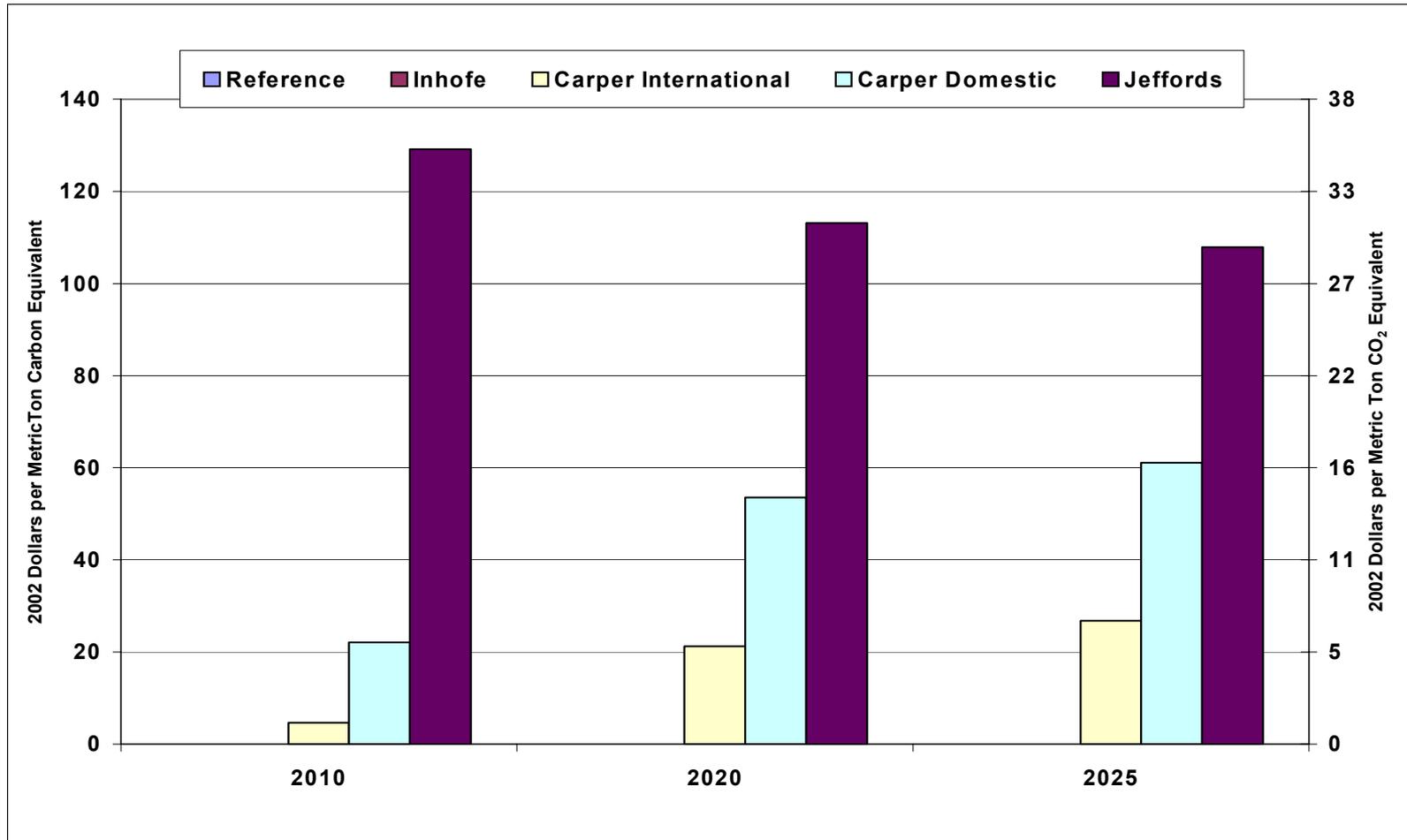
Sulfur Dioxide Allowance Price in the East (2002 dollars per ton)



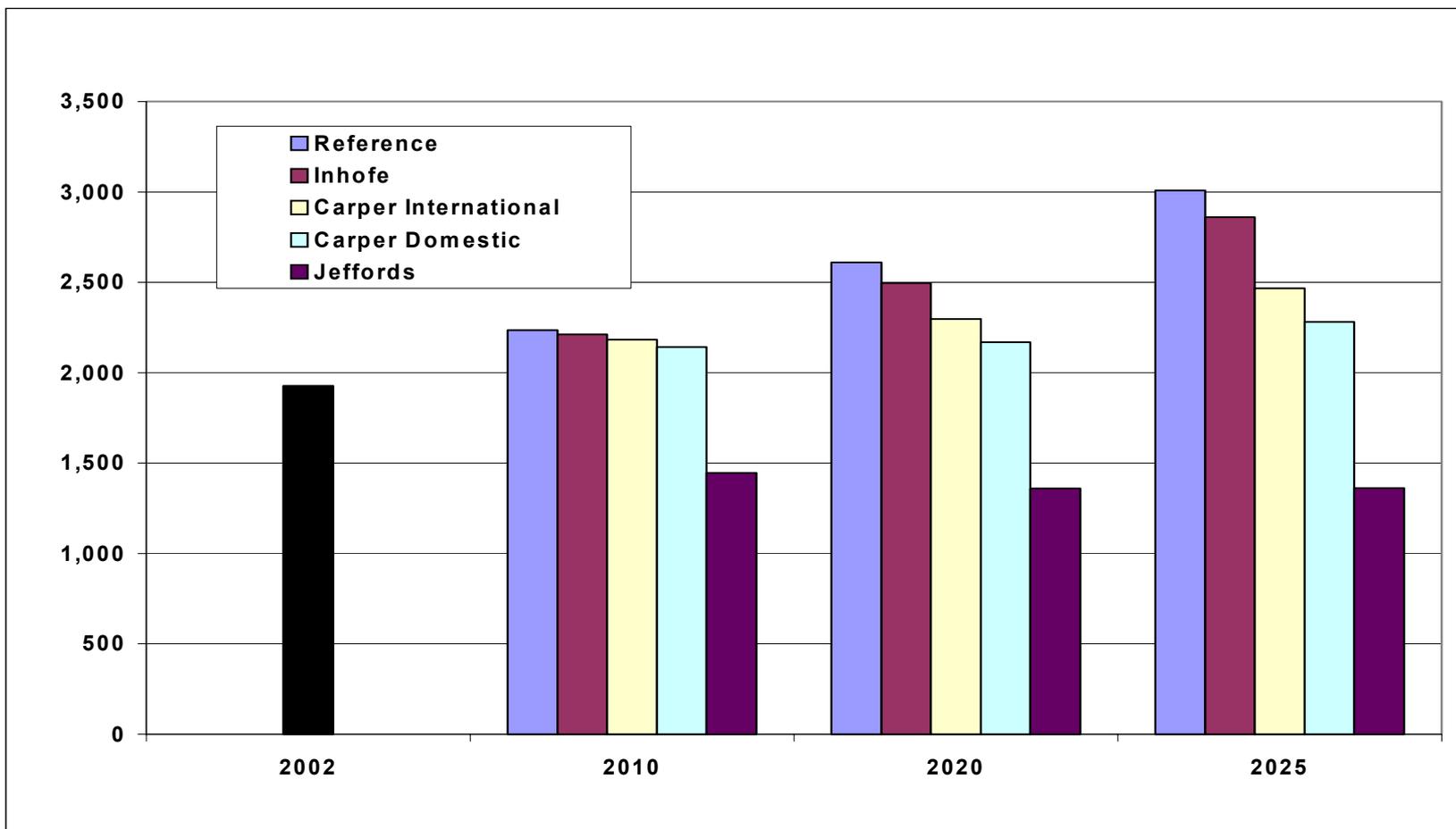
Mercury Allowance Price (thousand 2002 dollars per pound)



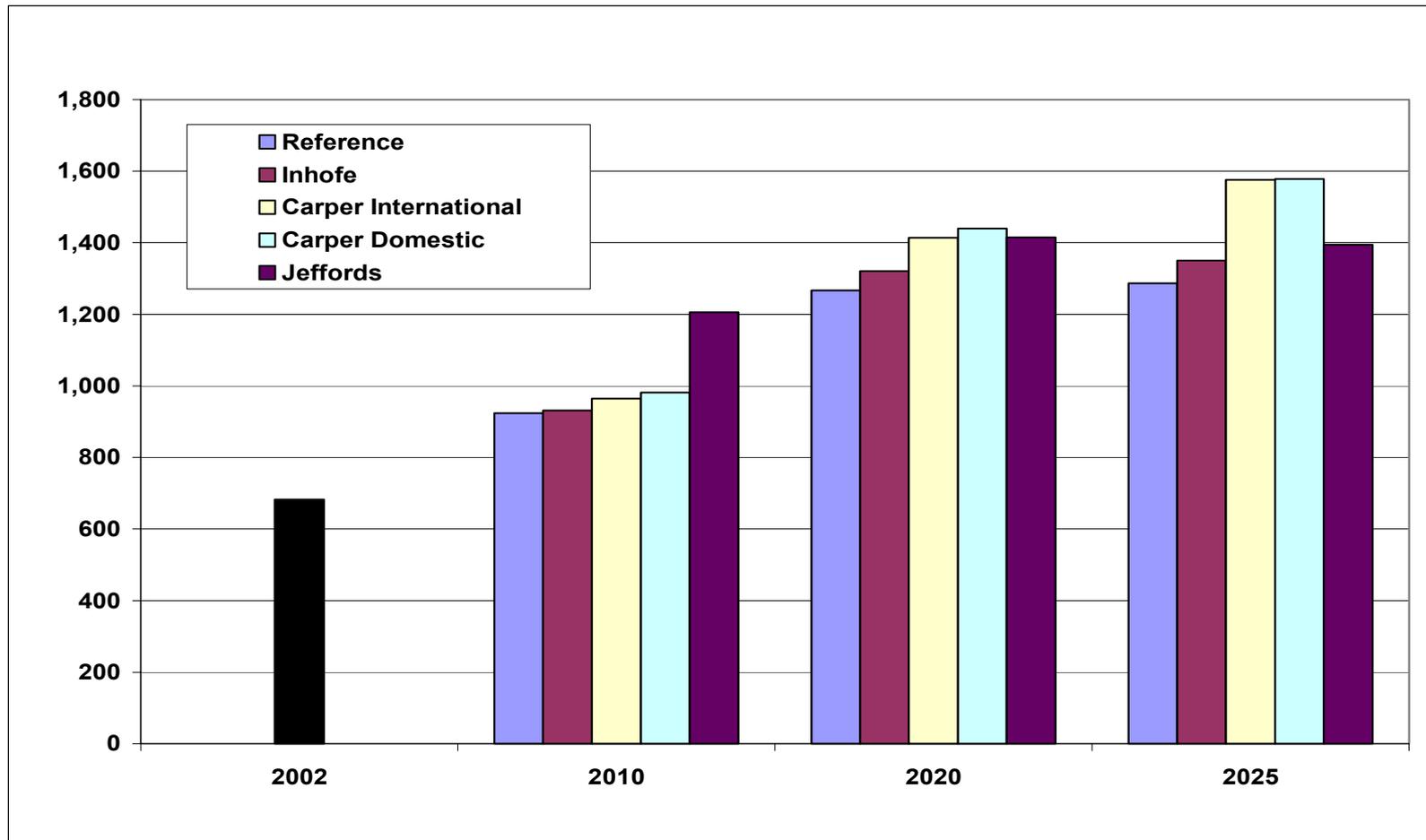
Carbon Allowance Price (2002 dollars per metric ton carbon equivalent)



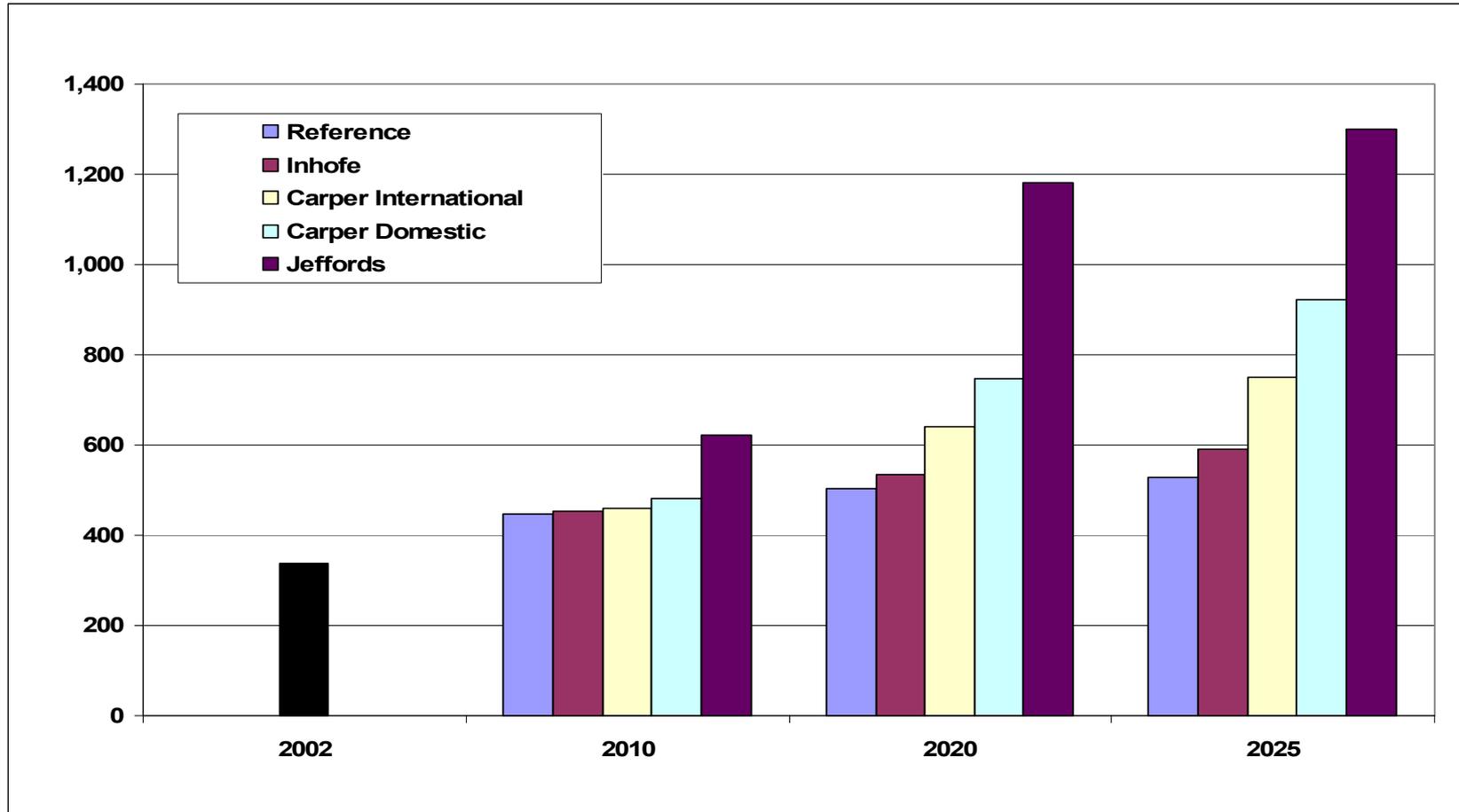
Coal-Fired Generation in Alternative Cases (billion kilowatthours)



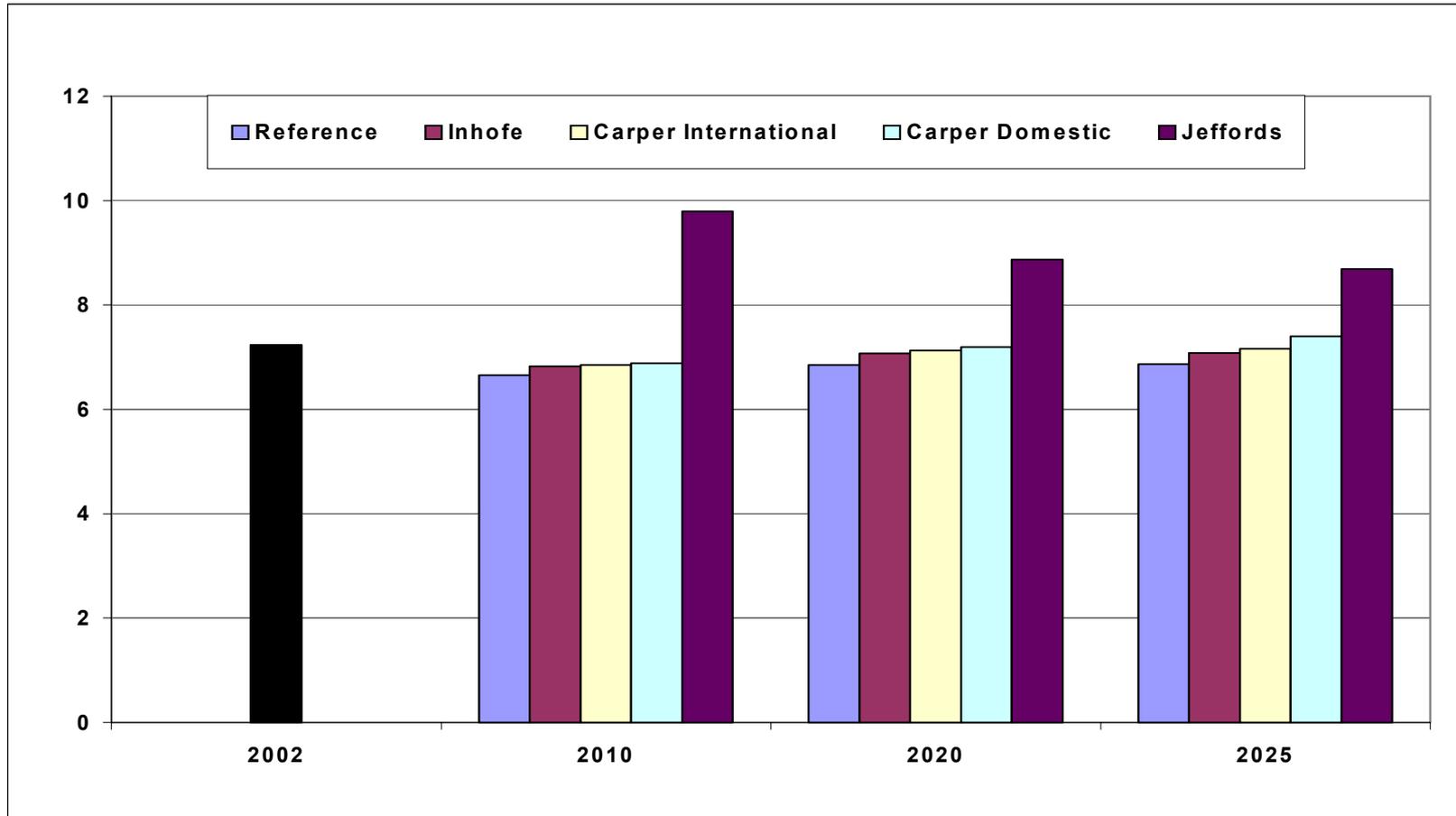
Natural Gas-Fired Generation in Alternative Cases (billion kilowatthours)



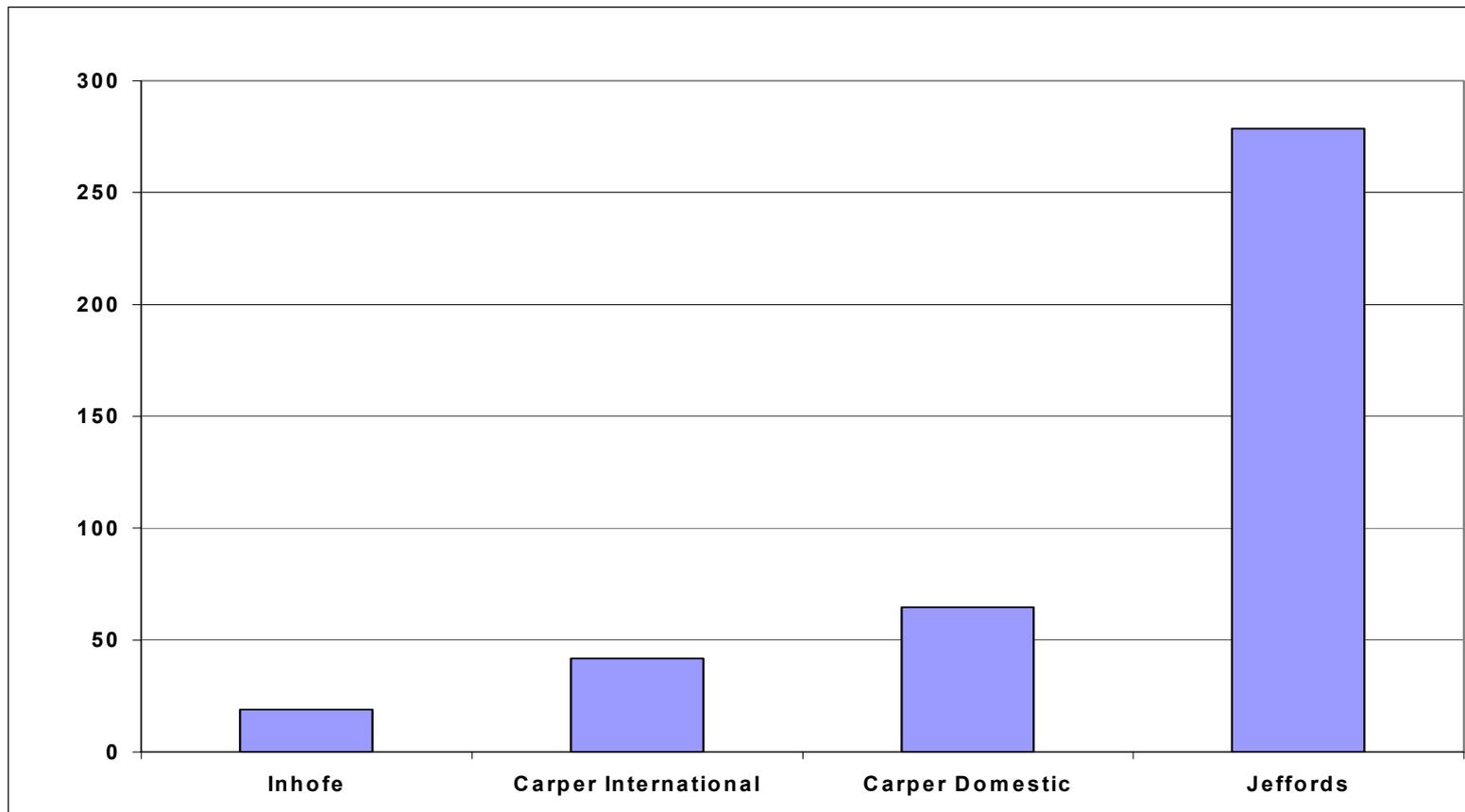
Renewable Generation in Alternative Cases (billion kilowatthours)



Electricity Prices in Alternative Cases (2002 cents per kilowatthour)

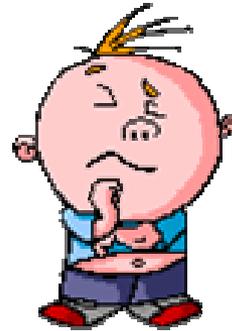


Change in Resource Cost (billion 2002 dollars)



Electricity Market Impacts

- Emission targets aren't met in 2010 for Hg (Inhofe) or CO₂ (Carper)
- Emissions decline more in the Jeffords Case
- Coal generation declines in all cases.
- Electricity prices increase more rapidly in the Jeffords Case.



If you have questions:

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