

Updating and Extending the 2011 CARIS Database for Specific Project Evaluation

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Retired or Mothballed Generator Units

◆ **Removed for CARIS Phase 2**

- *Barrett 07*
- *Beebee GT*
- *Binghamton Cogen*
- *Ravenswood GT 3-4*
- *Astoria 2 & 4*
- *Astoria GT 10 & 11*
- *Far Rockaway ST 04*
- *Glenwood ST 04 & ST05*
- *Dunkirk 3 & 4*

◆ **Retained for CARIS Phase 2**

- *Dunkirk 1 & 2*
- *Gowanus Barges 1 & 4*
- *Cayuga 1 & 2*

Economic Margin Additions by Zone

| Economic Margin Additions (MW) | | | | | | | | | | | | |
|--------------------------------|--------------|--------------|--------------|------------|--------------|------------|--------------|------------|------------|----------------|----------------|----------------|
| | A | B | C | D | E | F | G | H | I | J | K | Total |
| 2019 | | | | | | | | | | | 200.0 | 200.0 |
| 2020 | | | | | | | | | | | 250.0 | 250.0 |
| 2021 | | | | | | | | | | 200.0 | | 200.0 |
| 2022 | | | | | | | | | | 250.0 | | 250.0 |
| 2023 | 24.2 | | 30.4 | 6.0 | 73.8 | 1.8 | | | | | 250.0 | 386.3 |
| 2024 | 15.1 | 200.0 | 54.8 | | 29.7 | | | | | 250.0 | | 549.5 |
| 2025 | 500.0 | | | | | | | | | | | 500.0 |
| 2026 | | | | | | | | | | 100.0 | 250.0 | 350.0 |
| 2027 | | | | | | | | | | 250.0 | | 250.0 |
| 2028 | | | | | | | 500.0 | | | | | 500.0 |
| 2029 | | | | | | | | | | 100.0 | 250.0 | 350.0 |
| 2030 | | | 500.0 | | | | | | | 250.0 | | 750.0 |
| 2031 | | | | | | | | | | | | 0.0 |
| 2032 | | | 200.0 | | | | | | | 100.0 | 100.0 | 400.0 |
| Total | 539.3 | 200.0 | 785.2 | 6.0 | 103.5 | 1.8 | 500.0 | 0.0 | 0.0 | 1,500.0 | 1,300.0 | 4,935.8 |

Combined Cycle GT
 Wind
 Simple Cycle GT (GE-7FA Upstate; GE LMS100 Downstate)

Economic Margin Additions by Location

◆ Upstate

- *CCCT - Dunkirk, Bowline 2, and Watercure*
- *SCCT - Russell, Westover 8*

◆ Zone J

- *CCCT - Astoria 4, Gowanus 345, Astoria 345, West 49th St.*
- *SCCT – Astoria 2, West 49th St., Gowanus 345 (x3)*

◆ Zone K

- *CCCT – Glenwood (x2), Ruland Road, Shoreham*
- *SCCT – Far Rockaway, Holbrook, Ruland Road*

CO₂ Forecast Considerations

- ◆ USEPA “Endangerment Finding” has been reviewed through the courts
- ◆ USEPA is now obligated to develop emission limitations
 - *NSPS Proposed for new and rebuilt units*
 - *Limits for existing units will arrive soon*
 - *or Congress may act*

RGGI Relook

- ◆ RGGI was designed with a binding cap
 - *The advent of abundant supplies of economic natural gas accelerated the reduction in CO2 emissions beyond all expectations*
 - *RGGI States are evaluating policy alternatives with the intent of setting a binding cap*
 - *The next set of production simulations and CO2 price estimates will be available late this year.*

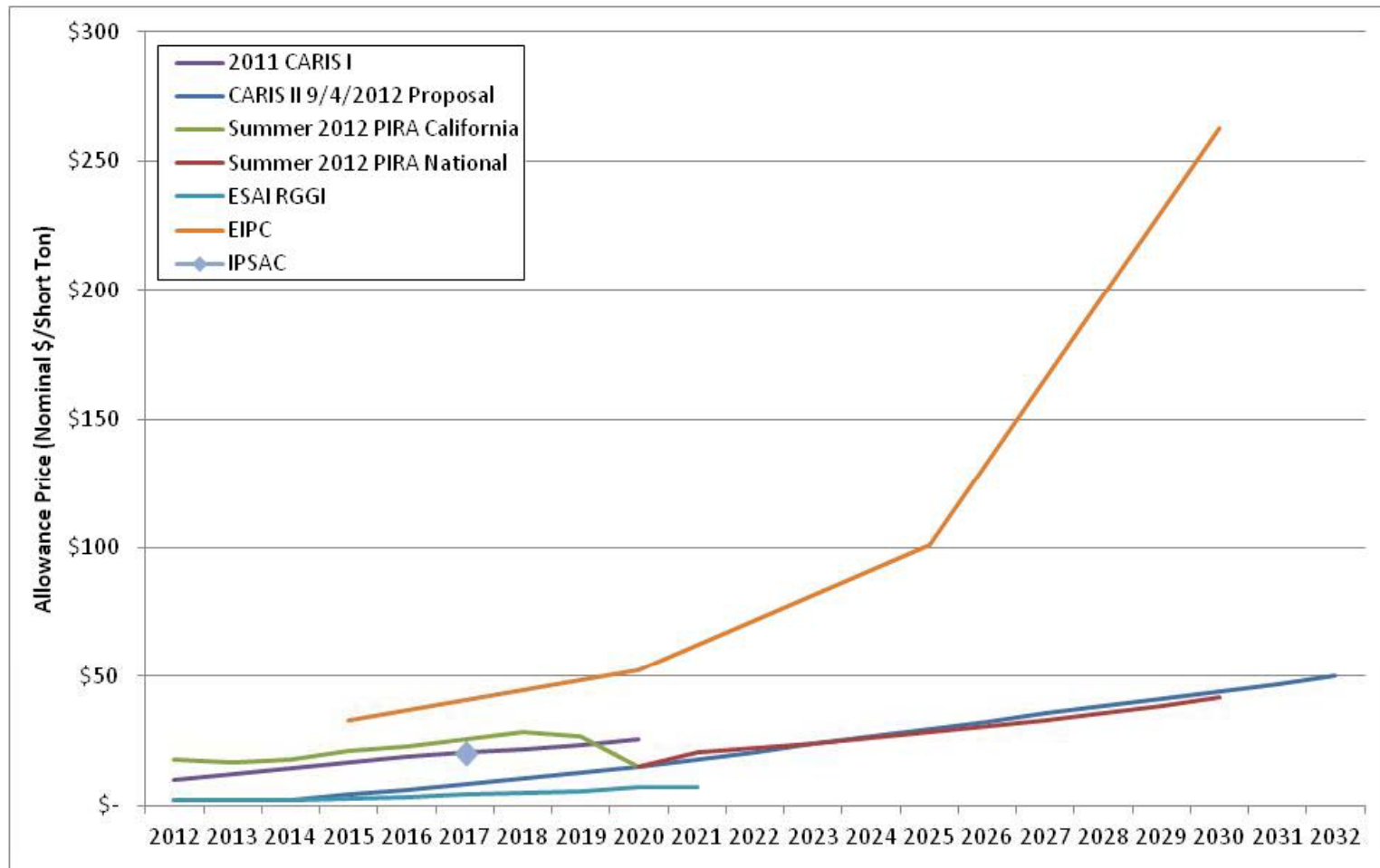
Other Studies

- ◆ **PIRA**
- ◆ **ESAI**
- ◆ **IPSAC**
- ◆ **EIPC**
- ◆ **Synapse**

NYISO View

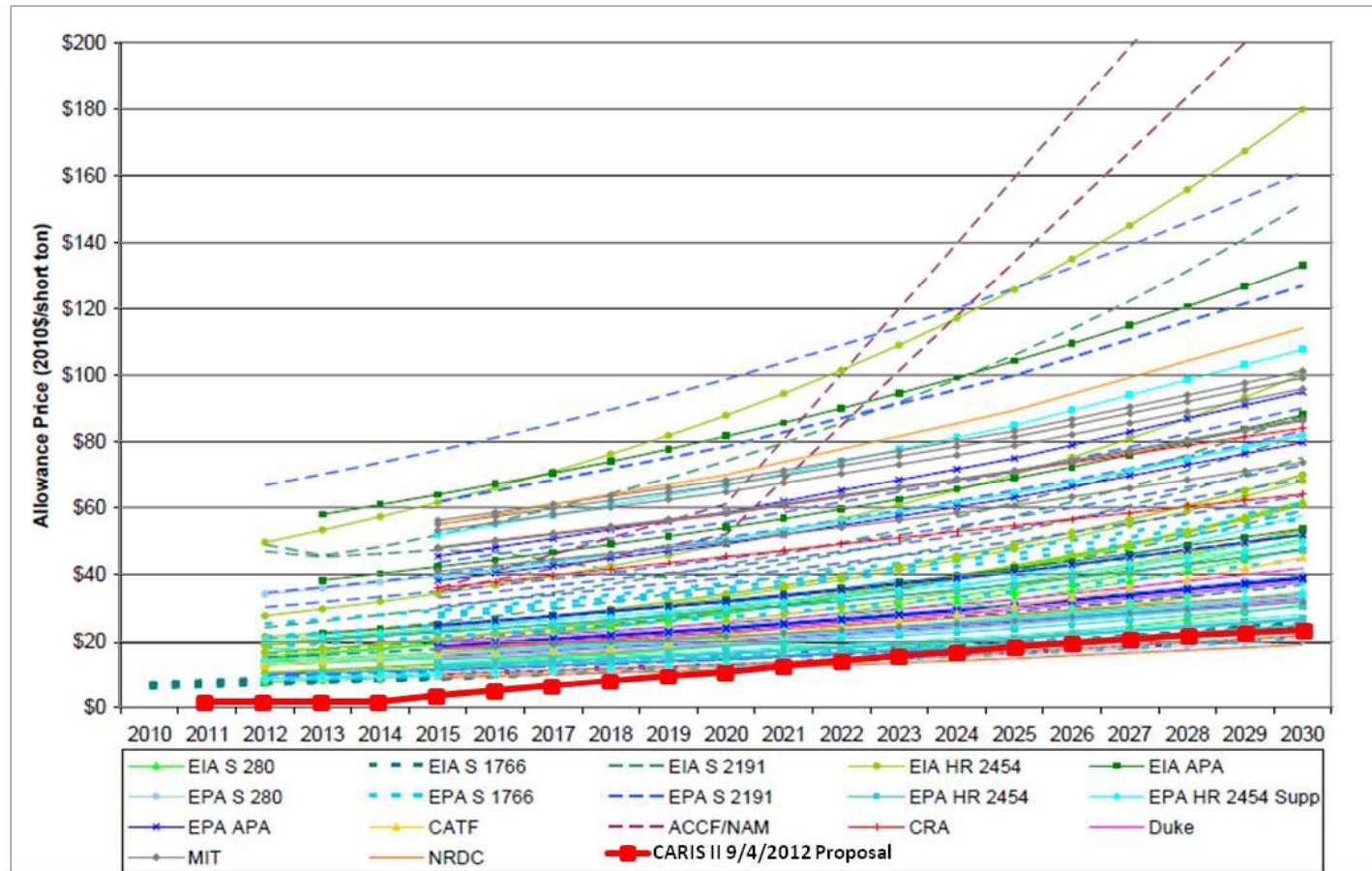
- ◆ **A National CO₂ reduction program will emerge in 2020**
- ◆ **California/ Western Climate Initiative prices will migrate towards the National program**
- ◆ **RGGI prices will move towards California and the National program**
- ◆ **CO₂ at the floor through 2014**
- ◆ **CO₂ in 2020 \$15.00/Ton**

CO₂ Allowance Price Forecasts



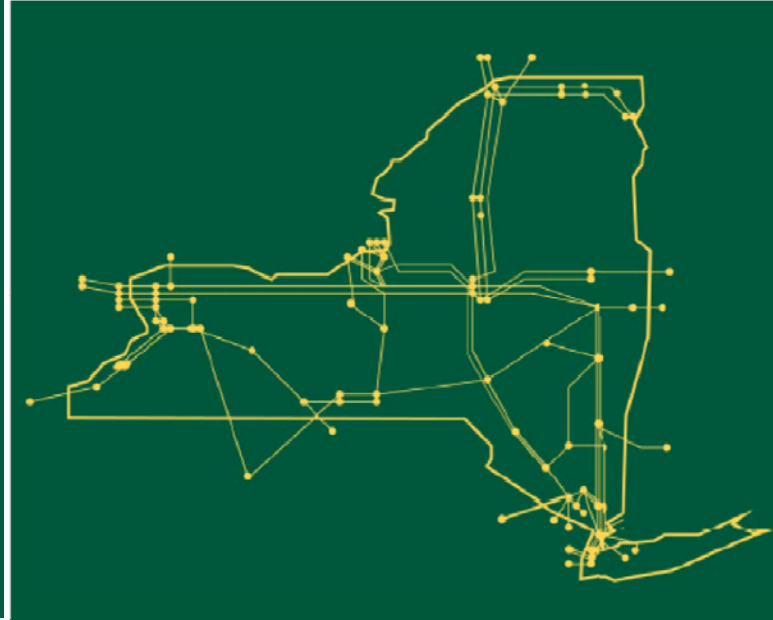
PIRA Forecasts Courtesy of: PIRA Energy Group, New York, NY

CO₂ Allowance Price Forecasts



Synapse Energy Economics; 2011 Carbon Dioxide Price Forecast; 2/11/2011(amended August 2011);
<http://www.synapse-energy.com/Downloads/SynapsePaper.2011-02.0.2011-Carbon-Paper.A0029.pdf>

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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