

# 2019 CARIS Emission Allowance Price Forecasts

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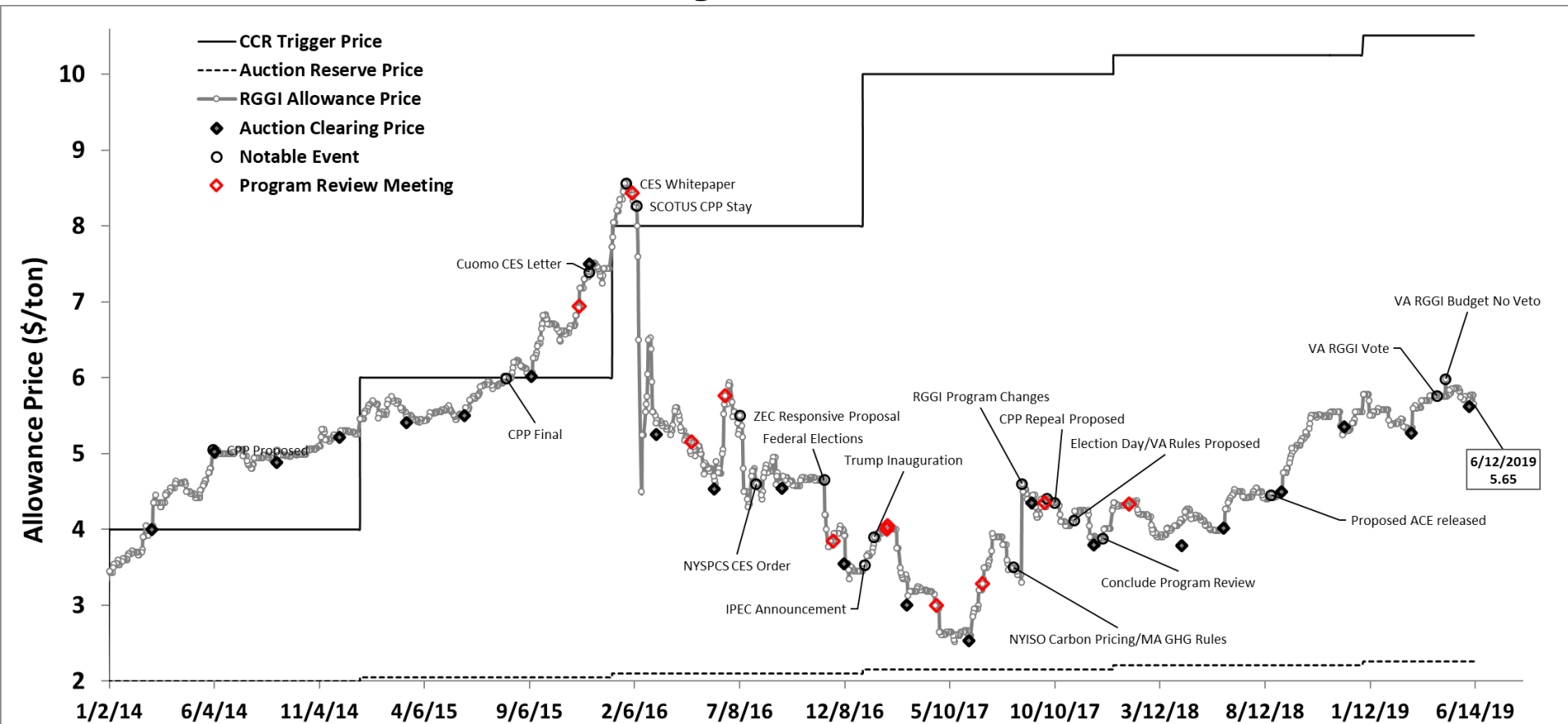
# Agenda

- **CO<sub>2</sub> Emission Allowance Price Forecasts**
  - RGGI – 9 state cap and trade program
    - NJ Participation beginning in 1/2020
    - VA Participation pending further state action
  - Massachusetts single state cap and trade program
  - Ontario/Canada Carbon Pricing Regulations
- **Cross-State Air Pollution Rule Market (CSAPR) Allowance Price Forecasts**
  - Annual SO<sub>2</sub>
  - Annual NO<sub>x</sub>
  - Ozone Season NO<sub>x</sub>

# RGGI Update

- **Program Review completed in 2017**
  - 30% cap reduction between 2020 and 2030
  - Modified the Cost Containment Reserve (CCR) trigger price and volume used to suppress ‘high’ prices by increasing the allowance supply auctioned for prices above the CCR trigger price
  - Added an Emission Containment Reserve (ECR) to elevate ‘low’ allowance prices by reducing allowance supply if prices drop below ECR trigger price
  - Full elimination of 2020 year-end bank by reducing auctioned allowances between 2021-2025
- **Bank of allowances decreased during 2018 from 108 to 99 million (2020 cap of 78.2 mmtons)**
  - [https://www.rggi.org/sites/default/files/Uploads/Market-Monitor/Annual-Reports/MM\\_2018\\_Annual\\_Report.pdf](https://www.rggi.org/sites/default/files/Uploads/Market-Monitor/Annual-Reports/MM_2018_Annual_Report.pdf)

# RGGI Price History 2014 - Present



# RGGI Allowance Price Forecast Development

- RGGI market prices since mid-2017 continue to increase (current price
- ECR trigger price (\$6/ton in 2021) appears to be the target price
- CARIS RGGI forecast proximate to proprietary vendor supplied forecasts
- Assumptions on continued operation of nuclear generators and renewable energy resource additions impact RGGI emissions and therefore price forecasts
- **Consistent with 2017 CARIS 1 RGGI allowance price forecast extended through 2028**

[https://www.nyiso.com/documents/20142/1397651/EmissionPriceForecast%20for%20CARIS%20internal%20June%202016\\_Updated.pdf/384a9cb5-bcd2-2576-4f52-c6cfac07e16a](https://www.nyiso.com/documents/20142/1397651/EmissionPriceForecast%20for%20CARIS%20internal%20June%202016_Updated.pdf/384a9cb5-bcd2-2576-4f52-c6cfac07e16a)

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# CO<sub>2</sub> Allowance Price Forecasts and RGGI Program Details

\$nominal/ton

\$20

\$18

\$16

\$14

\$12

\$10

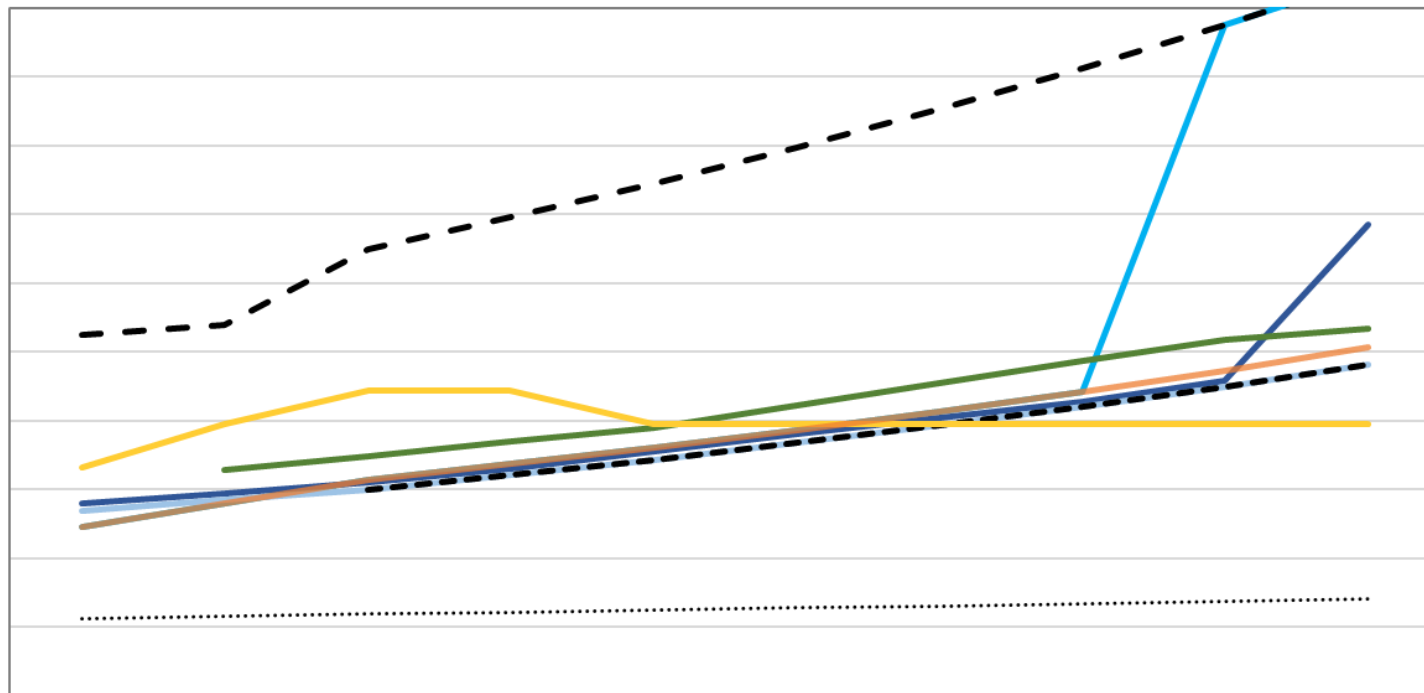
\$8

\$6

\$4

\$2

\$-



- 2018 CARIS 2 RGGI
- VendorA - Feb. 2019
- VendorB - May 2019
- - - RGGI ECR Trigger Price
- - - RGGI CCR Trigger Price
- IPPTF - RGGI
- ..... RGGI Reserve Price
- MA State Cap & Trade
- 2019 CARIS 1 RGGI

2019

2020

2021

2022

2023

2024

2025

2026

2027

2028

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# CO<sub>2</sub> Allowance Price Forecasts

	2017 CARIS I Emission Price Forecast (\$Nominal/ton)			
	Ontario CO2		RGGI CO2	
2017	\$	12.84	\$	3.50
2018	\$	16.25	\$	4.20
2019	\$	17.55	\$	4.90
2020	\$	17.90	\$	5.60
2021	\$	19.27	\$	6.30
2022	\$	20.69	\$	6.74
2023	\$	22.16	\$	7.21
2024	\$	23.68	\$	7.72
2025	\$	25.25	\$	8.25
2026	\$	26.87	\$	8.84

	2019 CARIS I Emission Price Forecast (\$Nominal/ton)					
	Ontario CO2		RGGI CO2	Mass CO2		
2019	\$	14.82	\$	4.90	\$	6.63
2020	\$	22.23	\$	5.60	\$	7.90
2021	\$	29.64	\$	6.30	\$	8.89
2022	\$	37.04	\$	6.74	\$	8.89
2023	\$	37.04	\$	7.21	\$	7.90
2024	\$	37.04	\$	7.72	\$	7.90
2025	\$	37.04	\$	8.25	\$	7.90
2026	\$	37.04	\$	8.84	\$	7.90
2027	\$	37.04	\$	9.46	\$	7.90
2028	\$	37.04	\$	10.12	\$	7.90

- **National CO<sub>2</sub> Program – not considered through 2028**
  - National program has been modeled as application of RGGI price to all states
- **Ontario Price – assume Canadian Federal Backstop enforced**
  - <https://www.canlii.org/en/ca/laws/stat/sc-2018-c-12-s-186/139160/sc-2018-c-12-s-186.html>
- **Massachusetts State Cap and Trade – assume ~\$7-10/metric ton range over study period**
  - <https://www.mass.gov/guides/electricity-generator-emissions-limits-310-cmr-774>

# CSAPR Allowance Price Forecasts

Persistent market oversupply due to emission reductions under fixed program caps, along with current market prices, support ozone season NO<sub>x</sub> allowance price forecast declines from prior CARIS cycle

	2017 CARIS I Emission Price Forecast (\$Nominal/ton)		
	SO2	Annual NOx	Ozone Season NOx
2017	\$ 1.75	\$ 4.00	\$ 665.00
2018	\$ 1.75	\$ 4.00	\$ 510.00
2019	\$ 1.75	\$ 4.00	\$ 340.00
2020	\$ 1.75	\$ 4.00	\$ 225.00
2021	\$ 1.75	\$ 4.00	\$ 195.00
2022	\$ 1.75	\$ 4.00	\$ 195.00
2023	\$ 1.75	\$ 4.00	\$ 195.00
2024	\$ 1.75	\$ 4.00	\$ 195.00
2025	\$ 1.75	\$ 4.00	\$ 195.00
2026	\$ 1.75	\$ 4.00	\$ 195.00

	Current CSAPR Spot Prices (\$/ton)		
	SO2	Annual NOx	Ozone Season NOx
11-Jun-19	\$ 2.00	\$ 3.50	\$ 170.00

Source: Argus

	2019 CARIS I CSAPR Emission Price Forecast (\$Nominal/ton)		
	SO2	Annual NOx	Ozone Season NOx
2019	\$ 2.00	\$ 4.00	\$ 175.00
2020	\$ 2.00	\$ 4.00	\$ 165.00
2021	\$ 2.00	\$ 4.00	\$ 155.00
2022	\$ 2.00	\$ 4.00	\$ 140.00
2023	\$ 2.00	\$ 4.00	\$ 125.00
2024	\$ 2.00	\$ 4.00	\$ 100.00
2025	\$ 2.00	\$ 4.00	\$ 100.00
2026	\$ 2.00	\$ 4.00	\$ 100.00
2027	\$ 2.00	\$ 4.00	\$ 100.00
2028	\$ 2.00	\$ 4.00	\$ 100.00

OS NO<sub>x</sub> price is in addition to the annual NO<sub>x</sub> price for NO<sub>x</sub> emissions from affected generators during May through September

<https://www.epa.gov/csapr>



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# Feedback/Comments?

- Email additional feedback to: [BCohen@nyiso.com](mailto:BCohen@nyiso.com)

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- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



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