



**Department
of Public Service**

Recommended CO₂ Value to Use in IPPTF Analysis

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- The Forecasted Value of CO₂ for IPPTF analysis should be on the order-of-magnitude of the level that the NY PSC is likely to adopt under such an approach

- The Record Suggests Two Candidate Sources:
 - The U.S. IWG Social Cost of Carbon (SCC) Estimates minus RGGI forecasts
 - The Procurement Price for Tier 1 RECs

- Basis
 - NYPSC January 2016 BCA Framework Order in 14-M-0101
 - Used the US IWG SCC “Central Value” minus RGGI until Tier 1 Procurements were established
 - Now, Tier 1 Procurement Values are Used
 - NYPSC March 2017 Value of Distributed Energy Resources Order 15-E-0751
 - Set “E” Compensation Value at the **Higher of** Tier 1 REC or SCC-RGGI

- First Two Tier 1 REC Procurements:
 - \$24.24 per MWH, Announced August 2016
 - \$21.71 per MWH, Announced March 2018
 - Forecast?

- Requires a conversion to \$/Ton
 - e.g. $[(24.24+21.71)/2 = \text{approx. } \$23/\text{mwh}]$
 - $\$23/\text{mwh} \div 0.5 \text{ tons/mwh} = \46 per ton

- NYISO data for hourly marginal emission rates (MERs) averages around 0.5 tons per MWH, but ranges from 0 to well over 1 ton per MWH depending on the hour and zone

- To derive a ton/mwh value, should we use:
 - Simple Average
 - System Load Weighted Average
 - Average Using Load Shape of Tier 1 Resources

- SCC was last updated August 2016, expressed in \$2007 per metric ton
- Converting to nominal \$s per U.S. ton:

	Gross SCC		
	<u>\$2007/metric-ton*</u>	<u>\$2007/US-ton**</u>	<u>\$nominal/US-ton***</u>
2020	\$42.00	\$38.10	\$47.30
2021	\$42.00	\$38.10	\$48.30
2022	\$43.00	\$39.01	\$50.48
2023	\$44.00	\$39.92	\$52.74
2024	\$45.00	\$40.82	\$55.07
2025	\$46.00	\$41.73	\$57.48
2026	\$47.00	\$42.64	\$59.96
2027	\$48.00	\$43.54	\$62.52
2028	\$49.00	\$44.45	\$65.17
2029	\$49.00	\$44.45	\$66.54
2030	\$50.00	\$45.36	\$69.32

Notes							
* Source:	Technical Support Document: Technical Update of the Social Cost of Carbon						
	for Regulatory Impact Analysis Under Executive Order 12866, August 2016 (Appendix A), central value (3%)						
**	Column B * 0.907185						
***	Column C * Inflation since 2007						

- A portion of the SCC is already bid into the market LBMP.
- CO₂-emitting generators which are 25 MWs or larger must purchase and hold a RGGI allowance for each ton of CO₂ emitted, just as they must purchase fuel. (CO₂ pricing for generators < 25 MWs will be discussed by IPPTF.)
- A fixed quantity of allowances are auctioned by the RGGI states each quarter.
- The price of RGGI allowances is largely determined by the expected demand the generators have for allowances
 - There is a reserve of allowances (the Cost Containment Reserve--CCR) that is only sold if the auction price exceeds a certain trigger level. This can level the price off at the CCR trigger level (\$13/ton in 2021).
 - There is a very low floor price, and there will be another reserve, the Emissions Containment Reserve (ECR), allowing states to withhold allowances to keep the price from dropping below the ECR (\$6/ton in 2021)

- While an “actual” RGGI price could be used for implementation, we may wish to forecast the RGGI price for Task 5 modelling.

Price History

- From 2009 to 2012 the RGGI price hovered around the \$1.89 floor.
- From 2014 through 2015 the price rose steadily, getting as high as \$7.50 a ton.
- Since then the price has fallen back down and was approximately \$3.80 per ton in the last two auctions.

- In August, 2017 the RGGI states announced new model rules, and lower allowance supplies, for 2020 – 2030. Their Base Case forecast for RGGI prices (and 2017CARIS forecasts):

	RGGI Forecasts (\$nominal/US-ton)	
	RGGI, Inc	CARIS
2017	\$5.51	\$3.50
2018		\$4.20
2019		\$4.90
2020	\$6.56	\$5.60
2021		\$6.30
2022		\$6.74
2023	\$7.81	\$7.21
2024		\$7.72
2025		\$8.25
2026	\$9.73	\$8.84
2027		
2028		
2029	\$11.58	
2030		
2031	\$13.51	

- Interpolating and subtracting, DPS proposes using Net CO2 charges for analysis purposes on the order of magnitude of:

	Gross SCC	RGGI, Inc	Net
	<u>\$nominal/US-ton</u>	<u>\$nominal/US-ton</u>	<u>\$nominal/US-ton</u>
2020	\$47.30	\$6.56	\$40.74
2021	\$48.30	\$6.98	\$41.32
2022	\$50.48	\$7.39	\$43.09
2023	\$52.74	\$7.81	\$44.93
2024	\$55.07	\$8.45	\$46.62
2025	\$57.48	\$9.09	\$48.39
2026	\$59.96	\$9.73	\$50.23
2027	\$62.52	\$10.35	\$52.18
2028	\$65.17	\$10.96	\$54.20
2029	\$66.54	\$11.58	\$54.96
2030	\$69.32	\$12.55	\$56.77

- The Gross SCC column could be used for generators < 25 MWs