Carbon Pricing

Tariff Revisions

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Market Issues Working Group (MIWG)

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Agenda

- Carbon Residual Analysis

- Select Definitions

- New OATT Rate Schedule 18, Section 6.18– Carbon Charges, Carbon Payments, and the Allocation of the Carbon Residual

- Revisions to MST section 7.4.1.1 ISO Corrections or Adjustments and Customer Challenges to the Accuracy of Settlement Information

- New MST Rate Schedule 9, Section 15.9 – Carbon Charges for Suppliers

- Carbon Pricing Timeline

- Appendix I: Select Tariff Sections without Revisions

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Carbon Residual Analysis

Carbon Residual Analysis

- At the February 4, 2019 MIWG meeting, the NYISO reviewed the proposed proportional Carbon Residual allocation. The presentation also explained that in the unlikely circumstance the carbon residual is negative, the tariff will include rules for allocating these carbon residual shortfalls to LSEs. The NYISO proposed that carbon residual shortfalls be allocated according to load ratio share in a similar way to how other residual shortfalls are allocated.
  - Using the same load ratio share allocation for both would allocate more of the shortfall to zones that have already borne a higher impact of the carbon charge in their prices (i.e., have a higher LBMPc) which is not consistent with the design objective of avoiding major cost shifts among customers.
- Stakeholders requested that the NYISO provide more information about the likelihood of a carbon residual shortfall in the future.
  - A carbon residual shortfall will occur when there are less carbon charges collected from internal generators, imports, and wheels through than carbon payments to exports and wheels through. This circumstance can arise when an emitting resource is on the margin while much of the energy is being provided by zero carbon resources.
- Stakeholders suggested leveraging the GE MAPS runs used in the carbon pricing consumer impact analysis to estimate the frequency of a carbon residual shortfall.

Carbon Residual Analysis

- The NYISO was able to confirm, using the GE MAPS runs from the consumer impact analysis, that even in the 2030 cases, a carbon residual shortfall is unlikely: the review of the two 2030 MAPS cases most likely to have carbon residual shortfalls found <u>no hours</u> where a carbon residual shortfall would have occurred.
  - A carbon residual shortfall requires that in the same hour there be both 1) low levels of internal NYCA carbon emitting generation and 2) net exports from the NYCA
  - The two 2030 consumer impact cases analyzed were D10fs and D12fspv*
    - These scenarios retired two nuclear units, added renewables including approximately 1,300MW of offshore wind, shifted 2.9TWh of renewable generation downstate and, in the D12fspv scenario, also added 500MW of behind the meter solar in zone G.
  - The NYISO found no hours during which a carbon residual shortfall would have occurred.
    - In other words, even with the renewables expected in 2030, including offshore wind and additional behind the meter solar, there were no hours with a carbon residual shortfall.

*See Brattle Memo "Summary of GE MAPS Cases Used in Issue Track 5 Analysis at the following link:
https://www.nyiso.com/documents/20142/3715785/2018.10.12%20MAPS%20Memo.pdf/d9f5bc46-1f76-42f2-ae32-1a1e8b25de66

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Select Definitions

Select Definitions

- New defined tariff terms are necessary to effectuate carbon pricing.

  - Carbon Emissions: Point-of-production carbon dioxide emissions that result from Energy injected, or start-up to inject Energy, in connection with participation in the Wholesale Market.

  - Cost of Carbon Emissions: For purposes of the ISO Administered Markets, a dollar per ton of Carbon Emissions value equal to the Social Cost of Carbon minus the value of any other state, multi-state, or federal charges for Carbon Emissions that the Supplier is required to pay, including but not limited to emission allowance costs.

New OATT Rate Schedule 18 – Carbon Charges, Carbon Payments, and the Allocation of the Carbon Residual

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New Rate Schedules

- The NYISO proposes two new sections to describe carbon charges/payments and residual allocation:
  - OATT Rate Schedule 18 will include carbon charges/ payments for Import Transactions and Export Transactions, as well as Wheels Through, and the carbon residual allocation.
  - MST Rate Schedule 9 will include carbon charges for Suppliers

Carbon Charges, Carbon Payments and Allocation of the Carbon Residual

- ■ Section 6.18.1 Carbon Charges for Import Transactions and Wheels Through

  - • The ISO will charge each Transmission Customer scheduling Imports and Wheels Through the LBMPc at the relevant Proxy Generator Bus ("Transmission Customer Carbon Charge").

Transmission Customer Carbon Charge = $\text{InjectionUnits}_{i\text{cp}} * LBMPc_{ip} * \frac{S_i}{3600}$

Carbon Charges, Carbon Payments and Allocation of the Carbon Residual

- Section 6.18.2 Carbon Charges for Export Transactions and Wheels Through

  - The ISO will pay each Transmission Customer scheduling Exports and Wheels Through the LBMPc at the relevant Proxy Generator Bus ("Transmission Customer Carbon Payment").

Transmission Customer Carbon Payment = $\text{WithdrawalUnits}_{icp} * LBMPc_{ip} * \frac{S_i}{3600}$

Carbon Charges, Carbon Payments and Allocation of the Carbon Residual

- Section 6.18.3 Calculation of Carbon Residual Payments/ Charges
  - Calculation of the Carbon Residual:
    - Transmission Customer Carbon Payments for Export Transactions and Wheels Through subtracted from the sum of all Supplier Carbon Charges and Transmission Customer Carbon Charges for Import Transactions and Wheels Through
  - This section defines the calculation of the Carbon Residual credit for each Transmission Customer through the proportional allocation methodology.

$$Carbon\ Residual\ Credit_{ch} = \frac{WithdrawalUnits_{czh} * HourlyLBMPc_{zh}}{TotalLBMPcImpact_h} * CarbonResidual_h$$

  - This section also defines the Carbon Residual charge if there is a Carbon Residual Shortfall as allocated through load ratio share.

$$Carbon\ Residual\ Charge_{ch} = (-1) * CarbonResidual_h * \frac{WithdrawalUnits_{ch}}{TotalWithdrawalUnits_{ch}}$$

Revisions to MST section 7.4.1.1 ISO Corrections or Adjustments and Customer Challenges to the Accuracy of Settlement Information

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Emissions Data Submission

- **New MST Section 7.4.1.1.2**

  - A Supplier shall provide the NYISO with all Generator Carbon Emissions data within 60 days from the date of the initial invoice for the month in which service is rendered.

    - The ISO shall post Generator Carbon Emissions data to the generator's account as soon as practicable after it is received for the Supplier's review.

- **New MST Section 7.4.1.1.6**

  - A Supplier shall provide to the ISO any final updates or corrections to Generator Carbon Emissions data within 170 days from the date of the initial invoice.

    - The ISO shall process final updates or corrections to the Generator Carbon Emissions data a soon as practicable after it is received, after which time it shall be finalized.

New MST Rate Schedule 9 – Carbon Charges for Suppliers

Carbon Charges for Suppliers

- ## Section 15.9.1 Carbon Charges
  - The NYISO shall charge each Supplier located in the NYCA for a Generator's Carbon Emissions ("Supplier Carbon Charge").

$$\text{Supplier Carbon Charge} = CE_{gh} * CC_{gh}$$

Where:

CE_{gh} = Carbon Emissions by Generator g in hour h

CC_{gh} = The Cost of Carbon Emissions for Generator g in hour h

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Carbon Charges for Suppliers

- **Section 15.9.2 Reporting Carbon Emissions**
  - This section refers to the timeframes for emissions reporting outlined in MST Section 7.4.1.1, as well as discusses penalties. Appendix II of this presentation includes examples of potential penalties.
    - Section 15.9.2.1 notes that if Carbon Emissions are not reported timely by day 60, then the Supplier will be charged for 0.5 times the applicable Carbon Emissions.
      - This penalty is in addition to the charge for Carbon Emissions on the initial invoice.
    - Section 15.9.2.1 further notes that if Carbon Emissions are not reported timely by day 170, then the Supplier will be charged 1.5 times the applicable Carbon Emissions.
      - This penalty is in addition to the charge for Carbon Emissions on the initial invoice.
      - This penalty is in addition to the charge if Carbon Emissions are not reported timely by day 60.
    - Section 15.9.2.2 notes that if Carbon Emissions are underreported, then the Supplier will be charged 2 times the applicable Carbon Emissions
      - This penalty is in addition to the charge for Carbon Emissions on the initial invoice.
      - This penalty is in addition to the failure to report by day 60 penalty outlined in section 15.9.2.1, if applicable.

Carbon Pricing Timeline

Carbon Pricing Timeline

MIWG Meeting Date	Topic/ Deliverable
~~Tuesday, January 15, 2019~~	~~Import/ Export Transaction Examples~~
~~Tuesday, January 22, 2019~~	~~Overview of Impacted Tariff Sections~~
~~Thursday, January 31, 2019~~	~~Credit Overview~~
	~~Tariff Revisions Discussion~~
~~Monday, February 4, 2019~~	~~Carbon Residual Allocation~~
~~Thursday, February 28, 2019~~	~~Tariff Revisions Discussion~~
Monday, March 18, 2019	LBMPc Calculation – Identifying the Marginal Unit(s)
	Carbon Bid Adjustment for Opportunity Cost Resources
Thursday, March 28, 2019	Tariff Revisions Discussion

Appendix I: Select Tariff Sections that will not Require Revisions

Tariff Sections without Revisions

- MST sections 4.2 and 4.5 describe DA and RT Energy settlements, respectively.
  - No revisions are expected for these sections.
    - Suppliers will submit their bids, including an adjustment to account for the carbon charge.
    - These bids will be used by the market software to establish prices and schedules.

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Tariff Sections without Revisions

- **No tariff revisions are anticipated for guarantee payments such as BPCG, DAMAP, and import curtailment guarantee payments.**

  - The NYISO's current guarantee payment practices will continue under carbon pricing.

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Appendix II: Example - Potential Penalties during Emissions Data Submission

Please Note: This appendix expands upon tariff revisions discussed at slide 17 of this presentation.

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Example 1 Assumptions

- Assume for purposes of example 1:
  - The NYISO estimates for the initial invoice that the generator's emissions are 9 tons.
  - The cost of carbon emissions is $40/ton.
  - The generator has 10 tons of actual carbon emissions.
  - The generator does not report emissions by the 60 day deadline.
  - The generator does not report emissions by the 170 day deadline.
- Invoice charges in this example show the generator's final position as of the invoice version.
  - No addition or subtraction between invoice versions are necessary in this example

Example 1

- **Initial Invoice Version 1**
    - Supplier Carbon Charge = $360
    - Failure to report by 60 day deadline penalty = $0
    - Failure to report by 170 day deadline penalty = $0
    - Failure to report accurate final carbon emissions penalty = $0
- **Total = $360**

Example 1

- **Settlement Adjustment Invoice Version 2**
  - Supplier Carbon Charge = $360
  - Failure to report by 60 day deadline penalty = $180
  - Failure to report by 170 day deadline penalty = $0
  - Failure to report accurate final carbon emissions penalty = $0
- **Total = $540**

Example 1

- **Final Invoice Version 3+**
  - Supplier Carbon Charge = $360
  - Failure to report by 60 day deadline penalty = $180
  - Failure to report by 170 day deadline penalty = $540
  - Failure to report accurate final carbon emissions penalty = $0
- **Total = $1,080**

Example 2 Assumptions

- Assume that at day 165, the generator in example 1 reports emissions of 6 tons, when the generator emissions are actually 10 tons.

- Assume for purposes of example 2:
  - The NYISO estimates for the initial invoice that the generator's emissions are 9 tons.
  - The cost of carbon emissions is $40/ton.
  - The generator does not report emissions by the 60 day deadline.
  - The generator reports emissions of 6 tons at day 165.
  - The generator has 10 tons of actual carbon emissions.

Example 2

- Initial Invoice Version 1 and Settlement Adjustment Invoice Version 2 would be the same as in example 1.

- Final Invoice Version 3+
  - Supplier Carbon Charge = $240
  - Failure to report by 60 day deadline penalty = $180
  - Failure to report by 170 day deadline penalty = $0
  - Failure to report accurate final carbon emissions penalty = $320

- Total = $740

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability

- 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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