Carbon Pricing

Carbon Residual Allocation

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Market Issues Working Group (MIWG)

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Agenda

- Purpose
- Background
- Carbon Residual Allocation
- Proportional Carbon Residual Allocation Example
- Carbon Pricing Timeline

Purpose

Purpose

- **An initial carbon residual allocation presentation was posted to the January 24, 2019 MIWG meeting materials; however, this material was not presented on the 24th.***
  - This presentation incorporates slides from the planned January 24, 2019 MIWG presentation.
- **This presentation will provide a detailed example of the proportional carbon residual allocation methodology.**
  - Return carbon residuals to LSEs based on the proportional effect carbon pricing has on their gross payments for energy.
  - The proportional allocation aims to equalize the ($/MWh Residual Allocation)/LBMPc for each zone.
- **Load Serving Entities (LSEs) will receive an allocation of the carbon residual that results from charging suppliers for their carbon emissions.**
  - The NYISO proposes to allocate these residuals to load serving entities (LSEs).
- **The carbon residual allocation will not affect the LBMP, (which includes the carbon impact on LBMP).**
  - Therefore it will not affect revenues to generators, who receive the LBMP

*Link to the January 24, 2019 MIWG meeting Carbon Residual Allocation presentation:
https://www.nyiso.com/documents/20142/4615689/6%20Carbon%20Pricing%20Residual%20Allocation.pdf/6468111d-1e04-62ea-738a-9dee80d71ac4

Background

Background

- **At the June 4, 2018 IPPTF meeting, the NYISO provided an overview of the carbon residual allocation options.***
  - The NYISO recommended the Cost Levelizing Approach at this meeting.
- **At the September 24, 2018 IPPTF meeting, the Brattle Group provided a comparison of the carbon residual allocation options as part of the carbon pricing consumer impact analysis.^**
- **At the October 29, 2018 IPPTF meeting, the NYISO revised its recommended carbon residual allocation to the proportional allocation methodology after consideration of the Brattle Group's findings.[1]**
  - When considering dynamic effects, as demonstrated by Brattle at the September 24, 2018 IPPTF meeting, the proportional allocation methodology minimizes cost shifts among consumers (see scenario C in the chart at Appendix I).

*For further information, please see the presentation at the following link: https://www.nyiso.com/documents/20142/1401870/2018-06-04_IPPTF%20residual%20allocation-repost.pdf/ec456c48-fa08-2a65-8e6a-d92988445fd9

^For further information, please see the presentation at the following link: https://www.nyiso.com/documents/20142/2625121/2018_09_20%20Zonal%20and%20Seams%20Issues.pdf/17f965c7-bcda-3b9f-9b1e-19958d2c6574

[1]For further information, please see the presentation at the following link: https://www.nyiso.com/documents/20142/3716686/10.29.2018%20IPPTF%20-%20Carbon%20Residual%20Allocation%20FINAL.pdf/35b5eb94-e885-82e3-796c-bd20a8e25f5d

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Carbon Residual Allocation

Carbon Residual Allocation

- **The total carbon residuals are the total dollar amount of carbon charges collected by the NYISO from suppliers and allocated to Load Serving Entities (LSEs).**
  - Total Carbon Residual = carbon charges collected from generators + carbon charges collected from imports and wheels through – carbon payments to exports and wheels through.
- **Suppliers will receive the full LBMP (which includes the carbon pricing effect on LBMP (LBMPc)) and then pay the carbon price on their emissions.**
  - Import transactions will be charged the applicable LBMPc and export transactions will be paid the applicable LBMPc.
- **LSEs will pay the full LBMP, which includes the LBMPc.**
- **The NYISO will then allocate the carbon residual surplus to LSEs.**

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The Proportional Carbon Residual Allocation

- **The proportional Carbon Residual Allocation avoids major cost shifts among customers by providing an equal percentage of carbon charges back to each LSE.**
  - In other words, it equalizes the ($/MWh Residual Allocation)/LBMPc) and therefore compensates for zonal differences in the carbon component of the LBMP (*i.e.,* LBMPc).

Carbon Residual Allocation

- **The carbon residual will generally be positive resulting in carbon residual surplus allocation to LSEs.**
- **In the unlikely circumstance the carbon residual is negative, the tariff will include rules for allocating these carbon residual shortfalls to LSEs.**
  - A negative residual will occur when there are less carbon payments collected from internal generators, imports, and wheels through than paid 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.
- **The NYISO therefore proposes that a carbon residual shortfall be allocated according to load ratio share in a similar way to how other residual shortfalls are allocated.**
  - The NYISO recommends this allocation method.
  - This method would avoid targeting additional carbon charges solely to load in zones with a higher LBMPc and avoids additional cost shifts.
    - Loads in zones with a higher LBMPc have already borne a higher impact from the carbon charges in their energy payment. If the proportional carbon allocation were used they would also pay a higher proportion of the negative residual.

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Mechanics of Carbon Residual Allocation

- **The carbon residual allocation will use the LBMPc from the binding real-time interval (nominally 5-minutes) to calculate the time-weighted integrated (TWI) LBMPc.**
  - Supplier emissions will be reported on an hourly basis; the carbon residual will therefore be on an hourly basis.
  - TWI LBMPc, the hourly carbon residual, and RT actual internal load, will be used to determine the allocation.

Proportional Carbon Residual Allocation Example*

*Please note that the data included in the following example is for illustrative purposes only.

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Proportional Carbon Residual Allocation Example

i	ii	iii	iv
Total Carbon Residual	Location	Load -MWH	LBMPc ($/MWh)
200,000	A	3,000	21.00
	B	800	10.00
	C	1,600	15.00
	D	700	0.00
	E	1,000	16.00
	F	2,000	20.00
	G	500	17.00
	H	700	18.00
	I	1,000	18.00
	J	7,000	21.00
	K	3,500	21.00
	Total	21,800	

Proportional Carbon Residual Surplus Allocation Example

i	ii	iii	iv	v	vi
				(iii*iv)	(v/(sum(v))
Total Carbon Residual	Location	Load -MWH	LBMPc ($/MWh)	Gross LSE Carbon Impact ($)	Share of Gross Carbon Payments by Zone (%)
200,000	A	3,000	21.00	63,000	15.34%
	B	800	10.00	8,000	1.95%
	C	1,600	15.00	24,000	5.85%
	D	700	0.00	-	-
	E	1,000	16.00	16,000	3.90%
	F	2,000	20.00	40,000	9.74%
	G	500	17.00	8,500	2.07%
	H	700	18.00	12,600	3.07%
	I	1,000	18.00	18,000	4.38%
	J	7,000	21.00	147,000	35.80%
	K	3,500	21.00	73,500	17.90%
	Total	21,800		410,600	

Proportional Carbon Residual Surplus Allocation Example

i	ii	iii	iv	v	vi	vii	viii	ix
				(iii*iv)	(v/(sum(v))	(vi*(i))	(vii/iii)	viii/iv
Total Carbon Residual	Location	Load -MWH	LBMPc ($/MWh)	Gross LSE Carbon Impact ($)	Share of Gross Carbon Payments by Zone (%)	Carbon Residual Allocation ($)	Carbon Residual Rate ($/MWh)	Proportion
200,000	A	3,000	21.00	63,000	15.34%	30,686.80	10.23	0.49
	B	800	10.00	8,000	1.95%	3,896.74	4.87	0.49
	C	1,600	15.00	24,000	5.85%	11,690.21	7.31	0.49
	D	700	0.00	-	-	-	0.00	-
	E	1,000	16.00	16,000	3.90%	7,793.47	7.79	0.49
	F	2,000	20.00	40,000	9.74%	19,483.68	9.74	0.49
	G	500	17.00	8,500	2.07%	4,140.28	8.28	0.49
	H	700	18.00	12,600	3.07%	6,137.36	8.77	0.49
	I	1,000	18.00	18,000	4.38%	8,767.66	8.77	0.49
	J	7,000	21.00	147,000	35.80%	71,602.53	10.23	0.49
	K	3,500	21.00	73,500	17.90%	35,801.27	10.23	0.49
	Total	21,800		410,600		200,000.00		

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Proportional Carbon Residual Surplus Allocation Example

Zone	Load	LBMPc ($/MWh)	Allocation Rate ($/MWh)
A	3,000.00	21.00	10.23
B	800.00	10.00	4.87
C	1,600.00	15.00	7.31
D	700.00	0.00	0.00
E	1,000.00	16.00	7.79
F	2,000.00	20.00	9.74
G	500.00	17.00	8.28
H	700.00	18.00	8.77
I	1,000.00	18.00	8.77
J	7,000.00	21.00	10.23
K	3,500.00	21.00	10.23

- **The zonal allocation rate ($/MWh) is used to allocate the carbon residual to each LSE.**
  - The NYISO will post the zonal allocation rate for each load zone.

Proportional Carbon Residual Surplus Allocation Example

			i
LSE	Zone	Zone Load (MWh)	LSE Load (MWh)
LSE1	A	3,000.00	1,000.00
LSE2	A		1,000.00
LSE3	A		1,000.00
LSE1	B	800.00	800.00
LSE1	C	1,600.00	1,600.00
LSE3	D	700.00	525.00
LSE3	D		175.00
LSE1	E	1,000.00	1,000.00
LSE2	F	2,000.00	1,200.00
LSE3	F		800.00
LSE1	G	500.00	500.00
LSE1	H	700.00	350.00
LSE3	H		350.00
LSE3	I	1,000.00	500.00
LSE2	I		500.00
LSE2	J	7,000.00	2,100.00
LSE1	J		1,400.00
LSE3	J		3,500.00
LSE2	K	3,500.00	875.00
LSE3	K		2,625.00

- A single LSE may serve load in many different zones.

Proportional Carbon Residual Surplus Allocation Example

			i	ii	(i*ii)
LSE	Zone	Zone Load (MWh)	LSE Load (MWh)	Allocation Rate ($/MWh)	LSE Allocation Revenue ($)
LSE1	A	3,000.00	1,000.00	10.23	10,228.93
LSE2	A		1,000.00	10.23	10,228.93
LSE3	A		1,000.00	10.23	10,228.93
LSE1	B	800.00	800.00	4.87	3,896.74
LSE1	C	1,600.00	1,600.00	7.31	11,690.21
LSE3	D	700.00	525.00	0.00	-
LSE3	D		175.00	0.00	-
LSE1	E	1,000.00	1,000.00	7.79	7,793.47
LSE2	F	2,000.00	1,200.00	9.74	11,690.21
LSE3	F		800.00	9.74	7,793.47
LSE1	G	500.00	500.00	8.28	4,140.28
LSE1	H	700.00	350.00	8.77	3,068.68
LSE3	H		350.00	8.77	3,068.68
LSE3	I	1,000.00	500.00	8.77	4,383.83
LSE2	I		500.00	8.77	4,383.83
LSE2	J	7,000.00	2,100.00	10.23	21,480.76
LSE1	J		1,400.00	10.23	14,320.51
LSE3	J		3,500.00	10.23	35,801.27
LSE2	K	3,500.00	875.00	10.23	8,950.32
LSE3	K		2,625.00	10.23	26,850.95
					200,000.00

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~~	~~Tariff Revisions Discussion~~
	~~Credit Overview~~
~~Monday, February 4, 2019~~	~~Carbon Residual Allocation~~
Friday, February 15, 2019	LBMPc Calculation – Identifying the Marginal Unit(s)
Thursday, February 28, 2019	Tariff Revisions Discussion
Monday, March 4, 2019	Carbon Bid Adjustment for Opportunity Cost Resources
Monday, March 18, 2019	Tariff Revisions Discussion

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