# Summarizing the Consumer Impact of Incorporating the Cost of Carbon Emissions in the Wholesale Electric Market

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September 17, 2018

# Agenda

- Project Description
- Background
- Cost and Efficiency Impacts
- Reliability Impacts
- Other Impacts
- Next Steps

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# Project Description

- The Brattle Group was retained by the NYISO to perform an assessment of the effects of carbon charges on consumer costs
- This presentation summarizes the findings of the Brattle Group
- The cost impact analysis presented by the Brattle Group is based on the design outlined in the Straw Proposal and presented to stakeholders in May of 2018[1] and other discussions with the Integrating Public Policy Task Force (IPPTF)
  - The straw proposal outlines a potential design for incorporating the cost of carbon emissions into the wholesale electricity markets[1]
- The cost of carbon emissions could be incorporated into the NYISO-administrated wholesale energy markets using a carbon price per ton of CO2 emissions[2]
  - The NYISO would apply a carbon price by debiting each energy supplier a carbon charge for its carbon emissions at the specified price as part of its settlement
- The NYISO would credit the carbon charge residuals, which are the sum of the carbon charges debited from suppliers, to the LSEs[2]
- The NYISO would apply carbon charges to external transactions such that they compete with internal resources (and each other) on a status quo basis, as if the NYISO was not applying a carbon charge to internal suppliers
  - Imports would earn the LBMP without the carbon effect, at the relevant border; similarly, exports would buy energy at the LBMP without the carbon effect[2]

1. Carbon Pricing Straw Proposal, A Report Prepared for the Integrating Public Policy Task force, April 30, 2018
2. Carbon Pricing Straw Proposal Overview, May 12, 2018

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# Background

- **In September 2017, the Brattle group presented an analysis of "Pricing Carbon into the NYISO's Wholesale Energy Market."**
  - The analysis used historic data on marginal units to compute the marginal emission rates (MERs) and a $40/ton cost of carbon based on the Social Cost of Carbon net of RGGI
  - The increase in wholesale energy prices was based on MER times Carbon Charge
  - Computed wholesale energy prices and carbon residuals for 2025
- **The analysis presented today is an update of the previous analysis**
  - GE MAPS production cost modelling serves as the basis of the current analysis
  - LBMPs and MERs were based on MAPS analysis, while carbon charges were taken from DPS Staff's April 23, 2018 presentation to the IPPTF
  - Computed wholesale energy prices and carbon residuals for a "most likely" scenario for 2020, 2025 and 2030, two additional 2025 scenarios with high and low load assumptions and three alternative scenarios (A, B and C) for 2030

# Consumer Impact Analysis (IA) Evaluation Areas

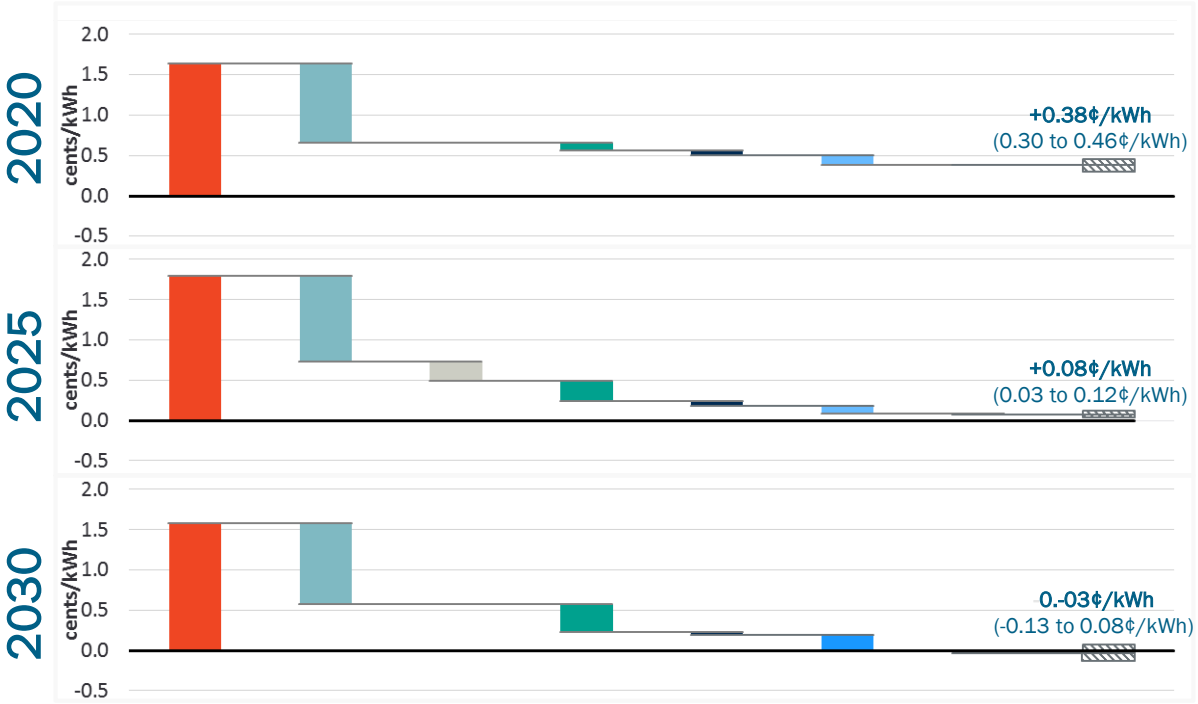
- Present the potential impact on all four evaluation areas

| | |
|---|---|
| **RELIABILITY**<br><br>Incorporating the cost of carbon into the wholesale energy market will help attract and maintain needed resources in a competitive manner | **COST IMPACT/ MARKET EFFICIENCIES**<br><br>Small cost increase anticipated in 2020 and 2025, followed by small cost decrease in 2030 |
| **ENVIRONMENT/ NEW TECHNOLOGY**<br><br>Carbon emissions reductions of approximately 3% by 2030 | **TRANSPARENCY**<br><br>Incorporating the cost of carbon in the wholesale market will enhance transparency |

# COST IMPACT/MARKET EFFICIENCIES

- Wholesale energy prices increase as carbon is incorporated into the market ranging from approximately 1.64 cents/kWh in 2020 to 1.58 cents/kWh in 2030 (Red Bar shown in Slide 7 taken from the Brattle Group analysis)
- However, based on static and dynamic analyses, other impacts off-set the increase in LBMP as shown in the remaining bars in Slide 7
- Customer credit from emitting resources offsets approximately 60% of the increase in LBMPs
- The remaining off-sets to LBMP increases come from lower ZEC and REC prices, increased TCC values and dynamic market impacts

# Cost Impacts

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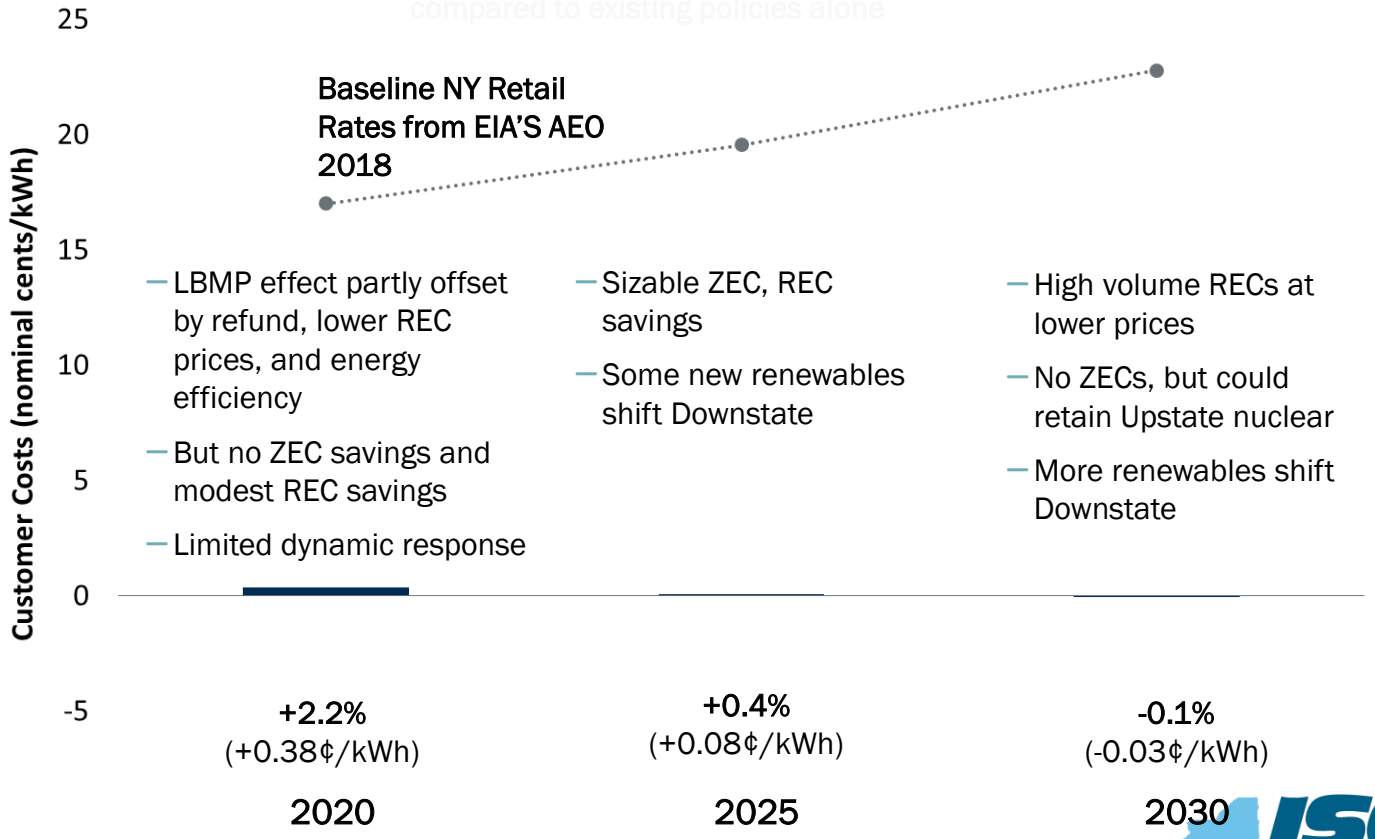
# Cost Impacts

- Slide 9, taken from the Brattle Group analysis, shows the overall cost impacts after taking into account all the static and dynamic impacts for the "most likely" scenarios in 2020, 2025 and 2030
- There is a small increase of approximately 0.38 cents/kWh in 2020, as most of the off-sets are just starting to fall in place
- The increase in 2025 is approximately 0.08 cents/kWh as the static and dynamic off-sets start to kick in
- By 2030 there is a slight decrease of -0.03 cents/kWh in the overall impact as the static and dynamic impacts are fully in place

# Cost Impacts

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# Environmental Impacts

- Carbon emissions reductions of approximately 3% by 2030
- Limited fuel switching as a result of adding the carbon charge
- The majority of the emission reductions result from dynamic effects, that include renewable shifts, nuclear retention, and price responsive load
- Reductions could be greater to the extent carbon prices enable the market to find and take advantage of innovative solutions beyond those modelled, e.g. more low-cost renewables, storage, and efficiency gains in the fossil fleet

# Reliability Impacts

- As the state continues to gain more renewable resources in the future, incorporating the cost of carbon into the wholesale energy market will help attract and maintain needed resources in a competitive manner

# Transparency

- **Incorporating the cost of carbon in the wholesale market will enhance transparency**
  - The NYISO intends to develop a calculation to estimate the LBMP carbon impact
  - Marginal units will be used to calculate the LBMP carbon impact based on their emissions
- **Will lead to more innovative solutions as the market deals with the cost of carbon**

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# Feedback?

- Email additional feedback to:
- deckels@nyiso.com

# Questions?

We are here to help. Let us know if we can add anything.

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- 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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