PJM Carbon Study Objective & Assumptions

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PJM is studying the potential impacts of a significant carbon price in the PJM wholesale energy market in order to inform stakeholders and policy-makers.

- PJM is not proposing to establish a carbon price.
- PJM is conducting this study in tandem with the carbon pricing discussion being advanced by Members in our stakeholder process.
- This initial modeling will be further informed by discussions in the stakeholder process.
- Policy-makers in the PJM region are ultimately responsible for environmental policy, and any associated revenue generated through its application.
• Simulate the impacts of a carbon price on the PJM energy and ancillary service markets
  – Regional: System-wide carbon price
  – Sub-regional: Carbon price for only a sub-region of PJM

• Evaluate the dispatch and commitment of resources and the resulting market and emissions outcomes
Carbon-Pricing Framework Goals

• Enable state policies
• Preserve orderly and competitive economic dispatch across the entire footprint
• Minimize economic and environmental leakage
• Coexist with the Regional Greenhouse Gas Initiative (RGGI)
Study Variables

- Carbon price
- Application of carbon price
  - Reference (business as usual), sub-regional, regional
- Definition of “carbon-pricing sub-region”
- Border-adjustment approaches
Study Variables: Carbon Price

• 2023 Social Cost of Carbon (SCC) determined by the Interagency Working Group on greenhouse gases:

  $52.79/short ton of CO2 (nominal)

• Sensitivities to determine impact of carbon-price magnitude:
  – 25% higher than SCC: $65.99/short ton of CO2
  – 25% lower than SCC: $39.59/short ton of CO2

• Carbon adder to be applied to offers of all emitting resources within the region or sub-region being modeled with a carbon price
The RGGI price will be modeled as $4.50/short ton of CO2 (nominal) based on the New Jersey analysis

• **Reference scenario:** The RGGI price will be applied to the offers of resources that are subject to the program

• **Carbon-pricing scenarios:** When a carbon price is applied to resources in RGGI, the net of the carbon price and the RGGI price will be added to the RGGI price
Study Variables: Carbon-Pricing Sub-Region Definition
Study Variables: Border-Adjustment Approaches

No Border Adjustment

Non-Carbon-Pricing Region

Determine baseline for economic and environmental leakage between regions

Offer

Offer

Carbon-Pricing Region

Offer with CO2 Price

Offer
Study Variables: Border-Adjustment Approaches
One-Way Border Adjustment

Non-Carbon-Pricing Region

- Offer
- Offer
- Offer with CO2 Price

Carbon-Pricing Region

- Offer with CO2 Price
- Offer

Account for impacts of carbon price on imports into the carbon-pricing region

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Study Variables: Border-Adjustment Approaches

Two-Way Border Adjustment

Account for impacts of carbon price on imports into carbon-pricing region and exports from the carbon-pricing region

Non-Carbon-Pricing Region

Carbon-Pricing Region

Offer
Offer
Offer with CO2 Price

Offer
Offer with CO2 Price
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