AC Transmission PPTN: Phase 2 Assumptions

Dawei Fan
Supervisor, Public Policy and Interregional Planning

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Agenda

- Overview of AC Transmission Need
- Assumptions for Comparative Evaluation
- Next Steps

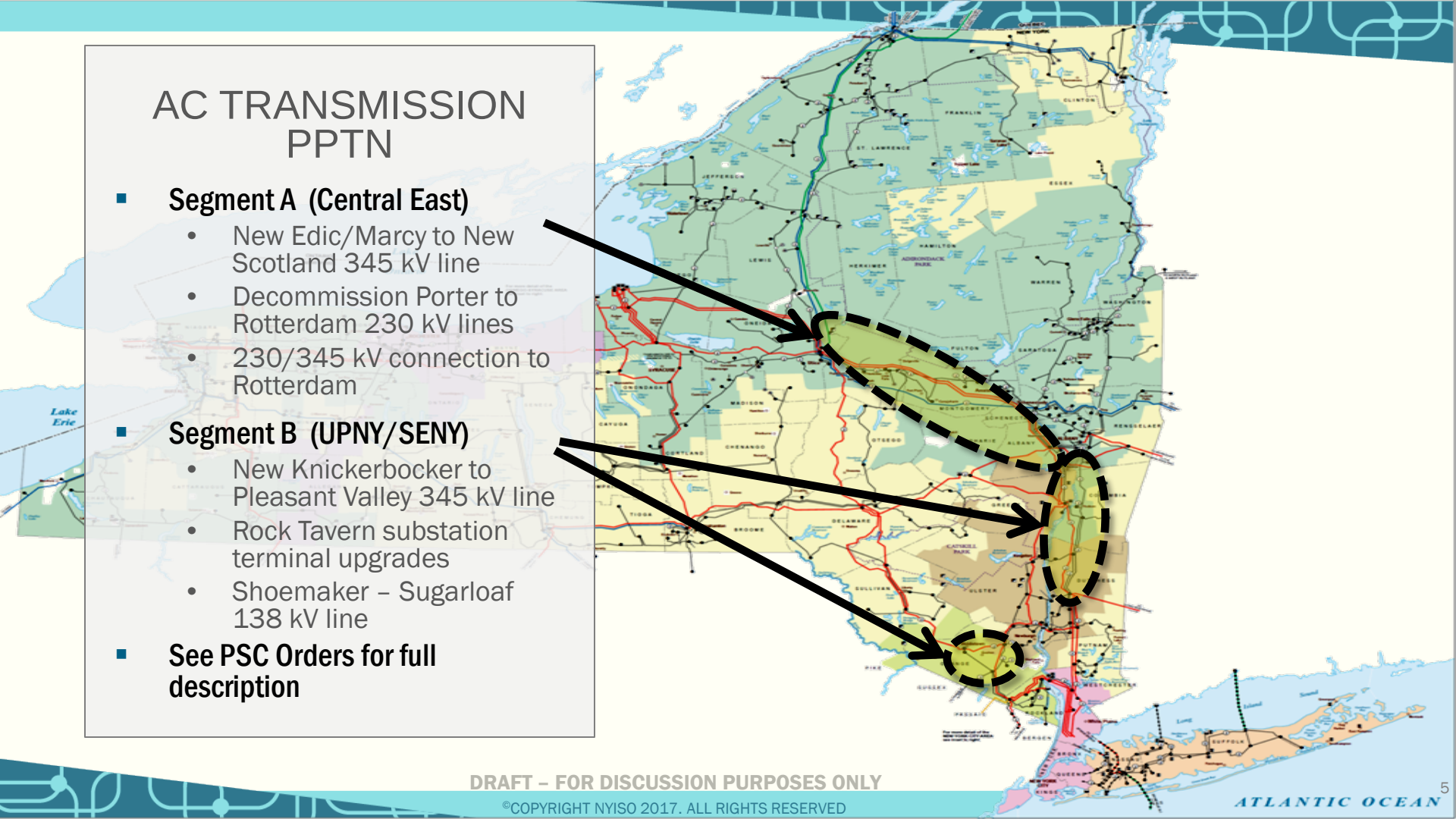
Overview of AC Transmission Need

Public Policy Planning Process

- **Phase I: Identify Needs and Assess Solutions**
  - NYISO solicits transmission needs driven by Public Policy Requirements
  - PSC identifies transmission needs and defines additional evaluation criteria
  - NYISO solicits solutions (transmission, generation, or EE/DR)
  - NYISO performs Viability and Sufficiency Assessment (VSA)
  - PSC reviews assessment and confirms continued transmission need
- **Phase II: Transmission Evaluation and Selection**
  - NYISO staff evaluates viable and sufficient transmission solutions and recommends the more efficient or cost-effective solution
  - Stakeholder review and advisory votes at BIC and MC
  - NYISO Board may select a transmission solution for purposes of cost allocation and recovery under the NYISO Tariff

AC TRANSMISSION PPTN

- **Segment A (Central East)**
  - New Edic/Marcy to New Scotland 345 kV line
  - Decommission Porter to Rotterdam 230 kV lines
  - 230/345 kV connection to Rotterdam
- **Segment B (UPNY/SENY)**
  - New Knickerbocker to Pleasant Valley 345 kV line
  - Rock Tavern substation terminal upgrades
  - Shoemaker – Sugarloaf 138 kV line
- **See PSC Orders for full description**



Viable and Sufficient Transmission Projects

- **13 transmission projects are viable and sufficient**
  - National Grid / Transco – New York Energy Solution Segment A
  - National Grid / Transco – New York Energy Solution Segment B
  - NextEra Energy Transmission New York – Enterprise Line: Segment A
  - NextEra Energy Transmission New York – Enterprise Line: Segment B
  - NextEra Energy Transmission New York – Enterprise Line: Segment B Alt.
  - North America Transmission / NYPA – Segment A + 765 kV
  - North America Transmission / NYPA – Segment A Base
  - North America Transmission / NYPA – Segment A Double Circuit
  - North America Transmission / NYPA – Segment A Enhanced
  - North America Transmission / NYPA – Segment B Base
  - North America Transmission / NYPA – Segment B Enhanced
  - ITC New York Development – 16NYPP1-1A AC Transmission
  - ITC New York Development – 16NYPP1-1B AC Transmission

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Assumptions for Comparative Evaluation

Overview

- Present assumptions for comparative evaluation
- Solicit feedback from stakeholders
- Evaluate all metrics required by the OATT
- The evaluation of Public Policy Transmission Projects differs from other planning processes because it can give varying levels of consideration to the baseline and the scenarios

Databases for Comparative Evaluation

- Power flow: used in metrics such as transfer limits, cost per MW, operability, and expandability
- Resource adequacy: used to analyze LOLE and ICAP benefit
- Production cost: used in metrics such as production cost savings, emission, LBMP, load payment, and performance
- SECO databases: used in metrics such as overnight capital cost, schedules, property rights, and expandability

Power Flow Analysis

- **Viability and Sufficiency Assessment: Phase 1 (Completed)**
  - 2014 Reliability Planning Process (RPP) base case representation of 2019 summer peak load
  - Updated to include CPV Valley Energy Center and associated System Deliverability Upgrades
- **Baseline Power Flow Analysis in Phase 2**
  - The same case as used in Phase 1

Power Flow Analysis

- **Scenario Power Flow Analysis in Phase 2**
  - Start with the 2016 RPP base case representation of 2026 summer peak load
  - Updated based on 2017 Gold Book
  - Generation:
    - Existing units no longer modeled as deactivated: Ginna, FitzPatrick, and Cayuga
    - Additions: CPV Valley Energy Center, Cricket Valley Energy Center, Bayonne Energy Center II, Greenidge #4, Jericho Rise, Bethlehem Energy Center Uprate, Cassadaga, Arkwright Summit, Eight Point, Shoreham Solar, and Ogdensburg
    - Deactivation: Auburn LFGE, Binghamton, Indian Point Energy Center Units No. 2 & 3
  - Transmission:
    - Hudson Transmission Project scheduled at 0 MW
    - ABCJK PARs modeled based on PJM/NYISO JOA
    - Selected Western NY transmission project modeled as in service

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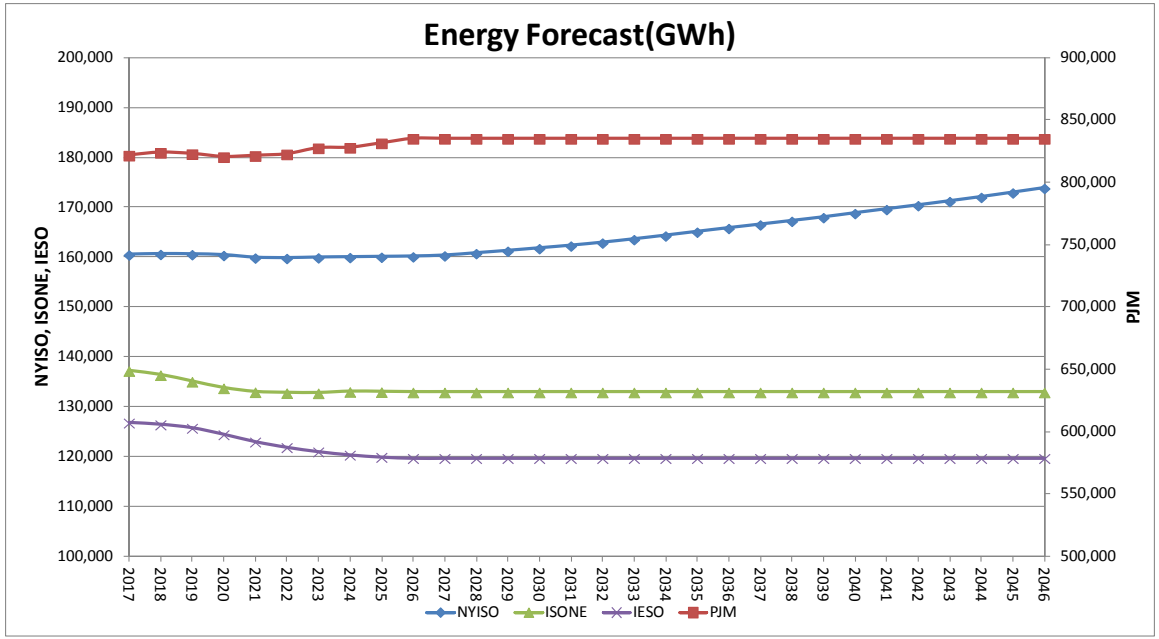
Production Cost Database

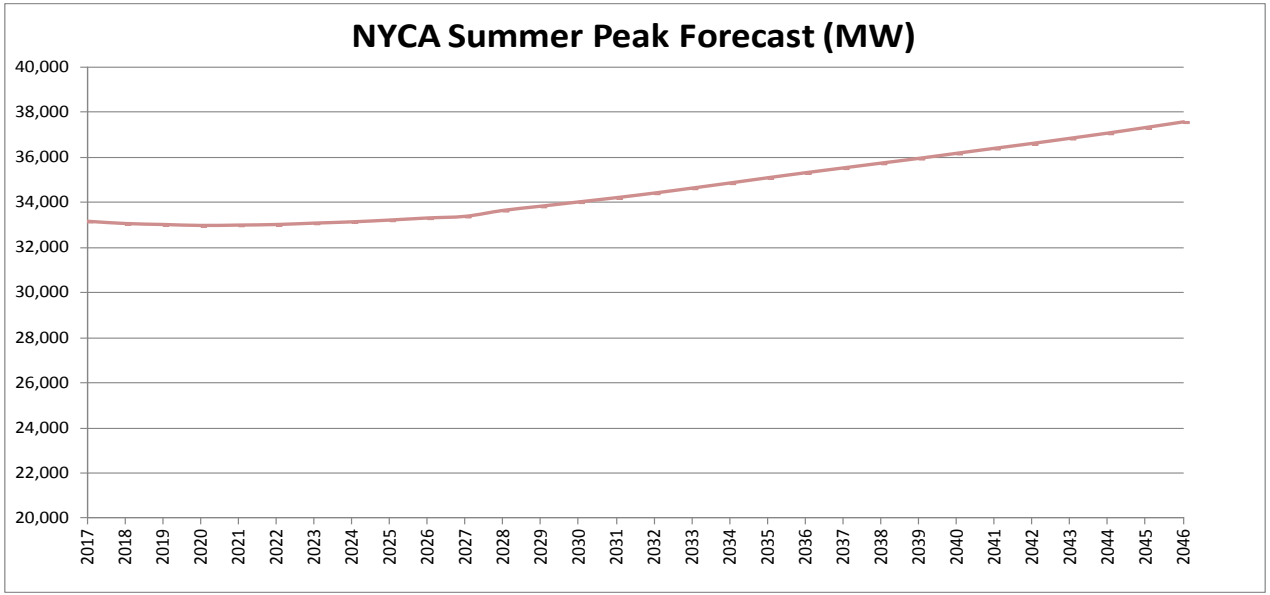
- **Baseline**
  - Start with 2017 CARIS Phase 1 Base Case (2017–2026)
  - Updates: Freeport in service, Binghamton out of service, and Indian Point Units No. 2 & 3 out of service
  - Extensions: up to 2046
    - Load, fuel, and emission
    - Compensatory MW to maintain a reliable system, if needed

Load Forecast (Energy)



Note: External load frozen starting with the 10th year

Load Forecast (Peak Demand)



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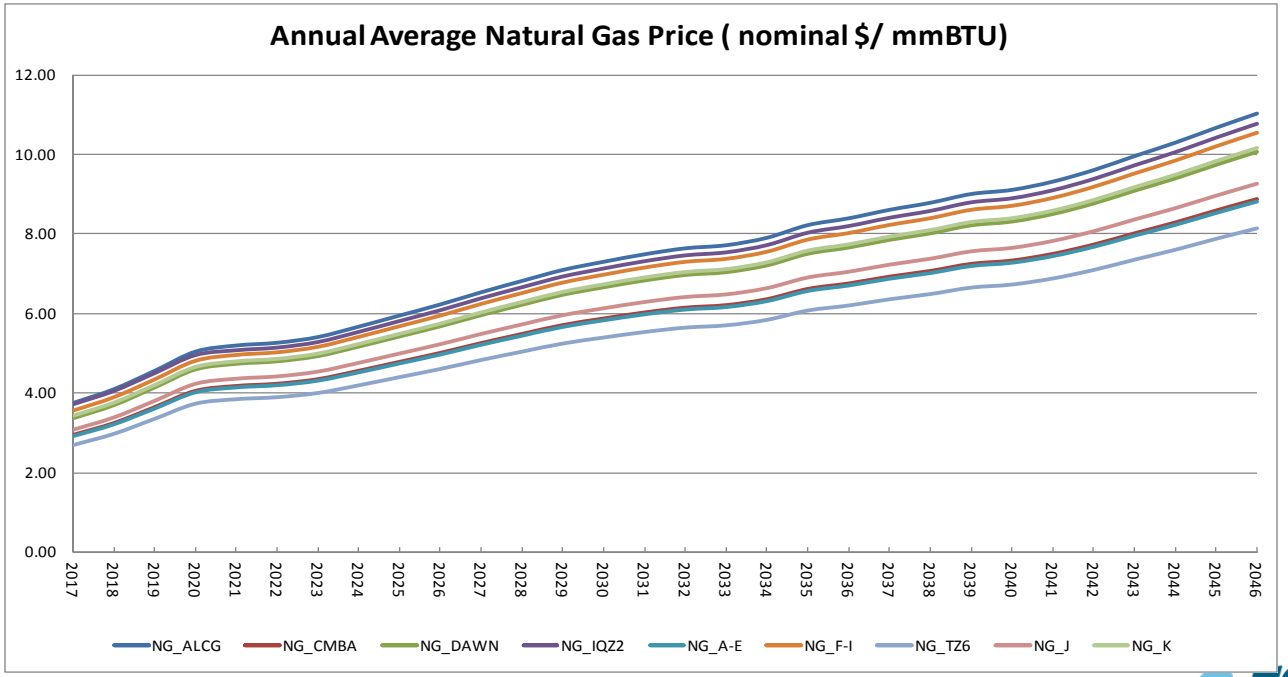
Natural Gas Price Forecast



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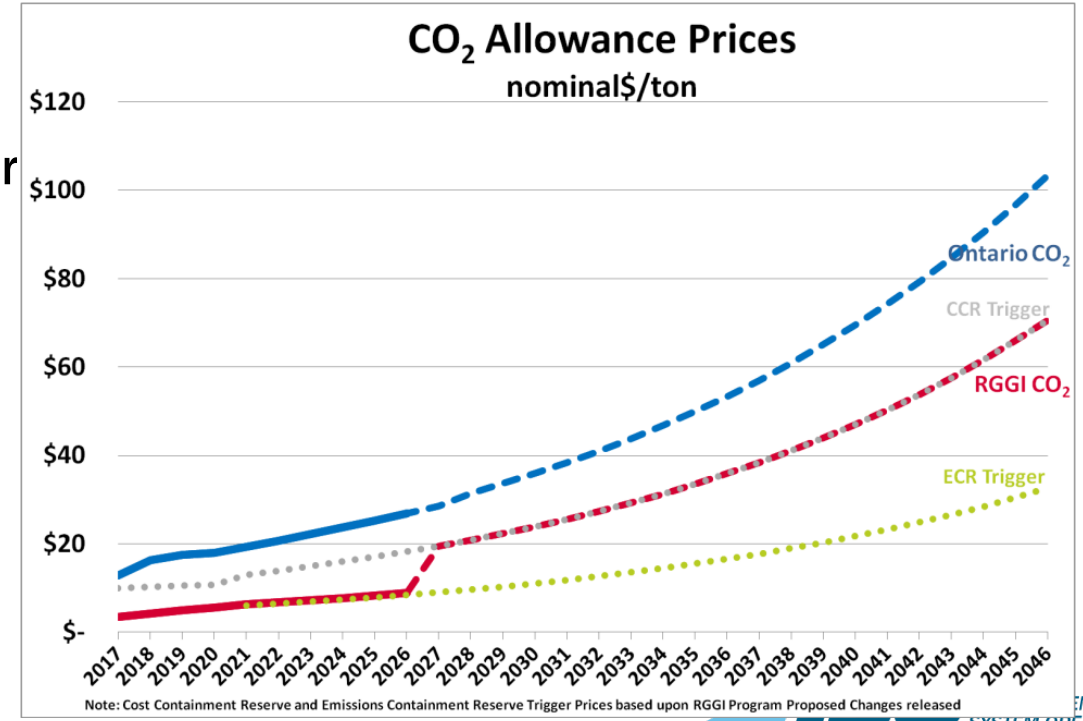
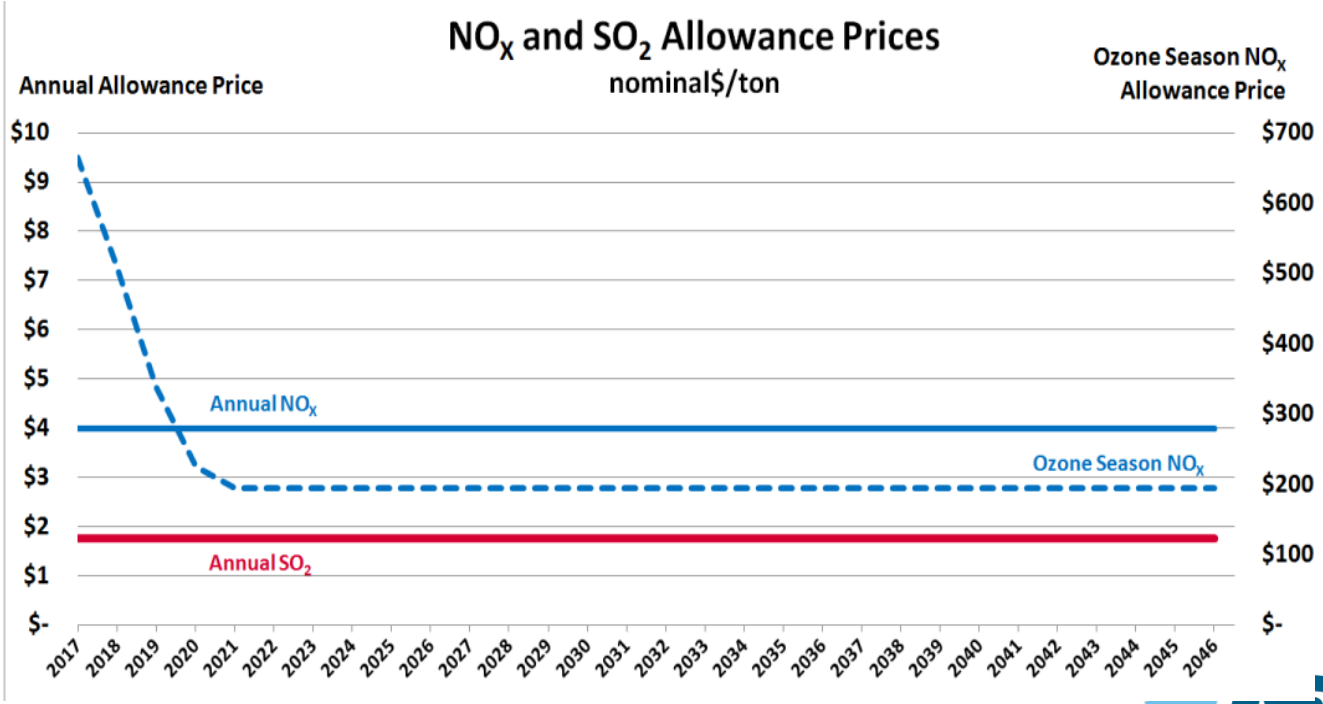
CO_2 Emission Price Forecast

- 2017 CARIS forecast used through 2026
- Price increase from soft floor to ceiling due to bank of surplus allowance reduced to zero in 2025, load growth, and decline in the allowance cap
- National CO2 program assumed to start in 2027



NO_x and SO_2 Price Forecast



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Production Cost Database

- **Potential Scenarios**
  - Model Clean Energy Standard combined with retirement of aging generation
  - No National CO_2 program
  - High Natural Gas price
  - Low Natural Gas price
  - Low NYCA load forecast
  - High NYCA load forecast

Resource Adequacy Analysis

- **Baseline:**
  - Start with 2016 RPP base case
  - Updated based on 2017 Gold Book, and load extended out to 2046
  - Generation:
    - Existing units no longer modeled as deactivated: Ginna, FitzPatrick, and Cayuga
    - Addition: CPV Valley Energy Center, Cricket Valley Energy Center, Bayonne Energy Center II, Greenidge #4, Jericho Rise, Bethlehem Energy Center Uprate, Cassadaga, Arkwright Summit, Eight Point, Shoreham Solar, and Ogdensburg
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Resource Adequacy Analysis

- **Potential Scenarios:**
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Next Steps

Next Steps

- Further questions and comments regarding AC Transmission Need assumptions and scenarios can be sent to PublicPolicyPlanningMailbox@nyiso.com as soon as possible, but no later than December 1, 2017.
- The NYISO tentatively plans to provide the draft results by the end of Q1 2018.

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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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