# 2016 Economic Studies Forward Capacity Auction Scope of Work

## Planning Advisory Committee

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# OVERVIEW AND BACKGROUND

# Overview

- Phase I of the 2016 Economic Study comprises production cost simulation results for six scenarios, which were examined for 2025 and 2030 with sufficient resources assumed to meet the Net Installed Capacity Requirement
- Today we will discuss results of the Phase II Scenario Analysis Results for Forward Capacity Auction Prices
  - The Scope of Work and assumptions were discussed with the PAC on December 14, 2016
  - See https://www.iso-ne.com/static-assets/documents/2016/12/2016_economic_study_fca_sow_pac_121416_a07.pdf

# NEPOOL's Six Base Scenarios

1. **RPS + Gas:** Physically meet Renewable Portfolio Standards (RPS) and replace generator retirements with natural gas (combined cycle units)
2. **ISO Queue:** Physically meet RPS and replace generator retirements with new renewable/clean energy
3. **Renewables Plus:** Physically meet RPS, add renewable/clean energy, EE, PV, PEV, storage, retire old generating units
4. **No Retirements (beyond FCA #10):** Meet RPS with resources under development and use RPS Alternative Compliance Payments (ACP) for shortfalls, add natural gas units
5. **Gas + ACPs:** Meet RPS with resources under development and use ACP, replace retirements with natural gas
6. **RPS + Geodiverse Renewables:** Scenario 2 with a more geographically balanced mix of on/offshore wind and solar PV

# NEXT STEPS

# Schedule

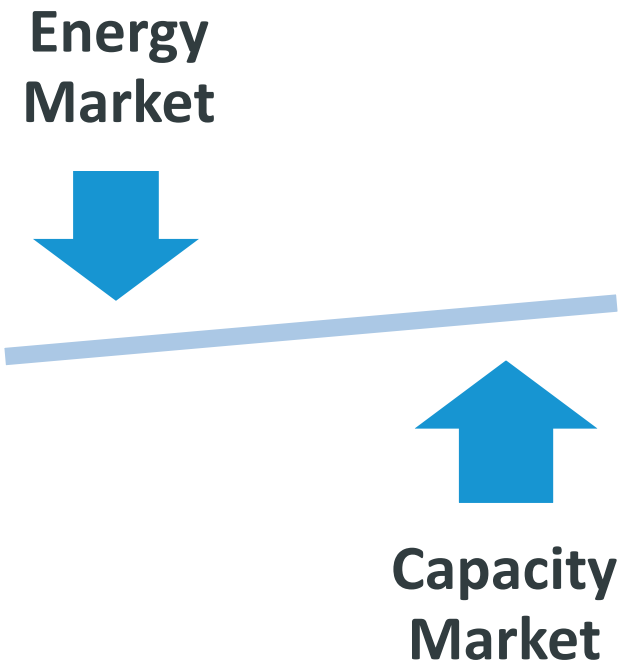
- May 25
  - Discuss draft results with PAC
- June 5, 2017
    - Stakeholder comments to be provided to PAC Matters@iso-ne.com
- June15, 2017
  - PAC website postings of comments received, responses to comments, and the final results
- June 21, 2017
  - Discuss comments received, relatively minor comments, and points of clarification

# Questions

# APPENDIX: ORIGINAL SCOPE OF WORK FOR PHASE II SCENARIO ANALYSIS OF FORWARD CAPACITY AUCTION PRICES

# The Energy and Capacity Markets Are Linked; Changes in One Market Will Affect the Other

- Because renewable resources typically have **no fuel costs**, they will be dispatched ahead of conventional generation (gas, coal, and oil), putting *downward* pressure on energy-market prices and *upward* pressure on capacity prices
- The **shift in revenues** from the energy to the capacity market **will affect the resource mix**, putting additional financial pressure on energy-market dependent resources like nuclear and coal-fired units
- Competition among natural gas units decreases their revenue from the energy market




*With increasing levels of renewables, the capacity market will play a key role in ensuring resource adequacy*

# The Analysis Group Will Model Capacity Market Outcomes for Each Scenario

- AG effort will quantify observation that lower energy prices are generally expected to increase capacity market prices
- Analyze the Five Base Scenarios for 2025 and 2030
  - Use one bus model
  - Discuss draft results with the PAC
- Build off prior capacity market modeling efforts
  - AG capacity market model previously analyzed Pay for Performance ("PFP") market rules
  - Update the model for current resource and market conditions
  - Incorporate recent FCM rule changes
  - Energy market outcomes modelled by ISO-NE will feed into FCM outcomes modelled by Analysis Group.

# The Analysis Group Model

- Model estimates FCM market equilibrium based on resource supply curve and demand curve
- Supply curve is based on resource-specific capacity market offers reflecting resource-specific estimates of going forward costs ("GFC")
  - GFC reflects fixed costs less net energy and ancillary service revenues
  - Reflects performance in PFP market environment
  - Includes all existing resources in each scenario
- Demand curves reflect assumed needed capacity levels
- Single year snapshots of prices, not a price trajectory across years

# Scenarios

- Initial runs will cover each of the scenarios for 2025 and 2030
- Some limited additional sensitivities may be performed
  - These could include, for example, different assumptions around the application of the Minimum Offer Price Rule (MOPR)
  - Other scenarios of interest likely to arise as the modeling effort progresses