Recent ISO-NE Economic Studies Relevant to Future New England Grid

Markets Committee/Reliability Committee
April 7, 2020

DAY PITNEY LLP

Overview

- Several recent ISO-NE Economic Studies provide insight relevant to New England's future grid. The analysis, data and results from these studies could help inform the Transition to Future Grid study.

- Note: while these ISO-NE studies are relevant, the future grid study is not intended to be an Economic Study under the Tariff.

- The most relevant studies are the 2016, 2017, and 2019 Economic Studies done by ISO-NE, pursuant to Attachment K of its Tariff, for NEPOOL, CLF, NESCOE, Anbaric and RENEW. High level summaries of these studies have been provided below. ISO-NE's Economic Studies page, with postings of reports/findings from past studies can be accessed here:

  https://www.iso-ne.com/committees/planning/planning-advisory/?document-type=Economic Studies

NEPOOL 2016 Economic Study

- Requested by NEPOOL in April 2016; completed by ISO-NE in late 2017. The study produced extensive data and findings related to the potential effect of public policies on markets, transmission, emissions and system operations.

- The requested scenarios considered several public policies assumed to be in effect in the six New England states in the two study years of 2025 and 2030, including Renewable Portfolio Standards; energy-efficiency, solar, and net-metering programs; and the Regional Greenhouse Gas Initiative allowance pricing

NEPOOL 2016 Economic Study

- The Phase 1 final report, published November 17, 2017, is available here:

  https://www.iso-ne.com/static-assets/documents/2017/11/final_2016_phase1_nepool_scenario_analysis_economic_study.docx

- The Phase 2 final presentation, dated December 20, 2017, is available here:

  https://www.iso-ne.com/static-assets/documents/2017/12/a2_2016_economic_study_phase_2_ramping_regulation_reservers_scenario_results.pdf

NEPOOL 2016 Economic Study

- NEPOOL requested study of the potential effects of public policies on markets, system reliability and operability, resource costs and revenues, and emissions. Six scenarios were studied, including:

  - **Scenario 1—"RPSs + Gas",** where the generation fleet meets existing Renewable Portfolio Standards (RPSs), and natural gas combined-cycle (NGCC) units replace retired units.

  - **Scenario 2—"ISO Queue",** where the generation fleet meets existing RPSs, and new renewable/clean energy resources meet all future needs, including retirements, with the wind resources located mostly in Maine in the same locations indicated in the ISO's Interconnection Queue.

  - **Scenario 3—"Renewables Plus",** where the generation fleet meets existing RPSs, and the system has additional renewable/clean energy resources.

NEPOOL 2016 Economic Study

- **Scenario 4**—"**No Retirements beyond FCA #10**", where the generation fleet has natural gas combined cycle (NGCC) plant additions and no retirements after the tenth Forward Capacity Auction (FCA #10) and where local load-serving entities meet existing RPSs, in part through alternative compliance payments (ACPs).

- **Scenario 5—"ACPs + Gas",** where the existing fleet meets existing RPSs in part through ACPs, and NGCC additions replace retired units.

- **Scenario 6—"RPSs + Geodiverse Renewables",** which is similar to Scenario 2 with the generation fleet meeting existing RPSs and new renewable/clean energy resources meeting all future needs, including retirements, but with more geographically balanced onshore wind, offshore wind, and solar photovoltaic (PV) resources.

- The scenarios examined data sets for two years, 2025 and 2030, with the transmission system constrained and unconstrained and with all resource mixes meeting the net Installed Capacity Requirement.

CLF 2017 Economic Study

- In 2017 Conservation Law Foundation requested study of several low-carbon-emitting resource-expansion scenarios and potential effects on resource adequacy, operating and capital costs, and options for meeting environmental policy goals ("Least cost emissions-compliant scenarios"). The final report on the study is available here:

  https://www.iso-ne.com/static-assets/documents/2018/10/2017_economic_study_final.docx

- The study used the following metrics: energy production by resource type; system-wide production costs; average locational marginal prices; average load-serving entity energy expenses and congestion; generic capital costs and annual carrying charges for each resource type; transmission-expansion costs; generation by fuel type and the amount of "spilled" renewable resources; system-wide carbon dioxide emissions; effects of transmission-interface constraints that may bind economic power flows

CLF 2017 Economic Study

- The CLF 2017 study used the following scenarios:

- **2016 NEPOOL Scenario Analysis Scenario 3—"Renewables Plus",** where the generation fleet meets existing Renewable Portfolio Standards (RPSs), and the system has additional renewable/clean energy resources
- **2017 Economic Study Scenario A—"EE + Offshore"** reflects a change from the Renewables Plus scenario by modifying the resource mix of new renewable/clean energy resources, with emphasis on energy efficiency (EE) and offshore wind in southern New England
- **2017 Economic Study Scenario B—"Onshore Less EE/PV"** simulates a change in the mix of Renewables Plus resources with new renewable/clean energy resources, with emphasis on onshore wind in northern New England (and less on EE and solar photovoltaics [PV])
- **2017 Economic Study Scenario C—"Wind Less Nuclear"** considers the replacement of some of the baseload nuclear generation in the Renewables Plus scenario with renewable/clean energy resources, especially onshore wind in northern New England

NESCOE 2019 Economic Study

- NESCOE requested study of the effects of increasing amounts of offshore wind in New England on transmission and wholesale markets.
- The study looks at up to 8,000 MW of offshore wind interconnecting at various points on the ISO-NE system in the time period up to 2030.
- ISO-NE has not finalized the study yet but provided results most recently in a February 20, 2020 presentation, which can be accessed here:

  https://www.iso-ne.com/static-assets/documents/2020/02/a6_nescoe_2019_Econ_8000.pdf

- ISO-NE expects to publish a final report by June 1.

Anbaric 2019 Economic Study Request

- Anbaric also requested study of impacts of increasing amount of offshore wind on energy market prices, air emissions and regional fuel security.

- The study looks at additions of up to 8,000 - 12,000 MW of offshore wind interconnecting in southern New England by 2030.

- ISO-NE has not finalized the study yet but provided results most recently in a February 20, 2020 presentation, which can be accessed here:

  https://www.iso-ne.com/static-assets/documents/2020/03/a8_anbaric_2019_economic_study_prelim_results_marpac.pdf

- ISO-NE expects to publish a final report in June/July.

RENEW 2019 Economic Study

- RENEW requested study of the economic impact of conceptual increases in hourly operating limits on the Orrington-South interface from conceptual transmission upgrades to allow bottled-in wind generation in Maine access to the rest of New England. While this study does not expressly look at public policies, it does look at getting wind energy out of Maine, and the market effects of large additions of wind energy on the New England grid.

- The study will model the transmission system using 2025 internal interface transfer capabilities, with the exception of the Orrington-South interface.

- As with the NESCOE and Anbaric studies, the RENEW study will include production cost simulations.

- ISO-NE has not finalized the study yet but expects to provide some results in April.

Conclusion

- Several recent ISO-NE Economic Studies exist or are in the process of being completed that could provide relevant analysis and data for the Transition to Future Grid study process.

- The Economic Studies done since 2016 through the present for NEPOOL, CLF, NESCOE, Anbaric and RENEW provide analysis and data, covering the time periods out to 2025, 2030 and/or 2035.

- Stakeholders may want to consider if analysis and data from these past studies could help support the Transition to Future Grid effort.