MINUTES OF THE
PLANNING ADVISORY COMMITTEE (PAC)
MEETING HELD ON APRIL 18, 2024

Attendee	Organization
J. Truswell (Chair)	ISO New England
J. Macura (Secretary)	ISO New England
P. Abucewicz	New England Power Company
S. Adams	ISO New England
A. Ahmed	ISO New England
Z. Ahmed	ISO New England
R. Albrecht	Ray Albrecht, LLC
S. Ali	NextEra Energy
S. Allen	Eversource Energy
R. Andrew	Eversource Energy
P. Asarese	ISO New England
K. Bane	ISO New England
D. Bergeron	ME PUC
P. Bernard	ISO New England
J. Black	ISO New England
K. Boucher	ISO New England
P. Boughan	ISO New England
D. Bradt	Oxford Power
H. Braun	London Economics
J. Breard	ISO New England
J. Brodbeck	EDPR
R. Brody	CT Global
D. Burnham	Eversource Energy
K. Caiazzo	MA Attorney General's Office
D. Cavanaugh	Energy New England
A. Chaplin	New Leaf Energy
P. Chardavoyne	ISO New England
L. Cioffi	Rhode Island Energy
M. Colapietro	ISO New England
R. Collins	ISO New England
W. Coste	ISO New England
F. Dallorto	ISO New England
W. Dejeanlousi	Synapse
B. Deonarine	Con Edison Transmission
J. Dong	Eversource Energy
J. Donovan	MA Attorney General's Office
M. Drzewianowski	ISO New England

L. Durkin	ISO New England
F. Ettori	VELCO
J. Fenn	Fennco, LLC
A. Feygin	ISO New England
B. Forshaw	Energy Market Advisors
M. Fossum	New Hampshire Office of Consumer Advocate
B. Fowler	Wheelabrator North Andover Inc.; Exelon Generating Company LLC; Nautilus Power; Dynegy Power Marketing, LLC; Entergy Nuclear Power Marketing LLC; Great River Hydro, LLC
M. Fultz	Rhode Island Energy
A. Gagnon	MA Attorney General's Office
S. Garwood	New Hampshire Transmission
A. Gillespie	Calpine
R. Guay	Maine PUC
J. Halpin	Eversource Energy
R. Harvey	IEEE
M. Haskell	Maine PUC
B. Havill	RLC Engineering
P. Holloway	MA DOER
H. Hunt	NESCOE
M. Ide	MMWEC
G. Joshi	Rhode Island Energy
S. Keane	NESCOE
K. Kilgallen	Avangrid (CMP/UI)
A. Kleeman	ISO New England
A. Kniska	ISO New England
R. Kornitsky	ISO New England
N. Krakoff	Conservation Law Foundation
A. Krich	Boreas Renewables
M. Krolewski	Vermont PUC
F. Kugell	Central Maine Power Company
R. Lafayette	Eversource Energy
S. Lamotte	ISO New England
J. Lamson	RTO Insider
A. Landry	ME OCA
A. Lawton	Advanced Energy United
P. Lopes	DCAM, Commonwealth of Massachusetts
J. Lucas	Eversource Energy
T. Lundin	LS Power
J. Martin	New England Power Company

T. Martin	New England Power Company
B. McKinnon	South Hadley Electric Light & Norwood Municipal
S. Molodetz	NextEra Energy
S. Nikolov	ISO New England
B. Oberlin	ISO New England
R. Panos	New England Power Company
D. Patnaude	Eversource Energy
M. Perben	ISO New England
E. Perez-Cervera	ISO New England
D. Phelan	New Hampshire PUC
J. Porter	Rhode Island Energy
H. Presume	VELCO
N. Raike	ISO New England
M. Ribeiro Dahan	ISO New England
C. Richards Jr.	Rhode Island Energy
B. Robertson	Eversource Energy
E. Roedel	Avangrid (CMP/UI)
V. Rojo	ISO New England
E. Ross	ISO New England
J. Rotger	CES
E. Runge	Day Pitney
A. Sarmadi	New England Power Company
K. Schlichting	ISO New England
D. Schwarting	ISO New England
M. Scott	New England Power Company
C. Sedlacek	Eversource Energy
P. Shattuck	Anbaric
M. Siddiqui	New England Power Company
J. Slocum	MA Dept. Transportation
B. Snook	Maine Governor's Office of Energy
C. Soderman	Eversource Energy
P. Sousa	South Coast Wind
M. Spector	Grid United
K. Sreenivasachar	ISO New England
B. Stein	H.Q. Enterprises
B. Swalwell	Tangent
T. Sweeney	New Hampshire Dept. of Energy
J. Talbert-Slagle	CT Office of Consumer Counsel
B. Thomson	Rhode Island Energy
A. Trotta	United Illuminating
G. Twigg	NECPUC
P. Vijayan	ISO New England

K. Wei	NextEra Energy
B. Wilson	ISO New England
M. Winne	ISO New England
J. Zhang	ISO New England

Item 1.0 – Chairs Remarks

Ms. Jody Truswell (ISO-NE) welcomed PAC and reviewed the day's agenda. Ms. Truswell issued the following brief announcements:

The window for Stakeholder-Requested Scenario submittals as part of the 2024 Economic Study has opened. Stakeholder-Requested Scenarios must be submitted to ISO New England via pacmatters@iso-ne.com by April 20. During the June 2024 meeting, the PAC will discuss and prioritize a singular Stakeholder-Requested scenario to be performed. The cost of this scenario will be covered under the tariff. The IPSAC meeting will be held on May 3 from 1:00-3:00 P.M. The EAG meeting will be held on May 23 from 9:30-11:30 A.M.

Item 2.0 – Update to Boston 2033 Needs Assessment (NA) **CEII**

Mr. Allan Feygin (ISO-NE) provided an update on additional analysis performed for the Boston 2033 NA. The presentation addressed corrections related to the use of the North Cambridge 345 kV series reactors and modeling of contingencies associated with the Stoughton Remedial Action Scheme. The presentation also discussed the time sensitivity of the newly identified needs and the processes that will be used to develop solutions.

ISO-NE issued the following statements in response to questions:

- The Transmission Planning Technical Guide (TPTG) is the point of reference for storage assumptions. If the night-time minimum load occurs at 4 A.M, the battery might already be fully charged. The TPTG assumes batteries are offline during low renewable cases.
- The TPTG documents the assumptions for the battery energy storage system. The planned BESS in the Boston area would be assumed offline during minimum load conditions.
- The ISO has not utilized switching out of high voltage cables to address high voltage concerns in its planning studies for many years due to the impact of the switching on the longevity of the cables.
- Currently, the use of Storage as a Transmission-Only Asset (SATAO) has not yet been fully incorporated into the planning process. For the solutions study, SATOAs will not be considered as a viable solution and when the non-time-sensitive needs are reevaluated at the end of the solutions study. The ISO will assess whether SATOA will be considered as a possible solution for the non-time-sensitive needs through the competitive RFP.
- On the question regarding the operation of the series reactors, the ISO stated that in general the series reactors are normally in-service, and decisions to bypass the series reactors are made by System Operators in response to specific system conditions. For the N-1-1 planning analysis, after the initial contingency is modeled out of service, generation redispatch and adjustments of phase shifters and shunt devices are done such that post second contingency criteria violations are addressed. These adjustments are made pre-2nd contingency.

- Switching reactors between first and second contingencies is acceptable.

Item 3.0 – Hurd State Park Corridor Rebuild Follow-Up Presentation

Mr. Chris Soderman (Eversource) provided a follow-up presentation on Hurd State Park's Corridor Rebuild that focused on highlighting Eversource's preferred solution, as well as reviewed stakeholder feedback.

The total estimated cost for the Hurd State Park rebuild is $43.6M (-25/+50%), with an updated in-service date of Q4 2025. The rebuild proposes to replace 33 lattice towers and a wood structure with a combination of single circuit H-frame structures, single circuit three pole structures, and steel monopoles. The rebuild separates the Connecticut River crossing structures and installs 4 new single-circuit steel monopoles, as well as replaces 12.5 circuit miles of Alumoweld shield wire with OPGW and 6.9 circuit miles of 954 45/7 ACSR and 1192 30/19 ACSR conductor with bundled 1590 ACSS conductor. In addition, the total estimated cost for reconductoring East of Hurd State Park to Haddam Neck is $13.3M, with an updated in-service date of Q4 2025. This will include replacing 7 circuit miles of 954 45/7 ACSR, bundled 954 45/7 ACSR, bundled 1192 30/19 ACSR, and bundled 1272 45/7 ACSR conductor with bundled 1590 ACSS conductor.

In response to questions, Eversource issued the following statements:

- Eversource uses recently completed line inspections to grade structure conditions in accordance with Electric Power Research Institute (EPRI) guidelines. Eversource's grading system is as follows: A: Nominal Defect, B: Minimal Defect, C: Moderate Defect, D: Severe Defect.
- Eversource does not use code changes as a project driver, but they are considered when reviewing suspect assets.
- Repairs to the lattice tower foundations would require extensive excavation, as the spalled concrete will be broken away and rods will be installed greater reinforcement. When the overburden is removed, the structures must be held down with weighted equipment. Many structures are under uplift under say to day conditions.
- The Hurd State Park Corridor is a critical asset, connecting to Millstone generating station.
- Eversource noted concern over line broken strands on the 1192 ACSR conductor, as this line spans over the river and is subject to smooth wind, causing Aeolian vibration.
- Eversource feels creating independent crossing structures presents a benefit by eliminating a contingency.

Item 4.0 – E-205E & E-205W 230kV Line Asset Condition Refurbishment

Mr. Rafael Panos (National Grid) discussed the asset condition needs driving the E-205E and E-205W refurbishment, as well as the conceptual alternatives for the identified asset condition issues. Recent inspections identified over 500 visibly deteriorated wood pole structures, circuit damage, as well as damaged conductors, shield wire, and insulators. The presentation also emphasized a growing need to expand and modernize National Grid's private telecommunications network that eliminates communication single points of failure. National

Grid is assessing a full rebuild solution at 345 kV (operating at 230 kV) and 230 kV. The estimated construction start date is Q2 2029, with an in-service date of Q4 2033.

In response to stakeholder questions, National Grid issued the following statements:

- National Grid will follow up with the line ratings for both its 230 kV and 345 kV solution alternatives.
- Due to varying levels of degradation, certain structures will require maintenance ahead of construction of this project.
- National Grid's inspection and maintenance program drives its mitigation efforts. Whether National Grid classifies an asset as a non-restorative structure depends on its most recent inspection.
- National Gird will follow up with more detail on its line condition rating system.
- National Grid will not propose a targeted approach for this asset condition project because damage is spread throughout the length of the line and a substantial number of wood poles replaced in 2010 are already displaying signs of damage.
- National Grid feels the inclusion of OPGW replacements provides the project with a more fulsome solution, rather than requiring additional projects and incurring those subsequent costs.
- National Grid's proposed solution includes permanent access roads due to the potential long-term cost savings of line maintenance.

Stakeholders issued the following comments:

- In an attempt to determine an appropriate scope for the asset condition project, a stakeholder inquired whether woodpecker damage stretched across all 100 miles of the line or if it was contained to certain sections of the line.

Item 5.0 – 339 & 349 345 kV Lines Asset Condition Refurbishment

Mr. Rafael Panos (National Grid) presented the asset condition needs driving the refurbishment of transmission lines 339 and 349 and its proposed solution to address the asset condition issues and its communications needs. Recent inspections identified vintage shieldwire, 91 deteriorated wood pole structures, hardware, and grounding, as well as damaged insulators. National Grid emphasized its growing need to improve and modernize its privately owned telecommunications network to reduce communication failures. National Grid proposes either a partial structure replacement with OPWG (preferred solution) or a complete rebuild with OPGW installation.

In response to stakeholder questions, National Grid issued the following statements:

- National Grid confirmed that OPGW installations are not driving the need for ththe wood pole replacement. National Grid assessed ADSS and determined OPGW replacements presented the most advantageous choice with only a small marginal cost difference.
- National grid is responsible for conducting internal inspections, while third parties conduct external inspections.

- National Grid specified 91 of the 115 proposed structure replacements have visible damage. National Grid explained the additional 24 structures have been included due to their proximity to the damaged structures in an effort to reduce later access issues.

Item 6.0 – 2024 Final Draft Energy and Seasonal Peak Forecasts

Ms. Victoria Rojo (ISO-NE) provided a summary of the long-term energy and demand forecasts that will be published in the 2024 Capacity, Energy, Loads, and Transmission (CELT) report.

ISO-NE issued the following statement in response to questions:

- In the graph depicting summer and winter PDR reconstitution, the red dots trending downward indicate the cleared Capacity Supply Obligations (CSOs). The downward PDR trend is the result of market transformations and the expiration of certain claimable savings.

Item 7.0 – 2050 Transmission Study: Results from Additional Analysis on Offshore Wind Points of Interconnection (POIs) Relocation

Mr. Liam Durkin (ISO-NE) presented additional analysis on offshore wind POI relocation. The ISO studied the effects from changing certain POIs in the 2050 Transmission Study. This analysis specifically relocated wind farm POIs from Yarmouth, ME to West Roxbury, MA, Orrington, ME to Ward Hill, MA, and West Roxbury, MA to Millstone, CT. Overall, these relocations presented small changes in the mileage of offshore cables and significantly reduced stress on the Maine-New Hampshire and North-South interfaces.

ISO-NE issued the following statements in response to questions:

- Shortfall Generation, also referred to as proxy generation, is an unspecified fuel type required to meet a load level due to a lack of resources available required to meet demand.
- The term "minimization of new lines" refers to the 2050 Transmission Study's Roadmap of the same name. This is different from the AC Roadmap as the goal was to avoid adding new lines to the system. Said differently, it minimizes the construction of new greenfield transmission.
- The cost estimates reflect a rough, regionalized estimate.
- The 51 GW load level serves as a comparison to other load levels.
- The cost and tradeoffs associated with managing very high peaks are beyond the scope of the 2050 Transmission Study.
- The 2050 Transmission Study's Final Report issued in February specifies the included costs.
- The ISO will review the numerical rounding of the costs on slide 27 to ensure consistency and accuracy.
- The ISO plans to release a separate report detailing the findings of this sensitivity, as this analysis does not alter the 2050 Transmission Study's original conclusions.

Item 8.0 – Economic Planning for the Clean Energy Transition (EPCET) – Additional Sensitivities

Mr. Ben Wilson (ISO-NE) presented the revised Two-Pass Methodology and pricing results for the modeling imports from New Brunswick (NB) in the Market Efficiency Needs Scenario.

ISO-NE issued the following statements in response to questions:

- The ISO's designation that 50% or 75% is the most rational NB import price assumption provides an improvement from the pre-existing 0-100% range. The ISO will continue to refine its import assumptions through the 2024 Economic Study and Economic Process Improvements Phase 2.
- The ISO revised the "first pass" of its Two-Pass Methodology. The ISO presented a demonstration of the two-pass model. During the "first pass" an unconstrained model is run and in hours with region wide oversupply (hours 9-28) the imports are the first resource curtailed. The region wide LMP is either $0/MWh (imports are the marginal resource) or $30/MWh (gas is the marginal resource). In the "second pass", the new import profile is the post curtailment profile from the "first pass", which avoids a region-wide oversupply. The imports are priced at a fraction of the region wide LMP from the first run. Constrained and unconstrained models are run for each of the pricing levels. All the constrained runs have hours when the interface is binding and gas generation has to run because import and renewable energy is being further curtailed due to the transmission constraint. When the unconstrained model is run, import energy displaces gas energy used in the constrained run. In comparison, the benefits of relieving the congestion are a function of the price of imported energy.
- Upcoming Tariff changes will address the ISO treatment of market driven versus contract driven imports.

Stakeholders issued the following comments:

- A stakeholder raised concern over the ISO's characterization that the 50% or 75% range represents the most rational import assumption without offering any concrete justification for this designation. This stakeholder encouraged the ISO to further refine and develop this import assumption before its application, especially given its significant impact on results.
- A stakeholder encouraged the ISO to consider whether the hub LMP is the best representation of NB market prices, emphasizing that others may draw inaccurate conclusions based off this representation.

Item 9.0 – Closing Remarks/Adjourn for the Day

Ms. Truswell announced the next PAC meeting will be held on Wednesday, May 15, 2024. The meeting adjourned at 12:09 P.M.

Respectfully submitted,

_____/s/_____

Jillian Macura

Secretary, Planning Advisory Committee