

**MINUTES OF THE
PLANNING ADVISORY COMMITTEE (PAC)
MEETING HELD ON OCTOBER 18, 2023
VIA WEBEX & TELECONFERENCE**

Attendee	Organization
J. Truswell – Chair	ISO New England
J. Macura – Secretary	ISO New England
R. Albrect	Consulting Energy
S. Allen	Eversource
C. Aquino	ISO New England
P. Asarese	ISO New England
D. Bergeron	ME PUC
P. Bernard	ISO New England
M. Beringer	Con Edison Transmission
B. Bloomer	VELCO
D. Bradt	Oxford Power
J. Breard	ISO New England
J. Burlew	ISO New England
D. Burnham	Eversource Energy
D. Cavanaugh	ENE
L. Cecere	VELCO
A. Chaplin	New Leaf Energy
M. Coleman	Jerra Americas
R. Collins	ISO New England
R. Conant	RLC Engineering
B. Conroy	RLC Engineering
W. Coste	ISO New England
F. Dallorto	ISO New England
B. D’Antonio	Eversource
B. Deonarine	Con Edison Transmission
A. DiGrande	ISO New England
J. Donovan	MA AGO
M. Drzewianowski	ISO New England
L. Durkin	ISO New England
F. Etori	VELCO
M. Farhan-Siddiqui	National Grid
J. Fenn	FENNCO LLC
A. Feygin	ISO New England
B. Forshaw	Energy Market Advisors
B. Fowler	Wheelabrator North Andover Inc.; Exelon Generating Company LLC; Nautilus Power; Dynergy Power Marketing, LLC; Entergy

	Nuclear Power Marketing LLC; Great River Hydro, LLC
J. Fu	DOE
J. Fundling	Eversource
S. Garwood	NHT
A. Gillespie	Calpine
R. Guay	ME PUC
L. Guilbault	H.Q. Energy Services
J. Halpin	Eversource
R. Harlan	Onward Energy
M. Haskell	Maine PUC
P. Holloway	MA DOER
N. Huang	National Grid
N. Hutchings	NextEra Energy
J. Iafrati	Customized Energy Solutions
M. Ide	MMWEC
P. Jeffrey	National Grid
S. Judd	ISO New England
T. Kaslow	First Light Power
S. Keane	NESCOE
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
K. Lagunilla	PPL
C. Lambrinos	National Grid
S. Lamotte	ISO New England
A. Landry	ME Office of Public Advocate
K. Lang	National Grid
A. Lawton	Advanced Energy United
Per-Anders Lof	National Grid
P. Lopes	MA DOER
S. Louiselle	VELCO
J. Lowe	ISO New England
J. Martin	National Grid
T. Martin	National Grid
C. Mattioda	Synapse
D. Murphy	MMWEC
A. Nichols	ISO New England
S. Nikolov	ISO New England
B. Oberlin	ISO New England

A. O'Connell	MA AGO
R. Panos	National Grid
K. Pastoriza	Concerned Citizen
A. Patel	Eversource Energy
D. Patnaude	Eversource Energy
M. Patrick	National Grid
T. Pelzer	Day Mark Energy Advisors
E. Perez-Cervera	ISO New England
D. Phelan	NH Energy Gov
J. Porter	National Grid
H. Presume	VELCO
F. Pullaro	Renew Energy
K. Quach	ISO New England
N. Raike	ISO New England
J. Rauch	Avangrid
M. Ribeiro-Dahan	ISO New England
C. Richards Jr.	Rhode Island Energy
B. Robertson	Eversource Energy
E. Ross	ISO New England
J. Rotger	Customized Energy Solutions
E. Runge	Day Pitney
M. Safi	Rhode Island Energy
D. Schwarting	ISO New England
M. Scott	National Grid
P. Shattuck	Anbaric
P. Silva	Synapse
R. Singh	Kearsarge Energy
J. Slocum	MA Dept. Transportation
B. Snook	CT AGO
P. Sousa	South Coast Wind
R. Stein	H.Q. Energy Services
E. Steltzer	Mott MacDonald
B. Swalwell	Tangent Energy
T. Sweeney	NH Dept. of Energy
C. Szmodis	Rhode Island Energy
Z. Teti	Avangrid
B. Thomson	Rhode Island Energy
P. Turner	Conservation Law Foundation
G. Twigg	NECPUC
M. Valencia-Perez	ISO New England
J. Viglione	CT OCC
P. Vijayan	ISO New England
S. Walcott	Eversource Energy

A. Wang	CT OCC
B. Wilson	ISO New England
M. Winne	ISO New England
J. Zhang	ISO New England

Item 1.0 – Chairs Remarks

Ms. Jody Truswell welcomed PAC and reviewed the day’s agenda. Ms. Truswell also noted that the TOPAC was moved to November and the RSP 2023 responses were posted. Additionally, the status of the 1,200 MW loss of source effort was provided.

Item 2.0 – E183W 115 kV Line Rebuild

Ms. Kyra Lagunilla (Rhode Island Energy) presented the E183W line rebuild. Aerial inspections identified structural deterioration (severe paint chipping, active corrosion, bent members). RIE proposes to rebuild approximately 2.6 miles of the E-183W mainline with steel monopoles, new 1590 ACSS conductor, and dual OPGW. The estimated PTF project cost is \$10.6 million (+50%/-25%).

There were no stakeholder questions.

Item 3.0 – M13 & L14 115 kV Line Rebuild

Ms. Kyra Lagunilla (Rhode Island Energy) presented the M13 and L14 line rebuild. The M13 and L14 project rebuild approximately 7.4 miles on each circuit from the MA/RI state border to Dexter Substation with steel monopoles, new 1113 ACSS conductor, and dual OPGW. This includes the Sakonnet River crossing and the tap to Tiverton (non-PTF). RIE proposes to retire the Canonicus switchyard as well. The estimated total cost is \$56 million (+50%/-25%). The PTF costs are \$44.9 million and the non-PTF costs \$11.6 million. The projected in-service date is Q4, 2025.

In response to stakeholder questions, RIE issued the following statements:

- RIE will confirm whether the M13 and L14 line rebuilds are in the same locations as the existing lines.
- RIE considers the 1133 ACSS conductor as the standard conductor for span optimization, based on cost to benefit for customers.
- RIE did not identify any feasible alternatives to address all the concerns for these lines. The conductor deficiency called for an holistic approach.
- The tap to Tiverton portions of the lines are non-PTF.

Item 4.0 – S171N & T172N 115 kV Line Rebuild

Ms. Kyra Lagunilla (Rhode Island Energy) presented the S171N and T172N line rebuild. RIE proposes to replace the lines’ remaining wood structures (~46) with steel monopoles and install

nine load breaks. The proposed design for structures between Woonsocket and West Farnum are an initial single, future double circuit to accommodate for future growth. Dual OPGW replacements are set between Woonsocket and West Farnum. The project's total cost is \$22.3 million dollars (+50%/-25%) with PTF costs totaling \$20.8 million and non-PTF costs accounting for \$1.5 million. The estimated start of construction is Q4 2023 with an in-service date of Q3 2026.

In response to stakeholder questions, RIE issued the following statement:

- This asset condition project focuses on rebuilding the remaining 20% of the S171N and T172N lines not addressed in 2013's refurbishment.

Item 5.0 – 2050 Transmission Study: Final Results and Estimated Costs

Reid Collins (ISO-NE) presented the final 2050 Transmission Study results, covering input assumptions, solution development approach, cost estimates and breakdowns, key takeaways, high-likelihood concerns (“HLCs”), non-HLCs, and project next steps.

In response to stakeholder questions, ISO-NE issued the following statements:

- The 2050 Transmission Study (“Study”) assumes that all future (not currently planned or in-service) battery storage systems are 4-hour batteries.
- Additional battery storage could potentially serve as a solution to the shortfall generation problems addressed in the input assumptions, but ISO-NE has concerns about retaining enough energy in the winter to charge those batteries.
- The Study compares peak loads at 57 GW and 51 GW to determine the difference it holds on the system.
- The Study's base transmission system only incorporates upgrades and future projects identified as of late 2021.
- The final costs (broken down by year and load level) represent cumulative, not additive numbers.
- For HLCs, it is important that generation and load are not too dependent on one station location, also that they are seen across at least a couple of different load levels.
- The PAC serves as an advisory body. ISO-NE has planning authority over pool transmission facilities (PTF), while state regulatory bodies retain siting authority. From a financial perspective, FERC has regulatory authority over rates and ratemaking. ISO-NE's review of costs occurs Transmission Cost Allocation (TCA) process, where the designations of localized or regional costs are reviewed. The TCA process is a gold plating review from an engineering perspective. The terms “end platform” and “middle platform” were referenced directly from the Department of Energy's (DOE) Atlantic Offshore Wind Transmission Study. The middle platform refers to a multi-terminal grid connecting links to two other offshore wind farms and an onshore location, while the end platform refers to a location that has connections to only one other offshore wind farm and an onshore location.
- The maximum load served at 57 GW accounts for a higher \$/GW-of-load-added break down than the maximum load served at 51 GW.

- The ISO clarified that both the high 57 GW peak and the lower 51 GW peak were studied and had solutions developed for each.
- ISO-NE expressed concern over the use of additional market-facing battery installations to resolve transmission concerns due to a potential lack of available energy during winter peak conditions.
- It may be best for the region to wait and see how load growth continues to develop before rebuilding existing lines not covered by the Asset Condition process.
- In this study, ISO-NE maintained the offshore wind location assumptions by state that were laid out in the “All Options” pathway of the “Energy Pathways to Deep Decarbonization”.
- ISO-NE has not considered increasing line voltages to 765 kV because of the reliability implications to the system if those lines were lost.
- The Study’s assumptions on floating wind turbines in the Gulf of Maine were limited to the lease information present at the time. This information can be adjusted in future Longer-Term Transmission Studies.
- The estimated \$10.5 million cost per mile of offshore wind cables was assumed to connect underwater to underwater cables and does not incorporate the cost of cables connecting onto land.
- The modeling process for offshore wind networking was fairly complex.
- The Study assumed the New York and New England transfers were about 400 MW higher than current limits.
- The \$1.1 billion dollar estimate for the Northwestern Vermont Import Roadmap includes several hundred miles of line rebuilds.
- ISO-NE will consider accepting stakeholder comments on the Study’s final report beyond the normal 15-day window.
- ISO-NE does not plan to run additional analysis for this study between now and mid-to-late 2024 when Extended-Term/Longer-Term Transmission Phase 2 Tariff changes are anticipated to be effective. In Phase 2, the states through NESCOE would need to determine whether they want to pursue additional studies. If changes to the study process occur, they would be implemented in the next long-term transmission study.
- The Study provides cost estimates for the intermediate years of 2035 and 2040.

The following comments were issued:

- There was a tremendous need for transmission anticipated at the onset of the 2050 Transmission Study. It could be a mistake to dilute the transmission development problem by assuming a lowering peak.
- Vermont’s peak load is not expected to grow as quickly as the rest of the New England region. It could be beneficial to account for those discrepancies around the region.
- A stakeholder urged ISO-NE to evaluate different POIs for offshore wind injections since those locations will account for significant megawatts of new generation and have major impacts on transmission upgrades and the performance of the system. It is sensible for ISO-NE to evaluate the benefits of an offshore grid to address onshore grid constraints.
- Supplemental data expanding on the value of offshore networking would be beneficial in the final report, expanding on conditions to mitigate onshore overload and contingencies.

- It would be helpful to include cost estimates for underwater cables from offshore wind installations that connect onto land.
- A stakeholder inquired whether the future development of New England's transmission system in Vermont would be built with 230 kV or 345 kV lines.
- The region's goal is to minimize the need to build new lines. If the region reaches 57 GW of maximum load served it might be helpful to flush out the full picture before selecting solutions.

Item 6.0 – Economic Planning for the Clean Energy Transition (EPCET) – Additional Policy Sensitivity Results

Mr. Patrick Boughan and Mr. Ben Wilson (ISO-NE) presented additional sensitivity results, including a Market Efficiency Needs Scenario sensitivity on load components and three Policy Scenario Sensitivities on no electrification growth, nuclear retirement, and biodiesel.

In response to stakeholder questions, ISO-NE issued the following statements:

- ISO-NE will clarify LMP interpretation in its final report.
- If ISO-NE does not change demand, prices fall. One trend identified was an increase in storage fuel generation.
- A vendor conducted the pipeline modeling as part of the 2050 Transmission Study.
- The study uses 2019's weather year.
- Delta represents an energy efficiency baked into load and accounting.
- ISO-NE explained deep decarbonization across all sectors would be similar to imagining a new power system with a price tag that takes into account all costs to achieve that goal. To achieve a greener system the process would effectively be building blocks, one upon another.
- ISO-NE will consider compiling a public list that records all stakeholder requested scenarios.

The following comments were issued:

- ISO-NE should clarify its explanation of deep decarbonization in its final report. At first pass, it seems the message is to give up on deep decarbonization. Achieving this goal is only made possible through electrification, which comes at an expense.
- The region should reframe decarbonizing the grid as an economic opportunity to accomplish this goal.
- It is important to think off all the different sectors that play a role in decarbonization to determine better the cost shifting implications.

Item 7.0 – NETO Asset Management Process

Mr. Rafael Panos (National Grid) presented an overview of the NETO asset management process. This covered asset monitoring, initial evaluation and scoping, holistic evaluation, project definition, design and procurement, project execution, and project closure.

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

- Cost effective solutions and scope vary depending on the TO. Typically, these are based on practical engineering judgements and industry experience. As an example, for structure replacements, access roads and matting are expensive. It is more cost effective to replace a number of structures than just one or two.
- TOs often manage multiple projects simultaneously. The goal is to ensure all assets are safe and reliable so more critical projects will take precedence and less urgent projects will follow.
- The NETOs will follow up on how TCAs and PPAs fit into the asset condition timeline.
- The NETOs anticipate providing an outline of the draft guidance document.
- Eversource finds that high-level desk top estimates found in cost estimating guides are not typically accurate. Focusing on sound engineering allows for the most accurate cost estimates.

The following comment was issued:

- A transmission cost estimation guide similar to MISO could be a beneficial tool to develop in New England.

Item 8.0 – K42 Transmission Line Replacement Project Update

Mr. Hantz Presume (VELCO) provided an update on the K42 transmission line replacement project. The presentation focused on the projects refined scope and corresponding cost estimate since 2021.

In response to stakeholder questions, VELCO issued the following statements:

- The line rating should be 500 MVA.
- Construction is estimated to begin next year and its in-service date is roughly end of 2025 or early 2026.
- ISO-NE could publish Daymark Energy Advisors' analysis to the PAC website subject to VELCO's permission.

The following comments were issued:

- Many stakeholders thanked VELCO for its efforts to proactively right-size this line based on its evaluation. This serves as a good, transparent model for asset condition project presentations moving forward.
- ISO-NE stated that results from the 2050 Transmission Study do not project the K42 line will be overloaded and a rebuild that line is not included in the upgrades identified in the 2050 study. The loss reduction effects of upgrading the K42 line are unlikely to be as large on most other transmission lines in New England, due to the K42 line's consistent high loading.
- NESCOE is working to develop a regional right-sizing plan.

Item 9.0 – RSP Project List and Asset Condition List October 2023 Update

Mr. Michael Drzewianowski (ISO-NE) updated PAC on changes to the 2023 RSP Project List from June to October. There were no major changes to cost estimates (> \$5 million), no new projects, no cancelled projects, and six upgrades had been placed in-service.

The following comment was issued:

- Incorporating the NETOs’ asset condition forecast into ISO-NE’s asset condition costs going forward would be a useful representation. The NETOs presented a 5-year forecast to the PAC this summer, which included all of the RSP and all its investments.

Item 10.0 – Closing Remarks/Adjourn for the Day

Ms. Truswell announced the next PAC meeting is on Wednesday, November 15, 2023.

The meeting adjourned at 2:46 P.M.

Respectfully submitted,

_____/s/_____

Jillian Macura

Secretary, Planning Advisory Committee