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

| Name | Affiliation |
|---|---|
| S. Abhyankar | ISO New England (Chair) |
| J. Macura | ISO New England (Secretary) |
| J. Adadjo | Eversource Energy |
| S. Adams | ISO New England |
| Z. Ahmed | ISO New England |
| C. Allen | Long Road Energy |
| S. Allen | Eversource Energy |
| B. Anderson | New England Power Generators Association (NEPGA) |
| B. Andrew | Eversource Energy |
| E. Annes | Connecticut Department of Energy & Environmental Protection (CT DEEP) |
| J. Ansah | Ocean Winds NA |
| P. Asarese | ISO New England |
| P. Barefield | Zero Emission Grid |
| P. Bartlett | Maine Public Utility Commission |
| D. Basler | CHA Consulting, Inc. |
| S. Beale | NESCOE |
| J. Bentz | NESCOE |
| D. Bergeron | Maine Public Utility Commission |
| P. Bernard | ISO New England |
| M. Beringer | Con Edison Transmission |
| C. Bilcheck | Breakthrough Innovations, LLC |
| J. Black | ISO New England |
| P. Bower | Daymark Energy Advisors |
| D. Bradt | Oxford Power, consulting for NESCOE |
| S. Bresolin | ENGIE |
| E. Brin | FERC |
| J. Brodbeck | EDP Renewables |
| R. Brody | CTC Global |
| D. Burnham | Eversource Energy |
| K. Caiazzo | Massachusetts Attorney General's Office (MA AGO) |
| D. Cavanaugh | Energy New England (ENE) |
| J. Cebrik | Avangrid (Central Maine Power/United Illuminating) |
| L. Cecere | Vermont Department of Public Service |
| E. Chapin | Onward Energy |
| A. Cienfuegos | Avangrid (Central Maine Power/United Illuminating) |
| M. Coleman | JERA Americas |
| R. Collins | ISO New England |

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| R. Conant | RLC Engineering |
| D. Conroy | RLC Engineering |
| R. Coxe | Mosaic Energy Insights |
| C. Cullen Hitt | Vineyard Wind |
| B. D'Antonio | Eversource Energy |
| P. Das | ISO New England |
| W. Dejeanlouis | Synapse Energy |
| R. Dolan | NextEra Energy |
| J. Donovan | Massachusetts Attorney General's Office (MA AGO) |
| M. Doolin | Eversource Energy |
| J. Downing | RTO Insider |
| M. Drzewianowski | ISO New England |
| L. Durkin | ISO New England |
| F. Ettori | VELCO |
| M. Farhan Siddiqui | National Grid |
| J. Fenn | FENNCO, LLC |
| J. Forest | NextEra Energy |
| B. Forshaw | Energy Market Advisors |
| N. Forster | NESOCE |
| M. Fossum | New Hampshire Office of Consumer Advocate (NH OCA) |
| J. Fundling | Eversource Energy |
| A. Fuzaylov | Synapse Energy |
| M. Gagne | Clearway Energy |
| R. Gahagan | Treadwood LLC |
| G. Garcia | Avangrid (Central Maine Power/United Illuminating) |
| R. Gibbons | Avangrid (Central Maine Power/United Illuminating) |
| A. Gillespie | Calpine |
| M. Gonzalez | ISO New England |
| S. Goynor | National Grid |
| D. Green | RLC Engineering |
| R. Guay | Maine Public Utilities Commission |
| L. Guilbault | H.Q. US |
| S. Gupta | Zero Emission Grid |
| J. Halpin | Eversource Energy |
| R. Harlan | Onward Energy |
| R. Harvey | IEEE |
| M. Haskell | Maine Public Utility Commission |
| S. Herbert | Vineyard Offshore Wind |
| T. Hill | National Grid |
| B. Ho | Connecticut Department of Energy & Environmental Protection (CT DEEP) |
| J. Honor | NextEra Energy |

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| K. Huang | National Grid |
| H. Hunt | NESCOE |
| N. Hutchings | NextEra Energy |
| J. Iafrati | Customized Energy Solutions (CES) |
| M. Ide | MMWEC |
| F. Ingalls | Member of the Public |
| B. Jagolinzer | Avangrid (Central Maine Power/United Illuminating) |
| S. Judd | ISO New England, Inc. |
| J. Kamins | Moody's Analytics |
| J. Kasow | ISO New England |
| S. Keane | NESCOE |
| A, Kleeman | ISO New England |
| N. Krakoff | Conservation Law Foundation |
| A. Krich | Boreas Renewables |
| M. Krolewski | Vermont Public Utilities Commission (VT PUC) |
| F. Kugell | Avangrid (Central Maine Power/United Illuminating) |
| R. Lafayette | Rhode Island Energy |
| C. Lambrinos | National Grid |
| S. Lamotte | ISO New England |
| J. LaRusso | Acadia Center |
| A. Lawton | Advanced Energy United (AEU) |
| S. Libonatti | Avangrid (Central Maine Power/United Illuminating) |
| L. Looman | VELCO |
| P. Lopes | Massachusetts Department of Energy Resources (MA DOER) |
| J. Lowe | ISO New England |
| W. Lu | ISO New England |
| M. Luke | National Grid |
| T. Lundin | LS Power |
| K. Mankouski | ISO New England |
| J. Martin | National Grid |
| T. Martin | National Grid |
| C. Mattioda | Synapse Energy |
| A. Mitchell | National Grid |
| S. Molodetz | NextEra Energy |
| R. Mone | RLC Engineering |
| S. Mitchell | NYSEG |
| R. Mozunder | ISO New England |
| D. Norman | Versant Power |
| B. Oberlin | ISO New England |
| A. Onwuachumba | RLC Engineering |
| R. Panos | National Grid |
| N. Parrotta | Taunton Municipal Light Plant |

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| D. Patnaude | ISO New England |
| E. Perez Cervera | ISO New England |
| D. Phelan | New Hampshire Public Utilities Commission |
| B. Pollpeter | Longview Infrastructure |
| N. Raike | ISO New England |
| J. Rauch | Avangrid (Central Maine Power/United Illuminating) |
| C. Richards Jr. | Rhode Island Energy |
| B. Robertson | Eversource Energy |
| V. Rojo | ISO New England |
| A. Rost | ISO New England |
| J. Rotger | Customized Energy Solutions (CES) |
| E. Runge | Day Pitney |
| M. Sarmadi | National Grid |
| K. Schlichting | ISO New England |
| D. Schwarting | ISO New England |
| M. Scott | National Grid |
| J. Seybrick | Avangrid (Central Maine Power/United Illuminating) |
| P. Shattuck | Power Advisory LLC |
| K. Shaarbafi | Eversource Energy |
| J. Singh | ISO New England |
| B. Snook | Maine Governor's Energy Office |
| P. Sousa | Avangrid (Central Maine Power/United Illuminating) |
| S. Stahr | DC Energy |
| B. Stein | H.Q. US |
| M. Stoker | Avangrid (Central Maine Power/United Illuminating) |
| J. Talbert-Slagle | Connecticut Office of Consumer Counsel (CT OCC) |
| B. Thomson | Rhode Island Energy |
| N. Toleman | Viridon |
| A. Trinsey | Couch White |
| A. Trotta | Avangrid (Central Maine Power/United Illuminating) |
| P. Turner | Conservation Law Foundation |
| G. Twigg | NECPUC |
| J. Vaile | Eversource Energy |
| P. Vijayan | ISO New England |
| S. Walcott | Eversource Energy |
| J. Walters | Connecticut Department of Energy & Environmental Protection (CT DEEP) |
| B. Wilson | ISO New England |
| M. Winne | ISO New England |
| S. Yasutake | Gabel Associates |
| M. Young | New Hampshire Department of Energy |
| H. Zheng | NextEra Energy |

## Item 1.0 – Chairs Remarks

Mr. Shounak Abhyankar (ISO-NE) welcomed PAC and reviewed the day's agenda.

Mr. Dave Burnham (Eversource) provided a brief update on behalf of the New England Transmission Owners (NETOs). He informed the PAC of recent updates on the Transmission Owner Asset Management web page. He noted that an updated version of the NETOs' PTF Asset Database has been published to the site along with corresponding quick links located at the top of the webpage. In addition, an updated version of the Asset Condition Process Guide (ACPG) was posted as well.

## Item 2.0 – 337 345 kV Line Asset Condition Refurbishment

Mr. Rafael Panos (National Grid) presented the 337 345 kV line asset condition refurbishment project, which extends from Sandy Pond 237 substation to Tewksbury 22A substation. National Grid's recent inspections identified multiple structural concerns with wood structures (decay, woodpecker damage, top rot, cracking, inadequate grounding, etc.) and groundline calculations showed 72 wood poles had signs of strength loss. The affected structures averaged 51 years, extending beyond natural wood structures' typical useful life. In addition, the steel structures on this line do not conform to current design standards.

National Grid's preferred solution (Alternative 4) replaces all structures (delta construction), replaces the conductor, and installs OPGW across the line. The project has an estimated cost of $200.483M (+50% / -25%). The anticipated start of construction is Q2 2028 and has a projected in-service date of Q2 2032.

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

- While unsure of the exact number, National Grid confirmed that most of the steel cross arms have already been replaced.
- A structure's overall condition is not impacted by replacing a structure's steel arm.
- The new structure will be made entirely of steel. Steel structures have a longer life span compared to wooden structures, lasting far longer than wood structures.
- Due to loading concerns, National Grid plans to replace all existing steel structures.
- A delta frame provides more clearance from the adjacent line, allowing for easier construction and maintenance.
- The accuracy of cost estimates and in-services dates can vary from project to project. Longer lines and congested locations can create greater cost variability.
- Permanent roads would provide access for future line maintenance. Future access costs will be lower as a result.
- Assets are sometimes replaced when there is no longer support from the manufacturer.
- National Grid will provide more detail on the project's cost drivers in subsequent presentations.
- This project was developed internally for roughly 1-2 years.
- National Grid will provide stakeholders with an additional presentation.
- National Grid's cost estimates reflected an increase in labor and material costs.

- Labor costs were projected to 2028.
- This project requires shield wire replacement. The price differential between shield wire and OPGW is minimal.
- National Grid will assess whether installing OPGW would impact the structure's overall design.

The ISO issued the following comments:

- The ISO is coordinating Transmission Owner (TO) identified asset condition needs, ISO identified time sensitive needs, and ISO identified a non-time sensitive needs.
- The ISO found that asset condition projects would satisfy the needs on lines 337 and 338. The ISO is supportive of moving forward with this asset condition project since the asset condition issues need to be addressed.

The following comments were issued:

- A stakeholder wanted more clarity on National Grid's definition of the term "prematurely."
- A stakeholder felt that certain alternatives did not address the project's need, and therefore was not a realistic solution.
- A stakeholder raised concern over the significant cost increase associated with project delays on other projects.
- A stakeholder felt the project's primary driver was to conform projects to similar design standards. This stakeholder requested National Grid provide more clarity on the differences between "primary" and "secondary" project drivers.
- A stakeholder requested National Grid provide the required line ratings from the Boston 2033 study and the 2050 Transmission study, along with the line's thermal rating before and after the project.
- A stakeholder suggested National Grid should consider the use of advanced conductors throughout the entire line. The stakeholder felt this could lead to shorter structures and a lower overall project cost. The stakeholder requested National Grid create an "Alternative 5" for advanced conductor estimates.

**Item 3.0 – Sandy Pond 237 Asset Replacement**

Mr. Rafael Panos (National Grid) presented the Sandy Pond 237 asset replacement project. The project's needs were driven by repeated SF6 leaks in 345 kV live tank circuit breakers, a 115 kV dead tank circuit breaker, and poor performing air operating mechanisms on the 345 kV live tank circuit breakers. National Grid's preferred solution (Alternative 2) incorporates the base alternative to replace 345 kV live tank gas circuit breakers and the problematic 115 kV circuit breaker, and also replaces four 345 kV wave traps and all limiting 2-1590 AL conductors. The project's estimated cost is $16.196M (+200% / -50%). The project's anticipated start of construction is Q4 2026 and has a projected in-service at of Q4 2028.

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

- A power line may require both wave traps for Power Line Carrier and OPGW installation to provide two independent protection systems.
- The 345-kV breaker replacements are not in-kind because the existing circuit breakers are live tank.

The following comments were issued:

- Eversource discussed its non-SF6 pilot program at the September PAC meeting.

**Item 4.0 – Westminster Switch Tower Rebuild and East Westminster Switch Replacement**

Mr. Rafael Panos (National Grid) presented the Westminster switch tower rebuild and East Westminster switch replacement project. National Grid's 2024 inspections identified that most wood structures possessed woodpecker damage, pole top rot, cracked crossarms, splitting poles, and other forms of decay. The affected structures average 65 years old, reaching the end of their typical useful life.

National Grid's base solution alternative includes the removal of the deteriorated wooden platform and structures, a rebuild of the switch tower with 115 kV steel structures, the replacement of six switches at Westminster Sw. Tower, and the installation of two new switches near East Westminster. National Grid's preferred solution (Alternative 2) includes the scope of the base alternative, plus replaces the switches at the Fitchburg switch tower. The project's estimated cost is $10.2M (+50% / -25%). The anticipated start of construction is Q1 2025 with a projected in-service date of Q1 2026.

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

- At this time, National Grid does not utilize this switch point even though it is in service.
- The non-Pool Transmission Facility (non-PTF) components of the project consist of the two steel H-frame dead-ends and the two steel H-frame structures on the tap. The cost equates to roughly $2.3M in estimated project costs.
- The need to replace the switch tower is being addressed separately from the A1/B2 project.

The following comments were issued:

- A stakeholder noted the poor condition of the switch tower.

**Item 5.0 – NESCOE Longer-Term Transmission Planning RFP Request**

Ms. Sheila Keane (NESCOE) reviewed the comments submitted by stakeholders in response to NESCOE's preliminary request for proposal (RFP). The RFP's objective aims to strengthen the connection between northern and southern New England and facilitate the integration and deliverability of additional affordable Maine generation resources located north of Surowiec.

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

- At this time, the RFP schedule follows an 18-month timeline. This is a really complicated part of the system.
- The RFP's final scope is outlined in NESCOE's final request, submitted on December 13, 2024.
- NESCOE relied on the 2050 Transmission Study when assessing minimum threshold limits.
- Increased transfer capabilities above the minimum thresholds would be reflected in the economic benefits.
- The Pittsfield substation's requirement to accommodate at least 1,200 MW (nameplate) of onshore wind interconnection was the result of feedback received after NESCOE's initial letter published on October 16, 2024. While the RFP request points to Pittsfield substation, there is flexibility in proposing other locations.
- If a distinction needs to be made between proposals, preference would be given to an earlier in-service date.
- NESCOE has not assessed a scenario where the RFP results only elicits one qualifying proposal. In the Boston RFP, there was a pool of bids.
- Increased capacity capabilities could allow for more offshore and onshore wind.

The ISO issued the following statements:

- The ISO noted increased transfer limits and the ability to interconnect generation would also be reflected in the qualitative benefits.
- The ISO still intends to meet the proposed March RFP start time, subject to any unforeseen challenges.
- The ISO is considering hosting a special session to educate bidders on the process.
- The ISO will issue a draft RFP with a short comment period.
- A radial HVDC to southern New England would likely not satisfy Surowiec-South's need presented in the RFP.
- At this time, the ISO does not plan on providing solution updates throughout the RFP process. The ISO plans to focus on selecting a final solution, so adding steps outside the prescribed Tariff requirements would lengthen the process.
- The ISO plans to provide additional information within the RFP documents.
- The 1,200 MW (nameplate) of onshore wind would be an energy interconnection.

The following comments were issued:

- A stakeholder requested that all ISO discussions and feedback are made publicly available.
- A stakeholder requested the ISO provide the PAC advanced notice of the draft RFP to accommodate a shorter comment period.

**Item 6.0 – Moody's Analytics Economic Update**

Mr. Adam Kamins (Moody's Analytics) presented economic overviews at both the federal level and the New England region.

There were no comments or questions.

**Item 7.0 – Post-NECEC Maine Transfer Limits**

Mr. Dan Schwarting (ISO-NE) discussed the updates on two interface transfer limits in Maine that will be valid after the New England Clean Energy Connect (NECEC) project and its associated upgrades are complete and placed in service.

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

- Ongoing System Impact Studies (SISs) will be completed under the currently effective transfer limits as possible, but this will be subject to an evaluation on the impacts from the higher transfer limits.
- The ISO explained that the Forward Capacity Market (FCM) related activities would be discussed at future meetings and would continue to follow the standard timeline.
- Given the potential market sensitivity concerns, the ISO feels it is not feasible to include transfer limits with NECEC off-line.
- High-voltage direct current (HVDC) designs possess certain advantages and offers controls for both real and reactive power, as well as ancillary benefits. However, HVDC designs are not the only way to address the RFP's needs. Notably, the loss of a hypothetical HVDC line installed to increase Maine interface transfer limits could pose as the most limiting condition.
- Generally, the ISO can allow the partial operation of a generator or ETU without its required upgrades in service. The analysis on projects with sequencing issues are done on a case-by-case basis. This work is supported by ISO's Operations staff.
- Under most conditions, in the post-NECEC system, the Maine-New Hampshire interface would be more limiting than Surowiec-South, and reach its limit first. However, the Surowiec-South interface could also reach its limit first, possibly due to the effects of high load levels or energy storage in Southern Maine.

**Item 9.0 – Closing Remarks/Adjourn for the Day**

Mr. Abhyankar announced the next PAC meeting is on Wednesday, January 23, 2025.

The meeting adjourned at 2:10 P.M.

Respectfully submitted,

_____/s/_____

Jillian Macura

Secretary, Planning Advisory Committee