MINUTES OF THE
PLANNING ADVISORY COMMITTEE (PAC)
MEETING HELD ON AUGUST 16, 2023
VIA WEBEX & TELECONFERENCE

Attendee	Organization
J. Truswell – Chair	ISO New England
J. Macura – Secretary	ISO New England
J. Adadjo	Eversource
S. Adams	ISO New England
Z. Ahmed	ISO New England
R. Albrect	Consulting Energy
S. Allen	Eversource
B. Anderson	NEPGA
B. Andrew	Eversource
E. Annes	CT DEEP
P. Asarese	ISO New England
J. Babu	Eversource
K. Bane	ISO New England
D. Basler	Chaco Companies
S. Beale	NESCOE
P. Bernard	ISO New England
L. Borsoi	Avangrid
C. Bothwell	DOE
D. Bradt	Oxford Power
H. Bruan	London Economics
J. Breard	ISO New England
J. Burlew	ISO New England
D. Burnham	Eversource Energy
D. Cavanaugh	ENE
L. Cecere	VELCO
E. Chapin	Onward Energy
A. Chaplin	New Leaf Energy
P. Chardavoyne	ISO New England
S. Chen	RLC Engineering
R. Collins	ISO New England
B. Conroy	RLC Engineering
W. Coste	ISO New England
K. Csizmesia	National Grid
B. D'Antonio	Eversource
T. Dalakos	RWE
F. Dallorto	ISO New England

J. Dannels	Shell
V. DelVillano	Eversource
F. Dieng	Eversource
J. Dong	Eversource
B. Donmez	Long Road Energy
J. Donovan	MA AG
M. Doolin	Eversource
M. Drzewianowski	ISO New England
L. Durkin	ISO New England
F. Ettori	VELCO
J. Fenn	FENNCO LLC
B. Forshaw	Energy Market Advisors
N. Forster	NESCOE
K. Fougere	Avangrid
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
K. Frank	Treadwood
J. Frost	Synapse
J. Fu	DOE
J. Fundling	Eversource
A. Gagnon	MA AG
R. Gahagan	Treadwood
S. Garwood	NHT
E. Golyshevskiy	Anbaric
M. Grover	Eversource
J. Halpin	Eversource
R. Harvey	IEEE
M. Haskell	Maine PUC
P. Holloway	MA DOER
N. Hutchings	NextEra Energy
J. Iafrati	Customized Energy Solutions
M. Ide	
C. Jylkka	Daymark Energy Advisors
S. Keane	NESCOE
A. Krich	Boreas Renewables
F. Kugell	Central Maine Power Company
R. Lafayette	Eversource Energy
K. Lagunilla	PPL
S. Lamotte	ISO New England
A. Landry	ME Office of Public Advocate

A. Lawton	Advanced Energy United
Z. Logan	Central Maine Power Company
L. Looman	VELCO
P. Lopes	MA DOER
J. Lowe	ISO New England
X. Luo	ISO New England
E. Mailhot	ISO New England
S. Marien	Eversource Energy
J. Marinstein	Invenergy LLC
J. Martin	New England Power Company
C. Mattioda	Synapse
B. McKinnon	South Hadley Electric Light & Norwood Municipal
A. Mitchell	National Grid
A. Nichols	ISO New England
S. Nikolov	ISO New England
B. Oberlin	ISO New England
A. O'Connell	MA AG
F. Omokaro	Eversource Energy
A. Patel	Eversource Energy
D. Patnaude	Eversource Energy
M. Perben	ISO New England
D. Phelan	NH Energy Gov
J. Porter	National Grid
H. Presume	VELCO
K. Quach	ISO New England
M. Ribeiro-Dahan	ISO New England
C. Richards	PPL
H. Rimkunas	Avangrid
B. Robertson	Eversource Energy
E. Ross	ISO New England
J. Rotger	Customized Energy Solutions
M. Safi	PPL
Z. Samuels	Eversource Energy
B. Sanderson	Anbaric
M. Saravanan	ISO New England
K. Schlichting	ISO New England
D. Schwarting	ISO New England
M. Scott	National Grid
P. Shattuck	Anbaric
J. Slocum	MA Dept. Transportation
B. Snook	CT AG
P. Sousa	South Coast Wind

A. Spinu	PPL
R. Stein	H.Q. Energy Services
E. Steltzer	Mott MacDonald
B. Swalwell	Tangent Energy
T. Sweeney	NH Dept. of Energy
C. Szmodis	PPL
L. Szmot	Strata Clean Energy
Z. Teti	Avangrid
B. Thomson	PPL
A. Trotta	United Illuminating
P. Turner	Conservation Law Foundation
G. Twigg	NECPUC
J. Vaile	Eversource Energy
M. Valencia-Perez	ISO New England
P. Vijayan	ISO New England
S. Walcott	Eversource Energy
A. Yahiaoui	United Illuminating
J. Zhang	ISO New England

Item 1.0 – Chairs Remarks

Ms. Jody Truswell welcomed PAC and reviewed the day's agenda.

Item 2.0 – 308 345 kV Line Asset Condition Refurbishment

Mr. Rafael Panos (National Grid) presented an asset condition refurbishment for the 308 line (345 kV) connecting Wachusett and Millbury #3 substations in Massachusetts. A recent needs assessment identified the line had deteriorated shieldwire and grounding, woodpecker and insulator damage, and requires improved communication channels. The estimated refurbishment cost is $15.77 million (+/- 10%), 100% PTF, with an in-service date of Q2, 2024.

There were no Stakeholder questions.

Item 3.0 – Canal Station BPS and Asset Condition Upgrade Re-Presentation

Mr. David Burnham (Eversource Energy) provided an update on Canal Station's asset condition project in Sandwich, MA that connects two 345 kV lines, three 115 kV lines, and three generation units. Since 2018, the project's scope has broadened to include the Canal Generating Station's expansion. The 2023 estimated total PTF cost (-10%/+10%) is $41.2 million, with an in-service date of Q4, 2024.

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

- Eversource underestimated the number of outages during the third unit's construction. This served as lessons for outage sequencing when re-wiring an adjacent substation.

- A new control house was part of the project's original scope.
- The project's scope caused a $4.3 million inflation increase in cost. Eversource needs to take back and review whether the $10.3 million dollars of additional scope was calculated in either 2018 or present day dollars.
- Outage management can be significant. When more outages are taken, more temporary work is required to put the equipment back in service at the end of the outage.

Item 4.0 – Southington 115 kV Relay Upgrades

Mr. John Babu (Eversource Energy) presented Southington 115 kV SEL relay upgrades. The estimated PTF cost is $13.85 million (-25%/ +50%) with a projected Q4, 2024 in-service date.

There were no Stakeholder questions.

Item 5.0 – Eversource Memo

Mr. Chris Soderman (Eversource Energy) discussed Eversource's Memo responding to NESCOE's July 7, 2023 inquiries on Hartford's 1704/1722 UG cable rebuild project.

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

- XLPE technology supports project longevity.
- Domestic and international XLPE manufactures have increased testing, offering greater cable confidence.
- City congestion makes XLPE installation more difficult. Duct banks offer a solution because they address limitation on the length that can be open at any one time. The concrete duct banks also provide both mechanical protection.
- A project's need is determined by many factors. Age is one of them. Loading history is also important.
- The limited number of skilled laborers capable of working on pipe-type cables presents a strategy concern.
- Monitoring magnetic flux changes in pipes serves as a useful technique to identify material section loss. This helps to strategize which pipe sections need to be replaced.
- Nearly every east coast Metropolitan area with pipe-type cables are facing similar challenges to Eversource. Notably, ConEdison has 600-650 miles of pipe-type cables with two hydraulic networks. The region as a whole is grappling how to navigate a long-term strategy.
- Eversource estimates about 15-20 year window for completing pipe-type cable replacements. Siting, permitting, and construction can impact that timeline.

The following comments were issued:

- A stakeholder thanked Eversource for providing additional detailed information, emphasizing the benefits of additional time to formulate questions.
- The level of detail provided in this presentation should be the baseline for PAC's asset condition presentations.

Item 6.0 – Overview of New England Transmission Owner Cost Estimating Processes

Mr. Zach Logan (Avangrid) presented a high-level overview of the NETO's cost-estimating processes.

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

- During the internal construction approval process, TOs weigh specific needs and solutions to specific project costs. TOs continue to refine future investments based on priority and budgetary constraints. The cost estimates are continually updated as projects move internally for approval.
- Contingency costs capture economic variability. That line item has been adjusted to reflect current economic trends.
- Eversource includes inflation assumptions and contingencies in its estimates, but does not index those estimations to inflation. If inflation assumptions are incorrect, it can trigger a review process and updates.
- Slide 4 covers how TOs' approach evaluate alternatives. Multiple competitive alternatives may exist during this stage. Competing alternatives advance internally until one proves to be the most viable solution moving forward. Competing alternatives are generally of similar nature, so research efforts often overlap.
- Projects' life cycles are broadly considered in TOs cost considerations.
- From Eversource's perspective, unknown costs are generally due to physical things (terrain, subsurface conditions, environmental issues, etc.) beyond what was identified during field review. Eversource uses cost and risk mitigation, but it does not always prove accurate.

The following comments were issued:

- The extreme nature of current economic issues cannot accurately be reflected in contingency costs.
- A stakeholders expressed appreciation for this presentation and insight into Transmission Owner's cost-estimating practices.
- There is an opportunity to use financial tools to hedge risks, such as labor costs, to better manage inflationary costs.

Item 7.0 – Proposed Guidelines for Asset Condition Project Presentations

Mr. David Burnham (Eversource Energy), on behalf of the NETOs, presented proposed guidelines for the asset condition PAC presentation process.

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

- The Footnote on slide 8 has an extra footnote.

- The timeline for TO responses from PAC presentations is not detailed in these proposed guidelines, but it is an area the Transmission Owners can take back and discuss in greater detail.
- Inspection reports exceed the scope of information required for PAC presentations.

The following comments were issued:

- Many stakeholders expressed sentiments of gratitude for this presentation and streamlining the asset condition project process to increase transparency.
- The "Needs and Solutions" component of NESCOE's July 14 memo is of interest. There is a need for clearer timelines and establishing a minimum number of months necessary to provide meaningful consideration on presentations and asset condition materials. An outstanding concern is that projects are sometimes already under construction before the review process occurs, so understanding the hard and fast timelines will be beneficial. Stakeholder review before construction is important and warrants consideration.
- Pole inspection reports are needed to assess damage when dealing with asset condition project process.
- It would be helpful to have a more standardized format for asset condition projects going forward for. This could also include steps taken to mitigating or hedge risk.

Item 8.0 – Requirements for Modeling Resources with Contracts in Needs Assessments – Update

Mr. Pradip Vijayan (ISO-NE) provided an update on ISO's modifications to the Transmission Planning Process Guide (TPPG), which contains modeling requirements for resources with contracts in Needs Assessments and solution development.

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

- In reference to queue positions, project names and developers are available in the contract, but the queue position is protected by concealing the interconnection number.
- The topic of base cases and feasibility studies exceeds the scope of the presentation.

The following comments were issued:

- Including queue position information for projects with contracts included in Needs Assessments does not violate the Tariff.

Item 9.0 – Economic Planning for the Clean Energy Transition (EPCET) Pilot Study – Policy Scenario and Market Efficiency Needs Scenario Sensitivities

Mr. Ben Wilson (ISO-NE) presented policy sensitivities on synthetic natural gas and non-carbon constrained expansion. The presentation also covered the methodology for capacity reserve margin expansion and addressed a MENS sensitivity request on New Brunswick flows and new wind farm congestion details.

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

- The dedicated pipelines for hydrogen could be the result of potential for methane leakages when it is put into the pipes.
- ISO-NE has not looked into storing hydrogen as ammonium. ISO-NE will model multiple future scenarios, and a hydrogen sensitivity is selected, this is something to consider.
- Hydrolysis uses green energy blended with carbon capture.
- This presentation primarily focuses on production costs, but mixes in built costs because of the potential for re-use. If less is built based on the result, you have the capital cost difference.
- Carbon pricing in the base case is driven by capital costs.
- Assumptions on the existing fleet are the units are using the fuel and the new cycles that were built are based on need.
- The 2050 fuel constraints are based off of a tool that modifies existing fuel constraints. It is meant to be bi-directional. Those constraints were meant to exist for synthetic gas, rather than traditional gas.
- When ISO-NE proposes new technologies, there can be attention attributed to non-commercialized tools in order to reach environmental goals.
- Methanization requires a robust framework of hydrolysis and carbon capture, which presents engineering challenges.
- ISO-NE envisions using electrolysis of water into hydrogen and direct air capture from the atmosphere to create synthetic methane. This would effectively be a 'green' product. There is the potential for combustion impacts close to natural gas, but the carbon capture would remove this from the atmosphere.
- Using existing pipeline infrastructure, rather than carbon capture infrastructure is more efficient.
- Stakeholders can submit EPCET sensitivity requests to the PAC Matters distribution list.
- Retirements are based on ratios.
- The models looks ahead in small periods, but the five-year timeframes have the potential to be short sighted.
- ISO-NE models 8-hour batteries for economic reasons and meet carbon constraints. However, a longer duration is something ISO-NE could look into.
- The production cost increases are an annual value.
- The key to using EPCET as a needs assessment falls with triggering a RFP during the MENS case. This has not yet been approved under the Tariff. Phase 2 will come to the Transmission Committee in October.
- The capacity cost impacts are part of a larger conversation surrounding what triggers transmission builds.
- EPCET did include the 1000 MW injection between Pittsfield and Orrington in its import assumptions.
- EPCET follows the typical ISO 10 year forward forecast assumptions.
- The last bullet on slide 47 speaks to NECEC congestion.
- Sturwick was not recorded because it presented no binding congestion.
- A request for historical comparisons can be submitted to ISO-NE.

- The source of synthetic gas is synthesized from a zero-carbon source outside of New England. It does not have to come from outside the region, but a constant production of synthetic fuel is required. There could be a sensitivity that sources synthetic gas in New England.
- ISO-NE has not received a sensitivity request for gas to liquid conversions.
- All cases incorporate NECEC.
- The upper graph on slide 39 depicts NECEC and New Brunswick flows2.

The following comments were issued:

- The discussion on the viability of the natural gas fleet while exploring this new fuel will be interesting. There is some concern for rebuilding the fleet after retirement.
- The SNG graded through electrolysis that flows into New England is constrained. However, if you inject at various points around New England, the constraint may not occur.
- Bio-diesel could be a valuable scenario to model. It could address a number of capital cost and peak load issues.
- SNG's commercially viability ultimately dictates whether this solution will aid the country in its de-carbonization goals.
- SNG could present challenges with fuel reliability.
- Potential air pollution and health impacts should be accounted for with SNG.
- Green hydrogen is a potential solution because it is commercially ready. This topic could be a good candidate for a working group.
- New Leaf thanked ISO-NE for running its requested sensitivity.
- Tie benefits should be tweaked to zero.
- It would be beneficial to put a dollar amount on the Maine/New Hampshire interfaces surrounding New Brunswick and the new wind farm.
- New Brunswick should be part of the base case sensitivity to reflect the actual system.
- To secure New England's energy needs in the future, it outside the region.

Item 10.0 – 2023 Regional System Plan – Release of Draft For Public Comment

Mr. Patrick Boughan and Ms. Marianne Perben (ISO-NE) presented the draft 2023 RSP and instructed PAC members on how to submit public comments.

There were no Stakeholder questions.

Item 11.0 – Closing Remarks/Adjourn for the Day

Ms. Truswell announced the next PAC meeting is on Wednesday, September 20, 2023.

The meeting adjourned at 1:48 P.M.

Respectfully submitted,

_____/s/_____

Jillian Macura

Secretary, Planning Advisory Committee