Planning Advisory Committee
WebEx Teleconference
May 19, 2021

Attendee	Organization
J. Truswell - Chair	ISO New England Inc.
M. Lyons - Secretary	ISO New England Inc.
A. Adhikari	New England Power Company
S. Allen	Eversource Energy
B. Anderson	NEPGA
R. Andrew	Eversource Energy
E. Annes	Connecticut Public Utilities Commission
J. Arruda	Vineyard Wind
N. Baldenko	Eversource Energy
A. Bennett	Levitan Associates
D. Bergeron	Maine Public Utilities Commission
P. Bernard	ISO New England Inc.
P. Boughan	ISO New England Inc.
J. Brodbeck	Marble River
D. Burnham	Eversource Energy
E. Camp	Synapse Energy Economics Inc.
D. Capra	NESCOE
D. Cavanaugh	Energy New England
D. Chatterjee	Eversource Energy
Q. Chen	ISO New England Inc.
R. Collins	ISO New England Inc.
R. Conant	RLC Engineering

S. Conant	ST Advising
D. Conroy	RLC Engineering
J. Contino	Oceanwinds
W. Coste	ISO New England Inc.
B. D'Antonio	NESCOE
B. Devarajan	New England Power Company
V. Divatia	Eversource Energy
J. Dong	Eversource Energy
M. Drzewianowski	ISO New England Inc.
F. Ettori	VELCO
J. Fairchild	Avangrid
J. Fenn	Versant Power
K. Flynn	ISO New England Inc.
B. Forshaw	CMEEC
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
J. Frasier	NYISO
P. Gandbhir	Conservation Law Foundation
N. Gangi	Eversource Energy
S. Garwood	New Hampshire Transmission
G. Ghanavati	Eversource Energy
M. Gonzalez	ISO New England Inc.
J. Gordon	CPV Towantic
L. Guilbault	HQ US
N. Hutchings	ISO New England Inc.

J. Iafrati	Customized Energy Solutions
S. Judd	ISO New England Inc.
S. Kaminski	New Hampshire Electric CoOp
S. Kaplan	Marble River
S. Keane	Massachusetts Department of Public Utilities
K. Kilgallen	Avangrid Renewables
S. Kirk	Exelon Generation Company
A. Kniska	ISO New England Inc.
R. Kowalski	ISO New England Inc.
A. Krich	Boreas Renewables
B. Kruse	Calpine
J. Lucas	Eversource Energy
X. Luo	ISO New England Inc.
A. Madkekar	Connecticut Public Utilities Commission
K. Mankouski	ISO New England Inc.
J. Martin	New England Power Company
T. Martin	New England Power Company
A. McBride	ISO New England Inc.
B. McKinnon	Norwood Municipal, South Hadley Municipal
A. Mitreski	Brookfield Renewable
B. Oberlin	ISO New England Inc.
K. O'Hora	Eversource Energy
L. Ortiz	Anbaric Development Partners
D. Norman	Versant Power
R. Panos	New England Power Company

H. Presume	VELCO
F. Pullaro	RENEW
A. Rawat	New England Power Company
J. Rotger	Galt Power, Cross Sound Cable, BP Energy, Mercuria Energy and DTE Energy
E. Runge	Day Pitney
D. Schwarting	ISO New England Inc.
M. Scott	New England Power Company
C. Sedlacek	ISO New England Inc.
T. Shakespeare	Massachusetts Department of Public Utilities
P. Shattuck	Anbaric Development Partners
G. Shen	EN Engineering
B. Shiengold	New Energy OPPS
S. Saddiqui	ISO New England Inc.
P. Silva	ISO New England Inc.
A. Singh	ISO New England Inc.
R. Snook	Connecticut Public Utilities Commission
P. Sousa	Massachusetts Department of Public Utilities
M. Spencer	Jericho Power
R. Stein	Generation Group Member, NRG Power Marketing, HQ Energy Services, PSEG Energy Resources & Trade, SunEdison
M. Swain	Massachusetts DOER
P. Tatro	EIG Engineering
B. Thomson	MMWEC
J. Troy	Massachusetts DOER
A. Weinstein	Vistra Corp.

L. Willick	NEEC
P. Wong	ISO New England Inc.
A. Worsley	Boreas Renewables
J. York	LS Power
J. Zicko	Eversource Energy

Item 1.0 – Chairs Remarks

Ms. Jody Truswell welcomed the committee and reviewed the days' agenda.

Ms. Truswell also announced the upcoming retirements of long time ISO New England employees, Mr. Rich Kowalski and Mr. Quan Chen and thanked them for their contributions to ISO-NE and to the PAC. Several PAC members also congratulated Mr. Kowalski and Mr. Chen and wished them well in their retirement.

Item 2.0 – Millbury #2 Substation Asset Condition Replacement Project

Mr. Rafael Panos (New England Power) reviewed the Millbury #2 Substation Asset Condition Replacement Project for the construction of a new control room within the existing facility with updated protection and control systems. Replacement of 20 115 kV circuit breakers, 9 115 kV CCVT's, replacement of two battery banks and chargers, replacement of the stand-by generator and incorporate monitoring for all the new equipment. This work will satisfy all NPCC Directory 1 requirements. The projected cost of the project is $28.04M (+50/-25%) and all of the costs are anticipated to be PTF recoverable.

In response to a stakeholder questions, New England Power stated that they will be using direct fiber communications for the project as well as other similar projects in the future.

Item 3.0 – 2021 Economic Study – Future Grid Reliability Study Phase I – Overview of Assumptions Part 2

Mr. Patrick Boughan (ISO-NE) reviewed the 2021 Economic Study – Future Grid Reliability Study Phase I – Overview of Assumptions Part 2 to review the study assumptions for supply modeling for solar, wind, battery and pumped energy storage and HQ energy banking. The demand modeling assumptions will include load and energy efficiency, transportation and heating electrification load. Ancillary services assumptions for grid facing energy storage and EV flex charging for participation in the day-ahead and real-time markets. In addition, a high-level transmission analysis will be performed. Preliminary production cost results for Scenario 1 are expected by June 1, 2021. Preliminary production cost results for the other scenarios will be presented in July and August 2121. Further assumptions for the remaining production cost simulations or ancillary services analyses will be presented between June and August 2021. Preliminary ancillary service results for Scenario I are expected in September 2021 and the results for other scenarios are expected in Q3/Q4 2021.

ISO-NE responded to a number clarifying questions from the stakeholders regarding resource efficiency values, emissions pricing and the changing regulation requirements as a result of increasing wind and solar resources. There was also a request for detailed reserve modeling in the assumptions. There was another request to perform a cluster study on the impact of electric

vehicles on the 115 kV transmission system. ISO replied that was beyond the scope of the 2021 Economic Study but it was noted for possible consideration at another time.

Item 4.0 – Cape Code Resource Integration Study

Mr. Al McBride (ISO-NE) reviewed the Cape Cod Resource Integration Study.

Cape Cod Resource Integration Study – Cost Estimate and Cluster Filing

The first of two ISO presentation that identified a Cluster Enabling Transmission Upgrade (CETU) for the interconnection of an additional 1200 MWs of off-shore wind into Cape Cod and an additional 345 kV line from West Barnstable to Bourne using an existing right of way. The cost estimate will include four substation upgrades and two transmission line upgrades. Estimated cost will be $335M. The cluster filing will be filled in queue position order that meet the cluster requirements that include a 5% deposit of the cost allocation for the cluster upgrades (deposits are forfeited if the project withdraws). The presentation also address a number of previously submitted stakeholder questions regarding the SEMA/Cape Cod Transmission System, Network Capability Interconnection Standard (NCIS - aka minimum interconnections standards), and identification of N-1 Limits. Comments on the posted Draft CETU Regional Planning Study (CRPS) are due by June 11. The final CRPS report is expected to be posted in mid-June 2021 at which time ISO will open the window for eligible projects to proceed to the Cluster System Impact Study (CSIS) phase.

In response to a number of clarifying questions from the stakeholders, ISO-NE provided the following responses:

- ISO stated that we will reply to a number of previously submitted questions from NESCOE on the study within the week. ISO also added that we will publicly post the submitted questions and responses once they are finalized.
- ISO stated we will look to see if the costs of the 345 kV underground cables between Bourne and West Barnstable be broken out for each of the interconnecting projects.
- In order to perform additional research regarding if a generator over subscribes and refuses to reduce their MW output in order to get to the transmission line limit, it was requested that the question be sent to ISO in writing.

Initiation of Second Cape Cod Resource Integration Study

The second of two ISO presentation that a second Cape Cod Resource Integration Study (CCRIS) has been initiated to identify upgrades for additional offshore wind interconnecting to the Cape. It also identifies infrastructure for the remaining area interconnection requests in the Queue that do not proceed forward as part of the First Cape Cod Cluster System Impact Study. The second CCRIS will address issues identified for offshore wind additions greater than 2800 MWs looking at N-1 345 kV overloads, loss of right of way, and N-1-1 export limitations. A

remaining 2000 MWs may still be seeking to interconnect to Cape Cod and an additional 1200 MWs may be seeking to interconnect at the Pilgrim Substation. One possible transmission upgrade would be the install submarine 345 kV HVDC cable from the Cape into the Boston area or create a new separate 345 kV right of way. Preliminary results of the second CCRIS are expected by the end of 2021.

ISO responded to a number of clarify questions and comments with the most significant being a request to expand the scope of the first cluster prior to going into the second cluster. There was also a request for an analysis to determine how many hours of transmission constraint could be expected. A statement was made that ISO should expect to hear more about this issue from Massachusetts as they want to maximize the first cluster capability. There was also a request to increase the transmission infrastructure to a value greater than 1200 MWs considering the scope of the Cape Cod projects. ISO replied that the 1200 MW limit is capped at that level to account for right of way performance.

Item 5.0 – Closing Remarks

Ms. Truswell announced that there is an IPSAC meeting on June 4, 2021. The next PAC meeting will be Wednesday, June 16, 2021 via WebEx Teleconference.

Meeting Adjourned at 1:15 PM

Respectively submitted,

Marc Lyons
Secretary, Planning Advisory Committee