

## **FINAL**

Pursuant to notice duly given, a meeting of the NEPOOL Participants Committee was held via teleconference beginning at 9:30 a.m. on Thursday, May 13, 2021. Attachment 1 identifies the members, alternates and temporary alternates who participated in the teleconference meeting.

Mr. David Cavanaugh, Chair, presided and Mr. Sebastian Lombardi, Acting Secretary, recorded. Mr. Cavanaugh welcomed everyone to the fourth meeting of the Future Grid Pathways Study process. He expressed appreciation to those who provided written comments following the April 15 meeting, and noted that all such written feedback was circulated in advance of the meeting.

### **APPROVAL OF APRIL 15 MEETING MINUTES**

Mr. Cavanaugh referred the Committee to the preliminary minutes of the April 15, 2021 Pathways meetings, as circulated and posted in advance of the meeting. Following motion duly made and seconded, the Committee unanimously approved the preliminary minutes of the April 15, 2021 meeting as circulated.

### **ISO PRESENTATION ON SCOPE AND DEFINITION OF PATHWAYS ANALYSIS**

On behalf of the ISO, Mr. Steven Otto reviewed materials that had been circulated and posted in advance of the meeting that continued discussions on the modeling approach and assumptions that ISO, together with Analysis Group, Inc. (AGI) planned to use to evaluate the forward clean energy market (FCEM) and net carbon pricing frameworks, including key design elements discussed at the April 15 meeting (e.g., integration of an FCEM with existing state policies and the treatment of storage resources). He noted that, following the ISO's presentation,

AGI would further present on the proposed modeling inputs and assumptions it intended to employ for its evaluation of the straw FCEM and net carbon pricing frameworks (together, the central case). He expressed appreciation for the feedback that had been received to date, indicating that the feedback was posted on the NEPOOL website and that additional feedback was welcomed and encouraged.

Mr. Otto then discussed how the ISO planned to consider clean energy certificates (CECs) and existing state environmental programs in its modeling efforts. In response to questions, Mr. Otto confirmed the AGI's modeling approach would be more general in nature and would not focus on individual constraints. When asked about a single optimization approach and the consideration of existing state programs in the modeling, Mr. Otto agreed that a potential way to preserve the existing regulatory framework could be to allow RECs obtained outside of the system to be counted toward the CEC structure. He confirmed that the central case would not include transmission constraints in order to avoid increasing the complexity of the model.

Mr. Otto went on to discuss how the model would consider energy imported from outside New England in order to facilitate accurate simulation of potential future outcomes under each of the potential pathways studied, and communicated the intent to include the sale of renewable energy credits (RECs) and CECs across state lines. He then reviewed the ISO's proposal to not award CECs to storage resources in the straw FCEM (as noted in the ISO's April 8, 2021 storage-related memorandum). He further explained why awarding CECs to storage resources would not align with sound market design.

Mr. Otto then explained the ISO's view that stakeholders need not choose between a FCEM and an integrated clean capacity market (ICCM) at this time, as AGI's modeling approach would be consistent with both. He noted that further detail had been included in the

ISO's materials/memoranda that had been circulated and posted in advance of the meeting, along with numerical examples that were included in the appendix to his presentation. He then reviewed the assumptions consistent with AGI's modeling approach, noting that the FCEM and the ICCM frameworks would yield identical awards and compensation to all resources.

In response to questions about AGI's modeling approach, Mr. Otto noted that when taking each of the identified assumptions into consideration, whether through an ICCM construct or a sequential FCEM approach, the prices and total revenue to resources would be identical, thus the need to only employ one approach for modeling purposes.

Mr. Otto next shared additional detail on AGI's modeling approach for the FCEM pathway, noting that the AGI approach assumed: (i) competitive markets for RECs and CECs; (ii) resource offers to sell clean energy would be based on the resource's clean energy production in the delivery year, (iii) offers for capacity and clean energy would be fully rationable (or divisible); and (iv) resources would have perfect foresight about future prices and awards in all markets (including capacity) when making entry/exit decisions. He added that AGI's modeling approach was consistent with either a FCEM where resources correctly internalize the actual capacity price when formulating their clean energy offer price, or an ICCM where clean energy and capacity are procured jointly.

In response to a question, Mr. Otto agreed that the modeling assumption that resources would have the foresight to exactly predict the capacity clearing price, their capacity award, their Real-Time energy profits, their clean energy production, etc. is the key assumption for achieving equivalence for the FCEM and ICCM frameworks, but he stressed the overall importance of the remaining four assumptions. Mr. Otto welcomed written feedback by May 21 to best allow for consideration ahead of the posting of materials for the June 11 Pathways Study meeting. He

noted that the final report on modeled market outcomes would be shared with stakeholders in the first quarter of 2022.

### **AGI PRESENTATION: REVIEW OF PROPOSED MODELING INPUTS AND ASSUMPTIONS FOR CENTRAL CASE ANALYSIS**

Mr. Cavanaugh introduced Mr. Todd Schatzki from the Analysis Group who, along with Mr. Chris Llop, reviewed materials, circulated and posted in advance of the meeting, that reviewed AGI's proposed modeling inputs and assumptions for the central case analysis. Mr. Schatzki explained that the inputs and assumptions were intended to reflect a common set of assumptions across the FCEM, ICCM, and Net Carbon Pricing approaches. These inputs and assumptions, to be assessed quantitatively, included: (i) study parameters; (ii) resource characteristics, operating costs and operating specifications; (iii) entry, exit and going-forward costs; and (iv) load and electrification. Mr. Schatzki noted that, throughout the analysis, AGI planned to take into consideration market conditions and determine the most appropriate and suitable data to assess policy driven approaches and preferences that work to accomplish policy related goals.

In response to a question, Mr. Llop confirmed that ancillary services would be included in the model but he recognized the need to further review revenue extremes and how they could be accounted for. Regarding a concern about co-located resources being modeled separately, Mr. Llop acknowledged this concern and noted his intent to review further. With respect to new entry capital costs, a member recommended that AGI reference information available in the National Renewable Energy Laboratory's (NREL) Annual Technology Baseline (ATB) and, if possible, data from Bloomberg New Energy Finance. Mr. Schatzki affirmed that the data sources used would have to be reliable and transparent.

Turning to feedback about the elimination of the Minimum Offer Price Rule (MOPR) from the central case, Mr. Schatzki confirmed his view that resource access/participation without price mitigation will be included in the model. Further, he noted the intent to model the costs of resources without a MOPR-type mechanism, with costs within the model reflected as full capital costs. When asked, Mr. Schatzki confirmed the oversight of inclusion of the combustion turbine as a potential resource addition, and indicated it would be considered within the model. Turning to how resource retirements would be considered within the model, he noted that while this was not a forecasting exercise, the analysis would align with historical data and would determine outcomes for retirements. AGI intended to make reasonable assumptions on expectations for potential retirements as well as on expectations for non-emitting resources. When looking at the entry of new resources, Mr. Schatzki noted the importance of finding reasonable estimates, especially due to the recent downward trend in costs. In response to a question, he confirmed the focus of the planned analysis across different policy approaches.

Mr. Schatzki then reviewed the case assumptions, which included: (i) modeling state policies assuming a simplified version of RPS standards and the resources used in each case to meet the 80% decarbonization targets; (ii) status quo, where states meet their environmental goals primarily via procurement of multi-year contracts with wind, solar, and hydro resources, and the resource mix consistent with New England State's policy assessments; (iii) FCEM assumptions (which are consistent with ICCM and would determine capacity and CEC awards simultaneously); and (iv) Net Carbon Pricing, which would be set to achieve the 80% electricity sector decarbonization target.

Responding to questions and comments, Mr. Schatzki acknowledged the importance of assumptions regarding state and overall regional decarbonization targets, and the need to discuss,

evaluate, and potentially reconcile those assumptions, and how costs might be assigned if they are different, in the context of specific proposals once presented. He committed to provide additional specificity regarding the anticipated interaction between existing state policies being assumed, including assumptions with respect to Renewable Energy Credit (REC) markets, and the three approaches being evaluated. He confirmed that the central case largely presumed “perfect foresight”, where resource performance would match expectations. Sensitivities, and the potential impact(s) of other variations (e.g. weather, compliance penalties or banking) would be included initially in the central case based on the impact that they might quantitatively have on pathways to be further considered. Where sensitivities and variations would be more qualitative in nature, discussion on those would begin in earnest in the Fall timeframe. With respect to static and dynamic CECs, he clarified that the central case would employ static CEC values and, presuming it would be reasonably feasible, scenarios that capture dynamic credits would be run as well.

Mr. Schatzki then discussed the potential outcomes across the approaches/frameworks that would provide insight into how outcomes may differ under each approach. Finally, he reviewed the project timeline, noting his plan at the June 11 meeting to provide a status on the project, share the initial proposed scenarios, and provide background on the actual model.

Mr. Cavanaugh concluded the meeting by reiterating the request for written feedback or comment submissions by e-mail to him by May 21. Looking ahead, he noted that tentative Future Grid meetings had been scheduled for July 21 and August 19.

There being no further business, the meeting adjourned at 3:00 p.m.

Respectfully submitted,

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Sebastian Lombardi, Acting Secretary

**PARTICIPANTS COMMITTEE MEMBERS AND ALTERNATES  
PARTICIPATING IN MAY 13, 2021 TELECONFERENCE MEETING**

PARTICIPANT NAME	SECTOR/ GROUP	MEMBER NAME	ALTERNATE NAME	PROXY
Actual Energy, Inc.	Supplier		John Driscoll	
Advanced Energy Economy	Fuels Industry Participant	Caitlin Marquis		
American Petroleum Institute	Fuels Industry Participant	Paul Powers		
AR Large Renewable Generation (RG) Group Member	AR-RG	Alex Worsley		
AR Small Load Response (LR) Group Member	AR-LR	Brad Swalwell		
AR Small RG Group Member	AR-RG	Erik Abend		
Associated Industries of Massachusetts (AIM)	End User			Mary Smith
AVANGRID: CMP/UI	Transmission		Alan Trotta	
Avangrid Renewables	Transmission	Kevin Kilgallen		
Belmont Municipal Light Department	Publicly Owned Entity		Dave Cavanaugh	
Block Island Utility District	Publicly Owned Entity	Dave Cavanaugh		
Borrego Solar Systems Inc.	AR-DG	Liz Delaney		
BP Energy Company	Supplier			José Rotger
Braintree Electric Light Department	Publicly Owned Entity			Dave Cavanaugh
Brookfield Renewable Trading and Marketing	Supplier	Aleks Mitreski		
Calpine Energy Services, LP	Supplier	Brett Kruse		Bill Fowler
Central Rivers Power	AR-RG		Dan Allegretti	
Chester Municipal Light Department	Publicly Owned Entity		Dave Cavanaugh	
CLEARResult Consulting, Inc.	AR-DG	Tamera Oldfield		
Clearway Power Marketing LLC	Supplier			Pete Fuller
Concord Municipal Light Plant	Publicly Owned Entity		Dave Cavanaugh	
Connecticut Municipal Electric Energy Coop.	Publicly Owned Entity	Brian Forshaw		
Conservation Law Foundation (CLF)	End User	Phelps Turner		
Consolidated Edison Energy, Inc.	Supplier	Norman Mah		
CPV Towantic, LLC	Generation	Joel Gordon		
Cross-Sound Cable Company (CSC)	Supplier		José Rotger	
Danvers Electric Division	Publicly Owned Entity		Dave Cavanaugh	
DTE Energy Trading, Inc.	Supplier			José Rotger
Dynergy Marketing and Trade, LLC	Supplier	Andy Weinstein		Bill Fowler
Emera Energy Services	Supplier			Bill Fowler
Enel X North America Inc.	AR-LR	Michael Macrae		
Environmental Defense Fund	End User	Jolette Westbrook		
Eversource Energy	Transmission	James Daly		Parker Littlehale
Exelon Generation Company	Supplier	Steve Kirk	Bill Fowler	
FirstLight Power Management, LLC	Generation	Tom Kaslow		
Galt Power, Inc.	Supplier	José Rotger		
Generation Group Member	Generation		Abby Krich	
Georgetown Municipal Light Department	Publicly Owned Entity		Dave Cavanaugh	
Great River Hydro	AR-RG			Bill Fowler
Groveland Electric Light Department	Publicly Owned Entity		Dave Cavanaugh	
H.Q. Energy Services (U.S.) Inc. (HQUS)	Supplier	Louis Guilbault		
High Liner Foods (USA) Incorporated	End User		William P. Short III	
Hingham Municipal Lighting Plant	Publicly Owned Entity	John Coyle	Dave Cavanaugh	
Jericho Power LLC (Jericho)	AR-RG		Nancy Chafetz	
Littleton (MA) Electric Light and Water Department	Publicly Owned Entity		Dave Cavanaugh	
Long Island Power Authority (LIPA)	Supplier		Bill Killgoar	
Maine Power LLC	Supplier	Jeff Jones		
Maine Public Advocate's Office	End User	Drew Landry		



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PARTICIPANT NAME	SECTOR/ GROUP	MEMBER NAME	ALTERNATE NAME	PROXY
Maple Energy LLC	AR-LR			Doug Hurley
Mass. Attorney General's Office (MA AG)	End User	Tina Belew	Ben Griffiths	
Mass. Bay Transportation Authority	Publicly Owned Entity		Dave Cavanaugh	
Mercuria Energy America, LLC	Supplier			José Rotger
Merrimac Municipal Light Department	Publicly Owned Entity		Dave Cavanaugh	
Michael Kuser	End User		Jason York	
Middleborough Gas & Electric Department	Publicly Owned Entity		Dave Cavanaugh	
Middleton Municipal Electric Department	Publicly Owned Entity		Dave Cavanaugh	
National Grid	Transmission	Tim Brennan	Tim Martin	
Nautilus Power, LLC	Generation		Bill Fowler	
New Hampshire Electric Cooperative	Publicly Owned Entity	Steve Kaminski		Brian Forshaw; Dave Cavanaugh
NextEra Energy Resources, LLC	Generation	Michelle Gardner		
North Attleborough Electric Department	Publicly Owned Entity		Dave Cavanaugh	
Norwood Municipal Light Department	Publicly Owned Entity		Dave Cavanaugh	
NRG Power Marketing LLC	Generation		Pete Fuller	
Pascoag Utility District	Publicly Owned Entity		Dave Cavanaugh	
PSEG Energy Resources & Trade LLC	Supplier		Eric Stallings	
Reading Municipal Light Department	Publicly Owned Entity		Dave Cavanaugh	
Rowley Municipal Lighting Plant	Publicly Owned Entity		Dave Cavanaugh	
Stowe Electric Department	Publicly Owned Entity		Dave Cavanaugh	
Sunrun Inc.	AR-DG			Pete Fuller
Taunton Municipal Lighting Plant	Publicly Owned Entity		Dave Cavanaugh	
The Energy Consortium	End User		Mary Smith	
Union of Concerned Scientists	End User		Francis Pullaro	
Vermont Electric Power Company (VELCO)	Transmission	Frank Etori		
Vermont Energy Investment Corp (VEIC)	AR-LR		Doug Hurley	
Vermont Public Power Supply Authority	Publicly Owned Entity			Brian Forshaw
Versant Power	Transmission	Lisa Martin		
Village of Hyde Park (VT) Electric Department	Publicly Owned Entity		Dave Cavanaugh	
Wallingford DPU Electric Division	Publicly Owned Entity		Dave Cavanaugh	
Wellesley Municipal Light Plant	Publicly Owned Entity		Dave Cavanaugh	
Westfield Gas & Electric Department	Publicly Owned Entity		Dave Cavanaugh	
Wheelabrator North Andover Inc.	AR-RG		Bill Fowler	