

MEMORANDUM

TO: NEPOOL Markets Committee

FROM: Paul Belval, NEPOOL Counsel

DATE: January 5, 2022

RE: NEPOOL Generation Information System Modifications
Energy Storage, Connecticut Green Bank Residential Rooftop Solar Metering and
Clarification of Dual Fuel Reporting

At its January 11/12, 2022 meeting, the NEPOOL Markets Committee will be asked to consider and vote on changes to the NEPOOL Generation Information System (“GIS”) and the GIS Operating Rules (the “Rules”) relating to (i) the treatment of energy storage resources in the Rules, (ii) metering for certain residential solar generating systems administered by the Connecticut Green Bank (“CGB”), and (iii) clarification of fuel split and emission entry submissions in the GIS. This memorandum describes each of the proposed changes, and the changes to the Rules are included in the attachments to this memorandum.

The Markets Committee referred each of these proposed changes to the NEPOOL GIS Operating Rules Working Group (the “Working Group”) at its October 14 meeting. The Working Group met by teleconference on October 29 to discuss the changes, and the proposed Rule changes were circulated to the Working Group after that teleconference. No member of the Working Group objected to the changes to the GIS or the Rules.

Energy Storage Facilities

Currently, energy storage facilities are addressed in the Rules to a limited extent, as follows:

- Energy storage systems that meet the qualifications of a Massachusetts Clean Peak Resource are eligible to receive Clean Peak Energy Certificates in the GIS;
- Flywheel storage systems may receive Massachusetts Alternative Portfolio Standard-eligible Certificates; and
- Pumped storage facilities are treated as neither generation nor load in the GIS; instead, there is a separate account in the name of the Administrator for the Certificates Obligation created by the difference between the energy used for pumping at those facilities and the energy generated at those facilities.

Other than those instances, energy storage is not explicitly addressed in the Rules.

The changes to the Rules proposed by APX, Inc., the GIS Administrator, which are included as Attachment 1, would handle energy storage in the same manner as pumped storage resources, as described above. Also, Appendix 2.4—*GIS Certificate Fields* of the Rules would

be revised to remove the asterisks on Energy Storage indicating eligibility for Renewable Certificates.

The GIS Agreement, as amended in October 2020, provides that APX will perform up to 500 hours of development work for enhancements to the GIS each year without additional cost. APX has stated that these changes will not require it to use any of the development time for 2022.

The following resolution could be used to adopt the changes to the Rules related to energy storage facilities:

RESOLVED, that the Markets Committee adopts the changes to the NEPOOL Generation Information System and the NEPOOL Generation Information System Operating Rules proposed and discussed at this meeting, which changes relate to the treatment of energy storage resources in the Rules [with such changes thereto as were discussed at this meeting and] with such non-material changes thereto as the Vice Chair of the Markets Committee may approve.

Residential Solar System Metering

CGB has proposed changes to the metering arrangements for certain residential solar generators in the Connecticut Residential Solar Investment Program (“RSIP”). For the generators in the RSIP, meter data is currently collected and aggregated using cellular telecommunications technology that is incorporated into each solar generating system. For certain of the systems installed prior to 2020, the telemetering technology uses 3G capability, and the major cellular carriers have announced plans to phase-out 3G technology by the end of 2022. CGB has plans to replace the telemetering equipment on roughly 5,000 homeowner-owned systems in its RSIP that are impacted by this change, but it expects to need several years to accomplish that switchover. CGB states that there are up to 30,000 third-party owned solar systems that have outdated 3G technology that will need to be replaced in order for the performance of the solar system to be communicated to CGB.

The proposed changes to the Rules included in Attachment 2 would allow CGB to use a predictive model using actual performance data to calculate the generation of the impacted RSIP systems for the purpose of creating Certificates in the GIS. The number of Certificates issued using this approach would be included in the publicly available reports in the GIS. Finally, the proposed changes would update the name of CGB from its prior name in Appendix 5.3 to the Rules. APX has stated that these changes will not require it to use any of the 500 hours of development time for 2022.

The following resolution could be used to adopt the changes to the Rules related to metering for RSIP systems:

RESOLVED, that the Markets Committee adopts the changes to the NEPOOL Generation Information System and the NEPOOL Generation Information System Operating Rules proposed and discussed at this meeting, which changes relate to the estimation of residential rooftop solar generation in the Connecticut Green Bank Residential Solar Investment Program [with such changes thereto as were discussed at

this meeting and] with such non-material changes thereto as the Vice Chair of the Markets Committee may approve.

Fuel Output and Emissions Reporting

Earlier this year, a NEPOOL Participant had requested a waiver of the Rules and the GIS Agreement in order to change incorrect information on its Certificates relating to the fuel sources used for a multi-fuel generating unit. While the waiver ultimately proved unnecessary, that NEPOOL Participant, Stored Solar J&WE, LLC, requested that the Working Group consider addressing the possibility of incorrect data entry in the creation of Certificates. At the Working Group's October 29 meeting, APX offered to propose some enhancements to the GIS to minimize confusion and provide additional confirmation details for the account holder when submitting and/or updating fuel output and emissions entries within the GIS. APX's proposed enhancements include:

- the change to Rule 2.5(d) included in Attachment 3 that would require an account holder to validate the output per fuel type or emissions data after that output or emissions data is initially submitted.
- automatically sending an email to the GIS account holder when fuel output and emissions data is submitted that includes the data that was submitted and reminding the account holder of the deadline to correct the data; and
- adding information to the account holder's "My Event Log" that will detail the fuel output and emissions data provided by an account holder.

APX, Inc. estimates that these changes will require 45 development hours to complete.

The following resolution could be used to adopt the changes to the Rules discussed above:

RESOLVED, that the Markets Committee adopts the changes to the NEPOOL Generation Information System and the NEPOOL Generation Information System Operating Rules proposed and discussed at this meeting, which changes relate to enhancements for fuel output and emission entries in the GIS [with such changes thereto as were discussed at this meeting and] with such non-material changes thereto as the Vice Chair of the Markets Committee may approve.

cc: NEPOOL GIS Operating Rules Working Group

**CHANGES TO NEPOOL GENERATION INFORMATION SYSTEM
OPERATING RULES RELATING TO ENERGY STORAGE RESOURCES**

Rule 4.3 Calculation of Certificates Obligation

(a) The GIS Administrator shall calculate on each Creation Date the Certificates Obligation of each Retail LSE for that Trading Period with MSS data for electrical load in the applicable calendar quarter obtained from the ISO, adjusted (subject to the last sentence of this Rule 4.3(a)) to account for any MMAs occurring prior to that Creation Date. The GIS Administrator shall determine a Retail LSE's Certificates Obligation by subtracting from such electrical load applicable to such Retail LSE that Retail LSE's entitlement or ownership share of Energy used for pumping at a pumped [storage facility or charging at a front-of-the-meter energy](#) storage facility owned by that Retail LSE or in which that Retail LSE has an Ownership Share during that calendar quarter (or the comparable figures for the transferor of that Retail LSE's Certificates Obligation), which shall be provided by the applicable Retail LSE at least five calendar days before the applicable Creation Date. Without limiting the generality of the foregoing, Forward Certificates will not satisfy a Certificate Obligation for any Trading Period prior to their Creation Date, APS Certificates and Clean Peak Energy Certificates will not satisfy a Certificates Obligation at any time, NH Class I Thermal Certificates and NH Biodiesel Producer Certificates will only satisfy a Certificates Obligation for a Retail LSE's New Hampshire Retail Subaccount, and Maine Thermal Certificates will only satisfy a Certificates Obligation for a Retail LSE's Maine Retail Subaccount. ISO's RBA data shall be available to Account Holders through their accounts, but such data shall not be used in the creation of Certificates Obligations.

* * * *

Rule 4.6 Energy Used for Pumped Storage [and Energy Storage](#)

In order to ensure a MWh-for-MWh match of Energy generated by GIS Generators and imported into the New England Control Area with Certificates created and assigned, a separate account (the "[Pumped Storage and Energy Storage Account](#)") will be created, with a separate Certificates Obligation for each calendar quarter equal to the excess of (x) Energy used for pumping at pumped storage facilities [and charging at front-of-the-meter energy storage facilities](#) in the New England Control Area during such calendar quarter over (y) Energy generated by such pumped storage [and energy storage](#) facilities during such calendar quarter. The GIS Administrator shall obtain figures for such amounts from the MSS. The Pumped [Storage and Energy](#) Storage Account shall not have an Account Holder associated with it. At the end of each Trading Period, Residual Mix Certificates shall be assigned to each MWh of Certificates Obligations in the Pumped Storage [and Energy Storage](#) Account.

* * * *

Appendix 1.1

FUNCTIONAL REQUIREMENTS

13. Pumped Storage and Energy Storage.

With respect to pumped storage and energy storage and generation, the real-time generation that runs the pumps or charges a front-of-the-meter energy storage resource will have certificates issued equal to the MWhs that the pumps or charges the energy storage resources, use. When the stored water at a pumped storage facility is released or the charged energy at a front of the meter energy storage facility is discharged, additional generation (~~about 30 percent less than the Energy that initially pumped the water~~) occurs that is sold into the wholesale market and ultimately to retail consumers.

In order to balance the total amount of Certificates assigned to retail loads with the total MWhs of generation, the losses associated with pumped storage (~~approximately 30 percent~~) and front-of-the-meter energy storage need to be addressed through the GIS Operating Rules.

While initially the emission reduction benefits of peak clipping from pumped storage and energy storage facilities and other load management programs will not be explicitly recognized in the GIS, the GIS Administrator will propose GIS Operating Rules to reflect the benefits they provide to the region after initial implementation.

* * * *

Appendix 2.4

GIS Certificate Fields¹

Part 1 – The following shall be the data field options for Fuel Sources⁶ (each GIS Generator and Importing Account Holder will select at least one) [bracketed references show state energy portfolio standard eligibility for the specific fuel type, subject in certain cases to additional requirements including without limitation size limits and in-service dates]: *

Energy storage system ~~that commenced~~

¹ Fields identified with an asterisk (*) will not change.

⁶ Fuel Sources identified with two asterisks (**) are eligible for Renewable Certificates, as described in Rule 3.5. Certificates created for a Zero Emissions Generator, as described in Rule 2.3, shall include a notation that such Certificates are “Emission Free-Generated Energy Certificates.”

Commenced commercial operation or provided incremental new capacity on or after January 1, 2019 that operates primarily to store and discharge renewable energy** [MA CPS]

Other

**CHANGES TO NEPOOL GENERATION INFORMATION SYSTEM
OPERATING RULES RELATING TO CONNECTICUT RESIDENTIAL SOLAR**

Rule 2.1 Creation of Certificates

(e) Meter data for Non-NEPOOL Generators, Included Generators, Non-NEPOOL Generator Representatives and BMG Resources shall either (x) meet the requirements of ISO New England Operating Procedure No. 18 or (y) satisfy either (i) the requirements of any applicable state regulations for metering standards or (ii) the following metering standards (the applicable state metering standards described in clause (y)(i) and the following metering standards are collectively referred to as the “Small Generator Metering Protocol”).

Minimum Meter Accuracy		
Meter Accuracy: Only "revenue grade" (also called "revenue quality") meters tested and certified to ANSI C-12 standards are allowed. Minimum accuracy and other requirements, based on nameplate capacity, are as follows:		
Nameplate Capacity	Minimum Meter Accuracy (all values are +/-)	Other Requirements
Up to 10 kW	2% (ANSI C-12.1-2008)	<p>Electromechanical meters may be used. Refurbished meters, if retested and certified, may be used. Allowable configurations for meters are :</p> <ul style="list-style-type: none"> • Single-phase 120 volt - Form 1S, Class 100 • Single-phase 240 volt - Form 2S, Class 200 • Three-phase 120 - 480 volt - Form 14- 16S, Class 200 <p>Meters used as part of a Data Acquisition System (“DAS”) must meet the "Greater than 10 kW and up to 1 MW" nameplate capacity requirements below.</p>
Greater than 10 kW and up to 1 MW	1% (ANSI C12.16 or better)	<p>Only new solid state meters are allowed. Current transformers (“CTs”) must conform to the 0.6% (ANSI/IEEE C57.13-2008) accuracy class, or the meter must be tested using the CT and certified to meet the minimum accuracy requirement.</p>

Greater than 1 MW	0.5% (ANSI C12.20-2010)	Only new meters are allowed. CTs must conform to the 0.3% (ANSI/IEEE C57.13-2008) accuracy class.
-------------------	----------------------------	---

Notwithstanding the foregoing, until July 1, 2026, generation data for solar photovoltaic systems included in the Residential Solar Investment Program administered by the Connecticut Green Bank (“RSIP Generators”) may either be metered as described above or be provided to the GIS Administrator by the Connecticut Green Bank via a secure internet portal and using an estimation methodology approved the Connecticut Green Bank from time to time (the “RSIP Estimation Methodology”).

* * * *

Rule 2.5 Sources of Generation Data

(b) Generation and conservation data used in the development of Certificates for NEPOOL Generators and DR Resources, respectively, shall be obtained from the ISO and will be based upon the monthly settlement statements issued by the ISO, as adjusted (subject to the last sentence of this Rule 2.5(b)) to reflect meter reconciliation and data corrections (“MMAs”) under Section 6 (Data Reconciliation Accounting) of Manual M-28 or any successor thereto prior to the Creation Date for the applicable Certificates. Such Certificates will therefore reflect any unit output adjustments initially made by the ISO in such settlement statements prior to such Creation Date. Generation data used in the development of Certificates for Non-NEPOOL Generators, Included Generators, BMG Resources and Non-NEPOOL Generator Representatives shall be provided to the GIS Administrator by either (x) such Non-NEPOOL Generator, Included Generator, BMG Resource or Non-NEPOOL Generator Representative in accordance with the procedures established in ISO New England Operating Procedure No. 18 or any successor thereto or in accordance with the Small Generator Metering Protocol or (y) for those states which require that a Third Party Meter Reader provide generation data and for those resources that are subject to Rule 2.5(j), by a Third Party Meter Reader in accordance with paragraph (j) of this Rule 2.5 or (z) for RSIP Generators, either as described above or by the Connecticut Green Bank using the RSIP Estimation Methodology as provided in Rule 2.1(e). Conservation data used in the development of Certificates for C&LM Resources shall be provided to the GIS Administrator by either the C&LM Resource or the applicable Fund Administrator representing such C&LM Resource. Generation data used in the development of Clean Peak Energy Certificates shall be provided to the GIS Administrator by the CPS Program Administrator. ISO’s Requested Billing Adjustment (“RBA”) data shall be available to Account Holders through their accounts, but such data shall not be used in the creation of Certificates.

* * * *

Rule 5.4 Publicly Available Reports

(e) The publicly available reports posted on the GIS Administrator's website shall include an aggregation and/or average, as appropriate, of the Certificate fields for all Certificates created during the quarterly or annual reporting period. Such reports shall aggregate data separately for NEPOOL Generators, Importing Account Holders, Non-NEPOOL Generators, Included Generators, C&LM Resources, BMG Resources, Class III Cogeneration Resources, DR Resources, MAPS CHP Resources, MAPS Useful Thermal Resources, NH Useful Thermal Resources, NH Biodiesel Producers, Maine Thermal Resources, Clean Peak Resources and Non-NEPOOL Generator Representatives and shall also include data aggregated for all GIS Generators and Importing Account Holders and data aggregated by originating control area (if other than ISO New England) and RPS or APS eligibility for all Imported Unit Energy. Those reports shall include the aggregate and/or average, as appropriate, of the Certificate fields for all Residual Mix Certificates, all Reserved Certificates, all Certificates assigned to state-specific subaccounts and all Certificates associated with Energy exported from the New England for the quarterly or annual reporting period as well. Those reports shall also include a listing of all Third Party Meter Readers for the time period covered by each such report, and the number of Certificates issued using the RSIP Estimation Methodology during the time period covered by each such report. In addition, those reports shall be capable of being sorted by the state of origination and settlement, by eligibility for RPS and APS programs, and by fuel type for all such Certificates for the time period covered by each such report.

* * * *

Appendix 1.1

FUNCTIONAL REQUIREMENTS

2. Sources of Generation Information for GIS.

The ISO currently provides monthly settlement statements to all Market Participants that take part in the wholesale electricity markets administered by the ISO, through the MSS. Those monthly statements are based on hourly load and supply assignments for all market participants as produced by the ISO's markets software. The initial generation credits produced by the real-time dispatch of generation based on telemetered data are modified by revenue quality meter readings that are submitted within 48 hours of the close of each day's market. The MSS also produces hourly scheduled Energy flows of imports and exports over the external ties to and from the New England Control Area. Those tie-lines connect to New Brunswick (1), Quebec (2), and New York (8). Small wholesale generators that are not telemetered as part of the real-time wholesale market but that request inclusion in the MSS database are included in the overall MSS database based on revenue-quality meter readings. Those readings are submitted within 48 hours of the close of each day's market.

The basic MSS database maintained for financial settlement purposes will provide the initial set of inputs for hourly generation credits by resource for NEPOOL Generators in the GIS database. In addition, labor characteristics and possibly some other characteristics that are not kept in the MSS, as well as generation information for Non-NEPOOL Generators, Included Generators, C&LM Resources, BMG Resources, Non-NEPOOL Generator Representatives and Clean Peak Resources, may be provided directly to the GIS Administrator by the GIS Generators or by certain regulatory [or other governmental](#) agencies, Third Party Meter Readers or the CPS Program Administrator.

* * * *

5. Production of Certificates.

The GIS Administrator will produce Certificates based on the hourly generation information from the settlements database and/or from information provided by GIS Generators ~~or~~, Third Party Meter Readers [or governmental agencies](#). The certificates will be numbered and may or may not include additional information from the other fields in the GIS database. Each certificate will provide sufficient information (or access to information in the GIS database) so that a participating Person will be able to determine, in combination with other Certificates, its ability to comply with Attribute Laws.¹

The owner for each generator whose output is settled through the ISO wholesale Energy market will receive from the GIS Administrator a quarterly statement of the Certificates created by its quarterly generation. In addition, the GIS will reflect end-of-the-month adjustments to meter reads and Load Asset values effected by the ISO.

* * * *

Appendix 5.3

REGULATORY AGENCIES

State Renewable Funds

Rhode Island Office of Energy Resources

Connecticut ~~Clean Energy Finance and Investment Authority~~ [Green Bank](#)

Massachusetts Clean Energy Technology Center as Administrator of Massachusetts Renewable Energy Trust and CPS Program Administrator

Maine State Planning Office as Administrator of Maine Renewable Resource Fund

New Hampshire Renewable Energy Fund

¹ It is not intended that the GIS will impact the allocation of generation attributes under bilateral agreements.

**CHANGES TO NEPOOL GENERATION INFORMATION SYSTEM
OPERATING RULES RELATING TO MULTI-FUEL UNIT ENTRIES**

2.5 Sources of Generation

(d) With its initial registration and by the fifth calendar day preceding each Creation Date thereafter, each GIS Generator and Importing Account Holder that has registered a generating unit with multi-fuel capability will submit and validate to in the GIS ~~Administrator~~ information reflecting the proportion of output per fuel type, by MWh, generated by the unit during each month in the applicable calendar quarter to which such Creation Date relates, using available sources of information. Such information shall be used to allocate Certificates for such multi-fuel generating units for each month for which it was supplied.