

Use of the Solar Photovoltaic Forecast to Modify the Long-Term New England Load Forecast



Reliability Committee Meeting

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Background

- A number of NEPOOL Participants, state agencies, and NESCOE, raised concerns over the Installed Capacity Requirement (ICR) values developed for the ninth Forward Capacity Auction (FCA #9)
- NEPOOL and other parties filed comments with the FERC regarding the use of the solar photovoltaic (PV) forecast information for establishing ICR values for FCA #9 and/or future FCAs
- ISO has continued to evaluate how best to utilize the solar PV forecast and has concluded that information available from the solar PV forecast can be used to adjust the long-term load forecast for the region

Background, cont.

- In its Order approving the ICR values for FCA #9, the FERC recognized the ISO's commitment to work with stakeholders to explore whether and how PV resources not currently captured through existing FCM mechanisms should impact the ICR calculations based on the PV forecast, and provided the following guidance on use of the solar PV forecast information in future FCAs:

“While we acknowledge concerns about excluding distributed generation from the ICR calculation, we also agree with ISO-NE and various stakeholders that ISO-NE must examine the market and operational issues associated with incorporating distributed generation into the ICR calculation. Accordingly, while we are accepting ISO-NE’s proposed values for FCA 9, we expect ISO-NE to fully explore the incorporation of distributed generation into the ICR calculation in the stakeholder process. We expect ISO-NE to do this on a schedule that will allow these factors to be reflected, if determined appropriate, in the ICR calculation for FCA 10.”

- Because the New England load forecast is a key input for the calculation of ICR, ISO will be sharing this information through the typical RC and PSPC process on the load forecast and ICR development

Important Issues to be Considered

- Avoid double counting of solar PV resources that are already captured in the load forecast or are participating directly in the markets
- Gain access to accurate and timely data to allow for proper modeling of future solar PV development and assessment of existing solar PV and their influence on regional load
- Maintain consistent treatment of different resource types
- Encourage market participation, wherever practical, of new, solar PV installations to improve visibility and operational awareness

Types of PV in New England

- PV as a capacity resource in the Forward Capacity Market (FCM)
 - Qualified for the FCM as either a generator or demand resource
 - Have capacity supply obligations
 - Size and location identified and visible to the ISO
- Settlement only Resources (SORs) PV
 - Small generators (< 5MW) registered in the ISO Market System
 - Hourly meter data provided for settlement purposes
 - Participate only in the energy market
 - Not available for dispatch



Types of PV in New England, cont.

- Behind the Meter (BTM) PV
 - Not registered in the ISO Market System
 - Historically, ISO has not received energy output data
 - Behind the Meter PV Embedded in Load (BTMEL)
 - The portion of BTM that is captured in the historical load forecast (**already in service**)
 - Energy output is reflected in system energy requirements and may be estimated as the difference between known supply resources and historical loads
 - Can be estimated to avoid double counting in future years
 - Behind the Meter PV not Embedded in Load (BTMNEL)
 - The portion of BTM that is not captured in the historical load forecast (**not in service yet**)
 - Impact on future load can be captured from the solar PV forecast
 - Represents change in retail customer behavior not captured in the econometric forecast
 - Over time, this category shifts from future expectations to past performance, allowing for an annual true-up to capture any minor discrepancies

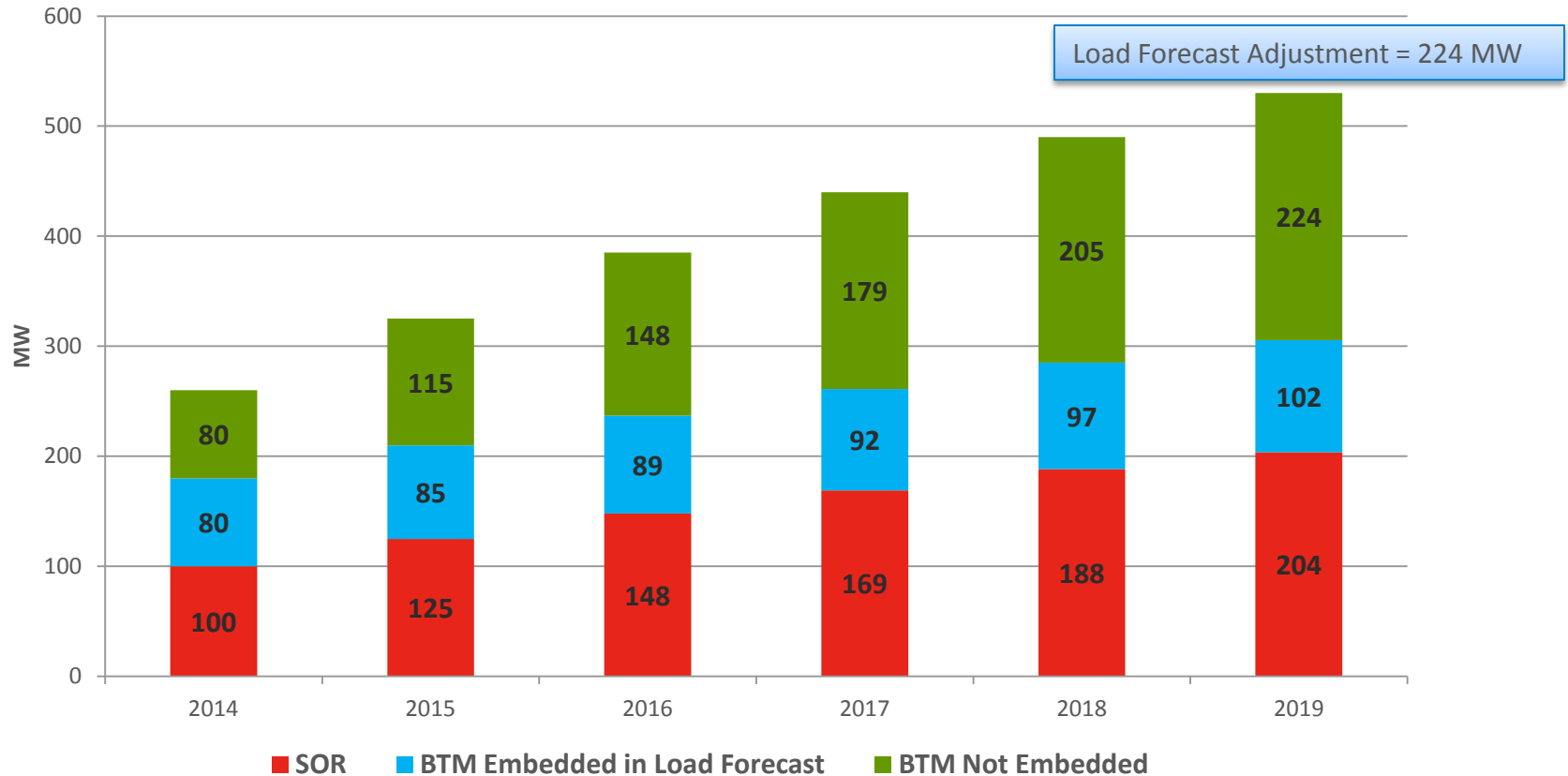
Accurate PV Production Data is Essential

- Actual PV energy production data will be required in order to pursue the framework described below
- ISO has been actively working with the New England states and distribution utilities to gather this information. At this stage, ISO is hopeful that all or most of the data will be provided by March 1.
- Changes in the load forecasting approach in time for use in the FCA #10 ICR calculation will be challenging due to the tight timelines

Potential Framework Output – Illustrative Example

Information Will be Updated Annually

Breakdown of 2014 CELT Solar PV Forecast (MW)



LOAD FORECAST ADJUSTMENT

Timeline and Framework Methodology

Timeline

- ICR analysis phase begins in late spring after capturing all critical inputs
- Inputs to load forecast that are reflective of the prior calendar year must be complete by early March
- CELT contains load forecast that is completed in March - April timeframe
- ICR analysis is fed CELT data which is published in May
- PV inputs to load forecast would be reflective of data captured through December/January (PV activity during first three quarters of calendar year in which ICR is published would not be reflected but would be factored into estimates)

Framework Methodology

- The methodology should be:
 - Objective and unbiased
 - Quantitatively based on verifiable data
 - Executable within the time constraints of the annual planning cycle
 - Consistent with existing Tariff requirements
- The primary purpose of the methodology is to capture and adjust the load forecast by the quantity of PV that is not registered as an FCM resource or SOR, and not fully embedded in the load forecast (already in service)



The Load Forecast is a Component of the ICR Calculation

- The load forecast currently incorporates:
 - Historical loads
 - 10-12 year look-back
 - BTM generation
 - Like energy efficiency (EE), it is part of historical loads and is factored into future loads
 - BTM generation and EE are said to be “embedded” in the load forecast
 - Loads are reconstituted by EE and BTM solar PV to avoid double counting

Data Requirements

- PV forecast annual estimates
 - Rates of PV production/installation
 - Estimates of load served by BTM PV generation
 - Distribution of SORs to BTM PV
- SOR Registration Information
 - Location (nodal)
 - AC or DC nameplate
 - Seasonal Claimed Capability (SCC) or equivalent
 - Energy production data
- BTM Solar PV
 - Location (state or load zone)
 - AC or DC nameplate
 - SCC or equivalent
 - Energy production data

Next Steps

- ISO is working with the Distributed Generation Forecast Working Group to complete the 2015 solar PV forecast. The next meeting is scheduled for February 27.
- States and distribution utilities are gathering and submitting necessary solar PV production data, due in early March
- ISO will then calculate the embedded BTM solar PV (already in service)
- 2015 load forecast will then be adjusted by the non-embedded BTM solar PV
- ISO staff to present complete solar PV forecast at the RC/PSPC based on committee preference