



2020 RNA - Development of Hourly Forecasts for Behind-the-Meter Solar PV

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Joint TPAS – IPFSWG Meeting

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NYISO BTM Solar Inverter Data

- Obtained under contract from a 3rd party data aggregator. Actual data has been available since Q1 2017.
- Data from about 10,000 sites is distributed across about 1,500 zip codes, distributed approximately proportional to all ~ 100,000 sites in New York.
- Data is aggregated first by county, then scaled to match daily capacity in each Zone. Zonal data is provided to the NYISO.
- Primary application is to support integration of solar forecasting in Grid Operations.

Advantages of Using Actual Inverter Data for NYISO Planning Studies

- **Accounts for performance & characteristics of actual installations, weather and solar irradiance.**
 - Cloud cover & precipitation (both rain and snow)
 - Orientation of installations: angle of inclination and facing east or west of due south
 - Shading from trees and other obstructions of panel's view of the sun
 - Actual variations in solar irradiance from one month and year to the next

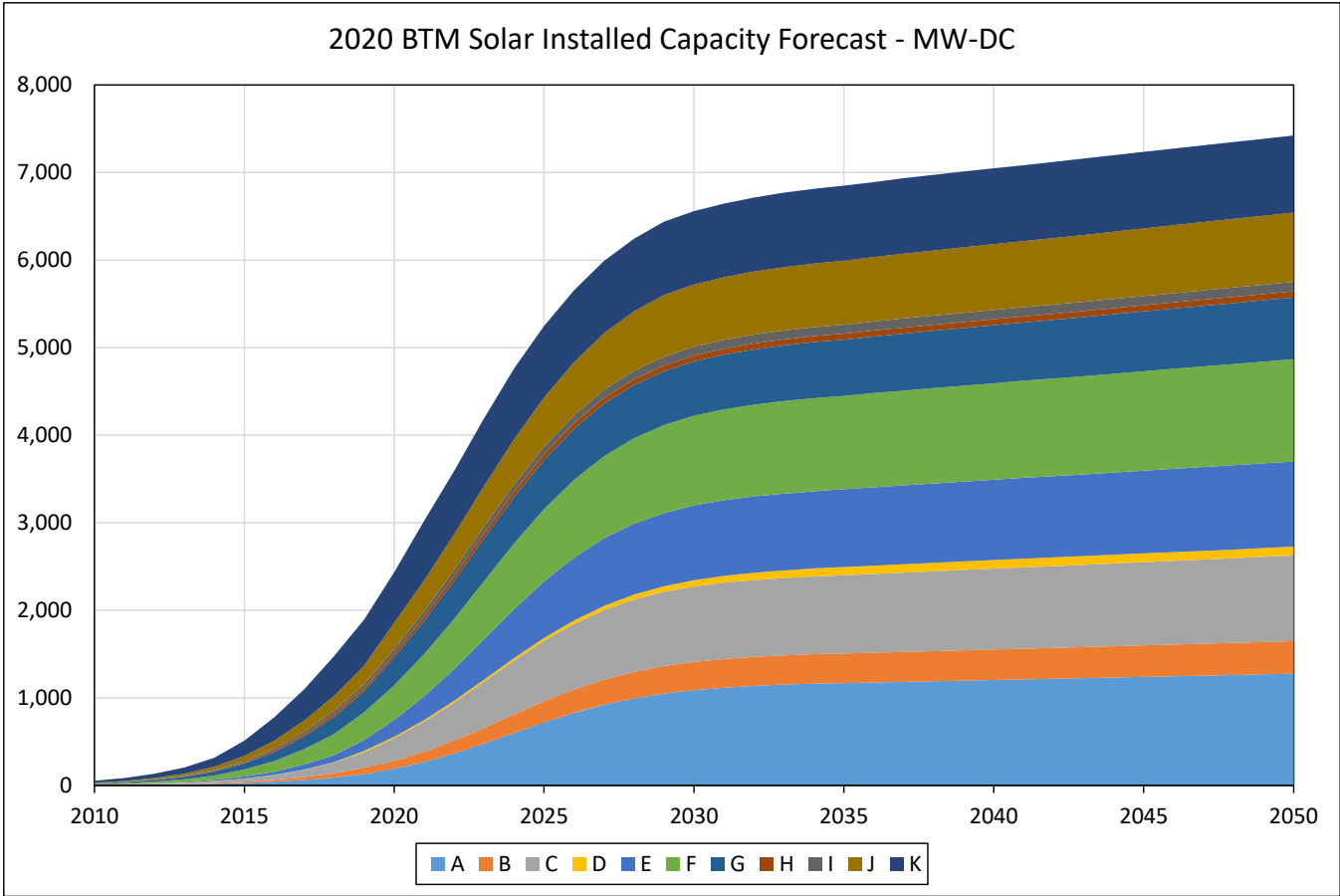
Application to 2020 RNA

- 1. Develop and deliver five sets of 11 zonal power curves for use in the 2020 RNA.**
- 2. For any given MARS simulation, randomly select one set of 11 curves from the five sets available.**
- 3. Adjust from annual energy = 1,000 MWh to annual energy for any particular Zone and year, based on the 2020 Gold Book forecast.**
- 4. For additional information please see the following link:**

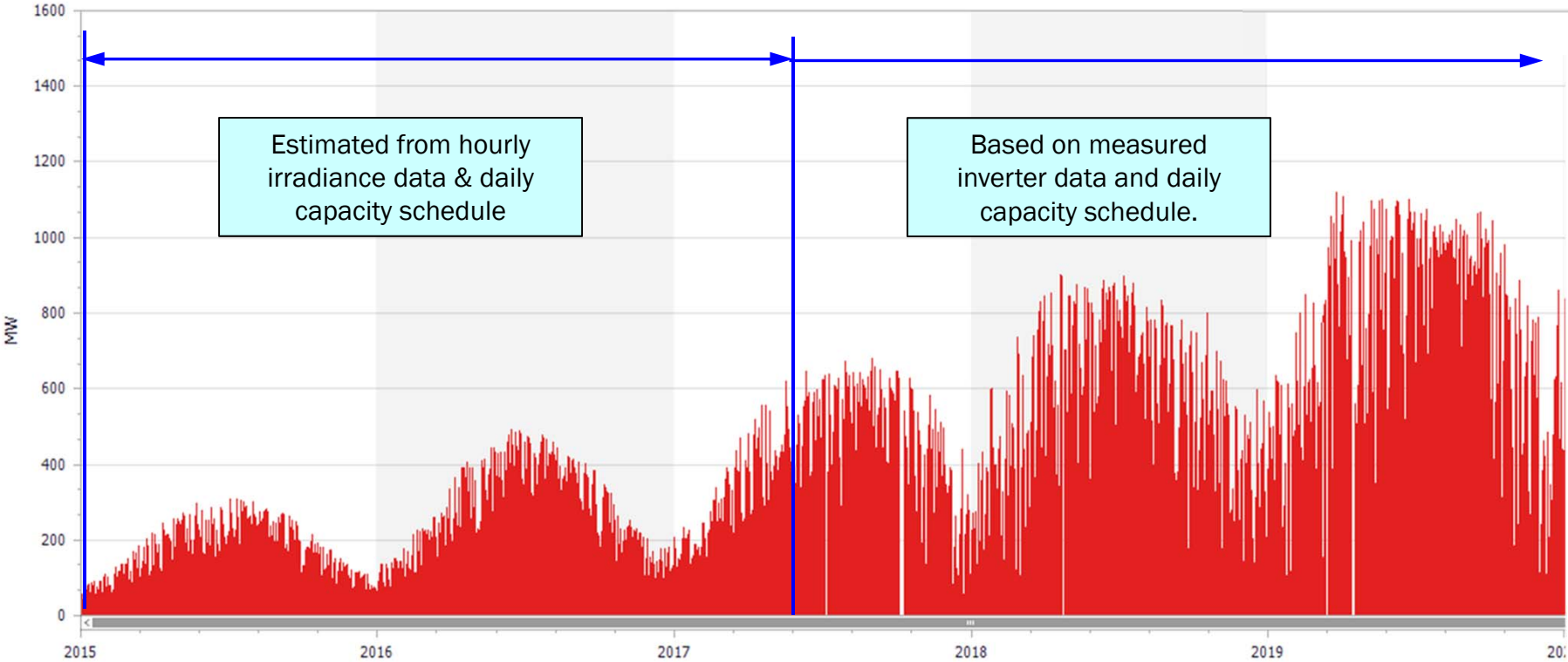
https://www.nyiso.com/documents/20142/11738080/12d_2020RNA_MARS-BtMSolar-Apr6TPAS-ESPWG.pdf/2ca99875-c817-2996-339c-8dab9fa2db05

Process Steps to Obtain Five Annual Power Curves for RNA

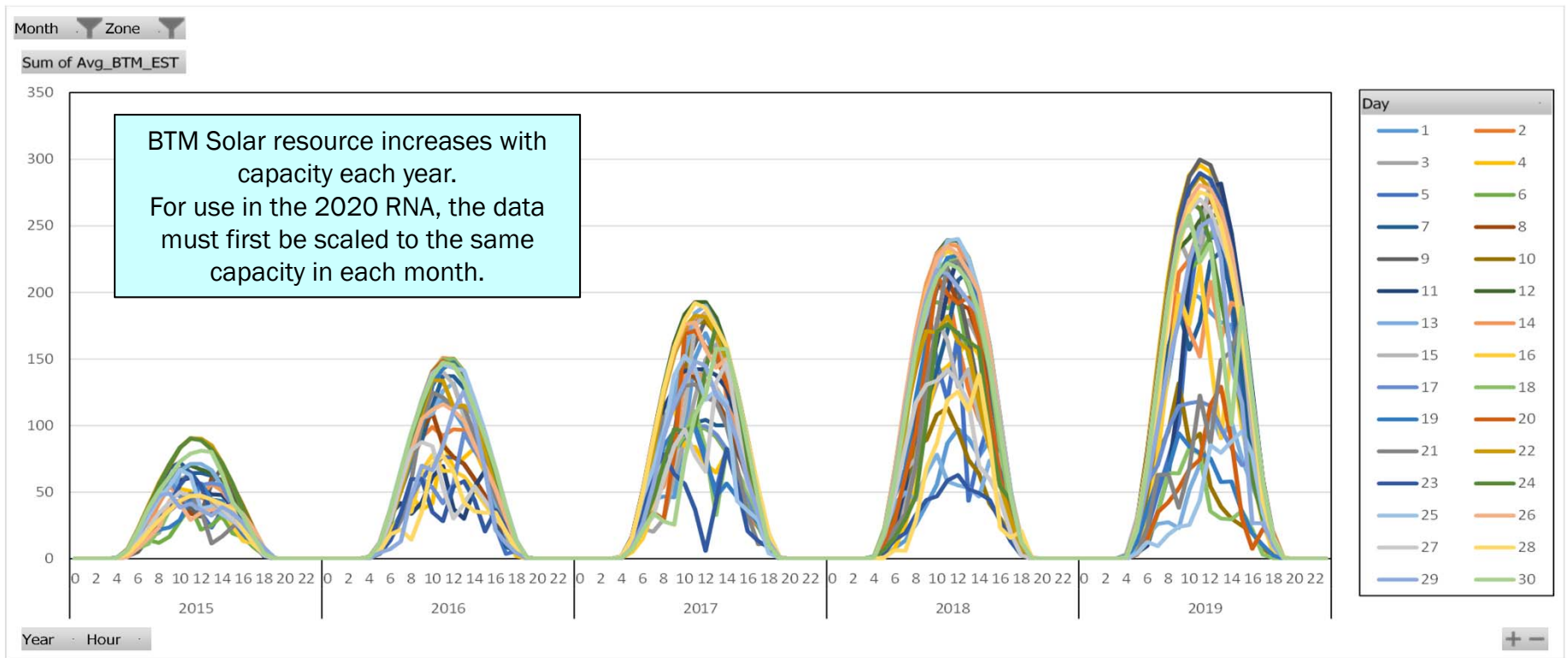
- 1. Extract actual solar BTM from load forecasting databases for the period from 2015 through 2019.**
- 2. Adjust for monthly growth in installed capacity by adjusting to the same reference capacity level for all months.**
- 3. Convert to per-unit data so that annual energy in each Zone and year sums to 1,000 MWh.**



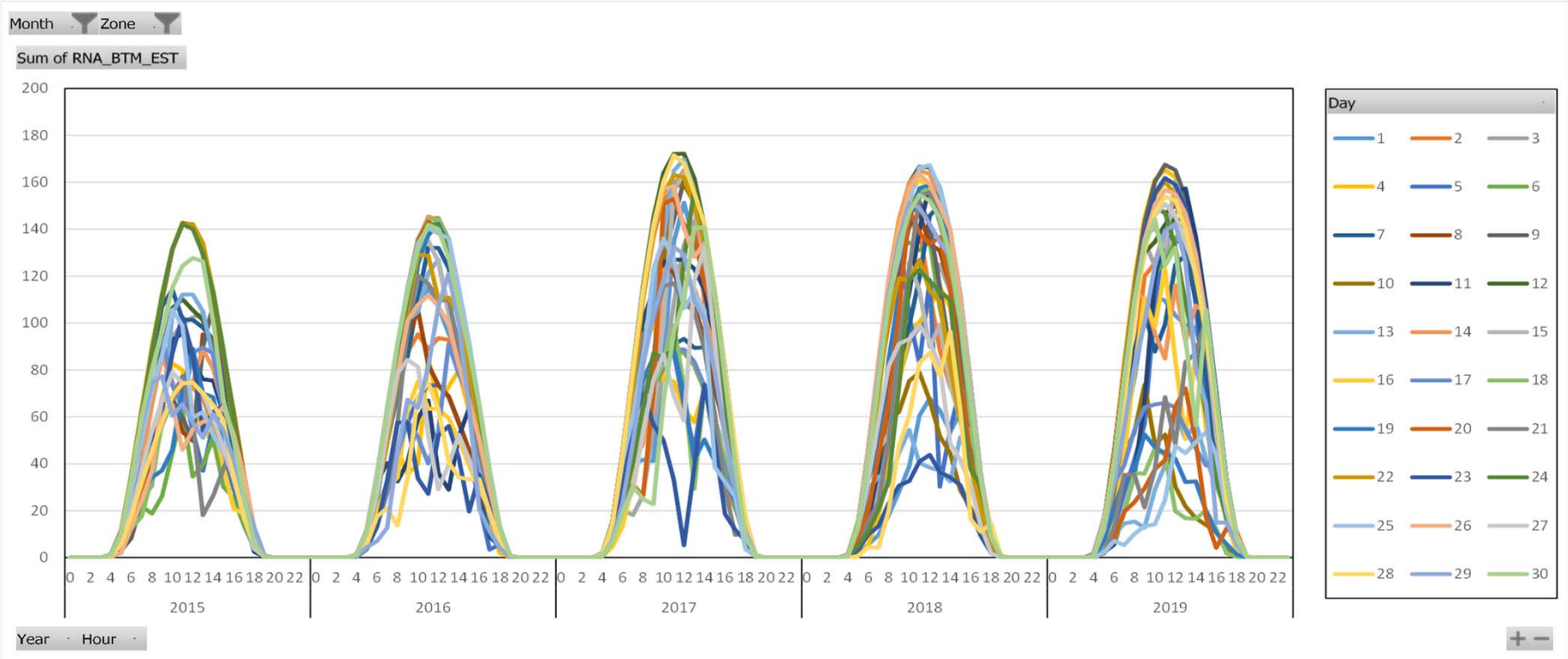
Historical Behind-the-Meter Solar Data - 2015 to 2019 (MW)



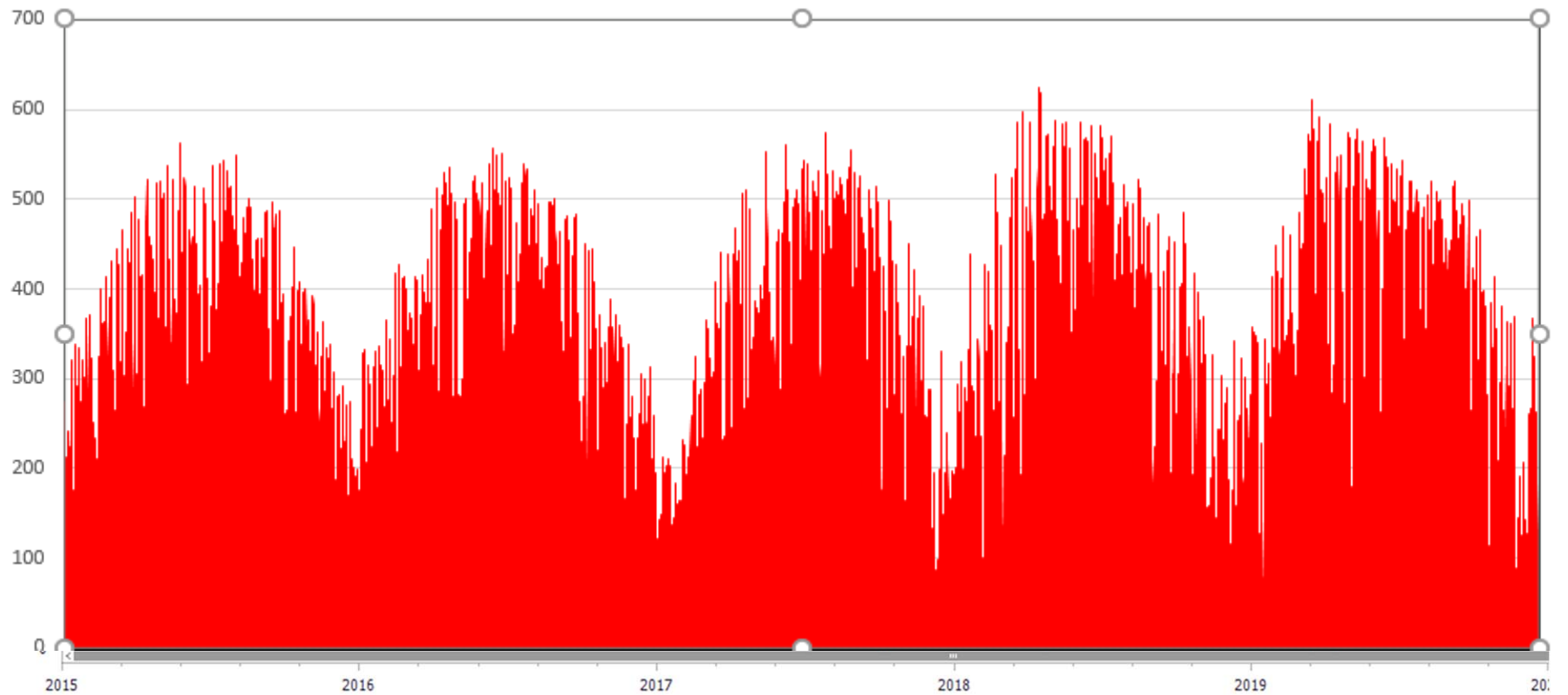
Zone K BTM Solar Data – Hourly Data for Each Day in June, 2015 to 2019 (MW)



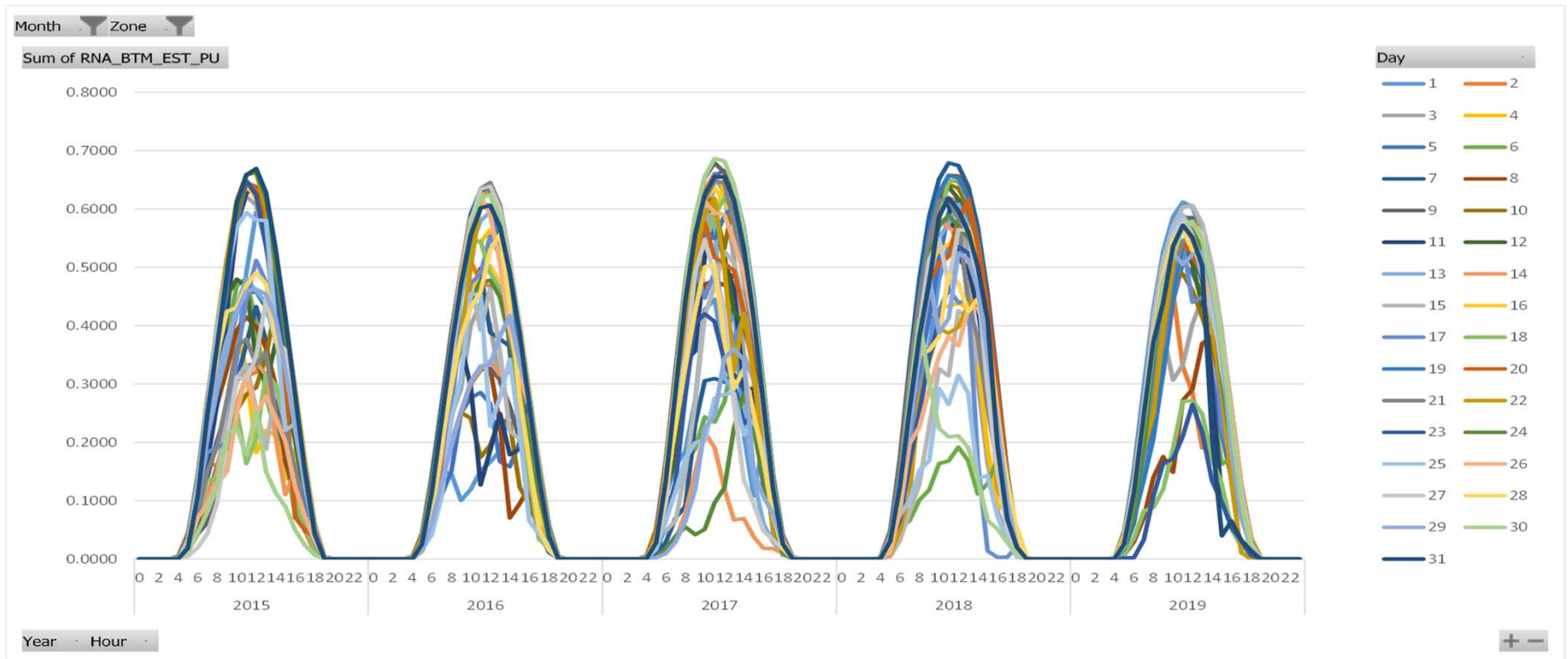
Zone K BTM Solar Data – Hourly Data for Each Day in June, 2015 to 2019 (MW) After Levelizing Installed Capacity in Each Month



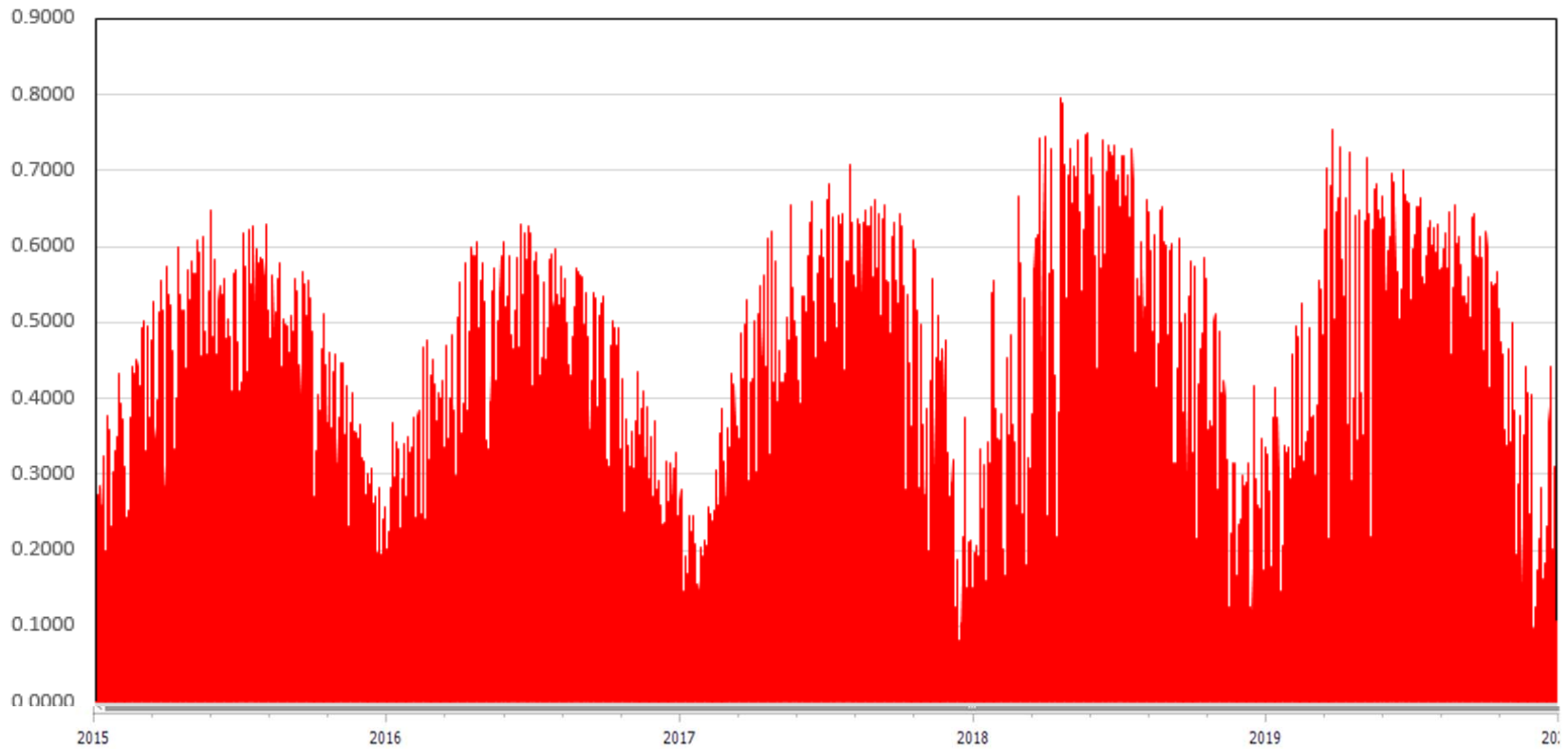
Historical Behind-the-Meter Solar Data - 2015 to 2019 (MW) After Levelizing Installed Capacity by Month



Zone K BTM Solar Data – Hourly Data for Each Day in July, 2015 to 2019 (MW) After Converting to Per Unit of Annual Energy = 1000 MWh



Historical Behind-the-Meter Solar Data - 2015 to 2019 (MW) After Converting to Per-Unit of Annual Energy = 1000 MWh



Availability of Data for NYISO Stakeholders

- A project is underway to post hourly values of actual and forecast BTM solar energy by Zone on the NYISO website, similar to current load forecasts. Expected to be implemented by end of Q4 2020.
- Reference data used for 2020 RNA will be made available to NYISO stakeholders after completion of the RNA.

Questions?

Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

