

STATE OF NEW HAMPSHIRE**Inter-Department Communication****DATE:** January 24, 2019**AT (OFFICE):** NHPUC

FROM: Elizabeth Nixon, Utility Analyst

SUBJECT: IR 18-028 Clifton Below
Staff Recommendation Regarding Motion to Correct Errors in
PUC Determination of Avoided Costs

TO: Martin Honigberg, Chairman
Kathryn Bailey, Commissioner
Michael Giaimo, Commissioner
Debra Howland, Executive Director

CC: Tom Frantz, Director, Electric Division
Leszek, Stachow, Assistant Director, Electric Division
David Wiesner, Director, Legal Division

On March 2, 2018, Clifton Below, a customer-generator, filed a motion to correct errors in the New Hampshire Public Utilities Commission's (NH PUC's) determination of the avoided cost calculated pursuant to Puc 903.02 (i) for use in compensating customer-generators opting to receive payment for banked kilowatt-hours. The motion indicated three suggested changes for the avoided cost calculation:

- 1) Interpretation of the actual hourly generation data as "hour beginning," not "hour ending;"
- 2) Use of actual hourly generation data from systems with a capacity weighted average azimuth closer to 180°; and
- 3) Inclusion of the proper number of hours on the days of transition in and out of Daylight Saving Time (DST) in the actual data set to reduce the chance of error.

As the motion indicated, Staff used actual hourly generation data for the first time in 2017, instead of modelled data. In so doing, the motion stated that Staff misinterpreted the spreadsheet for the corresponding hour of the generation. Staff assumed that the data was for "hour ending." In reviewing this motion, Staff consulted with the solar installer who provided the data, and the solar installer confirmed that the data is provided on an "hour beginning" basis. In calculating the avoided cost for 2018, Staff changed the interpretation of the actual hourly generation data to an "hour beginning" basis. Staff also confirmed with ISO New England (ISO-NE) that the data from ISO-NE used in the calculation is for "hour ending," as Staff has interpreted. That clarification enabled Staff to match the actual hourly generation data with the corresponding ISO-NE hourly price and load cost data for each hour.

To more closely resemble the orientation of most solar systems, the motion suggested that the actual hourly generation data come from systems with a capacity weighted average azimuth close to 180°. For the generation data provided for the 2018 calculation, Staff reviewed the azimuth for all the systems and calculated a simple average and also capacity weighted averages based on

both the alternating current (AC) capacity and direct current (DC) capacity. The capacity and azimuth of all nine systems are shown in Table 1. Staff also calculated the standard deviation of the azimuth data, that is, the amount of variation of the data values. The standard deviation of the data is 35.35. Based on this standard deviation, Staff analyzed the data for systems with azimuth of the systems which were within 35 degrees of 180° (excluding system Nos. 3, 7, and 8). The average azimuths for both of these analyses are shown in Table 2. Since the average azimuth of all systems for which Staff received data is closer to 180° than the alternative analysis eliminating some systems, Staff used the data for all nine systems. The average azimuth for the systems for which the data was used is close to 180°--within 10°.

Table 1. Summary of Nine Systems

	System 1	System 2	System 3	System 4	System 5	System 6	System 7	System 8	System 9
Capacity (kW _{DC})	58.3	57.0	51.9	26.4	45.0	40.5	5.46	6.89	48.72
Capacity (kW _{AC})	57.6	60	43	23	34	37.8	5	6	43.2
Azimuth (°)	152	145	219	145	165	197	110	222	185

Table 2. Average Azimuth

	All Nine Systems	Selected Systems
Simple Average	171.1°	164.8°
DC Weighted Average	173.0°	164.4°
AC Weighted Average	171.6°	163.7°

Finally, the motion suggested that, for the days of transitions in and out of DST, the actual solar data spreadsheet as well as the "AC calc" spreadsheet include 25 hours on the November date and 23 hours on the March date to reduce the chance of error. Staff incorporated these changes in the 2018 avoided cost calculation and also highlighted those hours in both spreadsheets. Note, however, that since the actual date of DST changes every year, Staff carefully checks the spreadsheet to make sure those dates have been incorporated accurately each year. In the 2018 avoided cost calculation, DST transitions occurred on November 5, 2017 and March 11, 2018.

In conclusion, Staff has investigated the proposed errors and revisions to the avoided cost calculation and agrees that these changes will correct and clarify the calculation. As Staff already incorporated these changes into the 2018 avoided cost calculation, and will continue to incorporate these changes in future calculations, Staff does not see the need for any further investigation. Staff therefore recommends that this docket be closed.

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Executive.Director@puc.nh.gov
amanda.noonan@puc.nh.gov
clifton.below@gmail.com
david.wiesner@puc.nh.gov
donald.kreis@oca.nh.gov
elizabeth.nixon@puc.nh.gov
leszek.stachow@puc.nh.gov
ocalitigation@oca.nh.gov
Stephen.Eckberg@puc.nh.gov
tom.frantz@puc.nh.gov

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