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Docket Number:	23-IEPR-02
Project Title:	Electricity Resource Plans
TN #:	250934-2
Document Title:	Marin Clean Energy Form 4 Narrative 2023 IEPR Demand Forecast
Description:	Marin Clean Energy MCE Form 4 Narrative 2023 IEPR Demand Forecast 23-IEPR-02 Forecast Methods and Models
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Submission Date:	7/3/2023 4:42:44 PM
Docketed Date:	7/3/2023

Marin Clean Energy ("MCE") utilizes its load forecasting model/methodology for three primary purposes: (1) for portfolio management and procurement; (2) for the development of financial projections; and (3) for Resource Adequacy compliance with the California Public Utilities Commission ("CPUC") and the California Independent System Operator ("CAISO"). Due to the nature of MCE's business as a rapidly growing Community Choice Aggregator which has experienced a constantly changing customer base since its inception in 2010, the adopted load forecasting methodology focuses primarily on the projected customer counts within the MCE service territory and incorporates historical per capita usage data to derive the load forecast. At present, the MCE service territory includes all of Marin and Napa Counties and parts of Contra Costa and Solano Counties.

The load forecast is developed for each of the thirteen major customer classes served by MCE. These classifications correspond with the customer categories for which statistical hourly class load profiles are published by Pacific Gas & Electric ("PG&E"). These include the following customer classes:

Load Profile Group	**Internal Forecasting Classification**	**2023 IEPR Forecast Classification**
E-1/E-TOU	Residential	Residential
A-1/B-1	Small Commercial	Commercial
A-6/B-6	Small Commercial	Commercial
A-10/B-10	Medium Commercial	Commercial
E-19-S/B-19-S	Large Commercial – Secondary Voltage	Commercial
E-19-P/B-19-P	Large Commercial – Primary Voltage	Commercial
E-19-T/B-19-T	Large Commercial – Transmission Voltage	Commercial
E-20-S/B-20-S	Industrial – Secondary Voltage	Industrial
E-20-P/B-20-P	Industrial – Primary Voltage	Industrial
E-20-T/B-20-T	Industrial – Transmission Voltage	Industrial
Ag	Agricultural and Pumping	Other
TC	Traffic Control	Other
SL	Street Lighting	Other

MCE's load forecasting methodology utilizes four sources of data: (1) MCE historical usage data; (2) PG&E dynamic and static hourly load profiles as published on PG&E's website; (3) MCE's forecast of incremental energy efficiency, distributed generation, EV load, and other demand programs; and (4) historical weather data specific to MCE's service territory.

MCE's load forecasting process starts with a base-forecast of current customers by end-use classification (residential, commercial, etc.), utilizing historical usage data and customer counts. MCE uses historical weather data from Concord Buchanan Airport (KCCR) as a proxy for its current service territory, and linear regression models to estimate relationships between weather variables (heating degree days, cooling degree days, and solar insolation) and customer consumption patterns. The resulting coefficients are then applied to normalized weather conditions, over a 5-year observation period, and current customer counts to derive a forecast for the existing customer base. Potential impacts of climate change are captured by utilizing the most recent 5-years of observed weather data as the benchmark for normal weather conditions.

MCE assumes a baseline long-term annual growth rate of 0.5%, and adjusts for the incremental impacts of program expansions, energy efficiency, distributed generation, and electric vehicle demand, factors. MCE does not have a long-term history for its current customer base with which to compare the reasonableness of the projected long-term growth rate. However, MCE believes that it is generally consistent with the net growth rate in the PG&E service area as a whole. In addition to current saturation in energy efficiency, demand response, and distributed energy resources, the forecast includes anticipated growth to these modifiers based on historical trends as well as internal studies on future growth. One other uncommitted load modifier program methodology is described further below.

Once the various forecasts layers are finalized and aggregated into total class-specific forecasts, including all anticipated customers that will take electrical generation service from MCE, PG&E class hourly load profiles are applied to translate the monthly usage data into hourly values (PG&E class profiles are used due to the constant MCE customer base expansion and to consistently align with CAISO settlements requiring use of load profiles for specified customer classes). Furthermore, MCE utilizes a four-year rolling average for the PG&E hourly load profiles in order to normalize for weather or other short-term events and anomalies that impact the hourly load profiles.

For MCE's peak demand forecast, statistical analyses are utilized to determine historical relationships between recorded monthly peaks and energy consumption for its service territory. The peak demand forecast is then estimated as a function of forecasted consumption under normalized weather conditions, based on the observed historical relationships. Class-level peak demands are estimated based on the hourly class load profiles and are scaled to MCE's monthly non-coincident peak forecast. A 6% distribution loss factor is also applied, which reflects the overall recorded historical average over the past five years.

MCE utilizes historical consumption data to calibrate and adjust its load forecast. However, due to several service territory expansions that have significantly changed MCE's customer base, there is very limited year-over-year steady-state data to use in calibration of the load forecast. The calibration process is run monthly and compares the most recent monthly KWh and peak KW usage data to the forecast values. The forecast is tracked relative to both the initial usage estimates (T+9) reported to the CAISO as well as the final reported usage (T+70). To the extent that the monthly forecast error exceeds a 5% threshold, MCE evaluates the potential causes of the variance and, if such error is deemed likely to persist, adjusts the forecast going forward.

Other Uncommitted Load Modifier Program

<u>FlexMarket</u>

For the Peak FLEXmarket, the program's impacts – as a demand modifying resource as well its incremental energy effects – were based on a series of estimates which forecast customer enrollment, responsiveness to the program's price signals (i.e., increased incentive rates), and estimates of flexible load based for both residential and nonresidential customers. Historical participation data (2022) was used for this forecast. One key trend to note is that a greater proportion of load-shifting projects may enroll in MCE's Residential Efficiency Market (Market Access Program) rather than the Peak FLEXmarket, and these are excluded from the forecast.

Responsiveness to program's price signals – Under the Peak FLEXmarket program, MCE pays participating aggregators for (1) daily load shift and (2) DR events. While the program's payment rates for daily load shifting have not yet been finalized, it is expected that daily load shifting will be compensated between $300/MWh during the peak window (i.e., 4-7pm) and $600/MWh during the net peak window (i.e., 7-9pm). In addition, the program will offer a premium rate during DR events at $2000/MWh.

Customer enrollment - MCE expects enrollment at 2849 residential and 49 nonresidential customers during the summer of 2023. This represents a 30% growth in program enrollments, which is again replicated for 2024. It is possible that enrollment numbers run far higher than this, however for the purposes of the forecast, it is assumed that results will instead weight heavily towards a smaller subset of customers who are genuinely engaged by the programs value proposition.

Estimates of Flexible Load - Flexible load is assessed at 150 watts for residential customers – a load determined as reasonable since it is unlikely to disrupt primary energy end-uses within a household. For nonresidential customers, the load profile of large commercial customers (i.e., >500,000 kWh in annual consumption) was assessed. Customers in this group exhibit ~240 kW peak demand on average within MCEs service area, and it is assumed that among the 75 participants, 10% of their load, or 24 kW, is flexible.