Standard LSE Plan

MARIN CLEAN ENERGY

2020 INTEGRATED RESOURCE PLAN

SEPTEMBER 1, 2020
Table of Contents

I. Executive Summary ............................................................................................................. 1
II. Study Design ......................................................................................................................... 9
   a. Objectives .......................................................................................................................... 9
   b. Methodology ..................................................................................................................... 10
      i. Modeling Tool(s) ........................................................................................................ 10
      ii. Modeling Approach ............................................................................................... 10
III. Study Results .................................................................................................................... 13
   a. Conforming and Alternative Portfolios ...................................................................... 13
   b. Preferred Conforming Portfolios ................................................................................. 21
   c. GHG Emissions Results ................................................................................................. 27
      d. Local Air Pollutant Minimization and Disadvantaged Communities ............... 27
         i. Local Air Pollutants .............................................................................................. 27
         ii. Focus on Disadvantaged Communities .............................................................. 28
   e. Cost and Rate Analysis ................................................................................................. 32
   f. System Reliability Analysis .......................................................................................... 32
   g. Hydro Generation Risk Management ........................................................................... 36
   h. Long-Duration Storage Development .......................................................................... 37
   i. Out-of-State Wind Development .................................................................................. 38
   j. Transmission Development .......................................................................................... 38
IV. Action Plan ....................................................................................................................... 40
   a. Proposed Activities ........................................................................................................ 40
   b. Procurement Activities ................................................................................................. 41
   c. Potential Barriers ............................................................................................................ 47
   d. Commission Direction or Actions ............................................................................... 48
   e. Diablo Canyon Power Plant Replacement .................................................................... 48
V. Lessons Learned ................................................................................................................ 49

Glossary of Terms .................................................................................................................... 51
I. Executive Summary

a. Introduction

Description of MCE

Marin Clean Energy (“MCE”) is California’s first Community Choice Aggregation (“CCA”) Program, a not-for-profit, Joint Powers Authority (“JPA”) that began service in 2010. Since that time, MCE’s mission has been to address climate change by reducing energy-related greenhouse gas (“GHG”) emissions through procurement of renewable energy and energy efficiency at cost-competitive rates while offering economic and workforce benefits and fostering equitable communities.

As a load-serving entity (“LSE”), MCE provides electricity generation service to approximately 484,000 customer accounts. These accounts represent more than one million residents and businesses in 34 communities across four Bay Area counties¹ with annual retail sales of approximately 5,550 GWh.

MCE’s service area is identified in the following map:²

Figure 1: Service Area Map

¹ MCE’s member communities currently receiving service include: Unincorporated Contra Costa, Unincorporated Marin, Napa, and Solano Counties, including the Cities and Towns of Concord, Danville, El Cerrito, Lafayette, Martinez, Moraga, Oakley, Pinole, Pittsburg, Richmond, San Pablo, San Ramon, Unincorporated Contra Costa County, Walnut Creek, Belvedere, Corte Madera, Fairfax, Larkspur, Mill Valley, Novato, Ross, San Anselmo, San Rafael, Sausalito, Tiburon, American Canyon, Calistoga, Napa, St. Helena, Yountville, and Benicia.

² MCE will expand service to the cities of Pleasant Hill and Vallejo in April 2021. This expansion is reflected in MCE’s Commission-assigned load forecast. Expansion to additional communities may occur during the 2020-2030 planning period.
As a JPA and local government agency, MCE is governed by a 28-member board composed of elected representatives from MCE’s member communities. MCE’s board sets policy for the agency and oversees MCE’s operations, including MCE’s procurement planning. Through these representatives MCE is controlled by and accountable to the communities MCE serves.

**MCE’s Mission**

MCE was formed for the express purpose of empowering its member communities to choose the generation resources that reflect their specific values and needs. As a mission-driven local government agency, MCE works toward the following:

- Reducing GHG emissions and accelerating the supply of clean energy being delivered to and used on the grid;
- Developing community programs and local energy projects to expand access to competitively priced renewable energy and energy efficiency programs for all customers;
- Creating economic and workforce benefits associated with renewable energy and energy conservation programs; and
- Leveraging energy and conservation spending to promote more equity throughout MCE’s communities and California.

Member community values and needs are reflected in a number of procurement principles, goals, targets, and directives reviewed and adopted by MCE’s governing board via MCE’s annual Integrated Resource Plan ("Operational IRP"). Since 2014, MCE has prepared an annual MCE Operational IRP as an internal planning and policy document to address MCE’s GHG reduction targets and various other agency matters related to resource planning and procurement, including complementary energy programs administered and funded by MCE. The MCE Operational IRP is well-aligned with the biennial Integrated Resource Plan ("IRP") submitted to the California Public Utilities Commission ("Commission") for certification pursuant to Cal. Pub. Util. Code Section 454.52(b)(3) ("Compliance IRP"). These two IRPs are developed concurrently, in even years, and reflect consistent long-term procurement planning strategies and goals.

Consistent with Sections 366.2(a)(5) and 454.52 (b)(3), MCE’s procurement is governed by MCE’s board and must be consistent with the board-adopted mandates in MCE’s Operational IRP.

---

3 The current MCE 2020 Operational Integrated Resource Plan was approved by MCE’s Technical Committee on October 3, 2019 and is available on MCE’s website: [https://www.mccleanenergy.org/energy-procurement/](https://www.mccleanenergy.org/energy-procurement/). MCE is updating this Operational IRP concurrently with this Compliance IRP to ensure consistent planning.

4 All further citations to statute are to the California Public Utilities Code unless otherwise noted.
**Introduction to MCE’s Compliance IRP**

In accordance with the requirements of Sections 454.51 and 454.52, Commission Decision (“D.”) 20-03-028, D.19-11-016, D.18-02-018, D.19-04-040, and formal guidance provided by the Commission’s Energy Division, MCE is providing the Commission its Compliance IRP for certification review and use in the Commission’s statewide planning process. In addition to this narrative, MCE’s Compliance IRP includes the following documents:

- MCE’s 38 MMT Resource Data Template
- MCE’s 46 MMT Resource Data Template
- MCE’s 38 MMT Clean System Power Calculator
- MCE’s 46 MMT Clean System Power Calculator
- MCE’s Senior Executive Attestation addressing D.19-11-016 Incremental Capacity Procurement

As directed in D.20-03-028, MCE is submitting two portfolios as part of its Compliance IRP:

1. A portfolio based on the Commission’s 38 MMT GHG reduction benchmark and associated 38 MMT Reference System Portfolio (“RSP”); and
2. A portfolio based on the Commission’s 46 MMT benchmark and corresponding RSP.

Projecting resource needs over the 10-year horizon covered by the IRP is an inexact exercise as demonstrated by the significant differences between the Commission’s 2017-2018 RSP and its 2019-2020 RSP. The future resources identified in MCE’s Compliance IRP represent MCE’s best, good-faith projection of the resource mix it will procure over the IRP planning horizon based on currently available information. The resources identified in future iterations of MCE’s Compliance IRP may change due to new information and changed circumstances. The ultimate resource mix MCE actually procures may differ from what is reflected in the plan due to a number of variables including regulatory changes, availability of supply, price of supply, and/or other market or regulatory considerations.

**MCE’s 38 MMT Approved Preferred Conforming Portfolio**

MCE is submitting its 38 MMT portfolio as part of its Compliance IRP. MCE provides this 38 MMT portfolio as its Approved Preferred Conforming Portfolio (“A-PCP”). The A-PCP has been

---

5 Over the course of the IRP planning cycle, Energy Division has issued a number of guidance documents to be used as LSEs develop their IRPs. These documents include: *Filing Requirements Overview* (updated June 15, 2020), *Filing Requirements Questions and Answers* (updated August 11, 2020), and *Clean System Power Calculator Documentation* (updated June 15, 2020).
approved by MCE’s Chief Executive Officer as: (a) reflective of MCE’s actual planned procurement; (b) consistent with MCE’s statutory obligations; (c) consistent with the Commission’s IRP framework and guidelines; (d) consistent with the Commission’s reliability requirements; and (e) consistent with MCE’s internal long-term procurement plans and internal procurement policies. MCE’s A-PCP comes in under its assigned portion of the 38MMT system emissions target. MCE’s A-PCP is being concurrently provided to the Commission for certification and submitted to MCE’s governing board for approval consistent with Section 454.52(b)(3).

**MCE’s 46 MMT Preferred Conforming Portfolio**

MCE is also submitting a 46 MMT Preferred Conforming Portfolio (“PCP”) as part of its Compliance IRP. In compliance with Energy’s Division’s direction, MCE developed this portfolio to include emissions equal to, but not lower than, MCE’s assigned load-proportional share of the 46 MMT emissions benchmark (the “equal-to requirement”). To develop a 46 MMT PCP that satisfies the equal-to requirement, MCE had to increase its portfolio’s emissions and significantly reduce its procurement of renewable generation and other low carbon and/or carbon-free generation. In fact, to comply with Energy Division’s guidance, MCE had to develop a portfolio that increases MCE’s GHG emissions between now and 2030. MCE’s 46 MMT PCP has GHG emissions of 0.671 MMT in 2020, increasing to 1.058 MMT in 2030. MCE believes that the emissions increase needed to comply with the 46 MMT equal-to requirement is inconsistent with the spirit and letter of the IRP Statute, the Commission’s IRP Decisions, state environmental goals, and MCE’s board-approved procurement policies.

In light of these concerns, MCE submits its 46 MMT PCP as a planning/modeling exercise and compliance submission only. MCE asks that the Commission use its 38 MMT A-PCP in all statewide planning and portfolio consolidation, regardless of whether the Commission decides to use the 38 MMT or 46 MMT scenario as the basis for its Preferred System Portfolio (“PSP”). In support of this request, this narrative provides analysis demonstrating that MCE’s 38 MMT A-PCP is consistent with the 46 MMT RSP’s resource mix and quantities, procurement timing, and other operational attributes, and that MCE’s 38 MMT A-PCP can be “plugged in” to either a 38 MMT statewide portfolio or a 46 MMT statewide portfolio and still contribute more than MCE’s share of reliability, renewable integration, and other shared resource requirements.

**Request for Certification**

MCE respectfully requests that the Commission certify this Compliance IRP.

As both the Legislature and the Commission have recognized, the Legislature has granted CCAs broad authority to procure resources on their customers’ behalf, an authority limited only where “other generation procurement arrangements have been expressly authorized by statute.”\(^7\) The Commission has likewise recognized that the Legislature has granted CCAs autonomy in setting their own rates and managing interactions with their customers.\(^8\) As such, the Commission has three primary interests in the CCA IRP process:

- Ensuring that CCA IRPs provide the CCA procurement information that the Commission needs to develop its statewide plan;\(^9\)
- Ensuring that CCAs’ current and planned procurement is consistent with the resource adequacy (“RA”) requirements established pursuant to Section 380;\(^10\) and
- Ensuring that CCAs’ current and planned procurement satisfies each CCA’s share of renewables integration resource identified in the Commission’s RSP, and that the CCA either self-provides or pays for IOU procurement for its share of any renewable integration shortfall.\(^11\)

MCE has prepared its Compliance IRP with these interests in mind, and MCE thanks the Commission in advance for its recognition of CCA procurement autonomy and the benefits of a collaborative approach with CCAs in its certification review of MCE’s Compliance IRP.

b. Summary of Findings

This narrative provides a detailed description of: (a) the development and content of MCE’s 38 MMT A-PCP and its 46 MMT PCP; (b) each portfolio’s compliance with applicable requirements; and (c) an Action Plan detailing MCE’s planned next steps.

MCE developed its Compliance IRP through the following steps:

\(^7\) Section 366.2(a)(5).
\(^8\) D.05-12-041 at 5 (“Nothing in the statute directs the CPUC to regulate the CCA’s program except to the extent that its programs may affect utility operations and the rates and services to other customers. For example, the statute does not require the CPUC to set CCA rates or regulate the quality of its services.”); D.19-04-040 at 18 (“[T]he Commission does not approve CCA or ESP rates.”).
\(^9\) D.19-04-040 at 17-18 (“The Commission’s portfolio aggregation and evaluation process, which relies of fulfillment of IRP filing requirements by LSEs, is the only process capable of assessing the overall needs of the CAISO grid and meeting the statewide GHG, reliability, and least-cost goals collectively. While LSEs may use their IRP process to meet local planning needs as well, the statewide planning function is the statutorily required process . . . .”).
\(^10\) Section 454.52(b)(3)(C).
\(^11\) Section 454.51.
MCE compiled data for its existing energy contracts, RA capacity contracts, and its share of capacity for allocated Cost Allocation Mechanism (“CAM”) resources;\(^{12}\)

For each IRP planning year, MCE identified its short positions relative to MCE planning targets in consideration of its assigned load forecast;

MCE populated the Resource Data Template with all current contracts;

MCE compiled detailed information on projects for which it is currently negotiating power purchase agreements (“PPA”), including information regarding project status and timing;

MCE identified future contracts it expects for new solar, storage, and wind generation. MCE prioritized the selection of future resources that ensure MCE’s overall portfolio of new resources is consistent with the relevant RSP’s resource attribute/category mix,\(^{13}\) procurement timing, and MCE’s proportional share of planned new procurement;

MCE added generic future contracts with existing resources to help fill its remaining open positions;\(^{14}\)

MCE used the Commission’s Clean System Power calculator to check the GHG emissions associated with the resulting portfolio to ensure that these emissions are lower than MCE’s assigned share of the 38 MMT benchmark;

MCE identified the resulting portfolio as its preferred conforming 38 MMT portfolio or A-PCP;

Using the 38 MMT portfolio as a starting point, MCE replaced planned large hydro-electric and renewable energy procurement with system power until the portfolio had emissions equal to MCE’s assigned share of the 46 MMT GHG benchmark;

MCE identified the resulting portfolio as its preferred conforming 46 MMT portfolio or PCP; and

\(^{12}\) MCE based its share of CAM resources on the most recent 2021 CAM, Reliability Must Run, and Demand Response resource allocations provided by the Commission in July 2020. This approach, while consistent with Energy Division direction, will likely ultimately indicate more RA than MCE will be responsible for procuring due in part to the creation of a Central Procurement Entity (“CPE”) for local RA.

\(^{13}\) Consistent with the Commission’s direction in Ordering Paragraph 7 of D.20-03-028, MCE tested its portfolios by comparing its planned procurement under the five resource “buckets” identified in the Decision against its load proportional share of the RSPs’ respective “buckets.” The “buckets” identified in Ordering Paragraph 7 are: long-duration storage; short-duration storage; hybrid resources; renewables; and other.

\(^{14}\) Although these open positions are represented as being filled using generic purchases from existing resources for purposes of this Compliance IRP, MCE also acknowledges the Working Group 3 process in Rulemaking 17-06-026. To the extent the Commission approves an allocation methodology for renewable and GHG-free resources within Pacific Gas and Electric Company’s (“PG&E”) legacy Power Charge Indifference Adjustment (“PCIA”) portfolio, those resource allocations will off-set MCE’s generic purchases. If, however, the Commission does not approve such an allocation methodology, MCE expects those existing renewable and GHG-free resources that are not needed to serve PG&E’s bundled load will be made available for market procurement.
• MCE checked both its 38 MMT A-PCP and its 46 MMT PCP for reliability by comparing the total portfolio Net Qualifying Capacity ("NQC") against MCE’s RA requirements for the month of September in each year of the planning period. MCE further established that its planned incremental capacity exceeds its pro rata share of its incremental capacity procurement obligation under D.19-11-016 (i.e., 87.5 MW) as well as its pro rata share of capacity that may be needed to replace the Diablo Canyon Power Plant.

MCE reached the following findings regarding its 38 MMT A-PCP:

• MCE’s 38 MMT A-PCP includes the procurement of the following new resources:
  o New hybrid resources totaling 690 MW solar/ 300 MW battery storage
  o New wind resources totaling 230 MW
  o New grid connected battery storage of 240 MW
  o New long-duration storage of 45 MW
  o New shed demand response totaling 6 MW

• MCE’s 38 MMT A-PCP provides for the following overall resource mix in 2030:\(^\text{15}\)
  o 324 MW of large hydro-electric
  o 20 MW of biomass
  o 3 MW of geothermal
  o 13 MW of small hydro-electric
  o 465 MW of wind
  o 1,271 MW of solar
  o 540 MW of short-duration battery storage
  o 45 MW of long-duration storage
  o 715 MW of natural gas/other (capacity-only)
  o 6 MW of shed demand response

• The mix of new resources in MCE’s 38 MMT A-PCP is generally consistent with procurement timing, resource quantities, and general resource attributes identified in the 38 MMT RSP.

• MCE’s 38 MMT A-PCP would have 2030 emissions of 0.669 MMT. This is significantly lower than MCE’s assigned share of 2030 emissions (i.e., 0.846 MMT).

• MCE’s 38 MMT A-PCP meets all Commission-provided reliability metrics.

• MCE’s 38 MMT A-PCP provides more than MCE’s load-proportional share of renewable integration resources.

\(^{15}\) Certain existing and planned resources provide for energy-only delivery, and for purposes of this Compliance IRP narrative, units have been converted from MWh to MW using prototypical technology-specific capacity factors.
MCE’s 38 MMT A-PCP is also consistent with the Commission’s 46 MMT RSP and can be used in either a 38 MMT or 46 MMT consolidated statewide portfolio, but for the fact that it has fewer GHG emissions than would otherwise be required by the 46 MMT portfolio.

MCE reached the following findings regarding its 46 MMT PCP:

- To comply with the equal-to requirement, MCE had to significantly increase its emissions relative to the 38 MMT A-PCP by taking the following steps:
  - Reducing its procurement of large hydro-electric by 310 MW.
  - Reducing its renewable procurement by 115 MW.
  - Reducing its short-duration energy storage by 50 MW.
  - Increasing its reliance on unspecified system power for the balance.

- MCE’s 46 MMT PCP includes the procurement of the following new resources:
  - New hybrid resources totaling 575 MW solar/ 250 MW battery storage
  - New wind resources totaling 230 MW
  - New grid connected battery storage of 240 MW
  - New long-duration storage of 45 MW
  - New shed demand response totaling 6 MW

- MCE’s 46 MMT PCP provides for the following overall resource mix from specified sources in 2030:
  - 14 MW of large hydro-electric
  - 20 MW of biomass
  - 3 MW of geothermal
  - 13 MW of small hydro-electric
  - 465 MW of wind
  - 1,156 MW of solar
  - 490 MW of short-duration battery storage
  - 45 MW of long-duration storage
  - 715 MW of natural gas/other (capacity-only)
  - 6 MW of shed demand response

- MCE’s 46 MMT PCP would have 2030 emissions of 1.058 MMT. As required by the Energy Division, this is very close to MCE’s assigned share of 2030 emissions under the 46 MMT RSP (i.e., 1.059 MMT).

\[16 \text{ Id.}\]
MCE selects its 38 MMT A-PCP as its approved preferred conforming portfolio because the 38 MMT portfolio is most consistent with MCE’s program goals and board directives. Specifically, the 38 MMT A-PCP adheres to MCE Board Policy to achieve an 85% renewable energy content by 2029 and minimize GHG emissions through use of a combination of renewable energy and other low carbon energy sources.\textsuperscript{17}

To implement its 38 MMT A-PCP, MCE is adopting the Action Plan described in Section IV, below. This Action Plan includes the following steps:

- As a follow up to MCE’s “Clean RA RFO” issued in April, 2020, MCE is exploring potential medium- or long-term PPAs for renewable hydrogen and/or low carbon RA supply;
- As a follow up to MCE’s collaboration with a group of CCAs on a “Long-duration Storage RFI” issued in June 2020, MCE is working with many of the same CCAs to issue a Long-duration Storage Request For Proposal (“RFP”) in late 2020 to solicit offers for new long-duration storage offered under medium- or long-term PPAs;
- MCE will conduct an annual “open season” Request for Offers (“RFO”) process to solicit offers for new renewable generation and storage projects. These resources are typically secured through long-term PPAs. MCE expects to secure PPAs for new projects in each open season conducted over the next several years;
- Periodically throughout the year, MCE will solicit offers for short-term renewable energy, large hydro-electric and Asset Controlling Supply (“ACS”), RA, and load-hedging products needed to balance the portfolio and adhere to position limits established through MCE’s risk management policy and practices. These solicitations can take the form of formal RFO processes, bilateral discussions, and transactions arranged through broker markets; and
- Increasing customer programs that shed load, including aggregated load shift from business and residential customers.

\section*{II. Study Design}

\subsection*{a. Objectives}

MCE had the following objectives in performing the analytical work to develop its Compliance IRP:

\textsuperscript{17} See MCE’s 2020 Operational Integrated Resource Plan available here: \url{https://www.mcecleanenergy.org/energy-procurement/}.\textsuperscript{17}
1. Identify a 38 MMT portfolio that meets MCE’s goals for renewable energy utilization and GHG emission minimization and that has GHG emission no greater than MCE’s proportional share of the 38 MMT GHG reduction benchmark, as determined using the Commission’s emissions calculator;

2. Identify a 46 MMT portfolio with emissions equal to MCE’s proportional share of the 46 MMT GHG reduction benchmark, as determined using the Commission’s emissions calculator;

3. Identify 38 MMT and 46 MMT portfolios that achieve economic, reliability, environmental, security, and other benefits and performance characteristics that are consistent with the goals set forth in Section 454.52(a)(1)(A-I);

4. Identify diverse and balanced 38 MMT and 46 MMT portfolios that include both short-term and long-term electricity and electricity-related and demand reduction products;

5. Identify portfolios that achieve the RA requirements established pursuant to Section 380 and fully provide MCE’s share of system reliability and renewable integration resources;

6. Identify a portfolio that fully complies with all MCE board-adopted procurement directives;

7. Identify portfolios that are fully compliant with MCE’s obligations under the Renewable Portfolio Standard (“RPS”) program; and

8. Identify portfolios that are cost-effective and minimize rate impacts on MCE’s customers.

b. Methodology

i. Modeling Tool(s)

In developing its planned portfolios, MCE used modeling tools that quantify portfolio targets for renewable energy content, capacity, and portfolio GHG emissions, as well as physical and financial positions to ensure adherence to MCE’s risk management policies and business practices. MCE uses proprietary models to assess annual, monthly, and hourly open positions taking into account forecasted hourly electric loads and expected deliveries from MCE’s resource portfolio. MCE uses a proprietary financial model to project power supply costs and incorporate existing and planned procurement into an overall financial assessment of revenues, costs, and cash flows. MCE also utilizes a commercially available energy trading and risk management system to monitor positions, market exposure, credit exposure, value-at-risk, and other risk management metrics.18

18 Pioneer Solutions TRMTracker SaaS.
For new resource selection, MCE relied upon the modeling and assumptions in the RSP as well as MCE’s recent procurement experience, which provides insight into resource availability and cost. The mix of new resources selected in the RSP is similar to the mix MCE would select based on its procurement experience and market expectations. As such, no significant differences were identified.

GHG emissions were assessed using the Commission’s Clean System Power calculator for the 38 MMT and 46 MMT variations.

ii. Modeling Approach

Load Forecast

MCE developed its Compliance IRP using its assigned load forecast from Attachment A to the May 20, 2020 Administrative Law Judge’s Ruling Correcting April 15, 2020 Ruling Finalizing Load Forecasts and Greenhouse Gas Benchmarks for Individual 2020 Integrated Resource Plan Filings ("Load Forecast Ruling"). MCE’s assigned load forecast used in this Compliance IRP is as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Load Forecast (GWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>5094</td>
</tr>
<tr>
<td>2021</td>
<td>5490</td>
</tr>
<tr>
<td>2022</td>
<td>5669</td>
</tr>
<tr>
<td>2023</td>
<td>5658</td>
</tr>
<tr>
<td>2024</td>
<td>5653</td>
</tr>
<tr>
<td>2025</td>
<td>5653</td>
</tr>
<tr>
<td>2026</td>
<td>5661</td>
</tr>
<tr>
<td>2027</td>
<td>5669</td>
</tr>
<tr>
<td>2028</td>
<td>5696</td>
</tr>
<tr>
<td>2029</td>
<td>5828</td>
</tr>
<tr>
<td>2030</td>
<td>5987</td>
</tr>
</tbody>
</table>

Load Shape

In developing its portfolios MCE used the default load shape from the Clean System Power calculator, which reflects the California Independent System Operator ("CAISO") hourly system average load shape forecast for the 2019 IEPR Mid Baseline Mid AAEE case.

The use of this load shape does not change MCE’s total annual energy volumes for both load and load modifiers, and these energy volumes remain consistent with MCE’s assigned load forecast.
Load-Proportional GHG Emissions Benchmark

MCE assessed its modeling against its 2030 load-proportional share of the respective 38 MMT and 46 MMT benchmarks, as specified in the 38 MMT and 46 MMT Clean System Power calculators. MCE understands these values to be consistent with the benchmarks assigned in Table 1 of the Load Forecast Ruling, with adjustment for certain allocated emissions.\textsuperscript{19}

Table 2: MCE’s Assigned Shares of GHG Reduction Benchmarks

<table>
<thead>
<tr>
<th>2030 Load (GWH)</th>
<th>Proportion of 2030 Load Within IOU Territory</th>
<th>2030 GHG Benchmark (MMT) – 38 MMT Scenario</th>
<th>2030 GHG Benchmark (MMT) – 46 MMT Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,987</td>
<td>7.87%</td>
<td>0.846</td>
<td>1.059</td>
</tr>
</tbody>
</table>

Compiling Existing Resources

To populate its baseline resource templates, MCE added existing resources from the following sources:

- Energy Contracts;
- Capacity (RA) Contracts; and
- MCE’s assigned share of capacity for CAM resources, taken from the most recent year-ahead CAM resource allocations provided to MCE in July 2020.

Selecting New Resources

To identify its new resource procurement, MCE first determined the new resource capacity it intends to add each year. To make this determination, MCE considered resource need (open positions), long-term renewable contracting requirements, RPS requirements, RA requirements, the need for incremental RA capacity to contribute to system reliability and renewable integration needs, the potential for technological improvements, financial considerations, and a desire to transition its portfolio toward greater use of renewable energy and storage capacity in lieu of reliance on fossil resources. MCE selected resource types based on its experience with competitive solicitations for new renewable and storage resources as well as by making reference to the studies and modeling underlying the adopted RSPs.

Confirming Reliability

MCE’s portfolios were evaluated to ensure that sufficient dependable NQC is available to meet peak load requirements plus a 15% reserve margin. MCE used forward looking technology-

\textsuperscript{19} Load Forecast Ruling at 5-7, Table 1.
specific Effective Load Carrying Capacity (“ELCC”) factors provided by the Commission to assess the contribution of each resource to system reliability. As such, MCE’s portfolio addresses the expected changes in ELCC factors and NQC of its planned resources. MCE’s portfolios were designed to ensure that current incremental RA capacity obligations are met and that MCE contributes to new resource development to address fossil fuel retirements and decommissioning of the Diablo Canyon Power Plant.

Calculating GHG Emissions

MCE calculated the emissions associated with its 38 MMT A-PCP and its 46 MMT PCP using the Commission’s Clean System Power calculator. The assigned load forecast, default load shapes, and behind the meter adjustments were used for this assessment, along with the planned supply portfolio. MCE’s 38 MMT A-PCP results in lower GHG emissions than allowed under the 46 MMT portfolio. Accordingly, to develop its 46 MMT PCP, MCE used its 38 MMT portfolio as a foundation and then made the following adjustments: (1) reduced planned purchases of hydro-electric energy; and (2) incrementally reduced planned purchases of solar/storage hybrid energy until the GHG results calculated by the 46 MMT Clean System Power calculator matched the assigned GHG benchmark. In other words, the 46 MMT PCP was derived by adjusting the 38 MMT A-PCP to reduce the zero emissions hydro-electric and hybrid energy with offsetting increases to the GHG emitting system energy by the necessary amounts to raise the portfolio emissions level to the assigned benchmark. The results were checked against the assigned GHG benchmarks included in the Clean System Power calculators.

III. Study Results

a. Conforming and Alternative Portfolios

As required by the Commission, MCE is submitting two preferred conforming portfolios – a 38 MMT A-PCP that conforms to both the Commission’s 38 MMT RSP and its 46 MMT RSP, and a 46 MMT PCP that conforms to the Commission’s 46 MMT RSP and the Energy Division’s equal-to requirement.

As discussed above, MCE’s 38 MMT A-PCP reflects MCE’s actual planned procurement and should be used regardless of whether the Commission decides to select a consolidated 38 MMT portfolio or a consolidated 46 MMT portfolio.

MCE is also submitting a 46 MMT PCP that complies with the Energy Division’s equal-to requirement. This PCP is being submitted for use as a planning exercise and compliance submission only. MCE is submitting its 46 MMT PCP in a good faith effort to comply with the
Energy Division’s equal-to requirement. However, MCE urges the Commission to use its A-PCP in its consolidated statewide portfolio even if the Commission selects a 46 MMT scenario. This 38 MMT A-PCP reflects MCE’s current and planned procurement activities through the planning period.

Under D.20-03-028, “LSEs are not required to adhere directly to the exact proportion of resources selected by RESOLVE in the 46 MMT or 38 MMT portfolios, in developing their own portfolios” and “specific resources may be used as proxies for similar resources.” The Decision requires that LSEs procure resources in five broad categories defined by their attributes: long-duration storage (8-12 hours); short-duration storage (4 hours or less); renewables; hybrid resources; and other resources. Similarly, the Energy Division has stated that “[t]he RSP is meant to guide planning, but LSEs do not have to procure an amount of resources that aligns with their proportional share of resources selected in the RSP. LSEs may submit portfolios that include more or less resources than their share of the RSP as long as those portfolios achieve their emissions goals.” Below, MCE follows this guidance and assesses its 38 MMT A-PCP and 46 MMT PCP for general consistency with the Commission’s RSPs.

**MCE’s 38 MMT A-PCP**

The table included as Attachment A to this Narrative provides a summary of MCE’s 2030 38 MMT A-PCP, identifying resources by type and distinguishing between the following procurement categories:

- Existing resources (energy and capacity) that MCE owns or contracts with, consistent with definitions provided in the Resource Data Template;
- Existing resources (energy and capacity) that MCE plans to contract with in the future.
- Existing resources (capacity) that MCE partially pays for through CAM;
- New Resources (energy and capacity) that are under development that MCE is planning to procure; and
- Future new resources (energy and capacity) that MCE is planning to procure.

In summary, to meet MCE’s projected 2030 energy demand of 5,987 GWh, MCE has selected a 2030 38 MMT A-PCP composed primarily of the following resources:

- Existing solar (owned or under contract) – 303 MW

---

20 D.20-03-028 at 63.
21 *Id.*
22 *See Filing Requirements Questions and Answers* (updated August 11, 2020), at 19-20 (Answer to Question 34).
- Existing solar (planned procurement) – 38 MW
- Existing wind (owned or under contract) – 54 MW
- Existing wind (planned procurement) – 82 MW
- Existing hydro (planned procurement) – 324 MW
- New solar (under development) – 240 MW
- New wind (under development) – 99 MW
- New solar (future resources) – 690 MW
- New wind (future resources) - 230 MW
- New short-duration storage (future resources) – 540 MW
- New long-duration storage (future resources) – 45 MW
- Other renewable resources (under contract and planned) – 36 MW
- New shed demand response – 6 MW

Additionally, MCE’s 2030 38 MMT A-PCP includes capacity-only resources composed primarily of the following resources:

MCE’s portfolio includes a mix of existing and new resources. Approximately 1,550 MW of MCE’s 2030 portfolio is composed of new resources, reflecting MCE’s role as an active player in the State’s development of new renewable and storage resources. Additionally, MCE’s short- and long-duration storage, along with its capacity-only resources will help maintain MCE’s role as an active player supporting the State’s need for reliability and renewable integration. MCE’s capacity-only resources include and will encourage innovative hybrid natural gas-battery storage technologies that increase responsiveness of natural gas facilities, while reducing water usage, GHG emissions and particulate emissions.

**MCE’s 38 MMT A-PCP Is Consistent with the 38 MMT RSP**

The new resources included in MCE’s 38 MMT A-PCP are consistent with the 38 MMT RSP’s 2030 new resource mix.

As demonstrated in the following table, MCE’s 38 MMT A-PCP is generally consistent with MCE’s proportional share of *new procurement* for each of the five “resource types” identified in D.20-03-028:
Table 3: 38 MMT A-PCP New Resource Procurement by Resource Type Compared to 38 MMT RSP

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>38 MMT RSP New Resources (MW)</th>
<th>MCE Load-Proportional Share of 38 MMT RSP New Resources (MW)</th>
<th>MCE’s 38 MMT Portfolio (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-Duration Storage</td>
<td>1,605</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Short-Duration Storage</td>
<td>9,714</td>
<td>272</td>
<td>540</td>
</tr>
<tr>
<td>(4 hours or less)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewable Resources</td>
<td>20,274</td>
<td>568</td>
<td>1259</td>
</tr>
<tr>
<td>Hybrid Resources</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other Resources</td>
<td>222</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

The differences between MCE’s raw proportional share of the 38 MMT RSP New Resources and the resources amounts in MCE’s 38 MMT A-PCP reflect MCE’s planned contributions to new resource development during this planning period. MCE plans to add significant new renewable generation and storage capacity to help reduce reliance on fossil fueled generation, while minimizing GHG emissions and maintaining reliability. More specifically, MCE plans to add roughly twice its load-proportional share of renewables and also roughly twice its load-proportional share of storage. MCE expects that these significant quantities of new storage capacity – whether paired directly with renewables in hybrid configurations or as stand-alone configurations – will help shape renewables and contribute to grid reliability. The “Other Resources” category of the RSP includes MCE’s load-proportional share of shed demand response, which MCE plans to achieve via dispatchable behind-the-meter battery energy storage systems.

As demonstrated in MCE’s 38 MMT Resource Data Template, MCE’s 38 MMT A-PCP is also consistent with the 38 MMT RSP’s new resource procurement timing, as set forth in Table 8 of D.20-03-028 and will contribute to meeting the capacity and timing needs identified by the Commission.

---

23 Id. at 46, Table 8.
24 MCE interprets the category “hybrid resources” as including generation resources that combine storage with generation. The RSP does not identify hybrid capacity, so for comparison purposes, MCE has allocated its planned hybrid resources between the renewable and short-duration storage categories.
MCE’s 38 MMT A-PCP Is Consistent with the 46 MMT RSP

MCE’s 38 MMT A-PCP is also fully consistent with the Commission’s 46 MMT RSP as adopted in D.20-03-028. Even if the Commission elects to use the 46 MMT scenario for its PSP, it should use MCE’s 38 MMT A-PCP rather than MCE’s 46 MMT PCP for consolidation and planning purposes.

As demonstrated in the following table, MCE’s 38 MMT A-PCP is generally consistent with MCE’s proportional share of 46 MMT RSP new procurement for each of the five “resource types” identified in D.20-03-028:

Table 4: 38 MMT A-PCP New Resource Procurement by Resource Type Compared to 46 MMT RSP

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>46 MMT RSP New Resources (MW)</th>
<th>MCE Proportional Share of 46 MMT RSP New Resources (MW)</th>
<th>MCE’s 38 MMT Portfolio (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-Duration Storage</td>
<td>973</td>
<td>27</td>
<td>45</td>
</tr>
<tr>
<td>Short-duration Storage (4 hours or less)</td>
<td>8,873</td>
<td>248</td>
<td>540</td>
</tr>
<tr>
<td>Renewable Resources</td>
<td>14,460</td>
<td>405</td>
<td>1,259</td>
</tr>
<tr>
<td>Hybrid Resources</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other Resources</td>
<td>222</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

The differences between MCE’s raw proportional share of the 46 MMT RSP New Resources and the resources amounts in MCE’s 38 MMT A-PCP reflect MCE’s planned contributions to new resource development during this planning period. MCE plans to add significant new renewable generation and storage capacity for renewable integration to help reduce reliance on fossil fueled generation, while minimizing GHG emissions and maintaining reliability. More specifically, MCE plans to add roughly three times its load-proportional share of renewables and also roughly twice its load-proportional share of storage. MCE expects that these significant quantities of new storage capacity – whether paired directly with renewables in hybrid

---

25 While MCE’s 38 MMT portfolio does not comply with the Energy Division’s “equal to” requirement, MCE notes that this requirement is Energy Division guidance and was not adopted or approved in any Commission Decision or ALJ Ruling. To the contrary, the requirement appears to be inconsistent with the IRP Statute and existing Commission Decisions encouraging LSEs to plan for ambitious GHG reductions.

26 D.20-03-028 at 41, Table 5.

27 MCE interprets the category “hybrid resources” as including generation resources that combine storage with generation. The RSP does not identify hybrid capacity, so for comparison purposes, MCE has allocated its planned hybrid resources between the renewable and short-duration storage categories.
configurations or as stand-alone configurations – will help shape renewables and contribute to grid reliability. The “Other Resources” category of the RSP includes MCE’s load-proportional share of shed demand response, which MCE plans to achieve via dispatchable behind-the-meter battery energy storage systems. MCE’s Energy Storage Program to achieve this shed demand response is already in early stages of development with a total of 200+ residential, commercial and critical facilities accounts involved to-date.

MCE’s 38 MMT A-PCP is also consistent with the 46 MMT RSP’s new resource procurement timing, as set forth in Table 5 of D.20-03-028.

**MCE’s 38 MMT A-PCP Is Reliable Under Both the 38 MMT and 46 MMT Scenarios**

MCE’s 38 MMT A-PCP is reliable from both an MCE-specific and systemwide perspective under both the 38 MMT and 46 MMT Scenarios. The A-PCP would provide adequate energy storage and RA capacity to meet MCE’s generation need during non-solar generating hours.

As a practical matter, the ability of MCE’s portfolio to meet MCE’s own load requirements will not be impacted by whether other parties procure consistent with the 38 MMT or 46 MMT target. As discussed in Section III.f, MCE’s 38 MMT A-PCP includes sufficient NQC to meet peak loads, even if other load serving entities also procure to the 38 MMT benchmark targets. If instead other LSEs procure in accordance with a 46 MMT GHG target, the NQC and contribution to reliability of MCE’s 38 MMT A-PCP would increase by 32 MW. MCE would also expect fewer hours of curtailment for its renewable resources, less use of system power, and lower emissions of GHG and local pollutants, utilizing the assumptions and calculations from the 46 MMT Clean System Power calculator.

For the periods during which MCE’s load exceeds the sum of its contracted energy resources and planned storage capacity and demand response resources, MCE intends to ensure sufficient system capacity is available through use of firm short- and long-term RA contracts. MCE is planning that approximately half of its RA capacity (ELCC adjusted) will be provided by new renewable and storage resources, while the other half will be provided by existing resources, most of which are likely to be dispatchable natural gas fueled generators.

MCE is proud of its role supporting reliability and renewable integration needs to-date, and is eager to continue supporting these important state objectives going forward. While MCE has built-in plans for traditional reliability resources (*i.e.*, from natural gas), MCE aspires to gradually layer in reliability supply that better aligns with the State’s ultimate GHG reduction goals. Towards this end, MCE entered into a 10-year RA agreement in 2019 for a hybrid natural gas/battery resource that will reduce GHG and particulate emissions by approximately 60%, while allowing the resource to meet grid needs immediately when called upon, with no ramping delay.
In addition, MCE issued a “Clean RA RFO” in early 2020, seeking GHG-free RA products to add to its portfolio. MCE is currently working with RFO bidders to pilot innovative, clean RA solutions that could become more common in the future.

Just as the Commission helped California’s energy sector transition to renewable energy supply over the last 10 years, now is the time for the energy sector to begin the incremental transition to renewable forms of RA with support from innovative suppliers, LSEs, and the Commission.

**MCE’s 46 MMT PCP**

The table included as Attachment B to this Narrative provides a summary of MCE’s 2030 46 MMT PCP, identifying resources by type and distinguishing between the following procurement categories:

- Existing resources (energy and capacity) that MCE owns or contracts with, consistent with definitions provided in the Resource Data Template;
- Existing resources (energy and capacity) that MCE plans to contract with in the future;
- Existing resources (capacity) that MCE partially pays for through CAM;
- New Resources (energy and capacity) that are under development that MCE is planning to procure; and
- Future new resources (energy and capacity) that MCE is planning to procure.

In summary, to meet MCE’s projected 2030 load of 5,987 GWh, MCE has selected a 2030 46 MMT PCP composed primarily of the following resources:

- Existing solar (owned or under contract) – 303 MW
- Existing solar (planned procurement) – 38 MW
- Existing wind (owned or under contract) – 54 MW
- Existing wind (planned procurement) – 82 MW
- Existing hydro (planned procurement) – 14 MW
- New solar (under development) – 240 MW
- New wind (under development) – 99 MW
- New solar (future resources) – 575 MW
- New wind (future resources) – 230 MW
- New short-duration storage (future resources) – 490 MW
- New long-duration storage (future resources) – 45 MW
- Other renewable resources (under contract and planned) – 36 MW
- New shed demand response – 6 MW
Additionally, MCE’s 2030 46 MMT PCP includes capacity-only resources composed primarily of the following resources:

MCE’s 46 MMT PCP includes a mix of existing and new resources. Approximately 1,435 MW of MCE’s 46 MMT 2030 PCP is composed of new resources, reflecting MCE’s role as an active player in the State’s development of new renewable and storage resources.

As demonstrated in the following table, MCE’s 46 MMT PCP is generally consistent with MCE’s proportional share of new procurement for each of the five “resource types” identified in D.20-03-028.

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>46 MMT RSP New Resources (MW)</th>
<th>MCE Proportional Share of 46 MMT RSP New Resources (MW)</th>
<th>MCE’s 46 MMT PCP (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-Duration Storage</td>
<td>973</td>
<td>27</td>
<td>45</td>
</tr>
<tr>
<td>Short-duration Storage (4 hours or less)</td>
<td>8,873</td>
<td>248</td>
<td>490</td>
</tr>
<tr>
<td>Renewable Resources</td>
<td>14,460</td>
<td>405</td>
<td>1144</td>
</tr>
<tr>
<td>Hybrid Resources&lt;sup&gt;29&lt;/sup&gt;</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other Resources</td>
<td>222</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

The differences between MCE’s raw proportional share of the 46 MMT RSP New Resources and the resources amounts in MCE’s 46 MMT PCP reflect MCE’s planned contributions to new resource development during this planning period. In particular, MCE plans to add significant new renewable generation and storage capacity to help reduce reliance on fossil fueled generation, while minimizing GHG emissions, fostering renewable integration and maintaining reliability. The Other Resources category of the RSP includes MCE’s load-proportional share of

<sup>28</sup> D.20-03-028 at 41, Table 5.

<sup>29</sup> MCE interprets the category “hybrid resources” as including generation resources that combine storage with generation. The RSP does not identify hybrid capacity, so for comparison purposes, MCE has allocated its planned hybrid resources between the renewable and short-duration storage categories.
shed demand response, which MCE plans to achieve via dispatchable Behind-the-Meter Battery Energy Storage Systems currently being developed.

As demonstrated in MCE’s 46 MMT Resource Data Template, procurement under MCE’s 46 MMT PCP is consistent with the 46 MMT RSP’s new resource procurement timing, as set forth in Table 5 of D.20-03-028 and will contribute to meeting the Commission’s identified capacity and timing needs.

b. Preferred Conforming Portfolios

38 MMT A-PCP

As demonstrated in Attachment A, MCE’s 38 MMT A-PCP consists of a combination of:

- utility-scale solar
- in-state wind
- short-duration storage
- long-duration storage
- small and large hydro-electric
- geothermal
- biomass
- natural gas/other (capacity only)
- shed demand response

As stated above, in accordance with Section 454.51(b)(3), the resource mix in MCE’s A-PCP achieves “economic, reliability, environmental, security, and other benefits and performance characteristics that are consistent with the goals set forth in [Section] 454.51(a)(1)].” These benefits and characteristics are discussed as follows.

GHG Reduction Goals

MCE’s 38 MMT A-PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(A) goal of meeting the Commission’s 38 MMT GHG reduction benchmark. The 2030 emissions from MCE’s 38 MMT A-PCP are substantially lower than MCE’s load-proportional share of the 38 MMT emissions benchmark. MCE’s proportional share of the 38 MMT benchmark is 0.846 MMT. 30 According to the Commission’s emissions calculator, MCE’s

38 MMT A-PCP would account for 0.669 MMT in 2030 emissions, beating the reductions benchmark by 0.177 MMT.

**Renewable Energy**

MCE’s 38 MMT A-PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(B) goal of ensuring that portfolios are composed of at least 50% eligible renewable resources. In 2030 MCE’s 38 MMT overall A-PCP portfolio would consist of 85% eligible renewable generation, well in excess of the 50% target.

**Minimizing Bill Impact**

MCE’s 38 MMT A-PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(D) goal of minimizing the impact of planned procurement on ratepayers’ bills. MCE’s 38 MMT A-PCP consists primarily of renewable resources that benefitted from increasing economies of scale over the past several years, and have price projections that continue to drop in the foreseeable future. MCE’s recent procurement experience indicates that solar costs have continued to decline, and lithium ion battery storage is increasingly cost effective relative to other capacity products available in the market, particularly when offered in a tax-advantaged hybrid configuration with solar generation.

MCE prioritizes use of renewable energy and low carbon emitting resources, reliability, and cost competitiveness. MCE anticipates that bill impacts will be minimized as new solar generation projects generally have lower net costs than the prices paid in the short-term renewable energy markets. Coupling new solar with battery storage increases the capacity value of the projects, displacing the need to buy more expensive resource adequacy products, and provides limited dispatchability for the solar generation, minimizing the risk of degradation in energy value. Further, MCE’s 38 MMT A-PCP minimizes exposure to volatile natural gas prices and the bill impacts that can result from periodic spikes in fossil fuel prices.

**Ensuring System and Local Reliability**

MCE’s 38 MMT A-PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(E) goal of ensuring system and local reliability. The 38 MMT A-PCP meets system resource adequacy requirements as detailed in Section III.f. MCE plans to meet its local resource adequacy requirements until such time as the central procurement entity takes on this responsibility pursuant to D.20-06-002. Some of the planned capacity-only contracts in MCE’s 38 MMT A-PCP will be displaced by local resource adequacy procured by the central procurement entity. However, adoption of the central procurement entity construct is a recent development, and the details of its planned procurement are not yet known. To ensure there are no reliability gaps in MCE’s 38 MMT A-PCP, and pursuant to Energy Division Guidance,
MCE’s portfolio assumes no CAM allocations or CAM resources beyond what is described in the most recently issued year-ahead CAM resource list and allocations. This approach, while consistent with Energy Division direction, will likely ultimately indicate more RA than MCE will be responsible for procuring. Thus, MCE provides this information with the understanding that its RA positions will be reduced by any future CAM allocations.

**Demand-Side Energy Management**

MCE’s 38 MMT portfolio achieves results and performance characteristics consistent with the Section 454.52(a)(1)(G) goal of enhancing demand-side energy management. MCE’s 38 MMT A-PCP includes MCE’s allocation of capacity through the demand-side management programs operated by PG&E. MCE operates a variety of energy efficiency programs and is actively developing customer Energy Storage resiliency projects that will incentivize customer-sited battery storage to help provide backup generation in the event of power outages and also shift load away from peak times through aggregated dispatch functionality.

**Minimizing Localized Air Pollutants with Emphasis on Disadvantaged Communities**

MCE’s 38 MMT portfolio achieves results and performance characteristics consistent with the Section 454.52(a)(1)(H) goal of minimizing localized air pollutants and other GHG emissions with early priority on disadvantaged communities (“DACs”). MCE’s 38 MMT portfolio relies primarily on renewable generation, and would have extremely low GHG and localized air pollution emissions. Further, MCE’s 38 MMT portfolio minimizes MCE’s reliance on unspecified system power, instead opting for renewable generation procurement and development and hydro generation procurement whenever feasible.

Results from the CSP tool indicate the following localized air pollutants associated with MCE’s 38 MMT portfolio in 2030:

- NOx: 125
- PM 2.5: 47
- SO2: 25

These emissions derive from planned use of biogas energy in the 38 MMT A-PCP, as well as emissions from CHP resources and system energy assigned to the MCE portfolio by the CSP tool. MCE’s four existing biogas energy sources are not located in DACs as identified in CalEnviroScreen 3.0. MCE plans to include emissions impacts on DACs as one if its criteria used for selecting specific projects for planned biogas procurement.

---

31 CalEnviroScreen 3.0 Disadvantaged Communities Map, available at: [https://oehha.ca.gov/calenviroscreen/sb535](https://oehha.ca.gov/calenviroscreen/sb535)
As stated above, MCE’s 38 MMT A-PCP, not its 46 MMT PCP, is consistent with MCE’s board policies and MCE’s 38 MMT A-PCP reflects MCE’s actual planned procurement. The purpose of the IRP Statute is to encourage GHG reductions equal to or greater than the GHG benchmarks set by the Commission, and both the IRP statute and relevant Commission Decisions clearly allow for the submission of IRPs that “outperform” the benchmark by achieving lower emissions. However, the Energy Division has issued clear guidance instructing LSEs to submit 46 MMT portfolios that achieve GHG emissions equal to, *but not lower than*, each LSE’s load-proportional share of the 46 MMT benchmark.

But for the Energy Division equal-to requirement, MCE would have submitted a 46 MMT PCP with a resource composition and other characteristics similar to its 38 MMT portfolio. As established above, MCE’s 38 MMT A-PCP is fully consistent with the resource mix, procurement timing, and operational attributes of the 46 MMT RSP.

Developing a 46 MMT PCP that complies with the equal-to requirement was a particular challenge for MCE. MCE’s load-proportional share of the 2030 46 MMT benchmark is 1.059 MMT. This is significantly greater than MCE’s current (2020) GHG emissions of 0.7 MMT, and the emissions associated with MCE’s 38 MMT A-PCP (0.669 MMT in 2030). Problematically, in order to develop a 46 MMT portfolio consistent with the equal-to requirement, MCE had to produce a 46 MMT PCP with significantly increased GHG emissions (compared to both current and planned portfolios). MCE produced this PCP by substituting planned large hydro and renewable energy procurement with higher-emissions resources (system power) until its emissions were high enough to meet its 46 MMT share.

MCE has provided its 46 MMT PCP solely to meet its obligations to the Commission. While the PCP hypothetically satisfies the minimum requirements established by the Commission, discussed below, MCE does not intend to procure the resources identified in its 46 MMT portfolio, as doing so would result in emissions increases that are inconsistent with the spirit and letter of the IRP statute and MCE’s board policies.

**GHG Reduction Goals**

MCE’s 46 MMT PCP achieves emissions approximately equal to MCE’s proportional share of the 46 MMT benchmark. MCE’s Proportional Share of the 46 MMT benchmark is 1.059 MMT. According to the Commission’s emissions calculator, MCE’s 46 MMT portfolio would account for 1.058 MMT in 2030 emissions. This minimal compliance results in a portfolio with significantly greater GHG emissions than MCE’s preferred portfolio and planned procurement.

**Renewable Energy**
MCE’s 46 MMT portfolio achieves results and performance characteristics that are consistent with the Section 454.52(a)(1)(B) goal of ensuring that portfolios are composed of at least 50% eligible renewable resources. In 2030 MCE’s 46 MMT portfolio would consist of 79% percent eligible renewable generation, well in excess of the 50% target. However, this would fail to meet MCE’s board adopted target of 85% renewable energy by 2029.

**Minimizing Bill Impact**

MCE’s 46 MMT portfolio achieves results and performance characteristics consistent with the Section 454.52(a)(1)(D) goal of minimizing the impact of planned procurement on ratepayers’ bills. MCE’s portfolio of renewable resources has benefitted from increasing economies of scale over the past several years, and have price projections that continue to drop in the foreseeable future. MCE’s recent procurement experience indicates that solar costs have continued to decline, and lithium ion battery storage is increasingly cost effective relative to other capacity products available in the market, particularly when offered in a tax-advantaged hybrid configuration with solar generation.

MCE prioritizes use of renewable energy and low carbon emitting resources, reliability, and cost competitiveness. MCE anticipates that bill impacts will be minimized as new solar generation projects generally have lower net costs than the prices paid in the short-term renewable energy markets. Coupling new solar with battery storage increases the capacity value of the projects, displacing the need to buy expensive resource adequacy products, and provides limited dispatchability for the solar generation, minimizing the risk of degradation in energy value.

**Ensuring System and Local Reliability**

MCE’s 46 MMT portfolio achieves results and performance characteristics consistent with the Section 454.52(a)(1)(E) goal of ensuring system and local reliability. The 46 MMT portfolio meets system resource adequacy requirements as detailed in section III.f. However, MCE notes that in order to increase its emissions to the 46 MMT threshold, MCE had to reduce planned new solar/storage hybrid capacity relative to its 38 MMT A-PCP. Although MCE would still be contributing a greater than proportional share of new capacity to support system reliability and renewable integration through its 46 MMT portfolio, the system would have less reliable capacity than under MCE’s 38 MMT A-PCP.

MCE will meet local resource adequacy requirements until such time as the central procurement entity takes on this responsibility pursuant to D.20-06-002. Some of the planned capacity-only contracts in MCE’s 46 MMT PCP will be displaced by local resource adequacy procured by the central procurement entity. However, adoption of the central procurement entity construct is a recent development, and the details of its planned procurement are not yet known. To ensure there are no reliability gaps in MCE’s 46 MMT PCP, and pursuant to
Energy Division Guidance, MCE’s portfolio assumes no CAM allocations or CAM resources beyond what is described in the most recently issued year-ahead CAM resource list and allocations. This approach, while consistent with Energy Division direction, will likely ultimately indicate more RA than MCE will be responsible for procuring. Thus, MCE provides this information with the understanding that its RA positions will be reduced by any future CAM allocations.

**Demand-Side Energy Management**

MCE’s 46 MMT portfolio achieves results and performance characteristics consistent with the Section 454.52(a)(1)(G) goal of enhancing demand-side energy management. MCE’s 46 MMT portfolio includes MCE’s allocation of capacity through the demand-side management programs operated by PG&E. MCE operates a variety of energy efficiency programs and is actively developing customer resiliency projects that will incentivize customer-sited battery storage to help provide backup generation in the event of power outages and also shift load away from peak times.

**Minimizing Localized Air Pollutants with Emphasis on DACs**

MCE’s 46 MMT portfolio achieves results and performance characteristics consistent with the Section 454.52(a)(1)(H) goal of minimizing localized air pollutants and other GHG emissions with early priority on disadvantaged communities. However, MCE notes that because MCE was required to produce a 46 MMT portfolio with emissions equal to, but not lower than, its share of 46 MMT, its 46 MMT portfolio results in significantly greater emissions impacts than MCE’s actual planned procurement reflected in its 38 MMT portfolio.

Results from the CSP tool indicate the following localized air pollutants associated with MCE’s 46 MMT portfolio in 2030:

- NOx: 155
- PM 2.5: 64
- SO2: 26

These emissions derive from planned use of biogas energy in the 46 MMT portfolio, as well as emissions from CHP resources and system energy assigned to the MCE portfolio by the Clean System Power calculator. MCE’s four existing biogas energy sources are not located in DACs as identified in CalEnviroScreen 3.0.\(^{32}\) MCE plans to include emissions impacts on DACs as one if its criteria used for selecting specific projects for planned biogas procurement.

\(^{32}\) CalEnviroScreen 3.0 Disadvantaged Communities Map, available at: [https://oehha.ca.gov/calenviroscreen/sb535](https://oehha.ca.gov/calenviroscreen/sb535)
c. GHG Emissions Results

MCE used its load-based proportional share of the 38 MMT and 46 MMT benchmarks to determine the emissions compliance for its 38 MMT A-PCP and its 46 MMT PCP, respectively. MCE’s assigned load-proportional share of the 38 MMT benchmark is 0.846 MMT. Based on the 38 MMT version of the Clean System Power calculator, MCE’s 38 MMT portfolio would result in total 2030 GHG emissions of 0.669 MMT, outperforming MCE’s assigned share of the 38 MMT GHG reduction benchmark by 0.177 MMT (or 21%).

MCE’s assigned load-proportional share of the 46 MMT benchmark is 1.059 MMT. Based on the 46 MMT version of the Clean System Power calculator, MCE’s 46 MMT portfolio would result in total 2030 GHG emissions of 1.058 MMT, which is nearly equal to its assigned load-proportional share of the 46 MMT benchmark. MCE intended to submit a 46 MMT portfolio with significantly lower GHG emissions, but to comply with the Energy Division’s guidance prohibiting the submission of higher-performing 46 MMT portfolios, MCE substituted GHG-emitting resources for planned renewables and large hydro procurement until its assigned portfolio emission benchmark was met.

d. Local Air Pollutant Minimization and Disadvantaged Communities

i. Local Air Pollutants

The 38 MMT version of the Clean System Power calculator estimates the following emissions associated with MCE’s 38 MMT portfolio:

- NOx: 125
- PM 2.5: 47
- SO2: 25

The 46 MMT version of the Clean System Power calculator estimates the following emissions associated with MCE’s 46 MMT portfolio:

- NOx: 155
- PM 2.5: 64
- SO2: 26

As described in MCE’s Action Plan, below, MCE intends to reduce its reliance on system power by procuring the renewable and other low GHG emitting resources identified in its 38 MMT portfolio in lieu of the system power that was added to its 46 MMT portfolio to increase its emissions to meet the 46 MMT emissions requirement. MCE actively seeks out power supply
technologies that minimize air pollutants including fully renewable technologies as well as natural gas/battery hybrid technologies.

ii. Focus on Disadvantaged Communities

MCE’s Compliance IRP is fully consistent with the goal of minimizing local air pollutants, with early priority on DACs. As identified in CalEnviroScreen 3.0, MCE serves the following DACs:

<table>
<thead>
<tr>
<th>Census Tract</th>
<th>Nearby City</th>
<th>California County</th>
<th>ZIP Code</th>
<th>Total Population</th>
<th>MCE accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>6013305000</td>
<td>Antioch</td>
<td>Contra Costa</td>
<td>94509</td>
<td>6620</td>
<td>116</td>
</tr>
<tr>
<td>6013320001</td>
<td>Martinez</td>
<td>Contra Costa</td>
<td>94553</td>
<td>3615</td>
<td>1360</td>
</tr>
<tr>
<td>6013320005</td>
<td>Oakley</td>
<td>Contra Costa</td>
<td>94561</td>
<td>6592</td>
<td>2288</td>
</tr>
<tr>
<td>6013313101</td>
<td>Pittsburg</td>
<td>Contra Costa</td>
<td>94565</td>
<td>7251</td>
<td>3226</td>
</tr>
<tr>
<td>6013314104</td>
<td>Pittsburg</td>
<td>Contra Costa</td>
<td>94565</td>
<td>7118</td>
<td>2379</td>
</tr>
<tr>
<td>6013310000</td>
<td>Pittsburg</td>
<td>Contra Costa</td>
<td>94565</td>
<td>5641</td>
<td>1813</td>
</tr>
<tr>
<td>6013314103</td>
<td>Pittsburg</td>
<td>Contra Costa</td>
<td>94565</td>
<td>5546</td>
<td>1642</td>
</tr>
<tr>
<td>6013311000</td>
<td>Pittsburg</td>
<td>Contra Costa</td>
<td>94565</td>
<td>5001</td>
<td>1548</td>
</tr>
<tr>
<td>6013313102</td>
<td>Pittsburg</td>
<td>Contra Costa</td>
<td>94565</td>
<td>3984</td>
<td>1564</td>
</tr>
<tr>
<td>6013309000</td>
<td>Pittsburg</td>
<td>Contra Costa</td>
<td>94565</td>
<td>2771</td>
<td>1473</td>
</tr>
<tr>
<td>6013312000</td>
<td>Pittsburg</td>
<td>Contra Costa</td>
<td>94565</td>
<td>2292</td>
<td>697</td>
</tr>
<tr>
<td>6013382000</td>
<td>Richmond</td>
<td>Contra Costa</td>
<td>94804</td>
<td>6964</td>
<td>1642</td>
</tr>
<tr>
<td>6013377000</td>
<td>Richmond</td>
<td>Contra Costa</td>
<td>94801</td>
<td>6962</td>
<td>2281</td>
</tr>
<tr>
<td>6013379000</td>
<td>Richmond</td>
<td>Contra Costa</td>
<td>94804</td>
<td>6117</td>
<td>1707</td>
</tr>
<tr>
<td>6013381000</td>
<td>Richmond</td>
<td>Contra Costa</td>
<td>94804</td>
<td>6097</td>
<td>1897</td>
</tr>
<tr>
<td>6013376000</td>
<td>Richmond</td>
<td>Contra Costa</td>
<td>94801</td>
<td>5962</td>
<td>1616</td>
</tr>
<tr>
<td>6013380000</td>
<td>Richmond</td>
<td>Contra Costa</td>
<td>94804</td>
<td>5706</td>
<td>3415</td>
</tr>
<tr>
<td>6013365002</td>
<td>Richmond</td>
<td>Contra Costa</td>
<td>94801</td>
<td>5462</td>
<td>1363</td>
</tr>
<tr>
<td>6013375000</td>
<td>Richmond</td>
<td>Contra Costa</td>
<td>94801</td>
<td>4389</td>
<td>1131</td>
</tr>
<tr>
<td>6013358000</td>
<td>Rodeo</td>
<td>Contra Costa</td>
<td>94572</td>
<td>5298</td>
<td>1831</td>
</tr>
<tr>
<td>6013392200</td>
<td>San Pablo</td>
<td>Contra Costa</td>
<td>94806</td>
<td>10605</td>
<td>3041</td>
</tr>
<tr>
<td>6013366002</td>
<td>San Pablo</td>
<td>Contra Costa</td>
<td>94806</td>
<td>6093</td>
<td>1661</td>
</tr>
<tr>
<td>6013364002</td>
<td>San Pablo</td>
<td>Contra Costa</td>
<td>94806</td>
<td>5518</td>
<td>1751</td>
</tr>
<tr>
<td>6013368001</td>
<td>San Pablo</td>
<td>Contra Costa</td>
<td>94806</td>
<td>5327</td>
<td>1327</td>
</tr>
<tr>
<td>6013368002</td>
<td>San Pablo</td>
<td>Contra Costa</td>
<td>94806</td>
<td>3404</td>
<td>1069</td>
</tr>
<tr>
<td>6095251901</td>
<td>Vallejo</td>
<td>Solano</td>
<td>94589</td>
<td>5072</td>
<td>0</td>
</tr>
<tr>
<td>6095250801</td>
<td>Vallejo</td>
<td>Solano</td>
<td>94592</td>
<td>3917</td>
<td>43</td>
</tr>
<tr>
<td>6095250701</td>
<td>Vallejo</td>
<td>Solano</td>
<td>94590</td>
<td>2962</td>
<td>33</td>
</tr>
<tr>
<td>6095250900</td>
<td>Vallejo</td>
<td>Solano</td>
<td>94590</td>
<td>2798</td>
<td>0</td>
</tr>
<tr>
<td>6095251802</td>
<td>Vallejo</td>
<td>Solano</td>
<td>94589</td>
<td>2538</td>
<td>0</td>
</tr>
</tbody>
</table>

In total, MCE serves 43,914 customer accounts located within DACs. This is approximately 9% of MCE’s total customer accounts (approximately 484,000).

33 [https://oehha.ca.gov/calenviroscreen/sb535](https://oehha.ca.gov/calenviroscreen/sb535)
MCE is dedicated to reducing pollution impacts and encouraging the development, health, and prosperity of DAC within and outside our service area. Our commitment is reflected in the practices, programs, and policies described below.

**Strategic Recruiting and Hiring Practices**

Practices include targeted job postings, partnerships with community-based organizations (“CBOs”), education and employment organizations, and physical attendance at job recruitment fairs. All job candidates are assessed through a blind résumé review and MCE prioritizes the creation of diverse hiring panels. Some MCE jobs may substitute experience for education requirements. MCE has also tailored employee benefit packages to be more inclusive and to apply to a broad range of people.

**Partnerships with CBOs**

Partnerships with CBOs include pre-K through grade 12 education, workforce development, and programs in support of underserved and vulnerable individuals. In 2020, MCE increased its CBO sponsorship-related diversity spend to 20% of the annual sponsorship budget, prioritizing support for DAC members. Sponsorships added in 2020 include, education programs for students, low-income senior services, post-incarceration workforce development, and organizations working with farmworkers and other underserved populations devoted to increasing equitable access to services and resources.

**Community Power Coalition**

MCE’s Community Power Coalition (“CPC”) is a group of grassroots organizations from throughout MCE’s service area that focuses on the following objectives:

- Expanding access to affordable renewable energy and energy efficiency programs;
- Advancing equitable, local, and sustainable workforce and economic development;
- Accelerating the transition to a cleaner and more efficient energy economy; and
- Building and developing inclusive programs and policies for all communities in MCE’s service area.

The CPC currently has 52 members, of which 6 are new in 2020. MCE’s recruitment for the CPC prioritizes organizations that are:

- Connected to communities who are diverse in language or culture;
- Working with under-served youth;
- Developing return-to-workforce programs; and
Advocacy groups with a focus on families living below the poverty level. Adding these voices and their questions to the CPC working group is one way to deepen MCE’s understanding about the groups’ challenges and the measures or types of support that could make a real difference. MCE’s CPC connects MCE more deeply to the community, offering expert advice on the needs of their constituents and how MCE can best support underserved customers and environmental equity through our programs, policies and procurement.

**Building Community Resiliency**

MCE’s Board established a $6 million Resiliency Fund to mitigate the impacts of grid outages threatening the safety, reliability, health and welfare of our customers, which disproportionately affect vulnerable populations, while supporting decarbonization and statewide efforts to improve overall grid reliability.

MCE’s Energy Storage Program is designed to help keep MCE’s most vulnerable customers – including low-income, those with medical needs, and those located in state-designated DACs and high fire threat districts – safe during power outages. The program includes proactive engagement in the form of postcards, emails, and calls to help vulnerable customers install batteries at their homes and businesses at no or greatly reduced costs with start-to-finish technical support. In addition to applying for California’s Self-Generation Incentive Program on behalf of customers, MCE also provides funding to help cover the cost of the batteries.

In partnership with funding from the Marin Community Foundation and as part of its Energy Storage Program MCE is offering additional technical and financial support to local nonprofits and affordable multifamily properties in Marin to install larger-scale solar plus storage systems that serve as resources for vulnerable customers during outages.

MCE has also purchased 100 portable off-grid YETI 3000 batteries for customers who depend on electricity for their medical or mobility devices. The batteries are distributed to qualifying customers through local Centers for Independent Living to provide a clean source of electricity at home during power outages.

**Disadvantaged Community Green Tariff and Community Solar Program**

MCE submitted an implementation Advice Letter to the Commission in May 2020 to request to serve as an administrator for the Disadvantaged Community Green Tariff and Disadvantaged Community Solar programs. If approved, this program will allow MCE to offer eligible customers in DACs increased access to renewable energy resources as well as a significant reduction in their bills on top of any other discount programs, such as CARE or FERA.

**Workforce Education & Training Program**
With $2.24M recently awarded from the Commission, MCE is working with its partner, the Association for Energy Affordability (“AEA”) to develop our new Workforce, Education, & Training (“WE&T”) program. This program will gather input from local nonprofit partners, community colleges, local government agencies, and the existing labor force to understand the challenges in the current market and how this is complicated by COVID-19. The model is focused on building trainee-to-employee workforce programs with a “learn & earn” model that compensates trainees for attending workshops and other learning opportunities. This makes it possible for trainees to take time off from other paying opportunities to be retrained; an essential link for the labor skills needed to build on-ramps to stable, secure career pathways.

**Sustainable Workforce and Diversity Policy**

In 2017, MCE’s Board of Directors approved a Sustainable Workforce and Diversity Policy to facilitate and encourage diversity and a sustainable workforce through its support for the following:

1. Fair compensation in direct hiring, renewable development projects, customer programs, and procurement services;
2. Development of locally generated renewable energy within the MCE service area;
3. Direct use of union members from multiple trades;
4. Quality training, apprenticeship, and pre-apprenticeship programs;
5. Direct use of local businesses in MCE’s service area;
6. Development of California-based job opportunities;
7. Business and workforce initiatives located in low-income and disadvantaged communities;
8. Direct use of disabled veteran-owned and lesbian, gay, bisexual, transgender, and queer-owned business enterprises;
9. Direct use of green and sustainable businesses; and
10. Direct hiring practices that promote diversity in the workplace.

MCE’s Sustainable Workforce and Diversity Policy has resulted in local hire requirements for MCE new-build solar in the Richmond community, the creation of a new call center for MCE in the Pittsburg community and will continue to result in workforce training and apprenticeship opportunities at numerous energy projects.

In developing its Compliance IRP, MCE carefully considered the impact of its resource procurement on DACs. MCE’s 38 MMT portfolio minimizes the use of fossil-based resources and unspecified system power, reducing reliance on gas generators that have an impact on DACs.
e. Cost and Rate Analysis

MCE’s 38 MMT and 46 MMT portfolios are both reasonable from a cost perspective. In selecting resources for its 38 MMT portfolio, MCE carefully considered the cost implications of specific resource selections and procurement timing. This analysis was informed by MCE’s procurement experience and the standard assumptions and results of the Commission’s RESOLVE/SERVM modeling.

In general, MCE sought to balance the need to procure resources with enough lead time to meet MCE’s LSE-specific procurement shortfalls and the Commission-identified overall system new resource need with the cost-saving benefits of waiting to procure renewable and storage resources with downward sloping cost projections. MCE also recognizes that future resource costs are highly uncertain, and technological advancement can happen unexpectedly; MCE’s annual open season procurement cycle is designed to take advantage of technological and cost improvements by adding new resource commitments incrementally over time.

MCE’s 38 MMT A-PCP in particular takes advantage of the rapidly falling cost of solar, wind, and battery storage resources. MCE’s 38 MMT A-PCP also takes advantage of the fact that, compared to Investor Owned Utilities, CCAs have significantly shorter generation project development timelines, in part due to the fact that CCAs can move more quickly to approve and develop such projects. These shorter timelines result in significant direct savings, and give MCE more flexibility to time its procurement to take maximum advantage of falling renewable generation prices.

MCE’s 46 MMT portfolio also reflects MCE’s preference for low-cost renewable and storage resources, but substitutes in more system energy purchases in order to increase MCE’s emissions to meet the Energy Division’s required emissions threshold.

f. System Reliability Analysis

Both MCE’s 38 MMT A-PCP and its 46 MMT PCP meet reliability standards set forth by the Commission and contribute significant new capacity to support system reliability.

The effective capacity of MCE’s 38 MMT A-PCP is provided in the following “System Reliability Progress Tracking Table” from its 38 MMT Resource Data Template dashboard (note that the row containing peak demand is confidential and has been excluded from this table). The NQC for the month of September is also shown for each year.
The effective capacity of MCE’s 46 MMT PCP is provided in the following “System Reliability Progress Tracking Table” from the its 46 MMT Resource Data Template dashboard (note that the row containing peak demand is confidential and has been excluded from this table). Also, the NQC for the month of September is shown for each year.

<table>
<thead>
<tr>
<th>Year</th>
<th>NQC for September</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>123</td>
</tr>
<tr>
<td>2022</td>
<td>145</td>
</tr>
<tr>
<td>2023</td>
<td>167</td>
</tr>
</tbody>
</table>

\[34\] An undetermined portion of this capacity is expected to be procured by the CPE.
g. Hydro Generation Risk Management

38 MMT A-PCP

In developing its 38 MMT A-PCP, MCE took three key steps to manage the risk of reduced hydro-electric availability due to in-state drought.

First, MCE reduced its overall reliance on large hydro-electric generation by adopting ambitious 2030 targets for renewable energy (which excludes large hydro-electric). More specifically, MCE’s 38 MMT A-PCP in 2030 consists of 85% eligible renewable generation, which will limit its large hydro-electric procurement to 15%. MCE’s 85% renewable energy target significantly exceeds its current 60% level, and it also exceeds the 70% target that MCE published in its Operational IRP in 2018, and exceeds the 80% target that MCE submitted to the Commission in its 2018 Compliance IRP.

Second, MCE developed a network of Pacific Northwest hydro suppliers, including entities that have substantial ACS energy volumes. As a result of these substantial ACS volumes, suppliers are able to sell MCE reliable, firm volumes.

Third, MCE developed the ability to take deliveries of hydropower outside of the CAISO and schedule/import such volumes into the CAISO on its own, as a purchasing-selling entity registered with the North American Electric Reliability Corporation (“NERC”)-affiliated North American Energy Standards Board (“NAESB”). This substantially increases MCE’s flexibility as a counterparty and therefore provides MCE increased access to greater volumes of non-California hydro-electric resources from suppliers that may not be willing, themselves, to deliver the volumes to California.

46 MMT PCP

In developing its 46 MMT PCP, and as explained in previous sections of this Compliance IRP, MCE started with its 38 MMT A-PCP and then reduced its targets for renewables and large hydro-electric supply. To increase emissions, MCE substituted the renewable and large hydro-electric supply with unspecified system power. The reductions to large hydro-electric supply

35 An undetermined portion of this capacity is expected to be procured by the CPE.
were significant; MCE’s 46 MMT PCP lists a total of only 14 MW in 2030 where as its 38 MMT A-PCP lists 324 MW of supply. Because MCE’s 46 MMT PCP is minimally reliant on large-hydro-electric supply, MCE does not see significant risk associated with its 46 MMT PCP in this regard.

h. Long-Duration Storage Development

The Commission’s 38 MMT RSP calls for 1,605 MW of new long-duration storage to be developed and operational by 2026, while the 46 MMT RSP calls for 973 MW of new long-duration storage to be operational by 2026.

In response to the Commission’s analysis, MCE and twelve other CCAs (“the Joint CCAs”) issued a request for information (“RFI”) on long-duration storage in June 2020. This RFI defined long-duration storage resources as those with the capability to discharge at full capacity for at least 8 hours. The RFI requested the following types of information: (1) storage technology and commercial history; (2) project specifics, including location, permitting, financing and development risks; (3) contracting terms and preferences, including indicative pricing.

The Joint CCAs received responses from 31 entities representing numerous types of chemical, mechanical and thermal long-duration storage technologies, such as: lithium-ion batteries; vanadium redox and other flow batteries; used electric vehicle batteries; waste to fuels via ultrasound; hydrogen storage; pumped storage hydro; geomechanical pumped storage; crane and stacked blocks; compressed air; flywheels; and molten salt and other thermal storage technologies. Moreover, the respondents identified 25 specific projects that represent more than 9,000 MW of capacity, two thirds of which is advertised as able to achieve commercial operation by 2026.

MCE and other CCAs are now engaging in the critical next step of assessing the economics of such projects. This assessment is expected to lead to RFOs and transactional discussions aimed at bringing actual projects online by 2026. For its part, MCE anticipates that it will procure its share of the Commission’s 1,605 MW target. For MCE, this translates to 45 MW of long-duration storage online by 2026. Due to the scale and complexity of these projects, however, successful development will depend on efficient collaboration among numerous entities including load-serving entities, developers, manufacturers, market operators, regulators and environmental stakeholders.

36 The RFI is available here: https://www.mcecleanenergy.org/energy-procurement/
i. Out-of-State Wind Development

The Commission’s 38 MMT RSP calls for 3,000 MW of new out-of-state wind generation (“OOS Wind”) to be developed and operational by 2030, while the 46 MMT RSP calls for 606 MW of new OOS Wind to be operational by 2030. MCE understands that the transmission projects needed to connect OOS Wind to the CAISO grid require significant lead-times. However, given the fact that OOS Wind is not needed until 2030, MCE believes that a careful and considered approach to potential OOS Wind projects is best. MCE does not have specific plans for use of OOS Wind at this time, but is open to purchases of such resources and will evaluate offers it receives during its annual open season process.

j. Transmission Development

In identifying resource locations for all portfolios, MCE was guided by the following considerations:

- MCE has a general preference for renewable resources located within its service area and the communities it serves;
- MCE prefers projects in locations that can utilize existing transmission infrastructure with minimal upgrade/modification costs; and
- MCE prefers low-impact renewable energy projects that provide economic benefit to DACs, subject to community interest in locally siting such projects.

Unlike the Investor Owned Utilities, MCE is not a transmission and distribution (“T&D”) owner or system operator. As such, MCE does not have granular knowledge of PG&E T&D system, and MCE is not in the best position to identify optimal resource locations. In practice, MCE relies on project developers to conduct the research and technical studies necessary for siting potential generation projects. MCE evaluates projects offered by developers based on a variety of criteria, including transmission availability, nodal prices and potential for congestion, project viability, environmental, workforce, and other factors. As such, MCE generally utilized the RSP selected candidate resources as a guide for likely resource locations in its 38 MMT A-PCP and its 46 MMT PCP. These should be treated as general expectations based on the above-listed considerations, not set-in-stone selections. Actual project locations will be selected during MCE’s solicitation processes.

MCE’s preferred 38 MMT A-PCP includes a total of 1,304 MW of new resources to be built at the locations identified in MCE’s 38 MMT new resources template. The following table provides a list of these resources, their identified locations, and MCE’s preferred alternate locations if the Commission’s modeling finds that the selected locations are not feasible.
Table 6 – New Resources and Locations (38 MMT A-PCP)

<table>
<thead>
<tr>
<th>New Resource Type</th>
<th>Size (MW)</th>
<th>Selected Resource</th>
<th>Preferred Alternative Resource/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>214</td>
<td>Northern_California_Ex_Wind</td>
<td>Solano_Wind</td>
</tr>
<tr>
<td>Wind</td>
<td>115</td>
<td>New_generic_wind</td>
<td>Northern_California_Ex_Wind, Solano_Wind, New_Mexico_Wind</td>
</tr>
<tr>
<td>Hybrid</td>
<td>690</td>
<td>New_Hybrid</td>
<td>N/A</td>
</tr>
<tr>
<td>Storage</td>
<td>80</td>
<td>New_Li_Battery</td>
<td>N/A</td>
</tr>
<tr>
<td>Storage, Long-duration</td>
<td>45</td>
<td>New_Li_Battery</td>
<td>New_Flow_Battery</td>
</tr>
<tr>
<td>Storage</td>
<td>160</td>
<td>New_generic_battery_storage</td>
<td>N/A</td>
</tr>
</tbody>
</table>

MCE’s 46 MMT PCP includes a total of 1,189 MW of new resources to be built at the locations identified in MCE’s 46 MMT new resources template. The following table provides a list of these resources, their identified locations, and MCE’s preferred alternate locations if the Commission’s modeling finds that the selected locations are not feasible.

Table 7 – New Resources and Locations (46 MMT PCP)

<table>
<thead>
<tr>
<th>New Resource Type</th>
<th>Size (MW)</th>
<th>Selected Resource</th>
<th>Preferred Alternative Resource/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>214</td>
<td>Northern_California_Ex_Wind</td>
<td>Solano_Wind</td>
</tr>
<tr>
<td>Wind</td>
<td>115</td>
<td>New_generic_wind</td>
<td>Northern_California_Ex_Wind, Solano_Wind, New_Mexico_Wind</td>
</tr>
<tr>
<td>Hybrid</td>
<td>575</td>
<td>New_Hybrid</td>
<td>N/A</td>
</tr>
<tr>
<td>Storage</td>
<td>80</td>
<td>New_Li_Battery</td>
<td>N/A</td>
</tr>
<tr>
<td>Storage, Long-duration</td>
<td>45</td>
<td>New_Li_Battery</td>
<td>New_Flow_Battery</td>
</tr>
<tr>
<td>Storage</td>
<td>160</td>
<td>New_generic_battery_storage</td>
<td>N/A</td>
</tr>
</tbody>
</table>

37 MCE is exploring numerous long-duration storage technology types, as highlighted above in sub-section h. However, the new resolve categories limit LSEs to “new lithium-ion battery” and “new flow battery” technology types for purposes of the Resource Data Template. As such, MCE’s use of “New_Li_Battery” and “New_Flow_Battery” in this context does not necessarily reflect MCE’s intent to use these specific technologies, but instead serves as a proxy for many possible long-duration storage technologies.

38 Id.
IV. **Action Plan**

a. **Proposed Activities**

To achieve its 38 MMT A-PCP over the next ten years (*i.e.*, by 2030), MCE plans to steadily procure volumes at regular intervals to allow MCE to keep within its established position limits and avoid concentrated procurement during any particular market environment. At a high level, MCE plans to procure renewables and storage, large hydro-electric and ACS, RA (including incremental capacity required by the Commission) and load-hedging products. MCE’s goal is to procure such products in a manner that is cost effective, achieves emissions and reliability objectives and supports a well-balanced resource portfolio.

To support this goal, MCE will also consider the following strategies:

- **Joint Solicitations**: joint solicitations can expand the procurement opportunities available to a CCA, as well as provide procedural efficiencies, economies of scale, and overall cost savings for participating organizations. MCE is closely networked with other CCAs through its membership in the California Community Choice Association (“CalCCA”), the trade organization representing California’s CCA sector, and regularly coordinates with other CCAs regarding prospective procurement opportunities and portfolio balancing activities;

- **Purchases from Retail Sellers**: Purchases from other retail sellers can provide a cost-effective way of meeting short term resource needs or filling in gaps in procurement while long-term projects are under development. MCE will evaluate solicitations offered by other retail sellers, as necessary;

- **Sales Solicitations**: As MCE continues to manage its growing portfolio of renewable and other resources, it will also consider administering sales solicitations (serving as an energy seller) for the benefit of other retail sellers. Such solicitations are expected to be rare and relatively small in scale. MCE may also engage in bilateral sales discussions with certain retail sellers, including CCAs, if/when divesting relatively small amounts of surplus energy supply is deemed necessary to rebalance MCE’s portfolio relative to internally established procurement targets. MCE has completed such processes in the past and expects to do so in the future as well. Selling excess supply is an effective way

---

39 MCE’s Action Plan for its 46 MMT portfolio would mirror the processes and procurement reflected in its 38 MMT Action Plan except for reduced procurement of renewables, storage and large hydro-electric as discussed in Section 3 (“Study Results”) of this narrative.
for all LSEs to reduce unnecessary energy expenses while providing valuable energy products to other market participants; and

- Optimizing Existing Procurement: As MCE considers its long-term resource needs, it may evaluate options in its future power purchase agreements to increase output through either facility upgrades or adding new capacity to the generating facility. Expanding existing facilities may provide additional generation at reduced costs with a lower risk of project failure because the need for distribution system upgrades and permitting may be reduced.

MCE also considers the deliverability characteristics of its resources (including the expected delivery profile, available capacity and dispatchability attributes, if any, associated with each of its generating resource and/or supply agreements) and reviews the respective risks associated with short- and long-term purchases as part of its forecasting and procurement processes. These efforts lead to a more diverse resource mix, address grid integration issues, and provide value to MCE’s member communities, including reduced costs and support in achieving planned procurement objectives.

b. Procurement Activities

MCE has a well-established procurement process that it will use to steadily achieve its 38 MMT A-PCP over the next ten years (i.e., by 2030). MCE’s procurement process includes the following ten key activities:

1. Load forecasting based on the number and types of customers, potential service territory expansions, opt-out rates, electrification trends, demand-side resources and weather;
2. Integrated resource planning based on load forecasts, renewables and emissions targets, agency-wide budgetary considerations and customer rate implications, long-term contracting requirements and goals for new steel in the ground, grid reliability needs and capacity requirements, market price hedging needs and goals for local resources, local resiliency and local workforce development;
3. Calculating open positions and interim volumetric needs based on MCE’s risk management policies;
4. Soliciting volumetric needs through RFOs, bilateral discussions or brokers;
5. Evaluating offers using a combination of proprietary and public models;
6. Negotiating (and ultimately executing) power purchase agreements, enabling agreements and confirms – including credit provisions and collateral requirements;
7. Managing pre-COD executed contracts and monitoring progress towards key
development milestones (such as interconnection status, deliverability studies, siting,
zoning, permitting, financing, construction, commercial operation, etc.)
8. Managing post-COD executed contracts: obtaining generation forecasts,
bidding/scheduling resources into the ISO, validating and paying invoices, etc.;
9. Bidding/scheduling MCE’s load into the CAISO; and
10. Regulatory compliance reporting.

With respect to activity #4 listed directly above, MCE plans to conduct an annual “open season”
RFO in the first half of each year for new renewable generation and storage projects. MCE
anticipates that the majority of its open seasons over the next several years will result in
executed long-term PPAs for new renewables and/or storage, and MCE anticipates that such
projects will achieve commercial operation within 2.5 years to 3 years of contract execution. In
these solicitations for long-term renewable energy and storage, MCE imposes numerous bid
requirements on interested respondents. These requirements address a variety of
considerations and are intended to identify the best qualified suppliers of MCE’s long-term
renewable energy needs. Such requirements include:

1. Overall quality of response, inclusive of completeness, timeliness, and conformity;
2. Price and relative value within MCE’s supply portfolio;
3. Project location and local benefits, including local hiring and prevailing wage
   considerations;
4. Project development status, including but not limited to progress toward
   interconnection, deliverability, siting, zoning, permitting, and financing requirements;
5. Qualifications, experience, financial stability, and structure of the prospective project
   team (including its ownership);
6. Environmental impacts and related mitigation requirements, including impacts to air
   pollution within communities that have been disproportionately impacted by the
   existing generating fleet;
7. Potential impacts to grid reliability;
8. Potential economic benefits created within communities with high levels of poverty and
   unemployment;
9. Acceptance of MCE’s standard contract terms; and
10. Development milestone schedule, if applicable.

In addition, MCE is planning to solicit offers periodically throughout each year for short term
renewable energy, large hydro-electric and ACS, resource adequacy and load-hedging products
needed to balance the portfolio and adhere to position limits established through MCE’s risk
management policy and practices.
MCE uses a portfolio risk management approach in its power purchasing program, seeking low cost supply (based on then-current market conditions) as well as diversity among technologies, production profiles, project sizes and locations, counterparties, lengths of contract, and timing of market purchases. These factors are taken into consideration when MCE engages the market and pursues related procurement activities.

A key component of this process relates to the analysis and consideration of MCE’s forward load obligations and existing supply commitments with the objectives of closely balancing supply and demand, cost/rate stability and overall budgetary impacts, while leaving some flexibility to take advantage of market opportunities and/or technological improvements that may arise over time. MCE monitors its open positions separately for each renewable generating technology as well as GHG-free resources, conventional resources, and its aggregate supply portfolio. MCE maintains portfolio coverage targets of up to 100% (of expected customer energy requirements) in the near-term (0 to 2 years) and typically leaves gradually larger open positions in the mid- to long-term, consistent with generally accepted industry practices.

**MCE’s Procurement of Incremental System Capacity Pursuant to D.19-11-016**

In D.19-11-016, the Commission ordered LSEs to collectively procure a total of 3,300 MW of incremental system capacity by 2023, with specific procurement obligations allocated to each LSE. As part of MCE’s contribution to system reliability and renewable integration needs, MCE has committed to self-providing its share of the identified system capacity need. MCE’s assigned share is 87.5 MW,40 50% of which must be online by August 1, 2021, 75% of which must be online by August 1, 2022, and 100% of which must be online by August 1, 2023.

In compliance with D.19-011-016, MCE notified the Commission of its intent to self-provide its share of this procurement on February 18, 2020.41 In IRP-filing years, D.19-11-016 further requires LSEs to include an update on incremental procurement activities in their biennial IRPs, including contract and resource information and an attestation of compliance by a senior executive.42 MCE provides the required attestation to meet this compliance requirement as

---

40 D.19-11-016, Ordering Paragraph 3.
42 D.19-11-016 at 85, Ordering Paragraph 13 (“All load serving entities serving load as of May 1 of every year beginning in 2020 shall provide the Commission staff with a data response detailing contract and resource information, to allow the Commission and stakeholders to monitor progress about system reliability and renewable integration. In years where an individual integrated resource plan (IRP) is required by Decision (D.) 18-02-018 to be filed, the same information shall be included in each LSE’s individual IRP.”)
part of this Compliance IRP. MCE also provides a progress report, below, describing, its procurement activities in relation to D.19-11-016.

**Incremental Procurement Progress Report**

MCE has executed agreements that will satisfy MCE’s 2021, 2022 and 2023 incremental capacity requirements. As of the date of this submission, MCE has 89.38 MW of September NQC under contract; NQC not included on the baseline resource list adopted in Rulemaking 16-02-007. These incremental resources slightly exceed MCE’s 87.5 MW incremental capacity requirement. The projects reflected in these contracts are either already online or expected to be online in advance of August 1, 2021.

MCE’s completed procurement towards its D.19-11-016 requirement is reflected in MCE’s 38 MMT and 46 MMT Resource Data Templates, respectively. MCE also provides a narrative description of specific incremental procurement efforts below.

**Sutter Energy Center**

On February 28, 2020, MCE executed a 3-year Master Power Purchase and Sale Agreement Confirmation Letter with Calpine Energy Services, L.P. for 69.55 MW of capacity from the Sutter Energy Center. The period for this agreement begins on January 1, 2021 and continues through December 31, 2023, which is consistent with D.19-11-016’s requirement that commitments based on existing resources must “stay in place at least through the end of the resource adequacy summer months of 2023.” Additionally, D.19-11-016 defines the Sutter Energy Center as an incremental capacity resource. Although physically located outside of the CAISO balancing authority, D.19-11-016 also indicates that Sutter Energy Center is not an import for purposes of the capacity procurement ordered by the decision and thus not subject to the D.19-11-016’s 20% limitation on import resources.

The Sutter Energy Center is in the process of securing final regulatory approval from CAISO to establish a pseudo-tie. This approval is expected in the coming months, and the project is on schedule to be online by January 1, 2021 pursuant to the above-mentioned agreement. Given

---

43 On August 13, 2020, Energy Division provided LSEs guidance and an attestation template to use to demonstrate compliance with the LSEs’ 2021 incremental procurement requirement. MCE used the attestation template provided by Energy Division and provides the additional contract and resource information in this section as directed by Energy Division.
44 See Administrative Law Judge’s Ruling Finalizing Baseline for Purposes of Procurement Required by Decision 19-11-016, filed January 3, 2020, Rulemaking 16-02-007.
45 D.19-11-016 at 47.
the agreement will bring 69.55 MW of capacity to the system from January 2021 through 2023, this project satisfies both MCE’s 2021 and 2022 requirements and represents approximately 80% of MCE’s total procurement requirement.

The Sutter Energy Center is represented in both the 46MMT and 38MMT Resource Data Templates, respectively, as incremental capacity. Please refer to the following locations in MCE’s Resource Data Templates:

- “Monthly_GWH_MW” tab: row 1428 through row 1463
- “Unique Contracts” tab: row 112

**Strauss Wind, LLC**

In 2018 MCE executed an Amended and Restated Renewable Power Purchase Agreement with Strauss Wind, LLC, a California Limited Liability Company (“Strauss Wind project”). This 15-year PPA is for a new-build wind energy project located in Santa Barbara County, California. The project has a nameplate capacity of 98.83 MW, with a September NQC of 14.85 MW.\(^48\) This resource is a new grid resource that is not included on the baseline resource list adopted in Rulemaking 16-02-007.\(^49\) Thus, the Strauss Wind project is eligible to count towards MCE’s assigned 87.5 MW of incremental system resource capacity.

The project began construction in March 2020. Due to permitting and construction delays the original Commercial Operation Date of April 1, 2020 has been revised to December 2, 2020. For compliance purposes, however, given MCE’s procurement of the Sutter Energy Center, MCE would not need this or other capacity online until August 1, 2023.

The Strauss Wind project is represented in both the 46MMT and 38MMT Resource Data Templates, respectively, as incremental capacity. Please refer to the following locations in MCE’s Resource Data Templates:

- “Monthly_GWH_MW” tab: row 2743 through row 2863
- “Unique Contracts” tab: row 193

**MCE Solar One**

MCE’s Solar One project is currently online and has been delivering energy since December 22, 2017 under a 20-year PPA with MCE. MCE Solar One is a 10.5 MW solar facility located in

\(^48\) The Resource Data Templates reflect that Strauss Wind has 14.85 MW of September NQC. MCE is following the NQC accounting in the Resource Data Templates, but notes that the Resource Data Templates slightly overstate the precise September NQC for this resource, which MCE calculates as 14.82 MW.

\(^49\) See Administrative Law Judge’s Ruling Finalizing Baseline for Purposes of Procurement Required by Decision 19-11-016, filed January 3, 2020, Rulemaking 16-02-007.
Richmond, California. Using the current NQC framework, this resource provides an additional 1.47 MW of September NQC that is not reflected on the baseline resource list. As such, MCE Solar One applies towards MCE’s incremental system capacity procurement compliance requirement.

The MCE Solar One project is represented in both the 46MMT and 38MMT Resource Data Templates, respectively, as incremental capacity. Please refer to the following locations in MCE’s Resource Data Templates:

- “Monthly_GWH_MW” tab: row 6972 through row 7103, and row 7104 through row 7235
- “Unique Contracts” tab: rows 235 and 236

Waste Management Redwood Landfill
(also referred to as “Redwood Renewable Energy”)

Waste Management’s Redwood Landfill project (“Redwood Landfill project”) is currently online and has been delivering energy since September 14, 2017 under a 20-year PPA with MCE. The Redwood Landfill project is a 3.9 MW landfill gas-fired generation facility located in Novato, California. This resource provides an additional 3.51 MW of September NQC that is not reflected on the baseline resource list. As such, the Redwood Landfill project applies towards MCE’s incremental system capacity procurement compliance requirement.

The Redwood Landfill project is represented in both the 46MMT and 38MMT Resource Data Templates, respectively, as incremental capacity. Please refer to the following locations in MCE’s Resource Data Templates:

- “Monthly_GWH_MW” tab: row 3008 through row 3139
- “Unique Contracts” tab: row 196

Additional Incremental Procurement

MCE 2020 Open Season RFO

After counting the above-mentioned resources (which total 89.38 MW of September NQC), MCE understands it has slightly exceeded its assigned 87.5 MW share of the system capacity requirement identified in D.19-11-016. As indicated in previous compliance filings related to D.19-11-016, MCE issued a 2020 Open Season RFO on January 31, 2020, which sought to fill

50 The Resource Data Templates reflect that the Redwood Landfill project has 3.51 MW of September NQC, but the CAISO’s Draft Final 2021 NQC list shows 2.39 MW for this resource. MCE is following the NQC accounting in the Resource Data Templates, but notes this discrepancy for the Commission.
approximately 350 GWh of annual energy need, including any incremental procurement that might be needed to meet D.19-11-016. This RFO requested offers for Portfolio Content Category 1 Renewable Energy and stand-alone, front-of-the-meter energy storage. MCE is in the final stages of completing power purchase agreements with selected respondents from this RFO and expects to procure significant volumes of hybrid resources, all of which will be agreements of at least 10 years in duration. MCE is currently negotiating these projects, and the resulting projects with executed PPAs are expected to be online before August 1, 2023. While MCE does not anticipate that these 2020 RFO projects will be needed for MCE’s share of the system capacity requirement identified in D. 19-11-016, these 2020 RFO projects will provide a back-up to the projects described above. Alternatively, MCE expects to count these 2020 RFO projects towards any future Commission-directed incremental capacity obligations. Because these resources are expected, and not currently contracted for, these resources are reflected as “new_resolve” resources in both the 46MMT and 38MMT Resource Data Templates.

c. Potential Barriers

**Regulatory Environment**

In order to achieve its 38 MMT A-PCP over the next ten years (i.e., by 2030), MCE must procure significant volumes of renewables, storage, large hydro-electric and ACS, RA, and load-hedging products, the costs of which will ultimately be funded by MCE’s retail customers. For this reason, it is critical for MCE and other LSEs to operate in a relatively stable regulatory environment, where procurement decisions can be made on the basis of cost and benefit analyses with a mitigated risk of stranded costs, and where contracts entered into under existing regulations are not devalued by after-the-fact regulatory changes. MCE hopes to work closely with the Commission, other State and Federal regulators, and the CAISO to ensure reasonable stability and transparency, particularly around the following topics:

1. RA;
   a. RA requirements and Qualifying Capacity calculation methodologies for the various configurations of storage resources (stand-alone, hybrid, co-located, etc.);
   b. RA requirements and Qualifying Capacity calculation methodologies for intertie resources (i.e., imports);
   c. The relationship between forward capacity and forward energy; and
   d. Incremental capacity counting rules and incentivizing proactive procurement.
2. Centralized procurement for certain reliability resources;
3. PCIA and other non-bypassable charges recovered from CCA customers; and
4. PG&E’s excess resources and the uncertainty around whether such resources will be allocated and/or made available to the market.

**Impacts of the COVID-19 Pandemic**

MCE is keenly aware of the current, worldwide COVID-19 pandemic, and its impact on “business as usual,” including both demand and supply side impacts. Across retail sellers, commercial loads have decreased as a result of business closures or substantially modified operations, and residential loads have increased due to “stay at home” and “shelter in place” orders. MCE meets frequently to discuss observed variances between actual and anticipated customer energy use, including potential adjustments to upcoming load schedules. Based on available data and related analyses conducted to date, impacts to MCE’s overall load and sales appear to be relatively modest, approximately 4%-5% lower than forecast. MCE is also closely monitoring supply-side impacts of COVID-19, including supplier and developer effectiveness in fulfilling renewable energy needs, project completion, and overall supplier viability.

d. **Commission Direction or Actions**

As mentioned in the “Barriers” section directly above, MCE would like to work closely with the Commission on several critical topics to achieve reasonable regulatory stability and transparency necessary to achieve state goals and ensure the reliability and procurement goals of the IRP are met. To create the market stability and confidence needed to achieve reasonable outcomes, Commission directions or Actions should be forward-facing, and not applicable to previously executed contracts between suppliers and LSEs.

In addition, the Commission should build in reasonable timelines for LSEs to receive and respond to all new directions and actions. As an example, templates for this IRP were not provided in final form to LSE until August 11, 2020, just weeks before the submittal date. This did not allow reasonable time for MCE as a public agency to incorporate changes, provide public notice of the changes, and hold the expected meetings of its governing board.

e. **Diablo Canyon Power Plant Replacement**

As explained above, MCE takes seriously its procurement of incremental system capacity pursuant to D.19-11-016, and MCE has made significant progress towards this obligation. On a related note, MCE takes very seriously the new capacity targets that have been produced by the Commission’s modelling efforts, which MCE understands have taken into account the upcoming retirement of the 2,256 MW Diablo Canyon Power Plant, with the first unit planned
for retirement in November 2024 and the second unit planned for retirement in August 2025. MCE has committed to procuring significantly more than its load-proportional share of these Commission-driven new capacity targets, as detailed in the sections above.

With respect to MCE’s 38 MMT A-PCP, MCE has committed to procuring 585 MW of storage with 230 MW achieving commercial operation by 2026, the first full year without Diablo Canyon Power Plant. Similarly, in its 46 MMT PCP MCE has committed to procuring 535 MW of storage, again with 230 MW achieving commercial operation by 2026. For comparison, MCE’s load-proportional share of the Diablo Canyon Power Plant’s capacity is 62.4 MW\(^{51}\)

MCE recognizes that storage capacity is not a like-for-like substitution for nuclear capacity, which provides energy and inertia around the clock. On this front, the nuclear capacity is unique when compared MW for MW to other non-baseload resources. Storage capacity is more flexible and can provide both the energy ramping and ancillary services that are critical to integrating renewables and therefore currently in high demand.

Given the magnitude of MCE’s energy storage procurement plans, relative to its share of the Diablo Canyon Power Plant (and more broadly relative to MCE’s share of the Commission’s new capacity targets), MCE is exceeding its responsibility to address the retirement of the Diablo Canyon Power Plant.

f. Lessons Learned

MCE recognizes the improvements made to the data templates relative to the 2018 planning cycle, including consolidation of the new and baseline templates and enhancements to better capture the full range of resources in LSE existing and planned portfolios. MCE believes that additional improvements to the data templates can be made, and MCE looks forward to further discussions with Energy Division staff. MCE’s experience completing the Resource Data Template and the Clean System Power calculators leads to the following observations and suggestions:

- The Resource Data Template “dashboard” sheet could be enhanced to auto-populate comparisons of the LSE portfolio to the Reference System Portfolio, which could then be directly used in the IRP Narrative;
- The requirement to use transfer_sale and transfer_purchase for certain entries in the resource field caused a loss of information. It would be better to allow the actual

\(^{51}\) To calculate this figure, MCE took its share of CAISO peak load (2.76%) and multiplied it by Diablo Canyon Power Plant’s capacity (2,256 MW).
resource information to be entered in the resource field and include another field to indicate if the transaction is a sale or purchase with another load serving entity;

- The resource categories in the Clean System Power calculator should be consistent with those in the Resource Data Template. Ideally, a summary sheet would be created in the Resource Data Template to compile the supply data needed for the Clean System Power calculator. For example, there is no category for a hybrid resource in the Clean System Power calculator and no obvious category mapping;

- The Resource Data Template should include annual CAM capacity and allow the LSE to simply enter its load ratio share to auto-populate its CAM allocations; and

- Reliability metrics should be standardized and specified to the extent that the NQC dashboard presented in the Resource Data Template does not capture required reliability attributes.

MCE appreciates the level of complexity of the IRP templates and the IRP planning process, and MCE applauds the commitment and thought the Commission and Energy Division have dedicated to the development and refinement of the IRP’s component parts. However, a successful IRP process requires timely regulatory rules and guidance and sufficient time for LSEs to apply those rules and guidance to their individual IRPs. LSEs did not receive final IRP templates until mid-May, 2020; this was roughly 3 ½ months from the final IRP due date. These final templates, however, were materially changed on June 15, 2020 with continuing material revisions to guidance up until August 28, 2020. These changes impeded MCE’s ability to make continuous forward progress on its Compliance IRP. Although MCE successfully completed its Compliance IRP, the evolving guidance inhibited MCE’s ability to achieve board approval of its IRP in advance of the Commission’s filing date, which would have required MCE to have a completed Compliance IRP at least a month in advance of the filing deadline due to board and public noticing requirements. This was not possible for this IRP cycle because of the many changes in the IRP requirements that took considerable time to understand, obtain clarification where needed, and build into the Compliance IRP. For future IRP cycles, the Commission should allow for a minimum of four months from the time that templates, guidance, and instructions are final and the due date for filing the IRPs.
Glossary of Terms

**Alternative Portfolio:** LSEs are permitted to submit “Alternative Portfolios” developed from scenarios using different assumptions from those used in the Reference System Plan. Any deviations from the “Conforming Portfolio” must be explained and justified.

**Approve (Plan):** the CPUC’s obligation to approve an LSE’s integrated resource plan derives from Public Utilities Code Section 454.52(b)(2) and the procurement planning process described in Public Utilities Code Section 454.5, in addition to the CPUC obligation to ensure safe and reliable service at just and reasonable rates under Public Utilities Code Section 451.

**Balancing Authority Area (CAISO):** the collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area.

**Baseline resources:** Those resources assumed to be fixed as a capacity expansion model input, as opposed to Candidate resources, which are selected by the model and are incremental to the Baseline. Baseline resources are existing (already online) or owned or contracted to come online within the planning horizon. Existing resources with announced retirements are excluded from the Baseline for the applicable years. Being “contracted” refers to a resource holding signed contract/s with an LSE/s for much of its energy and capacity, as applicable, for a significant portion of its useful life. The contracts refer to those approved by the CPUC and/or the LSE’s governing board, as applicable. These criteria indicate the resource is relatively certain to come online. Baseline resources that are not online at the time of modeling may have a failure rate applied to their nameplate capacity to allow for the risk of them failing to come online.

**Candidate resource:** those resources, such as renewables, energy storage, natural gas generation, and demand response, available for selection in IRP capacity expansion modeling, incremental to the Baseline resources.

**Capacity Expansion Model:** a capacity expansion model is a computer model that simulates generation and transmission investment to meet forecast electric load over many years, usually with the objective of minimizing the total cost of owning and operating the electrical system. Capacity expansion models can also be configured to only allow solutions that meet specific requirements, such as providing a minimum amount of capacity to ensure the reliability of the system or maintaining greenhouse gas emissions below an established level.

**Certify (a Community Choice Aggregator Plan):** Public Utilities Code 454.52(b)(3) requires the CPUC to certify the integrated resource plans of CCAs. “Certify” requires a formal act of the Commission to determine that the CCA’s Plan complies with the requirements of the statute and the process established via Public Utilities Code 454.51(a). In addition, the Commission must review the CCA Plans to determine any potential impacts on public utility bundled customers under Public Utilities Code Sections 451 and 454, among others.

**Clean System Power (CSP, formerly “Clean Net Short”) methodology:** the methodology used to estimate GHG emissions associated with an LSE’s Portfolio based on how the LSE will expect to rely on system power on an hourly basis.
Community Choice Aggregator: a governmental entity formed by a city or county to procure electricity for its residents, businesses, and municipal facilities.

Conforming Portfolio: the LSE portfolio that conforms to IRP Planning Standards, the 2030 LSE-specific GHG Emissions Benchmark, use of the LSE’s assigned load forecast, use of inputs and assumptions matching those used in developing the Reference System Portfolio, as well as other IRP requirements including the filing of a complete Narrative Template, a Resource Data Template and Clean System Power Calculator.

Effective Load Carrying Capacity: a percentage that expresses how well a resource is able avoid loss-of-load events (considering availability and use limitations). The percentage is relative to a reference resource, for example a resource that is always available with no use limitations. It is calculated via probabilistic reliability modeling, and yields a single percentage value for a given resource or grouping of resources.

Electric Service Provider: an entity that offers electric service to a retail or end-use customer, but which does not fall within the definition of an electrical corporation under Public Utilities Code Section 218.

Filing Entity: an entity required by statute to file an integrated resource plan with CPUC.

Future: a set of assumptions about future conditions, such as load or gas prices.

GHG Benchmark (or LSE-specific 2030 GHG Benchmark): the mass-based GHG emission planning targets calculated by staff for each LSE based on the methodology established by the California Air Resources Board and required for use in LSE Portfolio development in IRP.

GHG Planning Price: the systemwide marginal GHG abatement cost associated with achieving a specific electric sector 2030 GHG planning target.

Integrated Resources Planning Standards (Planning Standards): the set of CPUC IRP rules, guidelines, formulas and metrics that LSEs must include in their LSE Plans.

Integrated Resource Planning (IRP) process: integrated resource planning process; the repeating cycle through which integrated resource plans are prepared, submitted, and reviewed by the CPUC

Long term: more than 5 years unless otherwise specified.

Load Serving Entity: an electrical corporation, electric service provider, community choice aggregator, or electric cooperative.

Load Serving Entity (LSE) Plan: an LSE’s integrated resource plan; the full set of documents and information submitted by an LSE to the CPUC as part of the IRP process.

Load Serving Entity (LSE) Portfolio: a set of supply- and/or demand-side resources with certain attributes that together serve the LSE’s assigned load over the IRP planning horizon.

Loss of Load Expectation (LOLE): a metric that quantifies the expected frequency of loss-of-load events per year. Loss-of-load is any instance where available generating capacity is insufficient to serve electric demand. If one or more instances of loss-of-load occurring within the same day regardless of duration
are counted as one loss-of-load event, then the LOLE metric can be compared to a reference point such as the industry probabilistic reliability standard of “one expected day in 10 years,” i.e. an LOLE of 0.1.

**Net Qualifying Capacity**: Qualifying Capacity reduced, as applicable, based on: (1) testing and verification; (2) application of performance criteria; and (3) deliverability restrictions. The Net Qualifying Capacity determination shall be made by the California ISO pursuant to the provisions of this California ISO Tariff and the applicable Business Practice Manual.

**Non-modeled costs**: embedded fixed costs in today’s energy system (e.g., existing distribution revenue requirement, existing transmission revenue requirement, and energy efficiency program cost).

**Nonstandard LSE Plan**: type of integrated resource plan that an LSE may be eligible to file if it serves load outside the CAISO balancing authority area.

**Optimization**: an exercise undertaken in the CPUC’s Integrated Resource Planning (IRP) process using a capacity expansion model to identify a least-cost portfolio of electricity resources for meeting specific policy constraints, such as GHG reduction or RPS targets, while maintaining reliability given a set of assumptions about the future. Optimization in IRP considers resources assumed to be online over the planning horizon (baseline resources), some of which the model may choose not to retain, and additional resources (candidate resources) that the model is able to select to meet future grid needs.

**Planned resource**: any resource included in an LSE portfolio, whether already online or not, that is yet to be procured. Relating this to capacity expansion modeling terms, planned resources can be baseline resources (needing contract renewal, or currently owned/contracted by another LSE), candidate resources, or possibly resources that were not considered by the modeling, e.g., due to the passage of time between the modeling taking place and LSEs developing their plans. Planned resources can be specific (e.g., with a CAISO ID) or generic, with only the type, size and some geographic information identified.

**Preferred Conforming Portfolio**: the conforming portfolio preferred by an LSE as the most suitable to its own needs; submitted to CPUC for review as one element of the LSE’s overall IRP plan.

**Preferred System Plan**: the Commission’s integrated resource plan composed of both the aggregation of LSE portfolios (i.e., Preferred System Portfolio) and the set of actions necessary to implement that portfolio (i.e., Preferred System Action Plan).

**Preferred System Portfolio**: the combined portfolios of individual LSEs within the CAISO, aggregated, reviewed and possibly modified by Commission staff as a proposal to the Commission, and adopted by the Commission as most responsive to statutory requirements per Pub. Util. Code 454.51; part of the Preferred System Plan.

**Qualifying capacity**: the maximum amount of Resource Adequacy Benefits a generating facility could provide before an assessment of its net qualifying capacity.

**Reference System Plan**: the Commission’s integrated resource plan that includes an optimal portfolio (Reference System Portfolio) of resources for serving load in the CAISO balancing authority area and meeting multiple state goals, including meeting GHG reduction and reliability targets at least cost.
**Reference System Portfolio**: the multi-LSE portfolio identified by staff for Commission review and adopted/modified by the Commission as most responsive to statutory requirements per Pub. Util. Code 454.51; part of the Reference System Plan.

**Short term**: 1 to 3 years (unless otherwise specified).

**Staff**: CPUC Energy Division staff (unless otherwise specified).

**Standard LSE Plan**: type of integrated resource plan that an LSE is required to file if it serves load within the CAISO balancing authority area (unless the LSE demonstrates exemption from the IRP process).
<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Existing Resources (Owned/Contracted)</th>
<th>Existing Resources (Planned Procurement)</th>
<th>Existing Resources (CAM)</th>
<th>New Resources (In Development)</th>
<th>Future New Resources</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>CHP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Natural Gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Coal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Hydro (Large)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>324</td>
</tr>
<tr>
<td>Hydro (Scheduled Imports)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Biomass</td>
<td>16</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Geothermal</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Hydro (Small)</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Wind</td>
<td>54</td>
<td>82</td>
<td>99</td>
<td>230</td>
<td></td>
<td>465</td>
</tr>
<tr>
<td>Out-of-State Wind on New Transmission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Solar</td>
<td>303</td>
<td>38</td>
<td>240</td>
<td>690</td>
<td></td>
<td>1271</td>
</tr>
<tr>
<td>Customer Solar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Battery Storage</td>
<td></td>
<td></td>
<td></td>
<td>300</td>
<td></td>
<td>300</td>
</tr>
<tr>
<td>Pumped (long-duration) Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Shed Demand Response</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>Capacity-Only</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td>51</td>
<td>531</td>
<td>133</td>
<td></td>
<td></td>
<td>715</td>
</tr>
<tr>
<td>Battery Storage</td>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td></td>
<td>240</td>
</tr>
<tr>
<td>Long Duration Storage</td>
<td></td>
<td></td>
<td></td>
<td>45</td>
<td></td>
<td>45</td>
</tr>
</tbody>
</table>
## ATTACHMENT B – MCE 2030 Resource Mix – 46 MMT PCP

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Existing Resources (Owned/Contracted)</th>
<th>Existing Resources (Planned Procurement)</th>
<th>Existing Resources (CAM)</th>
<th>New Resources (In Development)</th>
<th>Future New Resources</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>CHP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Hydro (Large)</td>
<td></td>
<td>14</td>
<td></td>
<td></td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Hydro (Scheduled Imports)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td>16</td>
<td>4</td>
<td></td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Geothermal</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Hydro (Small)</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td>54</td>
<td>82</td>
<td>99</td>
<td>230</td>
<td>465</td>
<td></td>
</tr>
<tr>
<td>Out-of-State Wind on New Transmission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td>303</td>
<td>38</td>
<td>240</td>
<td>575</td>
<td>1156</td>
<td></td>
</tr>
<tr>
<td>Customer Solar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Battery Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Pumped (long-duration) Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Shed Demand Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>Capacity-Only</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td>51</td>
<td>531</td>
<td>133</td>
<td>715</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery Storage</td>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Long Duration Storage</td>
<td></td>
<td></td>
<td></td>
<td>45</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>