



MCE Technical Committee Meeting
Friday, June 5, 2026
10:00 a.m.

1125 Tamalpais Avenue
San Rafael, CA 94901

2300 Clayton Road, Suite 1500
Concord, CA, 94520

Public comments may be made in person or remotely via the details below.

Remote Public Meeting Participation

Video Conference: <https://t.ly/QzAmo>

Phone: Dial (669) 900-9128, Meeting ID: 828 5103 7385, Passcode: 142534

DISABLED ACCOMMODATION: If you are a person with a disability who requires an accommodation or an alternative format, please contact MCE at (888) 632-3672 or ada-coordinator@mceCleanEnergy.org at least 72 hours before the meeting start time to ensure arrangements are made.

The Technical Committee may discuss and/or take action on any or all of the items listed on the agenda irrespective of how the items are described.

Agenda Page 1 of 2

1. Roll Call/Quorum
2. Board Announcements (Discussion)
3. Public Open Time (Discussion)
4. Report from Chief Executive Officer (Discussion)
5. Consent Calendar (Discussion/Action)
 - C. 1. Approval of 5.1.26 Meeting Minutes
6. Integrated Resource Plan Proceeding (Discussion/Action)
7. 2026 Open Season (Discussion)

8. Modification to Committee Process for Agenda Setting (Discussion/Action)
9. Member Requests for Future Agenda Items (Discussion/Action)
10. Committee & Staff Matters (Discussion)
11. Adjourn

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MCE TECHNICAL COMMITTEE MEETING MINUTES

May 1, 2026

10:00 A.M.

Present: Stephanie Andre, City of Larkspur
Dion Bailey, City of Hercules, Chair, left at 10:32 a.m.
John McCormick, City of Lafayette
Devin Murphy, City of Pinole, left at 11:47 a.m.
Charles Palmares, City of Vallejo, joined at 10:07 a.m.
Amanda Szakats, City of Pleasant Hill, left at 11:33 a.m.

Staff

& Others: Jessica Brooks, Lead Board Clerk and Executive Assistant
John Dalessi, Pacific Energy Advisors
Kirby Dusel, Pacific Energy Advisors
CB Hall, Director of Power Resources
Vicken Kasarjian, Chief Operating Officer
Tanya Lomas, Board Clerk
Linda Lye, Senior Legal Counsel
Stephen Mariani, Manager of Power Resources
Catalina Murphy, General Counsel
Justine Parmelee, VP of Internal Operations
Mike Rodriguez-Vargas, Internal Operations Assistant
Sabrinna Soldavini, Vice President of Policy
Jamie Tuckey, Chief Customer Officer
Dawn Weisz, Chief Executive Officer

1. Roll Call

Chair Bailey called the regular Technical Committee meeting to order at 10:00 a.m. with quorum established by roll call.

2. Board Announcements (Discussion)

There were no comments.

3. Public Open Time (Discussion)

Chair Bailey opened the public comment period and there was a comment from member of the public, Jody Timms.

4. Report from Chief Executive Officer (Discussion)

Dawn Weisz, CEO, introduced this item.

Chair Bailey opened the public comment period and there were no comments.

5. Consent Calendar (Discussion/Action)

C.1 Approval of 4.3.26 Meeting Minutes

Action: It was M/S/C (Szakats/McCormick) **to approve Consent Calendar item C.1.** Motion carried by unanimous roll call vote.

6. Committee Process for Agenda Setting

a. Consideration of Agenda Setting Process (Discussion/Action)

b. Member Request for Future Agenda Items (Discussion/Action)

Chair Bailey and Vice Chair Palmares introduced this item and addressed questions from Committee members.

Chair Bailey opened the public comment period and there was a comment from member of the public, Jody Timms.

Action: It was M/S/C (Murphy/McCormick) to approve the recommendation to **a. Add a standing item to each Technical Committee meeting agenda as follows:**

Member Request for Future Agenda Items* (Discussion/Action)

****Committee Members may request items to be considered for future agendas. An item requested by a Committee Member will only be brought forward with a majority vote and it will appear on a future agenda for discussion only. After discussion and a majority vote, the item will be added to a future agenda for action with staff recommendations for further Committee consideration.***

Motion carried by roll call vote. 5-Yays 1-No (No: Szakats).

After the motion was adopted, there was further discussion about the agenda setting process, as adopted. Staff indicated they would follow up with the Chair to ensure the process accomplishes the Committee's goal of impartiality and streamlining in the agenda setting process.

Director Palmares took over as Acting Chair after agenda item 6.

7. Integrated Resource Plan and Power Procurement (Discussion)

Sabrinna Soldavini, VP of Policy, Stephen Mariani, Manager of Power Resources, John Dalessi, President and CEO of Pacific Energy Advisors, and

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Kirby Dusel, Vice President of Pacific Energy Advisors, presented this item and addressed questions from Committee members.

Acting Chair Palmares opened the public comment period and there was a comment from member of the public, Robert Miller.

Action: No action required.

8. Committee & Staff Matters (Discussion)

This item was not discussed due to loss of quorum.

9. Adjournment

Acting Chair Palmares adjourned the meeting at 11:47 a.m. to the next scheduled Technical Committee Meeting on June 5, 2026.

Charles Palmares, Acting Chair

Attest:

Justine Parmelee, Secretary



June 5, 2026

TO: MCE Technical Committee

FROM: Sabrina Soldavini, Vice President of Policy
Johnstone Kipyator, Principal Manager, Power Analytics
Sai Powar, Policy Analyst

RE: Integrated Resource Plan Proceeding (Agenda Item #06)

ATTACHMENTS: A. Presentation - Integrated Resource Plan Proceeding
B. MCE 2022 Integrated Resource Plan
C. Key Acronyms

Dear Technical Committee Members:

Summary:

Staff requests feedback on the guiding principles used in preparing MCE's 2026 Integrated Resource Plan (IRP), and draft Preferred Conforming Portfolio (PCP). MCE's IRP is due to the California Public Utilities Commission (CPUC) on August 10, 2026. In accordance with this Board's authority granted in Public Utilities Code (Code) Sections 366.2(a)(5) and 454.52(b)(3) and 454.52(b)(3), staff plans to bring the proposed IRP for Board consideration in July and submit it to the CPUC on August 10, 2026.

Background:

Code Section 454.52 requires all CPUC jurisdictional load serving entities (LSE), including Community Choice Aggregators (CCA) like MCE, to file an IRP with the CPUC every two years.¹ The IRP encompasses a long-term planning horizon and details the procurement plan each LSE has adopted to meet the state's goals of reducing greenhouse gas (GHG) emissions and maintaining reliability.

To reinforce the procurement autonomy of CCAs, Section 454.52(b)(3) requires that the IRP of a CCA be submitted to its governing board for approval and requires that the IRP meet the following:

- (A) *Economic, reliability, environmental, security, and other benefits and performance characteristics that are consistent with the goals of achieving 40% reduction in GHG emissions from 1990 levels by 2030 and procure 50% renewable energy resources by December 31, 2030.*

¹ While LSEs are generally required to submit IRP's every two years, the CPUC delayed the 2024 IRP LSE submission cycle to 2026.

- (B) A diversified procurement portfolio consisting of both short-term and long-term electricity and electricity-related and demand reduction products.
- (C) Resource Adequacy requirements.

Introduction

The Integrated Resources Planning (IRP) proceeding is an “umbrella” procurement planning process overseen by the CPUC that considers all of the CPUC’s policies and programs to ensure the state has a safe, reliable, and cost-effective electric supply”.² This is an iterative process with two tracks:

1. **Planning:** CPUC staff model and build a Preferred System Plan (PSP) for the state’s overall resource portfolio on a forward-looking basis. The PSP is based on load forecasts developed by the California Energy Commission (CEC), policy goals for renewable procurement and reliability, and GHG reduction targets. The PSP is a modelling scenario and represents the CPUC’s assumptions for an optimal resource portfolio that achieves the GHG benchmarks at least cost, while maintaining reliability. The CPUC allocates a portion of the PSP to individual LSEs like MCE, proportional to their load. Each LSE then submits a PCP as part of their individual IRPs to meet state targets and align with the PSP. PCPs submitted in an IRP year inform the next iteration of a 2-year process.
 - o IRP development is one step of a long-term, multi-year, iterative, and interconnected statewide planning process that spans multiple state agencies and LSEs. Most importantly, the PSP informs the California Independent System Operator’s (CAISO) Transmission Planning Process (TPP).
2. **Procurement:** The CPUC aggregates individual LSEs’ IRPs and measures the state’s progress on reliability and renewable procurement. Based on its evaluation, the CPUC determines the need for additional procurement to fill identified shortfalls which can (and has) led to mandatory procurement orders.

2024-2026 IRP cycle³

Based on portfolio planning information submitted by LSEs in the 2022 IRP process, the CPUC developed a 2023 PSP that informs the 2026 IRP process. For the 2024-2026 IRP cycle, the modeling years included 2026, 2028, 2030, 2035, 2040, and 2045, with GHG emissions limits of 25 million metric ton (MMT) in 2035 and 8 MMT by 2045. A few important aspects of the Commission's PSP analysis and results include:⁴

- 70 percent of the selected builds are solar and battery storage;

² <https://www.cpuc.ca.gov/irp/>

³ 2024-2026 IRP Cycle Events and Materials. <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/2024-26-irp-cycle-events-and-materials>.

⁴ 2026 CPUC Filing Requirements Modeling. <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2024-2026-irp-cycle-events-and-materials/2026-cpuc-filing-requirements-modeling.pptx>

- Nearly the full potential of conventional geothermal, onshore wind, and location-constrained storage is built;
- A small amount of Enhanced Geothermal Systems (EGS) resources is built in 2045;
- The GHG emissions target is binding for all model years; and
- Use of natural gas declines to meet the GHG target, but natural gas capacity is retained for reliability events through 2045.

MCE's 2026 IRP

MCE is required to complete and file three templates for the 2026 IRP filing by August 10, 2026:

1. **Resource Data Template (RDT)** - A CPUC tool used to report MCE's existing energy and capacity contracts and to build a PCP of planned, new long-term contracts to meet MCE's load, reliability, and emissions targets. The RDT allows for an assessment of the portfolio's level of reliability over the planning horizon (2026-2045);
2. **Clean System Power (CSP) tool** - A CPUC tool used to estimate and demonstrate the GHG and criteria pollutant emissions of MCE's PCP; and
3. **Narrative report** - Outline MCE's analysis, results, and provide a description of MCE's planning and programmatic efforts for the future.

MCE's assigned GHG benchmarks for the 2026 IRP are provided in Table 1 below.

	2030	2035	2040	2045
Load (GWh)	6361.61	7600.09	8507.80	8980.29
GHG Benchmark (MMT)	0.513	0.393	0.332	0.170

Table 1: MCE's assigned GHG benchmarks for the 2026 IRP

Guiding Principles for MCE's 2026 IRP:

As part of its planning and design process for the draft PCP, MCE considers the following Guiding Principles. This list is not in any order of priority, and the principles are not mutually exclusive of each other:

- **Mission & Board Policy:** Meet Board-approved renewable procurement and emissions targets and comply with all Board-adopted procurement directives;
- **Regulatory Compliance:** Comply with CPUC procurement-related rules and regulations, including procurement orders and resource adequacy (RA);
- **Affordability:** Build a portfolio that ensures stable and affordable rates for MCE customers;
- **Risk Management:** Incorporate contract terms and lengths and procurement timelines to minimize market risk impacts on MCE customers;
- **Technology Diversity:** Invest in a diverse portfolio of clean technology types; and
- **Clean Reliability:** Progress towards a cleaner RA portfolio.

Draft PCP

MCE developed its draft PCP consistent with the renewable energy and GHG-free goals summarized in Table 2 below.⁵

Portfolio Targets (%)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
PCC 1 Renewable (Light Green)	60%	65%	70%	75%	80%	85%	85%	85%	85%	85%
Carbon-free	37%	32%	27%	22%	17%	12%	12%	12%	12%	12%
GHG Free	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

Table 2: MCE's Internally Adopted Renewable and GHG-free Energy Targets

MCE's PCP includes plans for significant capacity additions of new renewable and storage resources by 2045 to support achievement of MCE's renewable and GHG-free energy goals, while contributing to system reliability in a responsible manner.

MCE's PCP includes the following planned new capacity:

- In-state and out-of-state wind resources totaling 683.3 Megawatts (MW)
- Geothermal resources totaling 176.4 MW;
- Solar resources totaling 1513.6 MW (imported and California solar);
- 4-hour battery storage resource totaling 588.9 MW; and
- 8-hour battery storage resource totaling 1166.7 MW.

MCE's PCP provides for the following overall energy resource mix in 2045:⁶

- Hydro-electric (large, small, and imported) of 500 Gigawatt Hours (GWh);
- Geothermal of 1617 GWh;
- Wind (in-state and out-of-state) of 2322 GWh; and
- Solar (California and imported) of 4700 GWh.

⁵ These targets were incorporated into MCE's 2026 budget process and were approved with the Fiscal Year 2026/2027 Budget. The revised targets will be incorporated into future planning efforts such as the IRP and MCE's Renewables Portfolio Standard (RPS) Procurement Plan until modified by the Board in the future.

⁶ MCE's PCP includes battery resources in its portfolio by 2045, but they are not included in this list because battery energy storage does not count towards energy in GWh because of round trip efficiency losses.

New Resource Additions in Draft PCP

MCE’s draft portfolio includes a mix of existing and new resources strategically integrated to adhere to MCE’s policy to achieve at least 85% renewable energy by 2031 to continue to reduce emissions through 2045 to meet state targets.

Through its currently contracted long-term capacity and planned contracts in the draft PCP, MCE plans to:

- Procure approximately 92% of its renewable energy from long-term contracts by 2045;
- Contribute to building more than 46 MW of new renewable energy resources directly in MCE’s service area;
- Contribute to building 2928 MW of new renewable energy resources throughout California;
- Contract with 2628 MW of storage that will help shift peak demand and support grid reliability; benefiting hourly accounting and energy costs; and
- Bring over 860 MW of nameplate capacity from renewable resources online in the next six years to serve reliability needs.

Approximately 4,000 MW of MCE’s PCP is composed of new resources, reflecting MCE’s active role in the State’s development of new storage and renewables.

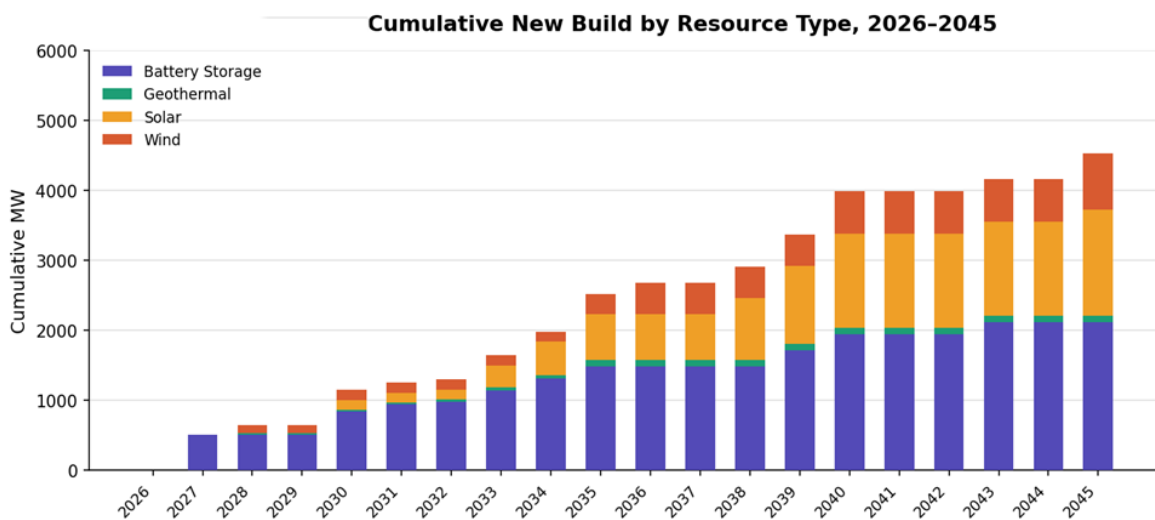


Figure 1: Cumulative New Resource Additions by Resource Type in Draft PCP

The above results are intended for illustrative incremental portfolio analysis only. Actual procurement choices would differ and follow Board approved procurement practices.

Emissions Results of Draft PCP

MCE’s assigned 2035 and 2045 load forecast, GHG emissions benchmarks, and forecast GHG emissions for the draft PCP are reflected in the table below as estimated using the CPUC’s CSP calculator. Inclusion of natural gas for capacity in MCE’s draft PCP does not compromise MCE’s

progress towards emissions reductions. Incremental additions of new, clean resources translate to lesser utilization of natural gas plants towards system power.

Year	Load (GWh)	GHG Benchmark (MMT)	Draft PCP Annual Emissions (MMT)
2035	7601	0.393	0.32
2045	8980	0.170	0.169

Table 3: Emissions Results of Draft PCP

Cost Impacts of Draft PCP

Adoption of an IRP does not equate to Board approval to enter into contracts to “build” the resources selected in the IRP. Any future procurement decisions must follow the Board approval process.

As the IRP utilized a 20-year planning horizon and IRPs are updated on a two-year cycle, MCE does not expect to procure exactly what is adopted in its 2026 IRP. Instead, the PCP is intended to represent one reasonable and feasible portfolio that MCE could build out to meet its share of the State’s reliability and GHG-emissions requirements and to help guide MCE and statewide procurement policy between now and the next IRP cycle. Accordingly, a primary goal of the IRP for MCE is to select a portfolio which leads to affordable rates for MCE customers.

While MCE does not expect to procure exactly what is in the 2026 IRP, *if* MCE were to build and bring online all the resources included in the draft PCP (per the exact planning timeline) and directly pass through the incremental procurement costs to customers, based on current pricing information⁷ MCE expects the following affordability and ratepayer impacts:

1. MCE’s generation rate⁸ would increase annually by 5% on average.
2. By 2045, MCE’s rates would cumulatively increase by 18.80 cents/kilowatt-hour (kWh), a 150% increase to the current generation rate.⁸

The rate impacts described above and in Figure 2 are intended for illustrative incremental portfolio and ratepayer impact analysis only. Critically, MCE does not currently have a rate mechanism to directly pass through power procurement costs to customers via rate increases. Any future rate changes would require Board approval, and actual net cost and rate impacts would be dependent on all costs and revenues.

⁷ Pricing information is derived from a combination of cost assumptions from the CPUC’s RESOLVE model and internal knowledge sourced from prior MCE solicitations.

⁸ Generation rate refers to the Residential E-TOU-C rate plan based on a weighted average rate of customer usage across seasons (summer/winter) and time-of-use (on-peak/off-peak) periods.

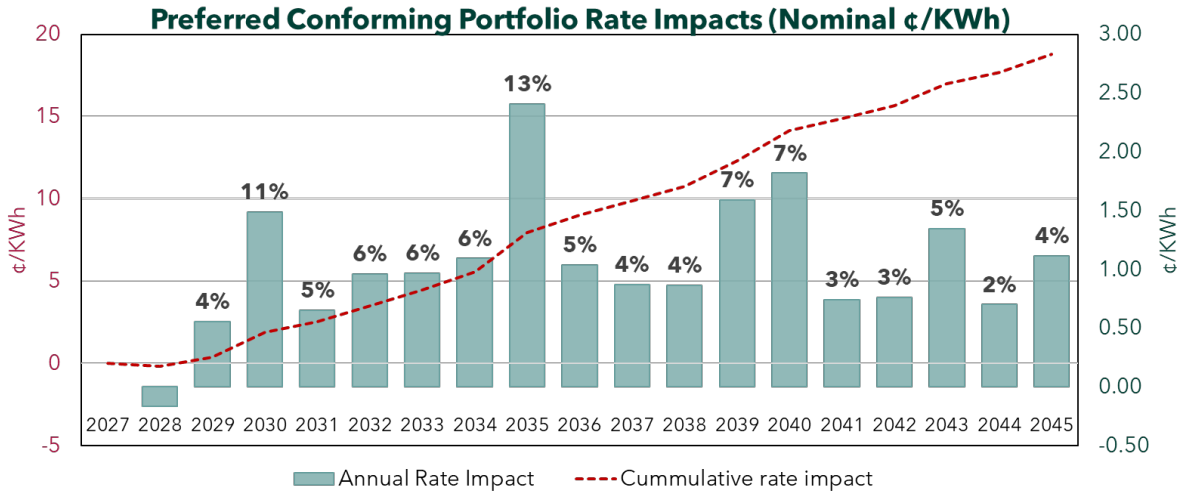


Figure 2: Cost Impacts of Draft PCP

Reliability of Draft PCP and Alternative Conforming Portfolio

MCE is committed to maintain reliability for our customers and align with the state’s reliability goals and planning scenario. MCE’s short- and long- duration storage, renewable baseload procurement, and its RA capacity-only resources will help maintain MCE’s critical role in supporting the State’s need for reliability and renewable integration.

While MCE does not enter into contracts for natural gas for its energy products, MCE’s portfolio does require natural gas for capacity purposes to reliably, feasibly, and affordably meet RA requirements.⁹ CPUC modeling in the current IRP cycle demonstrates the State’s need for natural gas resources to ensure a reliable statewide grid¹⁰. Accordingly, MCE’s draft PCP aligns with this planning framework and maintains natural gas in its RA portfolio to reliably and affordably serve our customers.¹¹

In order to understand and demonstrate the impacts of replacing natural gas capacity in MCE’s draft PCP with a greater percentage of clean RA resources, MCE built an alternative draft conforming portfolio. In this alternative conforming portfolio, MCE continues to meet all internal targets and CPUC requirements, but a portion of natural gas RA capacity is incrementally replaced with clean RA resources over the planning horizon as shown in Table 4.

⁹ <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/resource-adequacy-homepage>

¹⁰ CPUC 2026 IRP Modeling Results. <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2024-2026-irp-cycle-events-and-materials/2026-cpuc-filing-requirements-modeling.pptx>

¹¹ A significant portion of the thermal (natural gas) capacity in MCE’s portfolio comes from the CPUC’s Cost Allocation Mechanism (CAM). CAM allows investor-owned utilities to procure resources for reliability purposes and allocate the costs and capacity value to all LSEs.

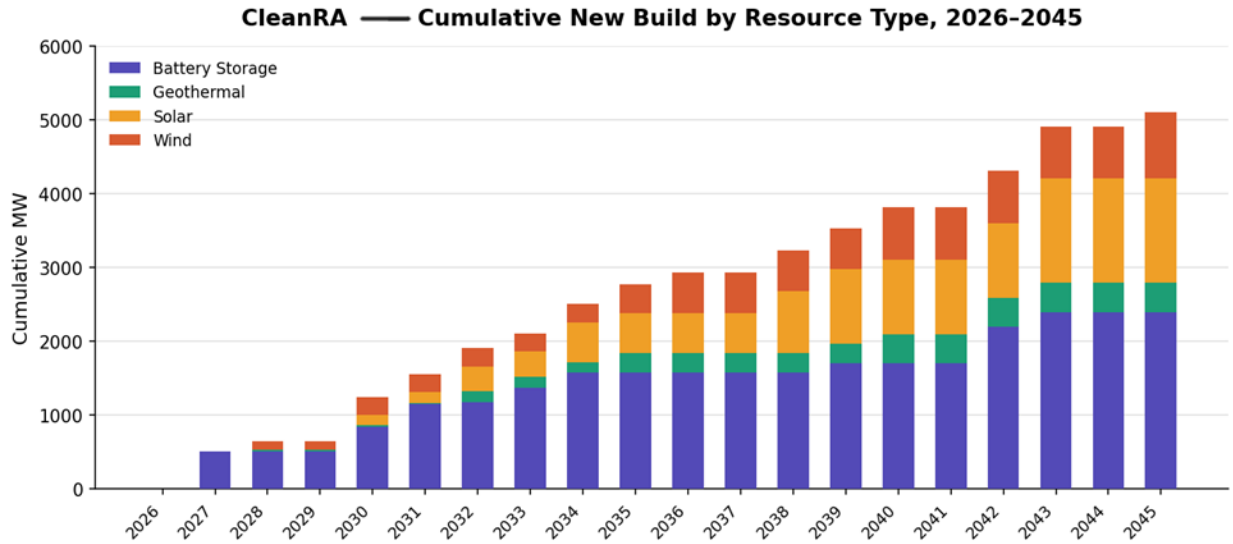


Figure 3: Cumulative New Resource Additions by Resource Type in Alternative Conforming Portfolio

Year	Load (GWh)	GHG Benchmark (MMT)	Draft PCP Annual Emissions (MMT)	Draft Alternative Conforming Portfolio Annual Emissions
2035	7601	0.393	0.32	0.14
2045	8980	0.170	0.169	(0.07) ¹²

Table 4: Emissions Results of Draft PCP and Draft Alternative conforming portfolio

As MCE adds new clean resources over the planning horizon, the proportion of natural gas within its RA portfolio in the draft PCP is projected to decrease. The draft alternative conforming portfolio demonstrates that MCE would need to contract with a significant amount of new clean resources over the planning horizon.

Based on MCE’s experience and understanding of the market, MCE Staff believe that the alternative conforming portfolio is likely to be very difficult to procure. Additionally, the alternative conforming portfolio is more costly and results in over procurement relative to 2045 needs. As mentioned previously, MCE will not contract with the exact set of resources included in the draft PCP. However, the CPUC uses LSE IRPs to plan statewide procurement and MCE endeavors to submit a portfolio

¹² The Draft Alternative Conforming Portfolio results in negative emissions as it leads to over procurement compared to 2045 energy requirements. The negative value reflects the avoided emissions above and beyond MCE’s projected needs.

that can feasibly and reasonably procure to ensure MCE is not providing inaccurate signals. Accordingly, Staff has not selected this portfolio as its draft PCP at this time.

For example, as shown in Table 4 below, the alternative conforming portfolio would see MCE contracting with approximately 299 MW more of nameplate capacity of geothermal resources between 2026 and 2045 versus 96 MW included in the baseline draft PCP. Currently, geothermal is an extremely scarce and expensive resource, and indicating that MCE could contract at the levels demonstrated in the portfolio would be highly speculative and not representative of what Staff believe is reasonable to build at this time.

Resource Type	Draft PCP (MW)	Clean RA Alternative (MW)	Change
Battery Storage	2,115	2,398	+283
Geothermal	96	395	+299
Solar	1,514	1,412	-102
Wind	801	900	+99
Total	4,527	5,106	+579

Table 5: New Resource Additions in Alternative Conforming Portfolio, 2026 - 2045

Additionally, the alternative conforming portfolio would likely result in significant rate increases for MCE customers. If MCE were to build and bring online all the resources included in the draft alternative conforming portfolio (per the exact planning timeline) and directly pass through the incremental procurement costs to customers, based on current pricing information¹³ MCE expects the following affordability and ratepayer impacts:

1. MCE's generation rate⁸ would increase annually by 6% on average.
2. By 2045, MCE's rates would cumulatively increase by 24.34 cents/kilowatt-hour (kWh), a 194% increase to the current generation rate.⁸

Although the 20-year impact appears modest as shown in Figure 4, the 20-year timeframe suppresses the year-over-year cost impact on customers.

¹³ Pricing information is derived from a combination of cost assumptions from the CPUC's RESOLVE model and internal knowledge sourced from prior MCE solicitations.

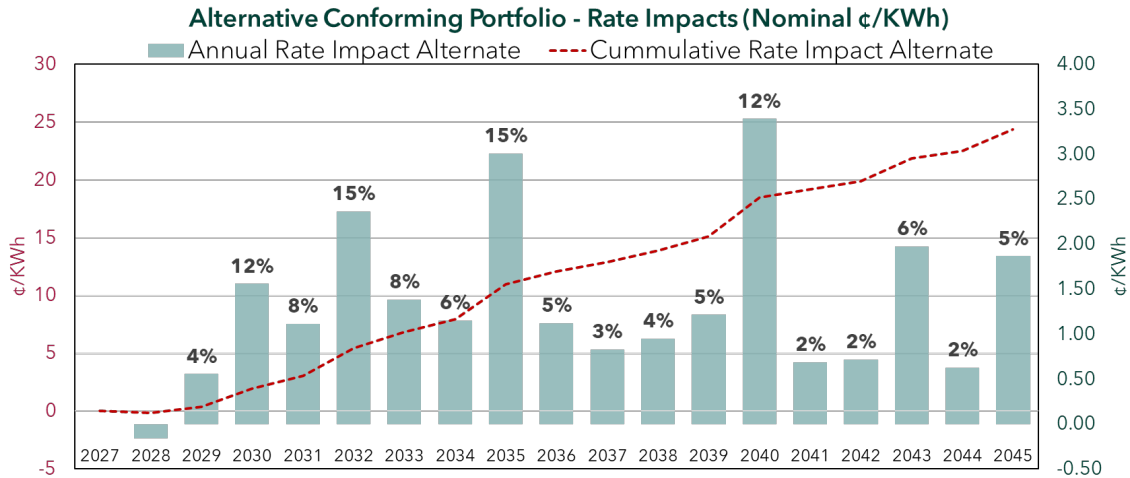


Figure 4: Cost impacts of Draft Alternative Conforming Portfolio

MCE Staff plans to continue to invest in clean RA resources and progressively reduce reliance on natural gas for RA, while balancing across all other Guiding Principles. While MCE has not currently selected the alternative conforming portfolio for IRP compliance, MCE Staff welcome feedback from the Technical Committee on this matter and remains open to continuous discussion on its clean RA efforts.

As described above, the results of the alternative conforming portfolio described in this section are intended for illustrative incremental portfolio and rate impact analysis only. Actual procurement choices would differ and follow Board approved procurement practices. Any future rate changes would require Board approval, and actual net cost and rate impacts would be dependent on all costs and revenues.

Fiscal Impacts:

When MCE brings a final 2026 IRP to the Board for consideration in July, it will be aligned with assumptions underlying MCE’s financial pro forma projections. There will be no direct or immediate fiscal impacts of adopting MCE’s 2026 IRP. All future resource commitments made to implement the plan will be subject to separate approval in accordance with MCE’s adopted delegation of authorities.

Recommendation:

Discussion only. Staff invites the Technical Committee to provide feedback on its 2026 IRP guiding principles, and draft PCP. Staff will bring the proposed 2026 IRP to the Board seeking approval in July 2026, before submitting to the CPUC on August 10, 2026.



Integrated Resource Plan Proceeding

Technical Committee
June 5, 2026

What We Are Asking Today

Seeking Feedback on the draft Integrated Resource Plan (IRP) Preferred Conforming Portfolio (PCP) and guiding principles.

- Focus: Portfolio direction and tradeoffs
- Today is NOT: Approval of specific projects, contracts, or budgets.

All future procurement decisions will still come to the Board for approval.

What is the IRP and How Does it Work?



IRP = Integrated Resource Plan



Key Goal: Identify a diverse portfolio of resources to meet grid reliability needs & support CA's Greenhouse Gas (GHG) emissions reductions goals.



California Public Utilities Commission (CPUC) oversees the IRP and sets resource planning targets for Load Serving Entities (LSEs) within its jurisdiction.

An iterative process with two tracks that impacts MCE procurement, budget, and ratepayers:

1. Planning

- The CPUC builds Preferred System Plan (PSP) portfolio based on load forecasts, state policy goals, and statewide emissions targets.
- **LSEs prepare individual IRPs that are aggregated and evaluated against the PSP.**
- Informs transmission planning

2. Procurement

- CPUC evaluates and determines if there is a need for additional procurement to fill identified shortfalls.
- This can (and has) lead to mandatory procurement orders.

How Does MCE Participate in the IRP

- MCE regularly engages in advocacy in CPUC-related proceedings to advocate for reasonable forecast and planning assumptions as well as fair procurement obligations.
- **Submit an IRP to the CPUC every two years:**
 - After development of the PSP, the CPUC allocates portion of the PSP to individual LSEs like MCE.
 - MCE is required to create and submit a Preferred Conforming Portfolio (PCP or Portfolio) for submission to the CPUC.
 - Conforming PCP outlines MCE's model demonstrating that it can meet its share of statewide reliability need and GHG targets.

2026 is an IRP year!

2026 IRP Requirements

- MCE's IRP demonstrates how MCE will meet its share of the **25 Million Metric Tons (MMT) by 2035 and 8 MMT by 2045 GHG target.**
- Submission Requirements:
 - **Resource Data Template (RDT)** - Report MCE's existing energy and capacity contracts and build a PCP of planned contracts to meet MCE's load, reliability and emissions targets
 - **Clean System Power (CSP) tool** - Use to estimate and demonstrate the GHG and criteria pollutant emissions of MCE's PCP
 - **Narrative report** - Outline MCE's analysis, results, and provide a description of MCE's planning efforts for the future



Impacts: What IRP Does and Does Not Do

The IRP does

- Directly impact MCE's operation strategy and budget.
- Influence and constrain (but does not dictate) MCE's future procurement efforts.
- Impact on MCE's procurement costs through changes in market dynamics and resource costs and availability.
- Have potential to result in procurement mandates if the CPUC determines more capacity is needed.

The IRP does NOT

- Determine specific or exact cost impacts for MCE.
- Select individual projects or contracts that MCE *must* procure.
 - MCE's procurement authority resides with this Board, and however the Board delegates such authority.
 - All future contracts for new resources will continue to follow that approval process.
- Align perfectly with market timing or contract availability to ensure least cost, optimal portfolios for individual LSEs.

Guiding Principles for MCE's PCP

Mission & Board Policy

Meet Board-approved renewable procurement and emissions targets and comply with all Board-adopted procurement directives

Regulatory Compliance

Comply with CPUC procurement-related rules and regulations, including procurement orders and resource adequacy (RA)

Affordability

Build a portfolio that ensures stable and affordable rates for MCE customers

Risk Management

Diversify contract types and lengths to minimize market risk impacts on MCE customers

Technology Diversity

Build a diverse portfolio of clean technology types

Clean Reliability

Continue to invest in clean RA resources

Portfolio Design: Constraints & Considerations

Requirement to meet the CPUC's Preferred System Plan for the state
for a 20-year timeframe

Regulatory Compliance & Uncertainty

- CPUC Procurement Mandates
 - 2030 - 2032 - 180 MW with 45 MW from long duration energy storage or clean firm resources
- Resource Adequacy Compliance
- Uncertainty of Resource Accounting Methodologies for Planning
- Possibility of Future Procurement Mandates & Programs (RCPPP)

Market Realities

- Resource Availability and Viability
- Price volatility impacts on MCE procurement costs
- Infrastructure Constraints impacting Capacity and Energy Availability, such as:
 - Curtailment
 - Grid Congestion
 - Permitting Backlogs
 - Supply Chain Risk
 - Federal Policy Risk

MCE's Assigned GHG Emissions Benchmarks

	2030	2035	2040	2045
Load (GWh)	6361.61	7600.09	8507.80	8980.29
GHG Benchmark (MMT)	0.513	0.393	0.332	0.170

MCE's IRP will illustrate how MCE plans to meet its share of the 25 Million Metric Tons (MMT) by 2035 and 8 MMT by 2045 GHG target.

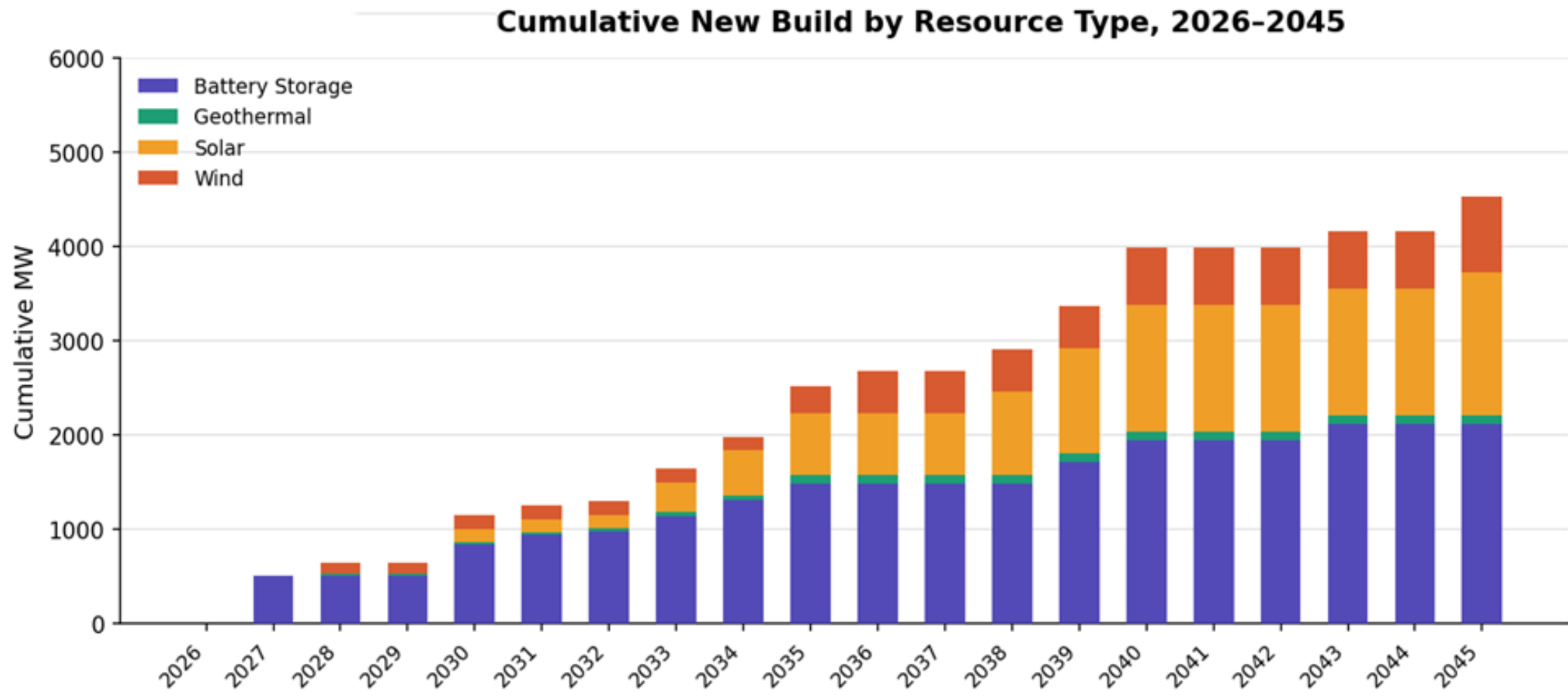
Draft PCP Mission & Board Policy

Portfolio Targets (%)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
PCC 1 Renewable (Light Green)	60%	65%	70%	75%	80%	85%	85%	85%	85%	85%
Carbon-free	37%	32%	27%	22%	17%	12%	12%	12%	12%	12%
GHG Free	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

Draft PCP: Technology diversity

Resource type	Contracted Capacity (MW) in 2026	Planned new capacity (MW)	Overall resource mix (GWh) in 2045	Proportion of total in 2045 [GWh](%)
Wind (in-state, out of state)	305.2	683.3	2322	25%
Geothermal	137	176.4	1617	18%
Hydro-electric (large, imported, small)	205.6		500	5%
Solar (California, imported)	861.4	1513.6	4700	51%
Battery (4hr)	476.6	588.9	-	-
Battery (8hr)	35	1166.7	-	-

Draft PCP: New Planned Resource Additions



*Cumulative MW are nameplate capacity additions

These results are illustrative only. Actual procurement will differ and follow Board approved procurement processes.

Draft PCP: Risk management

- The draft PCP aligns with MCE's current Energy Risk Management policy.
- Over the planning 20+ year horizon, all planned new contracts are long term contracts. The exact procurement timelines will be dependent on MCE's portfolio needs at the time.
- However, on a short-term timeline (1-3 years), MCE plans to fill its supply with short term contracts with existing resources.

What MCE Has Built Through Long-Term Contracts + Draft IRP PCP

~92%

of MCE renewable energy from long-term contracts (2045)*

46+ MW

of new renewables built directly in MCE's service area

2,928 MW

of new renewables statewide to serve MCE customers

2,911 MW

of renewable energy including draft IRP portfolio since 2021

Energy Storage: 2,268 MW of storage including draft IRP portfolio – shifting renewable energy to hours of peak demand and adding grid reliability. A benefit for hourly accounting & energy cost.

MCE also offers a Feed-in Tariff program providing direct incentives for new clean energy projects within our service area – supporting hyperlocal renewable development.

Four Reasons We Need Short-Term Contracts

01 Load Forecast Uncertainty

MCE cannot perfectly predict future demand. Large customers come and go; customers opt in/out of Deep Green; electrification reshapes demand. Short-term contracts let us adjust without being locked into wrong-sized long-term commitments, better for hourly accounting.

02 Multi-Year Project Development Timelines and Delays

Many new renewable projects are delayed due to transmission constraints. Short-term contracts with operating resources ensure reliable delivery while new-build projects come online.

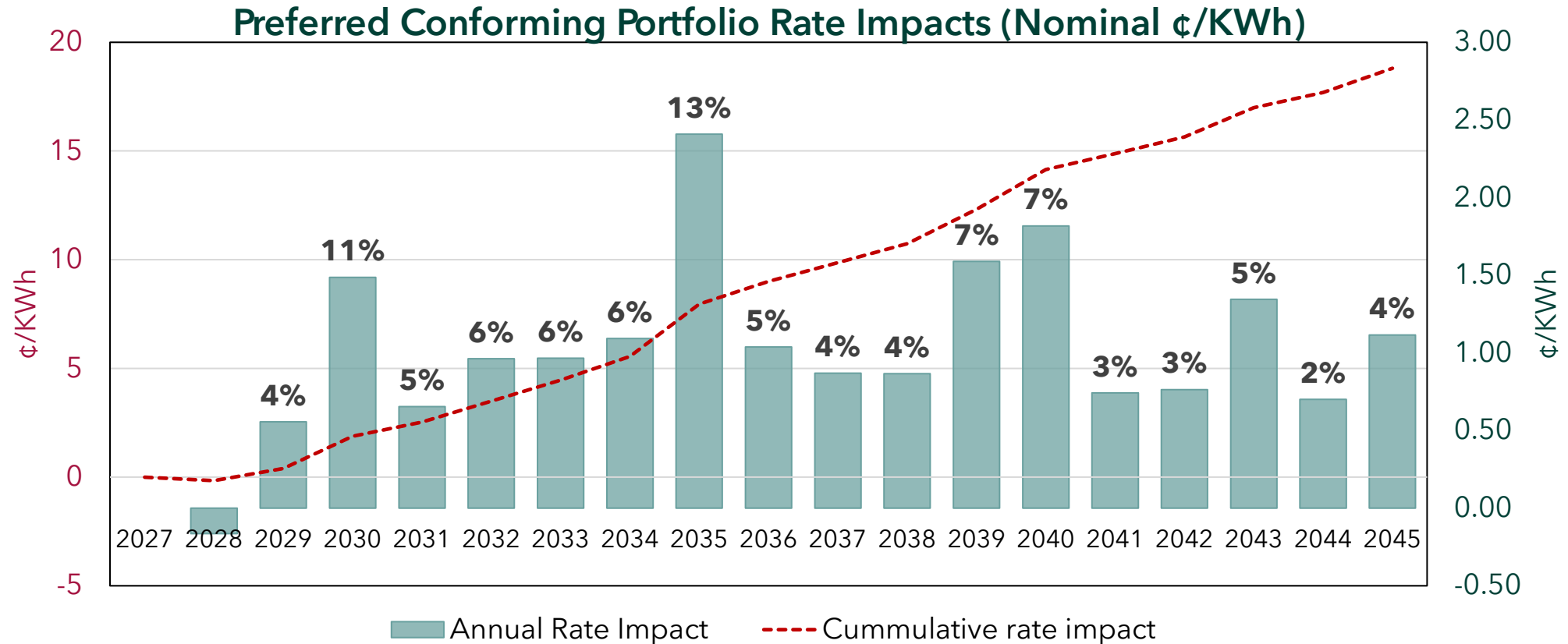
03 Technology Diversity

MCE's long-term portfolio is solar-heavy, so short-term contracts for wind, geothermal, and hydro can generate power when solar isn't producing. This reduces hourly emissions and better matches MCE's actual customer demand.

04 Price Risk Management

Executing contracts at different times and lengths diversifies portfolio risk. Observing temporal diversity when buying energy avoids over-exposure to discrete market conditions. A mix of short- and long-term contracts minimizes "planning cliffs" that could occur if several long-term commitments expired at the same time.

Draft PCP: Affordability & Cost Impacts



If MCE built this exact portfolio, all else equal, based on current cost assumptions MCE's generation rate would increase 150% by 2045.

****All future rate changes would require board approval and actual net cost and rate impacts would be dependent on all costs and revenues.**

RA and IRP: Key Differences

RA

- Resource accounting: Slice of Day (SOD)
- Compliance timeline
 - Short-term (2 years) planning
 - Month-ahead and year-ahead filings
- Meet capacity requirements with a Planning Reserve Margin (PRM) for MCE's load

IRP

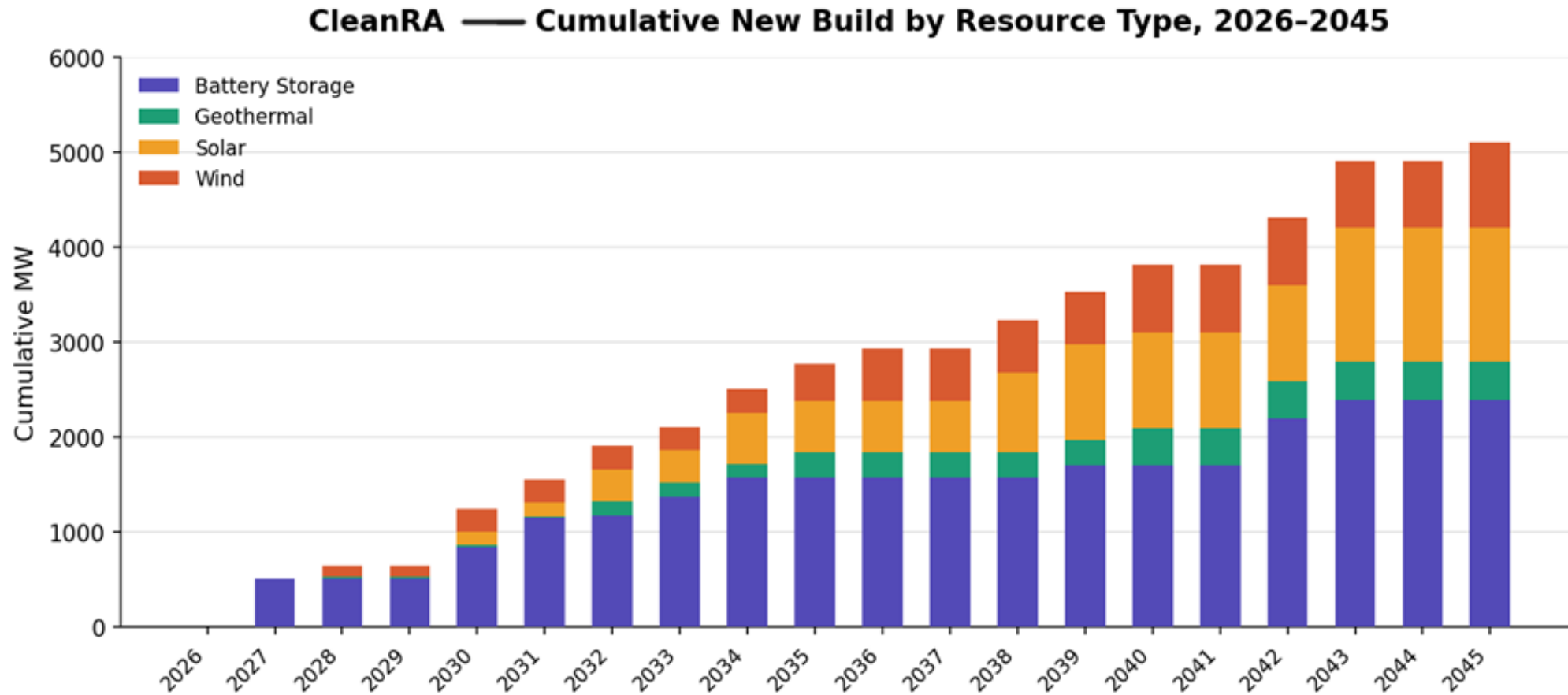
- Resource accounting: Marginal Effective Load Carrying Capability (ELCC)
- Compliance timeline
 - Long term (10-20 years) planning
 - 2-year filing cycle (iterative)
- Meet state GHG reduction goals and demonstrate alignment with state's planning portfolio

Main takeaway: MCE needs to address the challenge of building a portfolio and procuring resources for meeting two compliance programs on separate timelines with separate evaluation metrics, efficiently and affordably.

Clean Reliability in the IRP

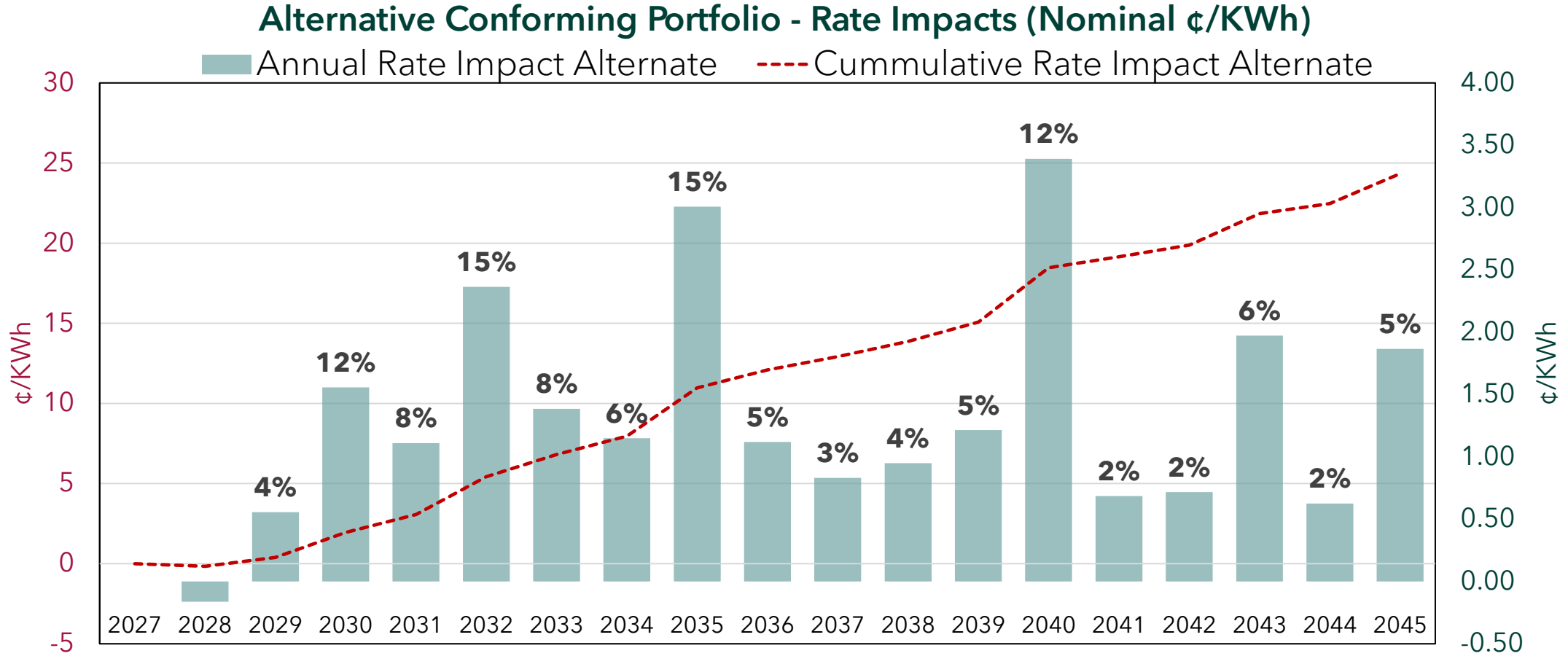
- **The fossil fuel question:** MCE does not directly procure natural gas as part of its energy supply for customers. However, MCE sources Resource Adequacy (capacity) from existing natural gas facilities.
- **Progress:** Over 860 MW of nameplate capacity from renewable resources expected to come online in the next six years.
- **Natural Gas in MCE's PCP:** MCE will have natural gas in its RA portfolio all the way through 2045.
 - CPUC's PSP includes reliance on natural gas to maintain reliability and MCE's PCP aligns with that planning direction.
 - As MCE's load is projected to increase, the proportion of natural gas relative to entire RA portfolio decreases.
 - Although the capacity is present in MCE's RA portfolio, this does not directly translate to the natural gas plants coming online to provide energy to the State's energy grid.

Draft Alternative Conforming Portfolio



These results are illustrative only. Actual procurement will differ and follow Board approved procurement processes.

Draft Alternative Conforming Portfolio: Affordability & Cost Impacts

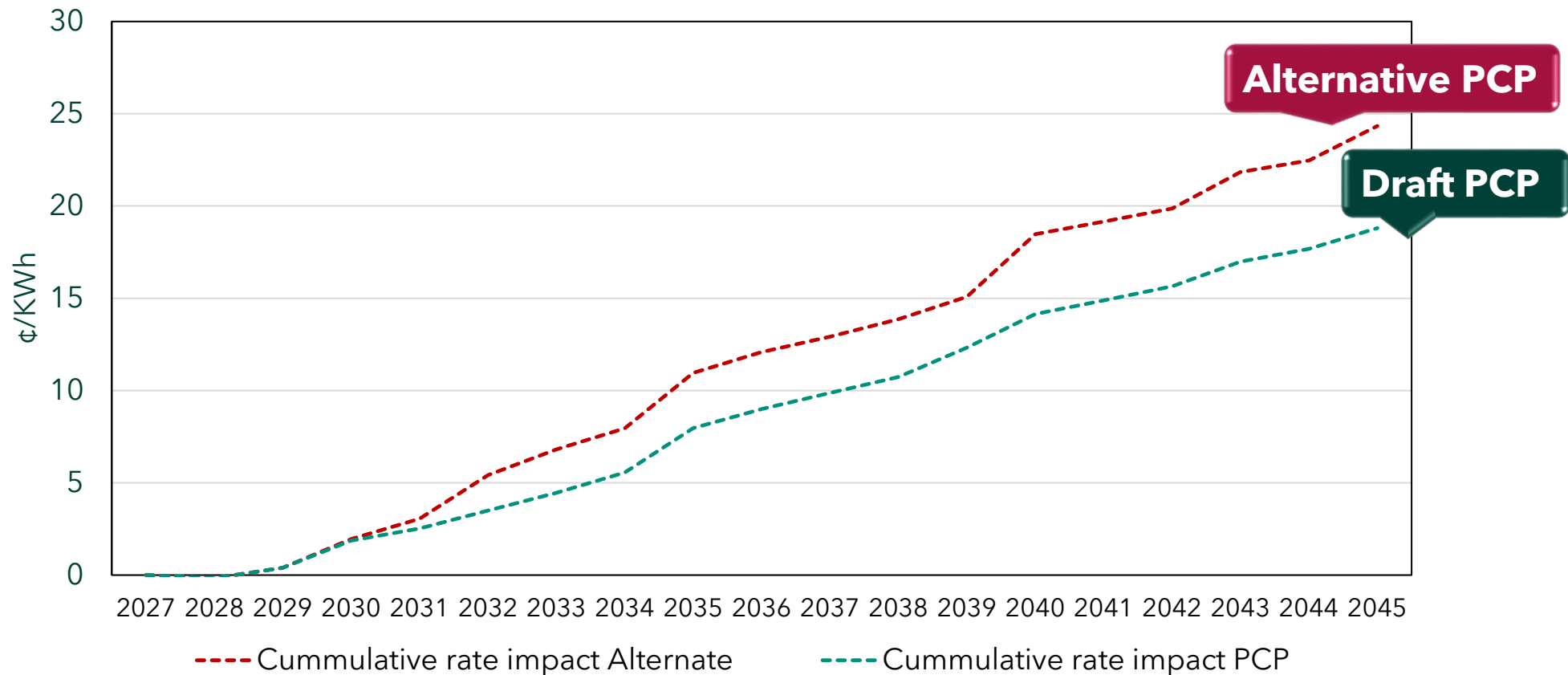


If MCE built this exact portfolio, all else equal, based on current cost assumptions MCE's generation rate would increase 194% by 2045.

*All future rate changes would require board approval and actual net cost and rate impacts would be dependent on all costs and revenues.

Affordability & Cost Impacts Comparison

Portfolio Rate Impacts Comparison (% Change)



***All future rate changes would require board approval and be dependent on many factors.**

Draft Alternative Conforming Portfolio

- Given the scarcity of resources like geothermal and wind, the price and cost impact of the resources will make them difficult to procure and costly for MCE's customers.
- Accordingly, Staff has not selected this portfolio as its Draft PCP.

New Resource Additions (Nameplate capacity)			
Resource Type	Draft PCP (MW)	Alternative Draft PCP (MW)	Change
Battery Storage	2,115	2,398	+283
Geothermal	96	395	+299
Solar	1,514	1,412	-102
Wind	801	900	+99
Total	4,527	5,106	+579

Looking Ahead: MCE will continue to invest in clean RA resources, while balancing across all other Guiding Principles. MCE is committed to continuous discussion on its clean RA efforts.

Next Steps

Recommendation

- Staff invites feedback on its 2026 IRP guiding principles and Draft PCP.

Proposed Next Steps

- June/July - Refine PCP and complete 2026 IRP based on feedback received today
- July - Proposed 2026 IRP for Board consideration and approval
- August 10 - Final IRP Submission to CPUC

Thank you!



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info@mceCleanEnergy.org



**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

FILED

11/01/22

01:50 PM

R2005003

Order Instituting Rulemaking to Continue
Electric Integrated Resource Planning and
Related Procurement Processes.

Rulemaking 20-05-003

**MARIN CLEAN ENERGY
2022 INTEGRATED RESOURCE PLAN
(PUBLIC VERSION)**

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November 1, 2022

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Continue
Electric Integrated Resource Planning and
Related Procurement Processes.

Rulemaking 20-05-003

**MARIN CLEAN ENERGY
2022 INTEGRATED RESOURCE PLAN
(PUBLIC VERSION)**

In accordance with the requirements of California Public Utilities Code Sections 454.51 and 454.52, Ordering Paragraph 14 of the California Public Utilities Commission’s (“Commission”) *Decision Adopting 2021 Preferred System Plan* (“D.22-02-004”), and the June 15, 2022 *Administrative Law Judge’s Ruling Finalizing Load Forecasts and Greenhouse Gas Emissions Benchmarks for 2022 Integrated Resource Plan Filings*, Marin Clean Energy (“MCE”) hereby submits its 2022 Integrated Resource Plan (“IRP”) and related documents to the Commission for certification.

Attached to this filing are the following documents associated with MCE’s 2022 IRP:

- Attachment A - Standard Load-Serving Entity Plan (Public);
- Attachment B – 25 MMT Resource Data Template (Public);
- Attachment C – 30 MMT Resource Data Template (Public);
- Attachment D – 25 MMT Clean System Power Calculator;
- Attachment E – 30 MMT Clean System Power Calculator; and
- Attachment F - MCE October 20, 2022 Board Meeting Agenda.

MCE has developed both public (redacted) and confidential (unredacted) versions of its Load-Serving Entity Plan (i.e., narrative), 25 MMT Resource Data Template, and 30 MMT Resource Data Template. Concurrent with this filing, MCE is filing a motion to file the confidential materials under seal and will submit the confidential versions of these documents to the Commission through secure FTP.

MCE thanks the Commission for its time and effort in the 2022 IRP cycle and respectfully requests the Commission certify its 2022 IRP as consistent with the requirements of Sections 454.52(b)(3) and 454.51(d) and (e) of the California Public Utilities Code and Commission direction.

Respectfully submitted,

/s/ Ann C. Springgate

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November 1, 2022


*Counsel to
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VERIFICATION

I, Dawn Weisz, am the Chief Executive Officer of Marin Clean Energy (“MCE”), a California joint powers authority, and I am authorized to make this Verification on MCE’s behalf. The statements in the documents included in MCE’s *2022 Integrated Resource Plan* and attached hereto are true of my own knowledge, except as to matters that are therein stated on information or belief, and as to those matters, I believe them to be true. The spreadsheet formats used in the supporting documents used to file this report have not been altered from the version issued or approved by the California Public Utilities Commission’s Energy Division.

I declare under penalty of perjury that the preceding is true and correct.

Executed on October 28, 2022 at San Rafael, California

DocuSigned by:

A59878416EBC4F8...
Dawn Weisz

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ATTACHMENT A

Standard LSE Plan

MARIN CLEAN ENERGY
2022 INTEGRATED RESOURCE PLAN
NOVEMBER 1, 2022

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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. MCE’s mission is to confront the climate crisis by eliminating fossil fuel greenhouse gas (“GHG”) emissions, producing renewable energy, and creating equitable community benefits. MCE’s vision is to lead California to an equitable, clean, affordable, and reliable energy economy by serving as a model for community-based renewable energy, energy efficiency, and cutting-edge clean-tech products and programs.

As a load-serving entity (“LSE”), MCE provides electricity generation service to approximately 580,000 customer accounts. These accounts represent more than one million residents and businesses across four Bay Area counties.¹ MCE procures for annual retail sales of approximately 5,729 GWh and a peak load of more than 1,240 MW.

MCE provides service to approximately 87% of eligible customers within its service area, which is depicted in Figure 1, below. MCE is also the default generation provider for any new or relocated customers therein.²

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

² MCE expanded service to the city of Fairfield in April 2022. This expansion is reflected in MCE’s Commission-assigned load forecast. Expansion to additional communities may occur during the planning period.



Figure 1: Service Area Map

As a JPA and local government agency, MCE is governed by a 31-member Board of Directors (“Board” or “Governing 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 to empower 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 conservations 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 Board via MCE’s annual Operational Integrated Resource Plan (“Operational IRP”).³ Since 2014, MCE has prepared an annual 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 Operational IRP is well-aligned with the biennial Compliance IRP submitted to the California Public Utilities Commission (“Commission” or “CPUC”) for certification pursuant to Cal. Pub. Util. Code Section 454.52(b)(3).⁴ These two IRPs are developed concurrently in even years and describe 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.

Introduction to MCE’s Compliance IRP

In accordance with the requirements of Sections 454.51 and 454.52, Commission Decisions (“D.”) 22-02-004, D.21-06-035, D.19-11-016, D.18-02-018, and formal guidance provided by the Commission’s Energy Division,⁵ MCE is filing 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 30 MMT Resource Data Template;
- MCE’s 25 MMT Resource Data Template;
- MCE’s 30 MMT Clean System Power Calculator; and
- MCE’s 25 MMT Clean System Power Calculator.

³ The current *MCE 2022 Operational Integrated Resource Plan* was approved by MCE’s Technical Committee in November 2021 and is available on MCE’s website: <https://www.mcecleanenergy.org/energy-procurement/>. MCE is developing its 2023 Operational Integrated Resource Plan concurrently with this Compliance IRP. The 2023 OIRP is scheduled to be reviewed and approved by MCE’s Technical Committee in November 2022.

⁴ All further citations to statute are to the California Public Utilities Code unless otherwise noted.

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 *LSE Filing Requirements RESOLVE Results* (issued June 15, 2022); *Filing Requirements Overview* (updated July 15, 2022); *Filing Requirements Questions and Answers* (updated September 23, 2022); *Clean System Power Calculator Documentation* (updated July 15, 2022); *Resource Data Template v3 User Guide* (updated September 23, 2022); and *Aggregated CAM Resources for LSEs Plan Development* (issued September 29, 2022).

As provided for in D.22-02-004 and described in Commission Guidance documents, MCE is submitting a single conforming portfolio (“Preferred Conforming Portfolio”) as part of its Compliance IRP, which meets the following GHG emissions limits:

1. A portfolio that achieves emissions that are equal to or less than MCE’s proportional share of the 38 MMT by 2030 and 30 MMT by 2035 GHG targets (“30 MMT Conforming Portfolio”); and
2. A portfolio that achieves emissions that are equal to or less than MCE’s proportional share of the 30 MMT by 2030 and 25 MMT by 2035 GHG targets (“25 MMT Conforming Portfolio”).

Projecting resource needs over the planning horizon covered by the IRP is an inexact exercise and is inevitably and appropriately subject to change in terms of both amounts procured and types of resources needed. MCE’s portfolio of resources generally includes (a) existing and operating resources that are under contract with MCE; (b) resources that MCE has contracted for, but that have not achieved commercial operation; and (c) future resources that MCE will need to procure to meet its agency targets and goals over both the mid- and long-term. 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. As such, the ultimate resource mix MCE procures may differ from what is reflected in this Compliance IRP due to a number of variables including regulatory changes, availability of supply, price of supply, and/or other market or regulatory considerations. What MCE expects to remain constant, however, is its aggressive trajectory towards procuring a diverse resource mix that meets MCE’s reliability and customer needs and minimizes reliance on GHG-emitting resources for both energy and capacity.

MCE’s Preferred Conforming Portfolio

MCE’s Preferred Conforming Portfolio (“PCP”) is described in detail below and is represented in MCE’s Resource Data Template, version 3 (“RDT”) for both the 30 MMT Conforming Portfolio and the 25 MMT Conforming Portfolio, respectively. The PCP has been approved by MCE’s Chief Executive Officer and Governing Board as: (a) reflective of MCE’s actual planned procurement as of the filing of this Compliance IRP; (b) consistent with MCE’s statutory obligations; (c) consistent with the Commission’s IRP framework and guidelines, including the Preferred System Plan (“PSP”); (d) consistent with the Commission’s reliability requirements; and (c) consistent with MCE’s internal short-, mid-, and long-term procurement plans and internal procurement policies. MCE’s PCP comes in under its assigned portion of the 25 MMT

and 30MMT system emissions targets. MCE's PCP was approved by MCE's governing Board on October 20, 2022 and is being provided to the Commission for certification consistent with Section 454.52(b)(3).

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."⁶ The Commission has likewise recognized that the Legislature has granted CCAs autonomy in setting their own rates and managing interactions with their customers.⁷ 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;⁸
- Ensuring that CCAs' current and planned procurement is consistent with the resource adequacy ("RA") requirements established pursuant to Section 380;⁹ and
- Ensuring that each CCA contributes to grid reliability and GHG emissions reductions through the procurement of long-term renewable integration resources.¹⁰

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.

⁶ Section 366.2(a)(5).

⁷ 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.").

⁸ 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.

⁹ Section 454.52(b)(3)(C).

¹⁰ Section 454.51.

b. Summary of Findings

This narrative provides a detailed description of: (a) the development and content of MCE's PCP; (b) the PCP's compliance with applicable requirements; and (c) an Action Plan detailing MCE's planned next steps to implement its plan.

MCE developed its Compliance IRP through the following steps:

- MCE compiled data for its existing energy-only contracts, bundled energy and capacity contracts, RA capacity contracts, and its share of capacity for allocated Cost Allocation Mechanism ("CAM") and Demand Response resources;
- For each IRP planning year, MCE identified its short positions relative to MCE's planning targets in relation to its assigned load forecast;
- MCE populated the RDTs with all current contracts;
- MCE compiled information on projects for which it is currently negotiating power purchase agreements ("PPA"), including information regarding project status and timing;¹¹
- MCE identified future contracts it expects for new geothermal, storage, and wind generation. MCE prioritized the selection of future resources that best fit MCE's portfolio and that meet or exceed MCE's proportional share of planned new procurement;
- MCE added generic future contracts with existing resources to help fill its remaining open positions;
- MCE used the Commission's Clean System Power ("CSP") 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 30 MMT and 25 MMT benchmarks;
- MCE identified the resulting portfolio as its Preferred Conforming Portfolio or PCP; and
- MCE checked its PCP for reliability by comparing the total portfolio Net Qualifying Capacity ("NQC") against MCE's forecast RA requirements for the month of September in each year of the planning period.

MCE reached the following findings regarding its PCP:

- MCE's PCP includes the procurement of the following new resources and nameplate capacities over the course of the planning horizon:

¹¹ In the interest of providing the Commission as much current information as possible, MCE's RDTs include information on projects under negotiation to the extent commercially reasonable and feasible. MCE asserts, though, the information provided for such projects is subject to change pending final execution of agreements.

- New wind resources totaling 265 MW;¹²
- New geothermal resources totaling 109 MW;
- New hybrid resources totaling 212 MW of solar generation and 153 MW of storage;
- New grid connected battery storage of 400 MW;
- New Demand Response resources of 15 MW; and
- New long-duration storage¹³ of 90 MW;
- MCE's PCP provides for the following overall resource mix in 2035:
 - Large hydro-electric of 525 GWh;
 - Imported hydro-electric of 120 GWh;
 - Small hydro-electric of 69 GWh;
 - Biogas/biomass of 46 GWh;
 - Geothermal of 1,785 GWh;
 - California wind of 1,014 GWh;
 - Out-of-state wind of 250 GWh;
 - Offshore wind of 400 GWh;
 - California solar of 1,155 GWh;
 - Distributed solar of 13 GWh;
 - Hybrid solar and storage of 596 GWh; and
 - Standalone battery storage of 2,117 MWh (capacity x duration).
- Using the 30 MMT scenario CSP calculator, MCE's PCP would have 2030 emissions of 0.500 MMT and 0.514 MMT in 2035.¹⁴ This is lower than MCE's assigned share of 2030 and 2035 emissions (0.848 MMT and 0.630 MMT, respectively).
- Using the 25 MMT scenario CSP calculator, MCE's PCP would have 2030 emissions of 0.493 MMT and 0.492 MMT in 2035. This is lower than MCE's assigned share of 2030 and 2035 emissions (0.640 MMT and 0.504 MMT, respectively).
- MCE's PCP meets all Commission-provided reliability metrics.
- MCE's PCP provides more than MCE's load-proportional share of renewable integration resources.

MCE has selected its PCP because it appropriately balances Board directives, MCE's program

¹² This 265 MW of new wind resources consists of in-state, out-of-state, and off-shore wind in the following amounts: 100 MW of in-state wind; 70 MW of out-of-state wind; and 95 MW of off-shore wind.

¹³ MCE is currently interested in long-duration storage resources with at least 8 hours of duration at full capacity.

¹⁴ MCE notes that the increase in emissions from 2030 to 2035 results from an increase in use of system power attributable to a decrease in allocated generation from Combined Heat and Power resources, as well as increases in the volume of curtailments and exports modeled.

goals, cost constraints, reliability, and customer rate impacts. Specifically, the PCP adheres to MCE Board Policy to achieve an 85% renewable energy content by 2035¹⁵ and minimize GHG emissions through use of a combination of renewable energy and other low carbon energy sources.¹⁶

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

- 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 (i) short-term renewable energy, (ii) large hydro-electric and Asset Controlling Supply (“ACS”), (iii) RA, and (iv) 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
- Continuing to develop and offer customer programs that shed load, including aggregated load shift from business and residential customers.

II. Study Design

a. Objectives

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

1. Identify a portfolio that meets MCE’s goals for renewable energy utilization and GHG emission minimization and that has GHG emissions no greater than MCE’s proportional share of the 38 MMT 2030 GHG Emissions Benchmark and 25 MMT 2035 GHG Emissions Benchmark, as determined using the CSP calculator;
2. Identify a portfolio that achieves economic, reliability, environmental, security, and

¹⁵ This assumes a certain amount of curtailment as dictated by the CSP. Without the curtailments assigned by the CSP calculator, MCE’s renewable generation would be approximately 87%. To account for curtailment, MCE uses short-term contracts to balance its portfolio and meet its goals and obligations. This ensures that unrealized or curtailed generation is accounted for.

¹⁶ See MCE’s 2022 Operational Integrated Resource Plan available here: <https://www.mcecleanenergy.org/energy-procurement/>.

other benefits and performance characteristics that are consistent with the goals set forth in Section 454.52(a)(1) (A-I);

3. Identify a diverse and balanced portfolio that includes both short-term and long-term electricity, electricity-related, and demand reduction and management products;
4. Identify a portfolio that achieves the RA requirements established pursuant to Section 380 and fully provides MCE's share of system reliability and renewable integration resources;
5. Identify a portfolio that fully complies with all MCE Board-adopted procurement directives;
6. Identify portfolios that are fully compliant with MCE's obligations under the Renewable Portfolio Standard ("RPS") program; and
7. Identify portfolios that are cost-effective and minimize rate impacts on MCE's customers.

b. Methodology

i. Modeling Tool(s)

In developing its PCP, 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.¹⁷

Portfolio reliability was evaluated using forward-looking Effective Load Carrying Capacity ("ELCC") values for each resource type to assess total NQC of the portfolio relative to MCE's reliability requirements. This approach ensures MCE contributes to grid reliability commensurate with its share of system reliability needs.

For new resource selection where specific projects have not yet been identified in MCE's procurement process, MCE relied upon the modeling and assumptions in RESOLVE as well as MCE's recent procurement experience. Both provide insight into resource availability and cost.

¹⁷ Hitachi Energy TRMTracker.

MCE considered resource cost as well as portfolio fit (*i.e.*, how new resources would complement existing portfolio resources to reliably serve MCE’s load shape, while minimizing GHG emissions).

GHG emissions were assessed using the Commission’s CSP calculator for the 30 MMT and 25 MMT variations.

ii. Modeling Approach

Load Forecast

MCE developed its Compliance IRP using its assigned load forecast pursuant to the June 15, 2022, *Administrative Law Judge’s Ruling Finalizing Load Forecasts and Greenhouse Gas Benchmarks for 2022 Integrated Resource Plan Filings* (“Load Forecast Ruling”). MCE’s assigned load forecast used in this Compliance IRP is as follows:

Table 1: MCE’s 2023-2035 Load Forecast

Year	Load Forecast (GWh)
2023	5,729
2024	5,759
2025	5,756
2026	5,759
2027	5,767
2028	5,795
2029	5,827
2030	5,955
2031	5,983
2032	6,040
2033	6,040
2034	6,067
2035	6,099

Load Shape

In developing its portfolio MCE used the default load shape from the CSP calculator. 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.

Compiling Existing Resources

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

- Existing and planned energy contracts, including MCE’s election of renewable resources through the Voluntary Allocation and Market Offer (“VAMO”) process;
- Existing and planned capacity RA contracts;
- MCE’s assigned share of capacity for CAM and Demand Response resources, taken from the most recent year-ahead CAM resource allocations provided to MCE on September 29, 2022;¹⁸ and
- Expected allocations of GHG-free energy from the Pacific Gas & Electric Company (“PG&E”) portfolio.

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 (i) resource need (*i.e.*, open positions), (ii) long-term renewable contracting requirements, (iii) RPS requirements, (iv) RA requirements, (v) the need for incremental RA capacity to contribute to system reliability and renewable integration needs, (vi) the potential for technological improvements, (vii) financial considerations, and (viii) 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 PSP portfolio.

Confirming Reliability

MCE’s portfolios were evaluated to ensure that sufficient dependable NQC is available to meet peak load requirements plus the required planning reserve margin. MCE used forward looking technology specific 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 to ELCC factors and NQC of its planned resources. MCE’s PCP was designed to ensure that current incremental RA capacity obligations are met, and that MCE contributes to new resource

¹⁸ MCE’s CAM and Demand Response allocations reflect the information provided in the *Aggregated CAM Resources for LSEs Plan Development* (“Aggregated CAM Guidance”), issued September 29, 2022, available at <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/2022-irp-cycle-events-and-materials>.

development to address fossil fuel retirements, the decommissioning of the Diablo Canyon Power Plant (“DCPP”),¹⁹ and integration of renewable resources.

Calculating GHG Emissions

MCE calculated the emissions associated with its PCP using the Commission’s CSP calculators. 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 PCP results in 2030 emissions of 0.500 MMT and 0.514 MMT in 2035²⁰ under the 30 MMT scenario, and 2030 emissions of 0.493 MMT and 0.492 MMT in 2035 under the 25 MMT scenario.

III. Study Results

a. Conforming and Alternative Portfolios

Pursuant to Commission direction,²¹ MCE is submitting one PCP because this portfolio meets the requirements of both the 30 MMT and 25 MMT system plans. As required, MCE presents this singular PCP separately in both the 30 MMT and 25 MMT RDTs and CSP calculators, respectively. MCE is not presenting Alternative Portfolios.

To meet MCE’s projected 2035 electricity demand of 6,099 GWh, MCE has selected a 2035 PCP composed primarily of the resource types and energy volumes detailed below.²²

Table 2: MCE’s 2035 PCP Resources

Resource Category	Under Development	Owned or Contracted	Planned Existing	Planned New	Under Review	Total
Battery Storage (GWh Energy Capacity)	24	-	-	2	-	
Biogas (GWh)	-	30	-	-	-	30

¹⁹ Pursuant to Senate Bill 846, MCE’s planning for purposes of this Compliance IRP assumes the current retirement and decommissioning schedule for DCP.

²⁰ MCE notes that the increase in emissions from 2030 to 2035 results from an increase in use of system power attributable to a decrease in allocated generation from Combined Heat and Power resources, as well as increases in the volume of curtailments and exports modeled.

²¹ Load Forecast Ruling issued June 15, 2022.

²² Residual energy needs are assumed to come from unspecified system energy purchases.

Biomass (GWh)	-	-	16	-	-	16
Geothermal (GWh)	-	-	149	580	1,056	1,785
Hybrid or Paired Solar and Battery (GWh)	596	-	-	-	-	596
Imported Hydro (GWh)	-	-	120	-	-	120
Large Hydro (GWh)	-	25	500	-	-	525
Small Hydro (GWh)	-	37	32	-	-	69
Solar Distributed (GWh)	13	-	-	-	-	13
Solar Existing California (GWh)	18	1,058	79	-	-	1,155
Wind Existing California (GWh)	-	-	374	-	87	461
Wind New Mexico (GWh)	-	-	-	250	-	250
Wind New PG&E (GWh)	290	-	-	-	-	290
Wind Offshore Morro Bay (GWh)	-	-	-	400	-	400
Wind New SCE SDG&E (GWh)	-	-	-	-	263	263

Additionally, MCE's 2035 PCP includes capacity-only resources composed primarily of the following:

- CAM, and Demand Response allocations – 48 MW²³
- Existing natural gas and other (planned procurement) – 549 MW

MCE's portfolio includes a mix of existing and new resources. MCE's 2035 portfolio is composed of approximately 1,383 MW of new nameplate capacity, reflecting MCE's role as an active participant 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 commitment to supporting the State's need for reliability and renewable integration.

MCE's PCP Is Consistent with the 2021 PSP

The new resources included in MCE's PCP are generally consistent with the 2021 PSP's 2035 new resource mix as adopted in D.22-02-004, as updated,²⁴ for both the 38 MMT and 30 MMT scenarios. There are, however, certain notable differences that reflect portfolio needs and resource selection that are unique to MCE.

As demonstrated in Table 3, below, MCE's PCP includes proportionately more new resources than would be indicated by MCE's proportional share of *new procurement* for each of the resource types identified in the adopted 2021 PSP.²⁵ Under this scenario, MCE's portfolio includes considerably more wind, geothermal and storage resources, and less utility-scale solar resources than does the 38 MMT PSP scenario.

Importantly, Table 3 also demonstrates the PCP's general consistency with procurement types and amounts in the 30 MMT PSP scenario. Notably, however, MCE's PCP consists of fewer MW of procurement and different resource proportions relative to the 30 MMT PSP

²³ MCE's CAM and Demand Response allocations reflect the information provided in the Aggregated CAM Guidance issued September 29, 2022.

²⁴ *LSE Plan Filing Requirements RESOLVE Modeling Results* at 16, issued June 15, 2022, available at <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/lse-filing-requirement-resolve-results.pdf>.

²⁵ D.22-02-004 adopts the 38 MMT GHG target as the 2021 PSP. However, the Decision also requires LSEs to submit plans for how they would reach the 30 MMT GHG target or lower. Further, as clarified in the *Administrative Law Judge's Ruling Finalizing Load Forecasts and Greenhouse Gas Emissions Benchmarks for 2022 Integrated Resource Plan Filings*, issued June 15, 2022, LSEs whose portfolios go below the 30 MMT GHG target are only required to submit one PCP.

scenario. Despite these deviations, MCE’s PCP: (a) meets the lower emissions targets in the 30 MMT PSP scenario as demonstrated in MCE’s CSP tool, (b) meets MCE’s projected load and energy needs as reflected in Table 2, and (c) meets the reliability requirements as demonstrated in the Reliability tabs in MCE’s RDTs and Section III.f, below. This is due to MCE’s PCP being weighted more heavily towards procurement of resources with high-capacity factors and being substantially less reliant on utility scale solar, which is assigned a significantly lower capacity factor. The PCP reflects MCE’s plans to invest in clean baseload, wind, and storage resources over the course of the planning horizon that complement the existing level of solar resources in MCE’s portfolio. MCE sees this portfolio as being the most efficient and cost-effective means of meeting MCE’s emissions and reliability needs.

Table 3: MCE’s PCP New Resource Procurement by Type Compared to 2021 PSP

Resource Type	38 MMT PSP Scenario New Resources (MW) ²⁶	MCE Load-Proportional Share of 38 MMT PSP New Resources (MW)	30 MMT PSP Scenario New Resources (MW) ²⁷	MCE Load-Proportional Share of 30 MMT PSP New Resources (MW)	MCE’s PCP (MW)
Natural Gas	0	0	0	0	0
Biomass	134	4	134	4	0
Geothermal	1,135	30	1,135	30	109
Wind	3,562	95	4,270	114	191
Wind on New Out-of State Transmission	4,636	124	4,828	129	70
Offshore Wind	4,707	126	4,707	126	95

²⁶ As described in the filing requirements provided by the Commission, this PSP portfolio is referred to in other contexts as the 30 MMT Conforming Portfolio.

²⁷ As described in the filing requirements provided by the Commission, this PSP portfolio is referenced in other contexts as the 25 MMT Conforming Portfolio.

Utility-Scale Solar	17,418	465	21,794	582	222 ²⁸
Battery Storage	17,350	463	17,742	474	559
Pumped (Long-Duration) Storage	1,000	27	1,000	27	90
Shed Demand Response	977	26	767	20	15
Total	50,919	1,360	56,377	1,505	1,351

The differences between MCE’s share of the 2021 PSP New Build Resources and the resources in MCE’s PCP, under either the 38 MMT or 30 MMT scenarios, reflect MCE’s planned contributions to new resource development during the 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 using the most cost-effective and efficient portfolio of resources.

b. Preferred Conforming Portfolio

MCE’s PCP consists of a combination of:

- Utility-scale solar;
- In-state wind;
- Out-of-state wind;
- Off-shore wind;
- Short-duration storage;
- Long-duration storage;
- Small and large hydro-electric;
- Geothermal;
- Biomass/biogas;
- Shed Demand Response; and
- Natural gas/other (capacity only).

²⁸ This represents 212 MW of solar hybrid procurement and 10 MW of new utility-scale solar procurement.

MCE's PCP consists of the following specific compilation of resources:

- MCE's PCP includes the procurement of the following new resources and nameplate capacities over the course of the planning horizon:
 - New wind resources totaling 265 MW (consisting of in-state, out-of-state, and off-shore wind);
 - New geothermal resources totaling 109 MW;
 - New hybrid resources totaling 212 MW of solar generation and 153 MW of storage;
 - New grid connected battery storage of 400 MW;
 - New Demand Response resources of 15 MW; and
 - New long-duration storage²⁹ of 90 MW;
- MCE's PCP provides for the following overall resource mix in 2035:
 - Large hydro-electric of 525 GWh;
 - Imported hydro-electric of 120 GWh;
 - Small hydro-electric of 69 GWh;
 - Biogas/biomass of 46 GWh;
 - Geothermal of 1,785 GWh;
 - California wind of 1,014 GWh;
 - Out-of-state wind of 250 GWh;
 - Offshore wind of 400 GWh;
 - California solar of 1,155 GWh;
 - Distributed solar of 13 GWh;
 - Hybrid solar and storage of 596 GWh; and
 - Standalone battery storage of 2,117 MWh (capacity x duration).

As stated above, in accordance with Section 454.51(b)(3), the resource mix in MCE's 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 below.

Meeting GHG Reduction Goals

MCE's PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(A) goal of meeting the Commission's 30 MMT or 25 MMT GHG reduction benchmark. MCE's proportional share of the 30 MMT benchmark is 0.848 MMT in 2030 and 0.630 MMT in 2035. According to the Commission's emissions calculator for the 30 MMT

²⁹ MCE is currently interested in long-duration storage resources with at least 8 hours of duration at full capacity.

scenario, MCE's PCP would account for 0.500 MMT of emissions in 2030 and 0.514 MMT of emissions in 2035.³⁰ MCE's proportional share of the 25MMT benchmark is 0.640 MMT in 2030 and 0.504 MMT in 2035. According to the Commission's CSP calculator for the 25 MMT scenario, MCE's PCP would account for 0.493 MMT of emissions in 2030 and 0.492 MMT of emissions in 2035.

Procuring Eligible Renewable Energy

MCE's PCP achieves results and performance characteristics consistent with the goals of Sections 454.52(a)(1)(B) & (F) of ensuring that portfolios are composed of at least 50% eligible renewable resources and displacing fossil fuels within the state. In 2035 MCE's PCP portfolio would consist of 87% eligible renewable generation. To this end, MCE has executed a number of long-term PPAs with new, California-based generating facilities that will produce Portfolio Content Category ("PCC") 1-eligible renewable energy in excess of the 2030 requirement. Of the targeted 87% eligible renewable generation in 2035, 44.5% is under long-term contracts in 2030, and 33.6% in 2035. The remaining 42.5% and 53.4%, respectively, will be filled with long-term contracts that are currently under negotiations and/or planned as shown in both the CSPs and RDTs.³¹

To supplement its core procurement of PCC 1 resources under long-term contracts for its PCP, MCE engages, and will continue to engage, in short-term contracts for renewable energy supplies to balance and optimize its PCP. As of this filing, MCE has secured contracts for renewable energy volumes in excess of applicable California RPS procurement requirements through 2025, and long-term contracting requirements through 2030.

Minimizing Bill Impact

MCE's 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 prioritizes use of renewable energy and low carbon emitting resources, reliability, and cost competitiveness.

³⁰ MCE notes that the increase in emissions from 2030 to 2035 results from an increase in use of system power attributable to a decrease in allocated generation from Combined Heat and Power resources, as well as increases in the volume of curtailments and exports modeled.

³¹ Historically, MCE has contracted with PCC 1 resources located in California. However, some resources located outside California are eligible for PCC 1, typically through direct interconnection or firm transmission rights to the CAISO. Although MCE has an established preference for in-state resources, contracting with out-of-state PCC 1-qualified resources is likely to the extent that they offer increased value or other desirable portfolio attributes during the planning period.

Energy and RA costs have risen sharply in recent years, and rising wholesale energy costs have placed upward pressure on customer rates. New build renewable development and storage costs have also seen substantial increases since the last IRP cycle due to a confluence of unprecedented amounts of mandated procurement on strict timelines, limited transmission capacity to support new projects, supply chain constraints, and inflationary pressures. At the same time, prices in the short-term markets for renewable energy and RA have also increased significantly resulting from increasing incidents of resource scarcity during peak hours and more numerous and extensive extreme weather events. MCE will take steps to minimize bill impacts, but near-term rate increases may be necessary to accommodate increased procurement costs.

Despite recent cost increases for new generation and storage associated with its resource plan, bill impacts can be at least partially mitigated by the fact that new renewable generation projects can have lower net costs than the prices paid in the short-term renewable energy and resource adequacy markets. In evaluating new resource commitments, MCE seeks generation and/or storage projects that meet portfolio fit considerations and that have positive net present value in consideration of expected contract costs and the value of the energy, reliability, and environmental attributes provided by the project. Such projects help reduce customer costs relative to alternative sources of energy and capacity. Further, MCE's PCP minimizes exposure to volatile natural gas prices and the bill impacts that can result from periodic spikes in fossil fuel prices.

Specific estimates of MCE's average portfolio costs through 2035 are provided in Section III.e., below.

Ensuring System and Local Reliability

MCE's PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(E) goal of ensuring system and local reliability on both a near- and long-term basis. The PCP meets system RA requirements as detailed in Section III.f. MCE's PCP is reliable from both an MCE-specific and systemwide perspective under the 30 MMT and 25 MMT Scenarios. The PCP would provide adequate energy storage and RA capacity to meet MCE's generation needs 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 materially impacted by whether other parties procure consistent with the 30 MMT or 25 MMT target. As discussed in Section III.f., MCE's PCP includes sufficient NQC to meet peak loads and reserve margins regardless of whether other load serving entities procure to the 25 MMT or 30 MMT benchmark targets. If other LSEs procure in accordance with a 25 MMT GHG target, the NQC and contribution to reliability of MCE's PCP would increase by an average of 10 MW.

Based on results from the CSP calculator, MCE should expect more hours of curtailment for its renewable resources, greater use of system power, and higher emissions of GHG and local pollutants in the 30 MMT scenario as compared to the 25 MMT scenario; however, these differences are small relative to the size of MCE’s planned portfolios and would have no meaningful impact on reliability.

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.

Strengthening the Bulk Transmission and Distribution Systems

MCE’s PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(G) goal of strengthening the diversity, sustainability, and resilience of the bulk transmission and distribution systems. MCE does not own, operate, or maintain the bulk transmission or distribution systems. However, MCE’s procurement of strategically located renewable generation, prioritization of local renewable generation, demand-side management efforts, and investment in distribution-side resources all serve to enhance the sustainability and resiliency of the bulk transmission and distribution systems.

Enhancing Demand-Side Energy Management

MCE’s PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(H) goal of enhancing demand-side energy management. MCE’s PCP includes MCE’s allocation of capacity through the demand-side management programs operated by PG&E. MCE operates a variety of energy efficiency and demand response programs, including MCE’s PeakFlex Market.³²

Additionally, MCE is working to develop a pilot Virtual Power Plant (“VPP”) within the City of

³² See <https://www.mcecleanenergy.org/market/>.

Richmond. This effort will install a suite of privately-owned distributed energy resources (“DERs”) to be dispatched into the VPP, such as rooftop solar, heat pump water heaters, smart thermostats, smart plugs, electric vehicles, and energy storage. These will send data directly to MCE and can be remotely controlled and operated together to pull power to and from the grid at strategic times, creating pockets of power to support and decarbonize the grid.

The goal of Richmond Advanced Energy Community is to connect 120 sites to the VPP including 10 rehabilitated homes, 90 homes occupied by low-to-middle income residents (which have already received solar systems from GRID Alternatives), 18 commercial sites, and 2 industrial sites. Combined, the 120 sites are expected to contribute 1 MW of solar, 2 MWh of energy storage, and 1.5 MW of flexible load by December 2024.

The VPP will allow MCE to aggregate and dispatch DERs to manage critical peak loads, minimize procurement costs, and - as market opportunities evolve - generate value in wholesale markets. Participants may not be enrolled in other DER aggregation or demand response programs. Participants will receive modern appliances, bill savings, and bill credits.

MCE plans to expand this program to monitor and control other customer owned DERs.

Minimizing Localized Air Pollutants with Emphasis on Disadvantaged Communities

MCE’s PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(I) goal of minimizing localized air pollutants and other GHG emissions with early priority on disadvantaged communities (“DACs”). MCE’s PCP relies primarily on renewable generation and would have low GHG and localized air pollution emissions. Further, MCE’s PCP minimizes MCE’s reliance on unspecified system power, instead opting for renewable generation, hydro generation, local energy storage, and local demand side reduction programs.

Results from the 30 MMT CSP calculator indicate the following localized air pollutants associated with MCE’s PCP in 2035:

- NOx: 68 tonnes/yr
- PM 2.5: 31 tonnes/yr
- SO2: 7 tonnes/yr

Results from the 25 MMT CSP tool indicate the following localized air pollutants associated with MCE’s PCP in 2035:

- NOx: 64 tonnes/yr
- PM 2.5: 28 tonnes/yr

- SO2: 7 tonnes/yr

These emissions derive primarily from system energy and CHP resources assigned to the MCE portfolio by the CSP calculator, as well as from relatively small amounts of biogas/biomass resources included in the PCP. MCE’s four existing biogas energy sources are not located in DACs as identified in CalEnviroScreen 4.0. MCE plans to include emissions impacts on DACs as one of the criteria used for selecting specific projects for any procurement that may be assigned emissions.

c. GHG Emissions Results

GHG emissions associated with MCE’s PCP are shown below for the 30 MMT and 25 MMT Scenarios. As stated above, the emissions associated with MCE’s PCP are lower than MCE’s proportional share for both the 30 MMT and 25 MMT benchmarks.

Table 4: MCE’s PCP GHG Emissions

Scenario	Emissions Total	Unit	2024	2026	2030	2035
30 MMT	CO2	MMt/yr	0.277	0.380	0.500	0.514
25 MMT	CO2	MMt/yr	0.265	0.390	0.493	0.492

d. Local Air Pollutant Minimization and Disadvantaged Communities

i. Local Air Pollutants

Local pollutant emissions associated with MCE’s PCP are shown below for the 30 MMT and 25 MMT Scenarios:

30 MMT Scenario

Table 5: MCE’s PCP Local Pollutant Emissions (30 MMT Scenario)

Emissions Total	Unit	2024	2026	2030	2035
PM2.5	tonnes/yr	39	35	34	31
SO2	tonnes/yr	18	15	12	7
NOx	tonnes/yr	137	116	97	68

25 MMT Scenario

Table 6: MCE’s PCP Local Pollutant Emissions (25 MMT Scenario)

Emissions Total	Unit	2024	2026	2030	2035
PM2.5	tonnes/yr	38	34	33	28
SO2	tonnes/yr	18	15	12	7
NOx	tonnes/yr	137	114	95	64

In each scenario, local air pollutants associated with MCE’s electricity mix are projected to decrease. 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 PCP. MCE actively seeks out power supply technologies that minimize air pollutants including fully renewable technologies as well as hydro-electric and natural gas/battery hybrid technologies.

ii. Focus on Disadvantaged Communities

MCE’s PCP is fully consistent with the goal of minimizing local air pollutants, with early priority on DACs.

MCE’s programs illustrate that MCE takes an expansive view of its responsibilities in this area and takes efforts to minimize disadvantaged community air pollution impacts, not only in its own service area, but also in the state as a whole.

As identified by CalEPA’s designation,³³ MCE serves the following DACs:

Table 7: DACs Served by MCE

Census Tract	Nearby City	California County	ZIP Code	Total Population	MCE Residential Accounts in Census Tract	MCE Non-Residential Accounts in Census Tract	MCE Accounts in Census Tract
6013305000	Antioch	Contra Costa	94509	6561	1	104	105
6013307202	Antioch	Contra Costa	94509	4299	0	2	2

³³ [SB 535 Disadvantaged Communities | OEHHA \(ca.gov\)](#).

6013314103	Bay Point	Contra Costa	94565	5629	1,552	61	1,613
6013314104	Bay Point	Contra Costa	94565	9278	2,217	121	2,338
6013336201	Concord	Contra Costa	94520	4056	1,161	21	1,182
6013320001	Martinez	Contra Costa	94553	3671	1,092	262	1,354
6013365002	North Richmond	Contra Costa	94801	5590	1,213	126	1,339
6013302005	Oakley	Contra Costa	94561	7290	2,051	184	2,235
6013309000	Pittsburg	Contra Costa	94565	3546	1,275	175	1,450
6013310000	Pittsburg	Contra Costa	94565	6257	1,646	135	1,781
6013311000	Pittsburg	Contra Costa	94565	5329	1,473	67	1,540
6013312000	Pittsburg	Contra Costa	94565	2243	626	82	708
6013313101	Pittsburg	Contra Costa	94565	7178	2,580	491	3,071
6013313102	Pittsburg	Contra Costa	94565	4595	1,341	123	1,464
6013314102	Pittsburg	Contra Costa	94565	6561	1,184	33	1,217
6013373000	Richmond	Contra Costa	94801	4468	897	90	987
6013375000	Richmond	Contra Costa	94801	4897	1,050	96	1,146
6013376000	Richmond	Contra Costa	94801	6245	1,557	78	1,635
6013377000	Richmond	Contra Costa	94801	7323	2,123	168	2,291
6013379000	Richmond	Contra Costa	94804	7003	1,508	203	1,711
6013380000	Richmond	Contra Costa	94804	5931	2,860	380	3,240
6013381000	Richmond	Contra Costa	94804	6521	1,708	191	1,899
6013382000	Richmond	Contra Costa	94804	8159	1,540	114	1,654
6013392200	Richmond	Contra Costa	94806	11304	2,829	172	3,001
6013358000	Rodeo	Contra Costa	94572	6285	1,609	151	1,760
6013364002	San Pablo	Contra Costa	94806	5531	1,693	36	1,729

6013366001	San Pablo	Contra Costa	94806	4514	1,117	34	1,151
6013366002	San Pablo	Contra Costa	94806	6627	1,584	71	1,655
6013368001	San Pablo	Contra Costa	94806	4817	1,236	85	1,321
6013368002	San Pablo	Contra Costa	94806	3782	956	125	1,081
6013369001	San Pablo	Contra Costa	94806	7254	2,026	240	2,266
6013314200	Unincorporated Contra Costa County Area	Contra Costa	94565	7748	1,473	50	1,523
6013315000	Unincorporated Contra Costa County Area	Contra Costa	94520	3862	1,077	811	1,888
6013327000	Unincorporated Contra Costa County Area	Contra Costa	94520	7430	1,627	1,001	2,628
6095252502	Fairfield	Solano	94533	2106	596	281	877
6095250801	Unincorporated Solano County Area	Solano	94592	4135	1,079	45	1,124
6095252402	Unincorporated Solano County Area	Solano	94534	5549	1,470	361	1,831
6095253500	Unincorporated Solano County Area	Solano	94571	10676	308	323	631
6095250701	Vallejo	Solano	94590	3529	767	196	963
6095250900	Vallejo	Solano	94590	2654	1,133	344	1,477
6095251000	Vallejo	Solano	94590	2654	1,122	69	1,191
6095251200	Vallejo	Solano	94590	3663	1,068	222	1,290
6095251500	Vallejo	Solano	94590	4326	1,362	348	1,710
6095251600	Vallejo	Solano	94590	2580	1,086	123	1,209
6095251802	Vallejo	Solano	94589	2770	927	406	1,333

6095251901	Vallejo	Solano	94589	5119	1,626	73	1,699
6095251902	Vallejo	Solano	94589	6173	1,508	59	1,567

In total, MCE serves 54,897 customer accounts located within DACs. This represents approximately 9.5% of MCE’s total customer accounts (approximately 580,000).

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.

Green Access and Community Solar Connection Programs

MCE is collaborating with the Commission, Investor-owned Utilities (“IOU”), and other CCAs to develop community solar programs for customers in DACs. These programs will be supported by the development of an additional 5.92 MW of new, local, clean energy capacity.

The Green Access program will supply 100% renewable power to customers located in a DAC with an accompanying 20% bill discount. The program currently serves 3,000 customers, and MCE prioritizes customers who live in the highest scoring DACs and are currently participating in either the California Alternate Rates for Energy (“CARE”) or Family Electric Rate Assistance (“FERA”) discount program and need additional support to get caught up on their energy bills. Eligible customers will be served by this 4.64 MW solar resource once it comes online, currently expected by December 2023.

The Community Solar Connection program will offer 100% solar energy and provide a 20% discount on the electricity portion of participating customers’ energy bills. This program also involves developing a solar project within 5 miles of a DAC to serve participating customers. At least 50% of the program’s participation capacity will be reserved for customers who are enrolled in CARE or FERA discount programs. Efforts to procure the 1.28 MW solar resource for this program are currently ongoing.

MCE estimates that it will be able to provide approximately 3,500 customers in DACs with bill discounts after both programs are up and running.

Sustainable Workforce and Diversity Policy

In 2017, MCE’s Board approved a Sustainable Workforce and Diversity Policy³⁴ 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 Business Enterprises (“DVBE”) and LGBT-owned Business Enterprises (“LGBTBE”);
9. Direct use of green and sustainable businesses; and
10. Direct hiring practices that promote diversity in the workplace.

More recently, in 2022 MCE adopted Sustainable Workforce Guidelines³⁵ to create a more detailed plan for implementing its Sustainable Workforce and Diversity Policy, further demonstrating our commitment to procuring resources that benefit our customers, our planet, and our future. These guidelines outline how MCE integrates these priorities into PPAs with third parties, MCE-owned or MCE-led power generation projects, and MCE customer programs, services, supplies, and direct hiring. For example:

- When possible, MCE shall give preference to projects within MCE’s service area and to CBOs and local associations serving disadvantaged and low-income communities.
- MCE has three tiers of requirements for union labor depending on the location of proposed projects. Projects located in Contra Costa County and over 1 MW in size must adhere to the terms of the Project Labor Agreement (“PLA”) between MCE and International Brotherhood of Electrical Workers (“IBEW”) Local 302 (“MCE/IBEW PLA”). Projects within Napa, Marin, or Solano County must participate in a PLA of similar

³⁴ See MCE November 16, 2017, Board of Directors Meeting Packet, Agenda Item No. 7 Attachment A https://www.mcecleanenergy.org/wp-content/uploads/2020/05/MCE-Board-Meeting-Packet-November_2017.pdf.

³⁵ See https://www.mcecleanenergy.org/wp-content/uploads/2022/05/MCE-Sustainable-Workforce-Guidelines_05122022.pdf.

scope and requirements with participating unions for workforce hired as described in the MCE/IBEW PLA. Projects outside of MCE’s service area are encouraged to enter into project labor agreements of similar scope and requirements with participating unions for workforce as described in the MCE/IBEW PLA.

- For projects located in MCE’s service area, 50% of work hours are required to come from permanent residents who reside within the same county as the project.
- MCE will not accept any proposals for projects that rely on equipment or resources built with forced labor. MCE adopted this prohibition two years ahead of federal law, signed by President Biden in June 2022.
- Any renewable development project that is developed or owned by MCE qualifies as a public works project and requires prevailing wages to be paid.

These efforts have resulted in significant local developments. To date, MCE has helped build almost 48 MW of new renewable projects in our service area. All local projects over 1 MW were built with union labor. Additionally, in 2021 MCE launched two new community solar programs, Community Solar Connection and Green Access, both described above.

These programs offer qualifying customers living in a CalEnviroScreen-designated DAC access to 100% renewable energy and a 20% discount on their electricity bills for up to 20 years. Both programs will be supported by the development of additional new clean energy resources.

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

Ad Hoc Workforce Development

Growing the green economy, supporting local contractors, and providing access to workforce development opportunities are core to MCE’s mission. One avenue for job creation is through energy efficiency, which lowers energy consumption and can save customers money while reducing greenhouse gas pollution and producing more equitable communities. Importantly, improving the built environment through energy efficiency also creates strong job opportunities, including among populations facing additional barriers to workforce entry. Encouraging the creation of local green job opportunities is rooted in the history of MCE’s efforts to create more equitable communities, while also reducing GHG emissions through renewable energy projects and electrification of the built environment and the transportation sector. For example, MCE has:

- Partnered with the Marin City Community Development Corporation from 2012–2016

to train 59 community members and connect them to solar installation and energy efficiency jobs.

- Partnered with RichmondBUILD in 2013, 2015, and later in 2021 to help 44 job seekers develop construction, numeracy, and literacy skills, and later connect them with related jobs for MCE Solar One and an LED retrofit project for city streetlights.
- Partnered with Rising Sun Center for Opportunity in 2012 and 2016 to train youth to provide no-cost energy and water-saving assessments in the cities of Richmond, El Cerrito, and San Pablo. More recently in 2021–22, helped customize a Rising Sun training construction curriculum to train five cohorts on green construction basics and give them an intro to electrification and energy storage systems.
- Coordinated the installation of a new call center in the City of Pittsburg through its contract with Calpine in 2017, and then partnered with Future Build in Pittsburg (a county workforce development program) to train students on call center basics, call handling, energy data, and more. Graduates of the training were offered positions at the new call center.
- Partnered with GRID Alternatives in 2021 to train six job seekers from Marin City and the Canal District on solar installation skills and provided them a paid stipend for their participation, to increase access and minimize barriers.
- Sponsored a collaboration with Puertas Abiertas Community Resource Center to develop a direct connection between local hard-to-reach communities and the opportunity to inform and engage with these communities on MCE programs and services, especially those programs developed specifically for underserved populations. This program sponsorship was a workforce development opportunity for organization staff to learn more about renewable energy, energy efficiency, and environmental sustainability.

To deepen MCE’s commitment to creating equitable green jobs, MCE has been an active participant in the regional High Road Training Partnership (“H RTP”) led by the Rising Sun Center for Opportunity since 2021. The joint project aims to understand regional decarbonization labor market demands, workforce issues, and training needs; establish industry labor standards; and develop clear, accessible training pathways to building decarbonization jobs in the Bay Area, especially for entry-level and disadvantaged workers.

Together with other key partners — including the Association for Energy Affordability, Electrify My Home, Inclusive Economics, Eco Performance Builders, Building Electrification Institute, Bay Area Metro, GENTEC Services, Emerald Cities Collaborative, StopWaste, the Greenlining Institute, Construction Trades Workforce Initiative, the Cities of Berkeley and Oakland and the Association of Bay Area Governments — MCE staff collaborate and hear from leaders in the

industry to address important equity and access aspects of a renewable economy. As a member of the Equity and Public Agencies Working Groups, MCE staff work to lay the groundwork for this industry while improving agency programming.

Creating Energy Efficiency Jobs

In 2018, the CPUC awarded MCE \$2.24 million through 2025 to offer a broad spectrum of opportunities to prepare the local workforce for careers in energy efficiency. This funding allows MCE to streamline workforce investments into a sustainable pipeline of long-term green job opportunities for community members, while strengthening the local economy and contributing to a just transition to a clean energy economy. This path is especially important in communities where the fossil fuel industry has long been a primary employer for generations of families. To ensure that a decarbonized energy future provides economic opportunities for all, workforce programs like these are a necessary link to train for the skills needed to enter the green economy.

As a result, in 2020 MCE launched the Workforce, Education, and Training (“WE&T”) Program to create a geographically diverse pool of training partners able to provide job seekers with the skills necessary to be competitive in the energy efficiency and electrification sector. This program funds on-the-job training and up to 12 months of wrap-around services to support their transition to a new career in energy efficiency and electrification. While providing an onramp for job seekers, the WE&T Program concurrently allows vetted contractors working in MCE’s service area to be matched with these prequalified job seekers for 160 hours of no-cost project assistance and labor. By influencing both the supply side and demand side of this industry, MCE hopes to increase the number of skilled workers and strengthen the local labor market.

With engagement from local partners, community colleges, and the existing contractor workforce, MCE has developed an internship program to achieve the following goals:

- Upgrade the existing contractor workforce’s technical expertise on energy efficiency and electrification technology;
- Fund the training of job seekers;
- Match qualified job-seeker trainees with trained contractors and pay for a local internship in a “learn and earn” model; and
- Provide project site opportunities where the intern can install efficiency and electrification measures while helping MCE customers increase the efficiency, health, and safety of their homes and businesses.

Long term, MCE hopes to solidify this trainee-to-employee pipeline so that it can continue investing in technical training, creating onramps to career pathways, providing job security, and building the economic health of member communities.

Equity in Power Purchasing

As of 2021, MCE’s Open Season solicitation encourages suppliers to consider community benefits and equity metrics when submitting offers. Some of the optional elements that MCE solicits in offers include:

- Support for educational programs, environmental justice initiatives, and workforce development and training initiatives;
- Participation of contractors, subcontractors, or businesses owned by disabled veterans;
- Projects located in a designated DAC or employing workers living in a designated DAC; and
- Use of components and materials manufactured or assembled in the United States.

In late 2020, when issues related to the use of forced labor for solar equipment production in Xinjiang, China, were reported, MCE incorporated new language into its PPA term sheets and contracts that prohibit MCE from contracting with facilities that rely on equipment or resources built with forced labor. This language was incorporated into MCE’s 2021 and 2022 Open Season, Green Access, and Community Solar Connection PPAs, and will continue to be an MCE procurement requirement.

Strategic Recruiting and Hiring Practices

Practices include targeted job postings, partnerships with community-based organizations (“CBOs”), education and employment organizations, physical attendance at job recruitment fairs, blind resume reviews, and 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.

Community Power Coalition

To facilitate direct community collaboration in the development, progress, and evolution of its mission MCE engages its Community Power Coalition (“CPC”). Formed in 2014, the CPC seeks to represent the interests of underrepresented and historically marginalized communities through collaboration and open dialogue with MCE. The CPC currently has over 40 members and meets every two months. MCE’s recruitment for the CPC prioritizes organizations that:

- Expand awareness and access to affordable renewable services;
- Accelerate the transition to a clean energy future through workforce development training opportunities;
- Develop inclusive programs and policies at MCE; and
- Identify just and equitable community collaboration opportunities aligned with MCE’s environmental justice values.

Adding these voices and their questions to the CPC working group deepens MCE’s understanding about the groups’ challenges and the measures or types of support that are needed. MCE’s CPC strengthens its connection to the community and offers expert advice on the needs of their constituents and how MCE can best support underserved customers and environmental equity through its programs, policies, and procurement.

Building Community Resiliency

To mitigate the impact of grid outages and Public Safety Power Shutoff (“PSPS”) events, and improve overall grid reliability, MCE’s Board of Directors approved a Resiliency Fund in 2019.

In 2020, MCE launched its Energy Storage Program to deploy up to 15 MWh of customer-sited battery storage systems that can provide backup power during grid outages and reduce GHG emissions and costs. This program prioritizes vulnerable customers and populations that are disproportionately affected by grid outages. The program leverages incentives from the CPUC’s Self-Generation Incentive Program (“SGIP”), coupled with gap funding and performance-based payments provided through MCE’s Resiliency Fund.

To extend the impact of this program, MCE is working with the Marin Community Foundation. Through a three-year grant of \$750,000 from the Buck Family Fund, this partnership is stretching MCE’s contributions to secure local resilience in Marin. These funds will be used to cover the costs for select critical facilities operated by nonprofits throughout Marin County to provide backup power to vulnerable communities during planned or unplanned outages.

As described above, on May 26th, 2022, MCE was approved to join the implementation of a \$5 EPIC grant from the CEC to develop an Advanced Energy Community (“AEC”). The grant will be used to develop a pilot VPP within the City of Richmond. The goal of Richmond Advanced Energy Community is to connect 120 sites to the VPP including 10 rehabilitated homes, 90 homes occupied by low-to-middle income residents (which have already received solar systems from GRID Alternatives), 18 commercial sites, and 2 industrial sites. Combined, the 120 sites are expected to contribute 1 MW of solar, 2 MWh of energy storage, and 1.5 MW of flexible load by December 2024.

The VPP will allow MCE to aggregate and dispatch DERs to manage critical peak loads, minimize procurement costs, and - as market opportunities evolve - generate value in wholesale markets. Participants may not be enrolled in other DER aggregation or demand response programs. Participants will receive modern appliances, bill savings, and bill credits. During later phases, this program may help MCE expand its role as a California Independent System Operator (“CAISO”) market participant by aggregating resources that can be dispatched into the CAISO market.

COVID-19 Customer Support

In response to the COVID-19 pandemic, MCE launched additional programs and services to support its customers. The \$10 million MCE Cares Credit Program offers qualifying customers bill relief in the form of a \$10 monthly bill credit for residential customers and a 20% monthly bill credit for small businesses. This program pairs with state discount programs and the Arrearage Management Program (“AMP”), in which MCE was an early participant.

MCE’s ongoing COVID relief efforts include suspension of collections; direct outreach to customers to encourage enrollment in existing discount and utility bill assistance programs; an education and awareness program to spread the word about community resources and programs for financial assistance; and free EV charging at MCE’s San Rafael office. The relief efforts were promoted online, via social media, with signage, and through local business and residents groups from early 2020 through the summer of 2022. MCE also launched two webpages providing a comprehensive list of COVID support resources for residential and small business customers, by county. In 2021, MCE partnered with local CBOs to distribute bill-savings program flyers in English and Spanish.

e. Cost and Rate Analysis

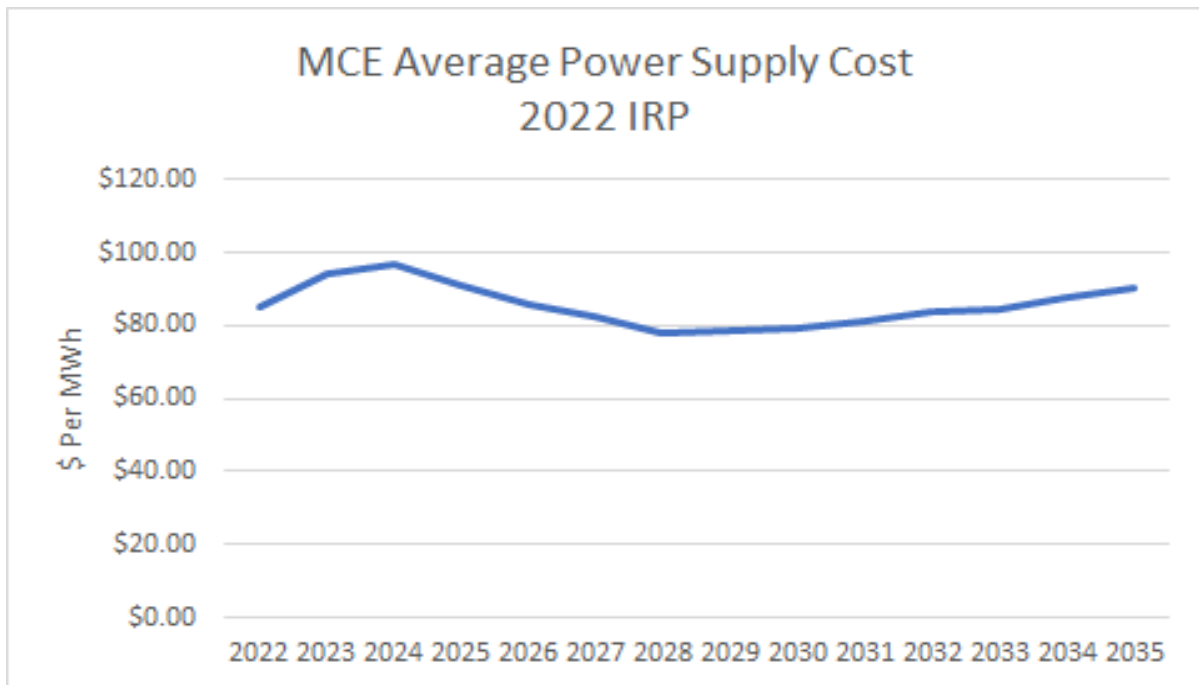
MCE strives to minimize carbon emissions associated with the electricity it supplies to customers while maintaining competitive rates and minimizing customer bill impacts. MCE also prioritizes reliability and seeks a supply portfolio that minimizes risks related to transmission congestion, curtailments, project development risks, and other uncertainties that impose the potential for unanticipated costs. MCE’s PCP was developed with these goals in mind. Resources were selected for least cost and best portfolio fit based on associated emissions, delivery profile, risk, commercial viability, and reliability. MCE considers both the direct resource costs (*e.g.*, contract price) as well as the value of each resource in its portfolio, taking into account the different resource characteristics of the various portfolio options.

MCE modeled the expected portfolio costs of its PCP to evaluate cost and rate impacts on customers. The results of this cost analysis are illustrated in the figure below. System average portfolio costs are projected to increase through 2024, decline from 2025 through 2028, and slowly increase from 2029 through 2035. The compounded annual rate of growth (nominal dollars) between 2022 and 2035 is 0.5%, which is below the expected rate of inflation. The near-term cost increases are primarily driven by high prevailing CAISO energy costs, which are influenced by the significant increase in natural gas prices since the beginning of 2022. Exceptionally high resource adequacy costs are also driving increases in MCE's average portfolio costs. These cost pressures are expected to moderate as new resources are developed and displace more expensive purchases from the short-term markets. It must be noted that the projected portfolio costs are dependent on assumed costs for new resources, and these are subject to considerable uncertainty. MCE engages in competitive solicitations for resource selection and makes resource decisions based on prices offered to it during these solicitations. MCE has observed very little stability in offered resource prices over time as market conditions and external events such as procurement orders, trade tariffs, tax policy and supply chain conditions impact resource costs that are available at any point in time. If these events persist, or additional external events (*e.g.*, new procurement orders) occur, the average portfolio costs may instead continue to increase in excess of MCE's current projections. While MCE's PCP provides a helpful framework for procurement decisions going forward, MCE must remain flexible to respond to market conditions or technological changes as circumstances change. MCE will take steps to minimize bill impacts, but near-term rate increases may be necessary to accommodate increased procurement costs.

In evaluating new resource commitments, MCE seeks generation and/or storage projects that meet portfolio fit considerations and that have positive net present value in consideration of expected contract costs and the value of the energy, reliability, and environmental attributes provided by the project. Such projects help reduce consumer costs relative to alternative sources of energy and capacity.

New resources were selected for the PCP with the goal of minimizing ratepayer impacts, while meeting reliability and environmental policy goals. MCE's plan diversifies across different renewable and low-carbon generation technologies with the goal of reducing use of system energy, thereby reducing market risk and emissions. MCE selected new resources that provide reliability and low emissions (*e.g.*, geothermal) and other carbon-free technologies that have low expected costs (*e.g.*, wind), which in conjunction with resources already under contract provide a least-cost, best-fit portfolio solution. In modeling expected ratepayer costs, MCE generally used cost assumptions consistent with RESOLVE modeling and the PSP. While not the lowest cost resource option, geothermal resources were included in the PCP to provide

reliability benefits from additional clean, firm resources. These resources have relatively low GHG emissions, and their ability to reliably produce energy on a near 24X7 basis warrants a role despite somewhat higher costs. Technological diversification in use of resources capable of providing firm energy reduces ratepayer risk that could arise from overdependence on new technologies such as long duration storage. The PCP includes lower cost wind resources to help minimize ratepayer impacts while meeting environmental and reliability objectives. MCE's PCP also minimizes exposure to volatile natural gas and system power prices and the bill impacts that can result from periodic spikes in fossil fuel prices.



f. [System Reliability Analysis](#)

[REDACTED]

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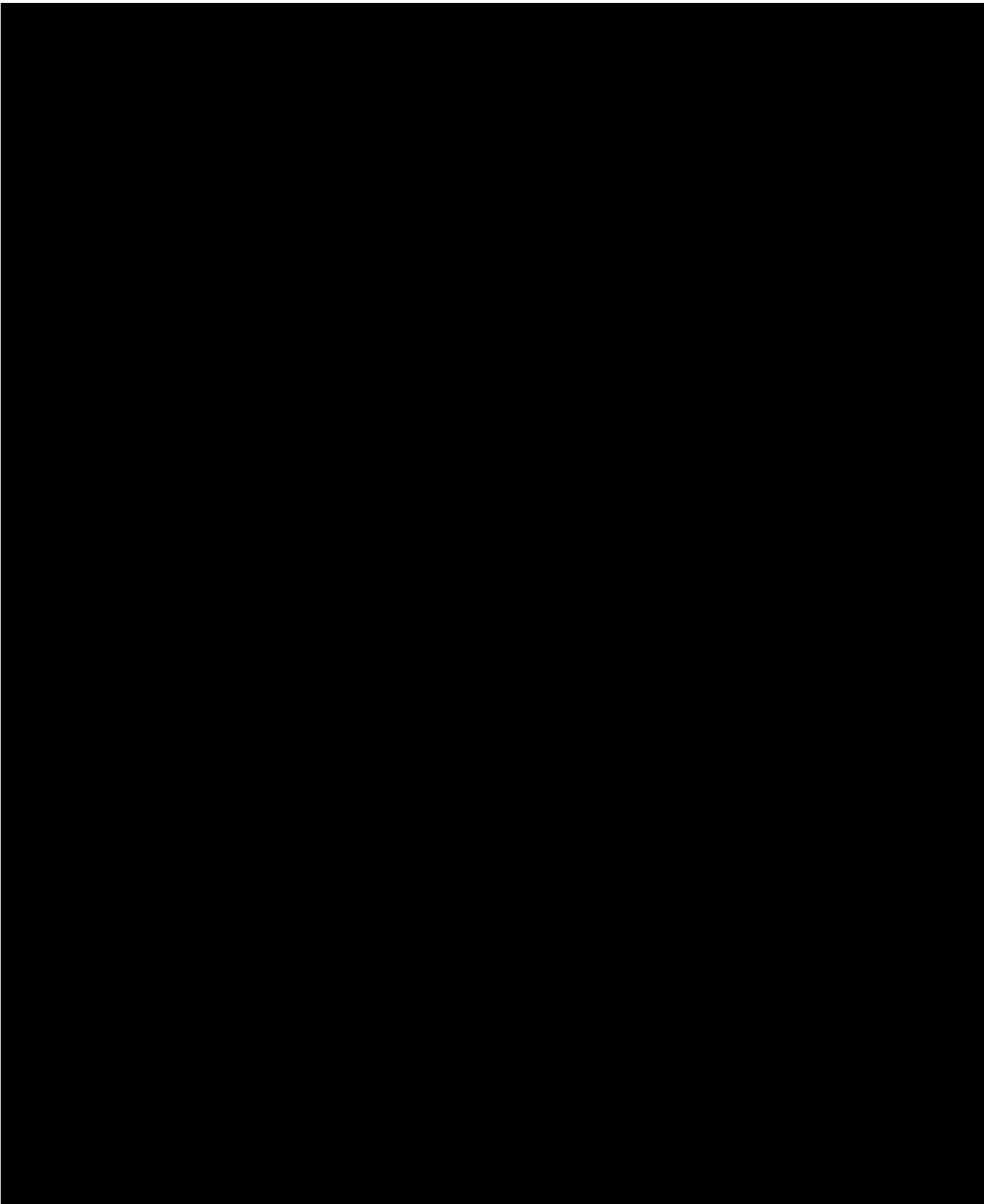
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g. High Electrification Planning

Under a high electrification scenario, MCE’s energy and peak demand requirements would increase, with most of the increase occurring toward the latter end of the planning period. MCE projected the load impacts of a high electrification scenario based on the 2022-2023 TPP High Electrification Load Sensitivity RESOLVE Modeling Results available on the 2019-2020 IRP Page.³⁶

Assuming similar impacts within the MCE service territory, MCE’s adjusted load forecast is shown below:

³⁶ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2019-2020-irp-events-and-materials/2022-2023-tpp-high-electrification-sensitivity-resolve-results.pdf>.

Table 8: MCE’s 2024-2035 Load Forecast - High Electrification Scenario

Year	Retail Sales (MWh), Base Case	Retail Sales (MWh), High Electrification	Impact of High Electrification (MWh)
2024	5,759	5,759	-
2025	5,756	5,756	-
2026	5,759	5,759	-
2027	5,767	5,767	-
2028	5,795	5,843	48
2029	5,827	5,959	132
2030	5,955	6,176	221
2031	5,983	6,325	342
2032	6,040	6,507	467
2033	6,040	6,637	597
2034	6,067	6,802	735
2035	6,099	6,974	875

Table 9: MCE’s 2024-2035 Peak Demand Forecast - High Electrification Scenario

Year	Annual Coincident Peak Demand (MW), Base Case	Annual Coincident Peak Demand (MW), High Electrification Case	Impact of High Electrification (MW)
2024	1,273	1,273	-
2025	1,275	1,275	-
2026	1,282	1,282	-
2027	1,289	1,289	-
2028	1,306	1,310	4
2029	1,313	1,325	12

2030	1,346	1,366	20
2031	1,357	1,388	31
2032	1,376	1,418	43
2033	1,375	1,429	54
2034	1,379	1,505	126
2035	1,378	1,576	198

The high electrification scenario changes load profiles and shifts peak load to later in the evening, primarily due to expected increases in electric vehicle charging. This shift in load profiles explains why the volumetric energy (MWh) forecast is impacted by a greater percentage than the coincident peak demand (MW) forecast. In 2035, for example, MCE projected annual retail sales are 14% higher under the high electrification scenario, while coincident peak demand is only 6% higher.

In order to maintain GHG emissions below the assigned limits, MCE would expect to increase its proportionate use of renewable and other low GHG emitting resources. While MCE can not specify the exact resources or resource type it would utilize, this would most likely come from additional out-of-state and/or offshore resources. MCE does not have sufficient information at this time to specify Transmission Zone and Substation/Bus locations for these hypothetical resource additions; however, a hypothetical example of a generic wind resource is provided in the table below.

Table 10: MCE’s Planned Out-of-State and Off-Shore Wind Resources

Resource Type	MWs	Annual GWh	2035 GHG target	Transmission Zone	Substation/Bus	Alternative Location	Note
Wind	250	900	0.504	Wyoming/Idaho	TBD	Morro Bay	See subsections l. and m. for discussion

[h. Existing Resource Planning](#)

Since MCE’s launch in 2010, MCE has been committed to building and expanding access to in-state renewable generation resources. This is reflected by approximately 700 MWs of new build

renewable generation MCE has added to the grid and the additional approximately 500 MW³⁷ of new build that MCE currently has under contract and that will be coming online by mid-decade. Further, as demonstrated in MCE's PCP, which covers the full planning horizon, MCE will continue to drive significant new resource development, which will have a corresponding decrease in MCE's planned use of existing resources.

As compared to MCE's 2020 IRP, planned reliance on existing resources in 2030 has declined from 754 MW to 503 MW. Under MCE's PCP, existing resources are planned to make up less than half of MCE's total portfolio NQC in 2035. These existing resources include renewable resources that are already online and under contract, expected allocations of CAM resources from the PG&E portfolio, and expected resource adequacy contracts with existing generators.

Particularly during this energy transition and the need for renewables integration, it is reasonable and necessary to assume continued use of existing resources in light of studies indicating the importance of retaining existing resources to ensure grid reliability. The 2021 PSP, for example, shows retention of much of the existing natural gas fleet. MCE's planned reduction in use of existing resources from 100% today to less than 50% in 2035, however, accommodates planned generator retirements and provides a reasonable transition away from fossil fueled capacity toward storage and other non-GHG-emitting technologies. MCE utilizes various procurement strategies to ensure access to resources in the market, including multi-year forward contracting with new and existing resources.

i. Hydro Generation Risk Management

In developing its PCP, MCE took the following 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 2035 targets for renewable energy (which excludes large hydro-electric). More specifically, MCE's PCP in 2035 consists of 87% eligible renewable generation, which will limit its large hydro-electric procurement to 13% or less. This compares to MCE's current use of large hydro for up to 40% of its electricity supply. MCE's 87% renewable energy target significantly exceeds its current 60% level, and it also exceeds the 85% target that MCE submitted to the Commission in its 2021 Compliance IRP.
- Second, to the extent hydro-electric fits into the portfolio, MCE has an established network of Pacific Northwest hydro suppliers, including entities that have substantial

³⁷ This number does not include incremental Shed Demand Response that MCE recently secured under contract (*i.e.*, 15 MW of September NQC that is eligible incremental capacity under D.19-11-016).

ACS energy volumes. As a result of these substantial ACS volumes, suppliers are able to sell MCE reliable, firm volumes.

- Third, MCE has 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 be the importer of record.

To the extent that hydro supply is unavailable, MCE would plan to use other sources of low carbon or carbon-free energy, which may include additional qualifying renewable energy. Considering the relatively small volume of planned large hydro, the cost impacts of supply unavailability is limited. At the extreme, if MCE needed to replace its entire planned large hydro-electric energy with a renewable energy source such as wind, the cost impact to the portfolio is estimated to be less than 10%. A more realistic drought scenario would have cost impacts in the range of 0% to 5%. Moreover, the PSP’s hydro-electric energy resources are planned as energy-only. As such, there would be no direct reliability impacts to MCE’s PSP in the event of drought, although there may be system-wide reliability impacts to the extent that other LSEs utilize large hydro-electric resources for capacity purposes.

One technique MCE uses to manage variable hydro conditions is to include planned margins of over procurement in its hydro-electric purchasing strategy. These reserve margins apply to forward procurement and are gradually released as better information about hydro-electric availability becomes known.

[j. Long-Duration Storage Planning](#)

MCE is planning significant new battery storage capacity to help balance load and supply as it integrates a greater percentage of renewable energy into its supply mix and continues to reduce reliance on natural gas generation capacity. MCE sees a greater need and role for long-duration storage as the grid continues to evolve. To address this need, MCE is procuring to meet its long-duration storage requirement under D.21-06-035 (*i.e.*, 29 MW of NQC) and anticipates procuring an additional 50 MW NQC of long-duration storage resources in the 2030 to 2035 timeframe.

In MCE’s view, battery storage technology is currently the most commercially viable technology to qualify for this long-duration attribute. However, MCE is also evaluating other technologies that have long-duration storage capability as well. Technology performance risk is the biggest

unknown at present because, with the exception of pumped hydro storage, there is no track record for utility scale, long-duration storage. MCE expects rapid technological improvement in battery storage as the industry continues to scale-up and anticipates declining costs in the longer-term. In the short-term, however, costs are increasing, and project opportunities are limited, particularly when the procurement is on accelerated procurement timelines. These factors may impact the pace at which MCE adds storage to its resource portfolio.

k. Clean Firm Power Planning

MCE has prioritized acquisition of clean firm resources beyond what is required under existing Commission procurement orders. Despite higher costs, clean firm resources provide reliable capacity and a higher-value energy delivery profile as compared to solar and other intermittent resources. MCE is planning for greater use of geothermal resources over time due to its low carbon emissions and high resource value. Unfortunately, supply of geothermal, and clean firm resources generally, is very limited in California, and the cost of new-build resources is significantly higher. Clean firm energy imported from other balancing areas is complicated by transmission availability and the need to obtain equivalent Maximum Import Capability (“MIC”) through the CAISO in order to utilize the capacity under the resource adequacy program. Despite these challenges to their expanded use, clean firm resources are important contributors to reliability and offer operational attributes that cannot be replicated by current-technology storage or other resource types. To develop these resources cost-effectively and efficiently, California LSEs will need the commitment of regulatory agencies and CAISO to facilitate this resource development by ensuring regulatory procedures and requirements align with market realities and that the transmission infrastructure necessary for this development is available and accessible to California LSEs.

l. Out-of-State Wind Planning

MCE’s PCP includes 70 MW of new, out-of-state wind, assumed to be located in New Mexico, with deliveries commencing in 2030. The choice of New Mexico wind is not intended to reflect a definitive plan for procurement from this area, and other locations for future wind projects are possible. New Mexico was selected as a likely source based on MCE’s review of wind projects that have been offered in recent solicitations. These opportunities utilize existing firm transmission routes into the CAISO. However, MCE observes the significant potential in the PSP for wind located in Wyoming and Idaho, as well as transmission projects being planned that would allow for delivery of this resource to California, which would indicate opportunities to contract for new wind from these areas should be prevalent in the 2030 timeframe provided the planning and construction of the Southwest Intertie Project-North (“SWIP-North”) transmission line proceeds expeditiously. Absent certainty that the SWIP-North transmission

line will be available with the appropriate level of import allocations and deliverability assurances for California LSEs, it will be difficult, or impossible to invest in this region’s renewable generation potential.

m. Offshore Wind Planning

MCE’s PCP includes 95 MW of offshore wind, assumed to be located at Morro Bay, with deliveries commencing in 2033. MCE has not yet seen any proposed opportunities to contract for offshore wind and is basing its planning assumption on the significant potential indicated in the PSP. Offshore wind appears to be a high potential resource with relatively high-capacity factors and resource adequacy values. At this time, costs of offshore wind development and maintenance infrastructure are largely unknown. As such, cost and development timelines pose the greatest risk to utilization of this resource. Despite these near-and possible near-term barriers to progress on this front, MCE is monitoring the issue as it evolves, and procurement of offshore wind becomes feasible.

n. Transmission Planning

i. New Projects

This section describes new generation projects that are under development and planned projects that have been specifically identified through MCE’s procurement processes where there is sufficient locational specificity that could be useful to the transmission planning process.

ii. Projects Under Development

Strauss Wind, LLC

This is a new-build [REDACTED] wind project. The expected commercial operation date (“COD”) is in 2023, and MCE intends to apply this resource towards its procurement requirements under D.19-11-016. The project is located in Santa Barbara County. The interconnection queue position is WDT-1320. All transmission upgrades needed for this project have been completed. The Strauss Wind project is represented in both the 30MMT and 25MMT RDTs, respectively, as incremental capacity. Please refer to row 41 of the unique_contracts tab in MCE’s RDTs.

Golden Fields Solar IV, LLC

This is a new-build hybrid project located in Kern County that pairs 100 MW of solar with 92 MW four-hour battery storage. The project has an expected COD of March 2025 and is intended to apply towards MCE's mid-term reliability ("MTR") requirements under D.21-06-035. The interconnection queue position for this resource is Q-1211, and the project will connect at the Southern California Edison ("SCE") Whirlwind 230 kV substation. Transmission upgrades needed for this project are expected to be completed in October 2024. These transmission upgrades are described in Appendix A to the Large Generator Interconnection Agreement ("LGIA") and include participating transmission owner (*i.e.*, SCE) reliability network upgrades. The Golden Fields Solar project is represented in both the 30MMT and 25MMT RDTs, respectively, as incremental capacity. Please refer to row 51 of the unique_ contracts tab in MCE's RDTs.

Daggett Solar Power 3, LLC

This is a new-build hybrid project located in San Bernardino County that pairs 110 MW of solar with 60 MW of four-hour battery. The project has an expected COD of August 2023, and MCE intends to apply this capacity towards its MTR requirements under D.21-06-035. The interconnection queue position is Q-1314, and the project will connect at Kramer Substation 220kV switchrack. Transmission upgrades needed for this project are expected to be completed in December 2022. These transmission upgrades are described in Appendix A to the LGIA and include participating transmission owner (*i.e.*, SCE) reliability network upgrades. The Daggett Solar Power project is represented in both the 30MMT and 25MMT RDTs, respectively, as incremental capacity. Please refer to row 55 of the unique_ contracts tab in MCE's RDTs.

Hecate Grid Humidor Storage 185, LLC

This new 185 MW four-hour battery storage project has an expected COD of April 2024 and will be located in Los Angeles County. MCE intends to apply this capacity towards its MTR requirements under D.21-06-035. The interconnection queue position is Q-1629, and the project will connect at SCE Vincent Substation, 220kV Bus. Transmission upgrades needed for this project are expected to be completed in Q4 2023. These transmission upgrades include extending the existing 230kV bay within the substation and installing an intermediate structure to connect to the Point of Interconnection ("POI") riser outside of the substation. The Hecate Grid Humidor Storage project is represented in both the 30MMT and 25MMT RDTs,

respectively, as incremental capacity. Please refer to row 64 of the unique_ contracts tab in MCE's RDTs.

RPCA Solar 3 - Byron Highway Solar

This is a new-build 5 MW solar project located in Contra Costa County. The project has an expected COD of November 2022. The interconnection queue position is 2296-WD, and the project will connect at Brentwood distribution substation. All transmission upgrades needed for this project have been completed. The RPCA Solar 3-Byron Highway Solar project is represented in both the 30MMT and 25MMT RDTs, respectively. Please refer to row 40 of the unique_ contracts tab in MCE's RDTs.

Ranch Sereno Clean Power, LLC

This is a new build 2MW solar project with 0.8 MW of four-hour battery storage. The project is located in Contra Costa County and has an expected COD of February 2024. The interconnection queue position is 2597-WD, and the project will connect at PG&E's Brentwood distribution substation. No transmission upgrades are required for this project. The Ranch Sereno Clean Power project is represented in both the 30MMT and 25MMT RDTs, respectively. Please refer to row 52 of the unique_ contracts tab in MCE's RDTs.

CES Electron One Farm, LLC

This new-build project consists of two solar projects sized at 4.4 MW and 0.24 MW. The projects are located within specified Disadvantaged Community areas in Fresno County and have an expected COD of December 2023. The interconnection queue position is 2226-WD, and the project will connect at PG&E's Panoche distribution substation. No transmission upgrades are required for this project. The CES Electron One Farm project is represented in both the 30MMT and 25MMT RDTs, respectively. Please refer to rows 53 and 54 of the unique_ contracts tab in MCE's RDTs.

iii. Projects Under Review

[Redacted content]



iv. Planned New (Generic) Projects

The following projects included in the PCP are generic in nature. Locations and technology resource types are subject to change as MCE advances in its procurement.

OS22 New Wind 2026

This generic 100 MW wind project with initial deliveries commencing in 2026 is assumed to be located in the Tehachapi area.

Generic LT Wind NM 2030

This generic 70 MW wind project with initial deliveries commencing in 2030 is assumed to be located in New Mexico. Please see subsections iv. and v., below, for additional details on planning assumptions for this project.

Generic LT Wind 2033

This generic 95 MW wind project with initial deliveries commencing in 2033 is assumed to be located offshore of Morro Bay. Please see subsections iv and v, below, for additional details on planning assumptions for this project.

Generic LT Geothermal 2030

This generic 75 MW geothermal project with initial deliveries commencing in 2030 is assumed to be located in the Imperial Valley.

MTR LDS 2026

This generic eight-hour battery storage project with initial operation commencing in 2026 is assumed to be located in Contra Costa.

Generic LDS 2030

This generic eight-hour battery storage project with initial operation commencing in 2030 is assumed to be located in Contra Costa County.

Generic 4 Hour Storage 2028

This generic four-hour battery storage project with initial operation commencing in 2028 is assumed to be located in Solano County.

Generic 4 Hour Storage 2034

This generic four-hour battery storage project with initial operation commencing in 2034 is assumed to be located in Napa County.

IV. Action Plan

a. Proposed Procurement Activities and Potential Barriers

To achieve its PCP over the planning horizon, 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. This is consistent with MCE's risk management approach to spread out the potential cost risks that may be at play in the market at any given year, while maximizing the potential for MCE to optimally procure. 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 and optimal resource portfolio.

To support this goal, MCE also considers 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.

Optimizing Existing Procurement

As MCE considers its long-term resource needs, it will evaluate options in its future PPAs 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. However, MCE has experienced some challenges as it pertains to transmission upgrades and deliverability of new capacity on to the grid. MCE continues to engage with relevant stakeholders and developers to evaluate the feasibility of such expansions for implementation.

Annual Energy Solicitations

In addition to periodic joint solicitations, MCE will also run targeted solicitations in the upcoming years to further optimize its current portfolio needs. Such solicitations may provide MCE with flexibility and potential to meet specific portfolio needs and obligations unique to MCE.

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 risk evaluations include, but are not limited to, transmission availability, MIC allocation, and exposure to global supply and market forces.

These efforts lead to a more diverse resource mix, help to address grid integration issues, improve the probability of project delivery, and provide value to MCE's member communities through reduced costs and support in achieving planned procurement objectives.

MCE has a well-established procurement process that it will use to steadily achieve its PCP over the next twelve years (*i.e.*, by 2035). This process is used by MCE in executing all its planned new resources. 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 CAISO markets, validating and paying invoices, etc.;
 9. Bidding/scheduling MCE’s load into the CAISO markets; and
 10. Regulatory compliance reporting.

With respect to activity number four 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 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. Acceptance of MCE's standard contract terms; and
- 9. 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.

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 technological improvements that may arise over time. MCE monitors its open positions separately for each renewable generating technology, 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). Typically, MCE has gradually larger open positions in the mid- to long-term, consistent with generally accepted industry practices.

In addition to the planned and proposed procurement activities, MCE also takes into consideration the various barriers that may impact the success of its planned renewable projects. Some of the potential barriers for each of the new resources identified in MCE's PCP include:

1. New Wind: The current market conditions have made new in-state wind resources scarce, which has led to a price premium and escalated cost risks on any available in-state wind resources. In addition, the transmission constraints and limited MIC allocation for out of state wind has made it difficult to negotiate and plan for new resources due to the uncertainty of deliverability.
2. New Geothermal: Due to the scarcity of new geothermal projects in-state and the uncertainty of deliverability and transmission of out of state geothermal projects, there has been an unprecedented competition on available geothermal, causing an ever-increasing upwards pressure in price. If this trend continues it may impact MCE's ability

to procure new geothermal resources in the near-term.

3. Hybrid Resources: Currently, most hybrid resources primarily consist of intermittent resources like solar. As solar is highly affected by global supply chain issues, most planned projects are facing upward pressures in cost and are consequently facing further delays.
4. Storage: Similarly, to hybrid resources, global supply chain issues and the scarcity of the raw materials required for battery production, there is risk and uncertainty in prices and expected delivery dates that may negatively impact MCE's planned portfolio and budgeted costs.

MCE continuously monitors the developments in the market and engages with various market stakeholders including the Commission, CAISO, and other CCAs, to strategize and find solutions to the various barriers and the risks associated with new clean energy procurement. Throughout the planning period MCE will continue to proactively evaluate its planned procurement and make necessary adjustments to meet its portfolio needs as determined by MCE's Board and its operational and compliance needs.

i. Resources to meet D.19-11-016 procurement requirements

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 is committed to self-providing its share of the identified system capacity need.³⁸ MCE's assigned share is 87.5 MW,³⁹ 50% of which was online by August 1, 2021, 75% of which was online by August 1, 2022, and 100% of which is expected to be online by August 1, 2023.

D.19-11-016 Procurement Progress Report

MCE has executed agreements that will satisfy MCE's 2021, 2022 and 2023 incremental capacity requirements under D.19-11-016. As of the date of this filing, MCE has 108.77 MW⁴⁰ of

³⁸ *Marin Clean Energy's February 15, 2020, Integrated Procurement Planning Progress Report Pursuant to Decision 19-11-016 Adopted in Rulemaking 16-02-007* filed February 18, 2020.

³⁹ D.19-11-016 at Ordering Paragraph 3.

⁴⁰ For consistency purposes, MCE is calculating September NQC based on the most recent ELCC factors adopted in D.22-08-039 and the September NQC assigned to MCE's resources in the RDTs. However, using the more conservative NQC values, MCE has 101.9 MW of NQC either online or under contract to meet its D.19-11-016 requirement. This capacity includes a recently executed agreement for incremental capacity. However, due to the Commission's August 1, 2022, cutoff for contracts, MCE includes this contact in its RDTs as a resource under review (see unique_contracts tab of the RDT Row 115) but includes this capacity in this progress report to provide the Commission the most up-to-date information on its D.19-11-016 procurement. MCE will reflect this resource as in

September NQC under contract; this is NQC not included on the baseline resource list adopted in Rulemaking 16-02-007⁴¹ and exceeds 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, 2023.

MCE also provides a narrative description of specific incremental procurement efforts below, which is consistent with the information MCE provides the CPUC in its bi-annual D.19-11-016 compliance filings.

Sutter Energy Center

The Sutter Energy Center project has been online since January 1, 2021 under a 3-year Purchase & Sale Agreement between MCE and Calpine Energy Services, L.P.. The period for this agreement began on January 1, 2021 and will continue 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."⁴² Additionally, D.19-11-016 defines the Sutter Energy Center as an incremental capacity resource.⁴³ 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.⁴⁴

Sutter Energy Center adds 69.55 MW of incremental capacity to the system from January 2021 through 2023. As such, this project satisfied both MCE's 2021 and 2022 requirements.

The Sutter Energy Center is represented in both the 30MMT and 25MMT RDTs, respectively, as incremental capacity. For this resource, please refer to row 59 of the unique_contracts tab in MCE's RDTs.

Strauss Wind, LCC

In 2018 MCE executed an Amended and Restated Renewable Power Purchase Agreement with

Development in its next D.19-11-016 RDT compliance filing. Under either NQC methodology, MCE has more than its share of incremental capacity under contract for purposes of D.19-11-016.

⁴¹ 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.

⁴² D.19-11-016 at 47.

⁴³ D.19-11-016 at Ordering Paragraph 6.

⁴⁴ *Id.*

Strauss Wind, LLC, a California Limited Liability Company (“Strauss Wind project”). This 20-year PPA is for a new-build wind energy project located in Santa Barbara County, California. [REDACTED]

[REDACTED] This resource is a new grid resource that is not included on the baseline resource list adopted in Rulemaking 16-02-007. 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. [REDACTED]

The Strauss Wind project is represented in both the 30MMT and 25MMT RDTs, respectively, as incremental capacity. For this resource, please refer to row 41 of the unique_contracts tab in MCE’s RDTs.

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 Richmond, California. Using the current NQC framework, this resource provides an additional 1.16 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 30MMT and 25MMT RDTs, respectively, as incremental capacity. For this resource, please refer to rows 35 and 36 of the unique_contracts tab in MCE’s RDTs.

Waste Management Redwood Landfill (“Redwood Landfill Project”)

The 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

⁴⁵ See MCE’s August 1, 2022, D.19-11-016 Compliance Filing for additional detail provided in the Remediation Plan.

additional 3.39MW of September NQC under the current framework and according to the September NQC assigned in the RDTs. This is incremental capacity 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 30MMT and 25MMT RDTs, respectively, as incremental capacity. For this resource, please refer to row 7 of the unique _contracts tab in MCE's RDTs.

- i. Resources to meet D.21-06-035 procurement requirements, including:
 - a. 1,000 MW of firm zero-emitting resource requirements
 - b. 1,000 MW of long-duration storage resource requirements
 - c. 2,500 MW of zero-emissions generation, generation paired with storage, or demand response resource requirements

In D.21-06-035, the Commission ordered LSEs to collectively procure a total of 11,500 MW of incremental system capacity by 2026, with specific procurement obligations allocated to each LSE to support mid-term system reliability needs. MCE's assigned share of this procurement is 332 MW of NQC,⁴⁷ 58 MW of which must be online by August 1, 2023, an additional 173 MW of which must be online by June 1, 2024, an additional 43 MW of which must be online by June 1, 2025, and an additional 58 MW of which must be online by June 1, 2026.

MTR Procurement Progress Report

MCE has executed agreements that MCE expects will satisfy its 2023, 2024 and 2025 incremental capacity requirements. As of the date of this filing, MCE has 308.7 MW of eligible NQC under contract towards its D.21-06-035 requirement, which represents 395 MWs of nameplate capacity.

MCE's completed procurement towards its D.21-06-035 requirement is reflected in MCE's 25 MMT and 30 MMT RDTs, respectively. MCE also provides a narrative description of specific incremental procurement efforts below.

Firm Zero-Emitting Resources (MCE Requirement = 29 MW of NQC)

[REDACTED]

⁴⁷ D.21-06-035 at 56.

[REDACTED]

Long-Duration Storage (MCE Requirement = 29 MW of NQC)

[REDACTED]

Zero Emissions Generation (MCE Requirement = 274 MW of NQC)

- Golden Fields Solar IV

MCE executed a contract with Clearway Energy Group on February 4, 2022, for a new-build hybrid project located in Kern County that pairs 100 MW of solar PV with 92 MW four-hour battery storage. This project has an expected COD of March 2025, and MCE expects to apply this resource to count for at least 75 MW of NQC towards its general MTR requirements under D.21-06-035, including towards MCE’s 72 MW of zero-emitting resources pursuant to Table 6 in D.21-06-035.⁴⁸ The Golden Fields Solar project is represented in both the 30 MMT and 25 MMT RDTs, respectively, as incremental capacity. Please refer to row 51 of the unique_contracts tab in MCE’s RDTs.

- Daggett Solar Power 3, LLC

MCE executed a contract with Clearway Energy Group on September 25, 2020, for a new-build hybrid project in San Bernardino County that pairs 110 MW of solar PV with 60 MW four-hour battery storage. This project has an expected COD of August 2023, and MCE expects to apply this resource to count for at least 65.9 MW of NQC towards its MTR requirements under D.21-06-035, which also contributes towards MCE’s 72 MW

⁴⁸ MCE expects this resource to provide at least 61.3 MW of DCPD replacement capacity. To apply towards both the general MTR requirements and MCE’s requirement to procure 72 MW of zero-emitting resources with certain availability requirements, MCE’s PPA for this project ensures that this hybrid resource will be designed to be capable of delivering 5 MWh of energy per every MW of claimed incremental capacity during the 5PM to 10PM period, daily.

of zero-emitting resources pursuant to Table 6 in D.21-06-035.⁴⁹ The Daggett Solar Power project is represented in both the 30MMT and 25MMT RDTs, respectively, as incremental capacity. Please refer to row 55 of the unique_contracts tab in MCE's RDTs.

- Hecate Grid Humidor Storage

MCE executed a contract with Hecate Grid in August 2022 for a new 185 MW four-hour battery storage project in Los Angeles County. This project has an expected COD of April 2023, and MCE expects to apply this resource to count for at least 167.8 MW of NQC towards its MTR requirements under D.21-06-035. The Hecate Grid Humidor Storage project is represented in both the 30 MMT and 25 MMT RDTs, respectively, as incremental capacity. Please refer to row 64 of the unique_contracts tab in MCE's RDTs.

- i. All other procurement requirements

Open Season RFO

After counting the above-mentioned resources [REDACTED]

[REDACTED] To fill any current and future open positions, MCE issues annual open season RFOs, which seek to fill approximately 350 GWh of annual energy needs, including any incremental procurement that might be needed to meet D.21-06-035. These RFOs request 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 2021 RFO and expects to procure significant volumes of hybrid resources, all of which will be agreements of at least 10 years in duration. In addition, MCE expects to count these 2021 and future RFOs projects towards any future Commission-directed incremental capacity obligations. While MCE does not anticipate that the new projects will be needed for MCE's share of capacity requirements identified in D.21-06-035, they may provide back up to the projects identified above.

Because these resources are expected/planned, and not currently contracted for, these resources are reflected as "review," "PlannedExisting," and "PlannedNew" resources in both the 30 MMT and 25 MMT Resource Data Templates.

⁴⁹ MCE expects this resource to provide at least 48 MW of DCPD replacement capacity. To apply towards both the general MTR requirements and MCE's requirement to procure 72 MW of zero-emitting resources with certain availability requirements, this hybrid resource is capable of delivering 5 MWh of energy per every MW of claimed incremental capacity during the 5PM to 10PM period, daily.

ii. Offshore wind

MCEs PCP includes 95 MW of offshore wind, assumed to be located at Morro Bay, with deliveries commencing in 2033. MCE has not yet seen any proposed opportunities to contract for offshore wind and is basing its planning assumption on the significant potential indicated in the PSP. Offshore wind appears to be a high potential resource with relatively high-capacity factors and resource adequacy values. At this time, costs of offshore wind development are largely uncertain. As such, costs of offshore wind development and maintenance infrastructure pose the greatest risk to utilization of this resource. However, the completion of environmental impact review and filing a proposed sale notice for the Humboldt Wind Energy Area by the federal Bureau of Ocean Energy Management (“BOEM”) is an important initial step. MCE will continue to monitor the developments and will engage the various stakeholders involved, should an opportunity to purchase offshore wind arise.

iii. Out-of-state wind

MCE’s PCP includes 70 MW of planned new, out-of-state wind (“OOS”), with deliveries commencing in 2030. MCE has reviewed wind projects that have been offered in recent solicitations and understands that the transmission projects needed to connect OOS Wind to the CAISO grid require significant lead-times. OOS wind opportunities rely on existing firm transmission routes into the CAISO or construction of new transmission with the appropriate level of import allocations and deliverability assurances for California LSEs. Absence of such assurances make it difficult for MCE to realize the significant potential for wind located in Idaho, Wyoming, and New Mexico. 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 will continue to monitor for opportunities to purchase such resources and will evaluate offers it receives during its annual open season process.

iv. Other renewable energy not described above

[REDACTED]

v. Other energy storage not described above

MCE is not actively planning for any additional energy storage investments beyond what is described above.

vi. Other demand response not described above

In April 2021, MCE launched the Peak FLEXmarket, a first-of-its-kind program platform aimed at shifting energy use in its service area away from times of extreme demand. Following its initial pilot year, the program received \$11 million in ratepayer funding from the CPUC for the summers of 2022 and 2023. Created in partnership with Recurve, the Peak FLEXmarket provides tools to measure hourly reductions in energy use that allows MCE to compensate businesses working locally with customers for energy savings during peak demand hours. The program is technology agnostic and incentivizes load reductions from a diverse group of technologies including batteries, managed EV charging, controls systems and behavioral/operational change. The Peak FLEXmarket incentivizes regular load shifting and also calls demand response events during periods of extreme grid stress. The Peak FLEXmarket has been included in MCE's Energy Efficiency Business Plan Application for continued funding for the 2024-2027 timeframe.

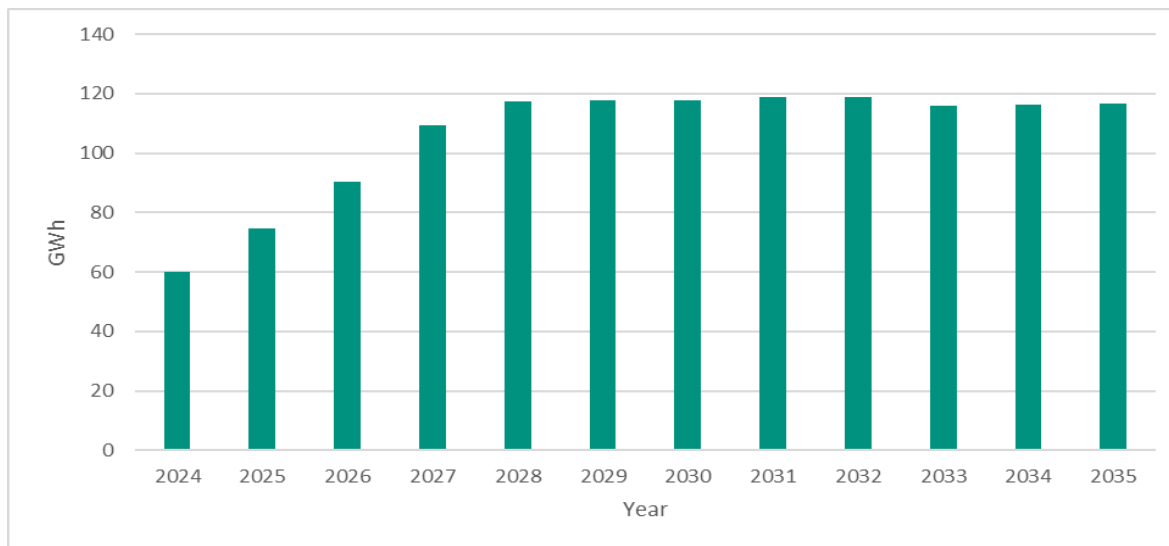
MCE plans to expand this program to monitor and control other customer owned DERs.

In addition to the City of Richmond VPP described above, MCE continues to explore opportunities for demand response in its service area while facilitating third-party demand response programs. MCE customers are eligible for many of the demand response programs administered by PG&E, and MCE receives allocations from PG&E-administered programs. Depending on the results of this analysis, MCE may launch new programs and possibly seek funding from other sources for more robust programs in this sector.

vii. Other energy efficiency not described above

MCE is an administrator of California's ratepayer-funded, energy efficiency programs alongside IOUs and Regional Energy Networks. Ratepayer funding is derived through collection of the Public Purpose Program charge from all electric service customers and is administered by the Commission. MCE has received Commission funding approval for energy efficiency programs to be administered through 2025 and currently administers programs in multifamily, single family, commercial, agriculture, and industrial sectors. Furthermore, MCE administers the Low-Income Families and Tenants ("LIFT") Program, which serves income-qualified, multifamily properties and includes a fuel-switching component to incentivize property owners to replace gas-fired space and water heaters. The forecasted cumulative savings of MCE-administered energy efficiency programs are based on average life cycle savings.

MCE also invests in multiple workforce development initiatives to encourage the growth of green jobs through the approval of its Energy Efficiency Business Plan. MCE also coordinates closely with PG&E to maximize community benefits.



MCE cumulative energy efficiency impacts (GWh)

viii. Other distributed generation not described above

Net Energy Metering and Rooftop Solar Rebates

Through its Net Energy Metering (“NEM”) program, MCE supports customer-sited distributed generation within its service area by offering above-market incentives including automatic cash-outs for surplus generation each year at twice the wholesale rate (up to \$5,000). MCE’s NEM Program currently includes more than 63,528 customers (10.9% of all MCE accounts) with an aggregate-installed renewable generating capacity of approximately 642 MW.

Through 2021, MCE incentivized local rooftop solar development for low-income customers. MCE has a long-standing partnership with California’s Single Family Affordable Solar Housing (“SASH”) program administrator, GRID Alternatives. By leveraging multiple sources of funding, GRID Alternatives installs these systems in disadvantaged communities at little to no cost for the customer. MCE contributed \$900 per solar installation to qualifying low-income, single-family homeowners. MCE also offered a \$0.41 per watt (AC) rebate to low-income, multifamily properties that install solar to benefit their tenants.

From 2012–2021, MCE allocated \$725,000 toward these two rebate programs, and supported the installation of 688 residential solar PV systems on low-income multifamily homes. These

installations represent more than 1,400 kW of new, local, renewable capacity that helps reduce monthly energy bills for low-income families.

- ix. Transportation electrification, including any investments above and beyond what is included in Integrated Energy Policy Report (IEPR)

As part of its broader strategy to reduce GHG emissions through buildings and transportation electrification, MCE has been working on several EV-related initiatives since 2017. These include demand response-enabled charging devices, equity-centered incentives for EVs, and funding for charging stations. These efforts started with a strategic plan and infrastructure analysis in partnership with the U.S. Environmental Protection Agency to analyze local EV market trends and their impact on MCE's customer demand.

MCE has identified workplace EV charging as an opportunity to shift the demand of the 60,200 (and growing) EV drivers in its service area to hours of the day when energy is frequently cheaper and cleaner. MCE Solar Charge, a public EV charging station that opened in 2019 at MCE's San Rafael office, demonstrates that vision to MCE's staff and customers. In 2021, MCE launched MCE Sync, a residential smart charging pilot with the goal of reducing the peak load impacts of home charging while saving customers money and reducing GHG impacts.

MCE Sync uses an app to manage home vehicle charging. During a 6-month pilot with 232 enrolled participants, the pilot shifted 93% of EV electricity usage away from the 4–9 p.m. peak, reduced carbon intensity by 55% on average, and saved customers on an EV rate around \$12/month before event-based incentives. The expanded program has a goal of 2,500 enrolled customers by May 2023.

Since 2018, MCE has supported or funded 1,570 Level 2 EV charging ports for workplaces or multifamily properties. More than 930 ports have been installed — equivalent to 36% of all public Level 2 charging ports in the four counties that MCE serves — and more than 645 ports under planning and in construction. MCE is coordinating with PG&E on its EV Charge Network program and providing a supplemental rebate to customers who participate in that program. More than 71% of the MCE stations already deployed are enrolled in MCE's Deep Green service.

In addition to incentives for EV charging stations, MCE provides free technical assistance and helps coordinate with other funding sources for commercial and multifamily customers interested in EV charging infrastructure. A CEC grant won by Contra Costa Transportation Authority and MCE will increase EV engagement, access to electric transportation, and deployment of charging infrastructure, especially at multifamily properties, across marginalized communities in the county from summer 2021 to spring 2024.

MCE also partnered with Bay Area Air Quality Management District and GRID Alternatives to win grants from the CEC and Marin Community Foundation. These grants are anticipated to start in the second half of 2022. Implementation will focus on deepening relationships with local housing authorities, affordable housing administrators, owners, and property managers to increase awareness and adoption of tenant-based EV charging stations. The implementation consists of installing EV charging and providing concierge education on how to qualify for income-based EV incentives, including MCE’s own EV rebate.

Lastly, MCE built upon its rebate program for income-qualified customers interested in purchasing a new EV with the goal of increasing understanding of and access to EVs beyond the typical early adopters. This program has helped over 261 customers purchase or lease a new EV and will expand in fiscal year 2023/2024 to include used EVs as well.

- x. [Building electrification, including any investments above and beyond what is included in Integrated Energy Policy Report \(IEPR\)](#)

MCE is committed to electrifying its service area and is currently offering several programs that it expects will impact building electrification efforts including its: LIFT Pilot Program, Multifamily Energy Savings (“MFES”) Program, Home energy Savings (“HES”) Program, and Heat Pump Water Heater (“HPWH”) Contractor Incentive Program. An overview of MCE’s planned investment in these programs is provided below.

Multifamily Energy Saving Program

MCE’s MFES provides residential energy efficiency⁵⁰ and electrification⁵¹ improvements to affordable multifamily properties in the MCE service area. The intent of the program is to support vulnerable communities, particularly those who have been traditionally underserved. MFES seeks to substantially fund energy efficiency and electrification measures for deed-restricted properties. It will also continue to co-leverage as many funding opportunities to provide comprehensive, whole building upgrades.

MFES was designed to co-leverage with MCE’s LIFT pilot program, authorized in D.16-11-022, by providing funding to affordable properties where not all units qualify for LIFT incentives. LIFT provides comprehensive services and supports fuel switching from natural gas to electric heat pumps for cleaner and safer energy use. Income-qualified multifamily properties can layer

⁵⁰ Refrigerators, package terminal heat pumps, LED light fixtures, smart thermostats, low flows showerhead and aerators, and LED bulbs, T24 compliant windows, crawlspace, wall, and roof insulation.

⁵¹ Domestic hot water heat pump, space heating and cooling and electrical upgrades.

incentives from LIFT on MFES program rebates. With this model, MFES supports property-wide upgrades for all tenants who live in affordable housing.

MFES services include no-cost property assessments, project scope development, and program assistance throughout the project lifetime. The program also offers owner rebates for energy efficiency and electrification measures as well as no-cost direct installation of certain energy efficiency measures.

The program addresses market barriers by providing: (1) customized technical assistance to overcome challenges associated with the diversity of building types, ownership types, and billing configurations, and to provide assistance with analyzing potential upgrade measures; (2) guidance through the initial assessment of multiple measure upgrade opportunities throughout the property; (3) a range of participation options to best meet the current needs and abilities of properties; and (4) a bridge for the funding gap between multifamily units that qualify for LIFT or ESA incentives and the rest of the property to promote a comprehensive and equitable whole-building upgrade.

The current budget for the MFES program is \$1,017,476 for 2022 and \$971,459 for 2023. The current timeline for the program is 2022-2024, with project renewal expected every two years.

LIFT Pilot Program

MCE launched the LIFT pilot in 2017, providing additional incentives for property owners and tenants in multifamily buildings (5+ units) beyond what is available through the MFES program. LIFT provides \$1,200 per unit for energy efficiency upgrades⁵² and additional incentives for fuel substitution and fuel switching away from natural gas and propane combustion appliances to high efficiency electric heat pumps⁵³ (HVAC and water heating). This transition will support cleaner and more efficient energy use while resolving health and safety concerns.

MCE's LIFT program aims to support income-eligible multifamily renters with improving their household efficiency, reducing their energy costs, and increasing home safety and comfort, while simultaneously maximizing benefits to owners. The program is part of a larger goal of California's climate initiatives to support disadvantaged customers and increase statewide electrification and efficiency efforts. The literature review outlines the current regulatory

⁵² Refrigerators, package terminal heat pumps, LED light fixtures, smart thermostats, low flows showerhead and aerators, and LED bulbs, T24 compliant windows, crawlspace, wall, and roof insulation.

⁵³ Domestic hot water heat pump, space heating and cooling and electrical upgrades.

context within California, discusses DAC definitions and metrics, electrification, health and safety, costs, and barriers to emerging technology adoption.

The LIFT pilot was originally approved by the CPUC to run under the Energy Savings Assistance (“ESA”) program, followed by a series of extensions granted to keep this running as a pilot through 2023. The LIFT Program distributed over \$1 million in incentives to 680 qualifying households between 2018 and 2021 and successfully reached underserved customers with 95% of participants residing outside of a DAC. Participants collectively saved over 7,800 kilowatt-hours annually and, individually, an average of \$192 per year on their electricity bill.

MCE expects to serve more than 450 additional households in the LIFT program through 2023.

MCE’s MFES and LIFT programs have different funding sources (CPUC – Energy Efficiency and CPUC – Energy Savings Assistance, respectively), which makes it possible for MF properties to leverage incentives from both programs. The two programs share the same implementor, providing a single point of contact (“SPOC”) and stack incentives for low-income multifamily customers. The rebates, when combined with MCE’s Multifamily Energy Savings program, cover up to 80% of total project costs. The program currently has a timeline of October 2017 – December 2023 with a budget of \$6.75 million.

Home Energy Savings (“HES”) Program

MCE’s Single-Family Direct Install program, or Home Energy Savings Program (“HES”), provides no-cost energy efficiency measures to eligible homeowners and tenants in single-family homes (up to 4 attached units) and dwellings in MCE’s service area. This program targets moderate-income customers whose household income falls between 200% and 400% of the Federal Poverty Guidelines (“FPG”). The target group’s income exceeds the limit to receive services through programs like PG&E’s Energy Savings Assistance (“ESA”) program and MCE’s LIFT Program, yet who are still too income constrained (lower middle-income) to participate in market rate programs. MCE will refer customers who fall outside of the moderate-income threshold to available low-income and market rate programs. MCE’s goal is to fill the service gap and introduce this market sector to the concepts of energy efficiency, while providing energy upgrades and emerging technologies that reduce household energy consumption. Energy efficiency measures offered under this program include: energy and water savings kits, energy advisor provided home assessments and envelope, heating, ventilation and cooling (HVAC) and electrification home upgrade measures.

The current budget for the HES program is \$2,366,392 for 2022 and \$2,384,874 for 2023. The current timeline for the program is 2022-2024, with project renewal every two years.

Heat Pump Water Heater (“HPWH”) Contractor Incentive Program

BayREN has partnered with MCE, East Bay Community Energy, Silicon Valley Power, City of Santa Clara, and CleanPower SF to offer a standardized midstream electrification program serving multiple Bay Area counties. The program seeks to develop the electrification market by providing Bay Area residential contractors incentives for the installation of HPWHs.

The program offers a \$1,000 incentive — paid directly to licensed contractors who replace homeowners’ natural gas or propane residential water heaters with high efficiency heat pump water heaters. Contractors enrolled in the BayREN Home+ program may participate in both programs and rebates are stackable. This program is self-funded by MCE and has a budget of \$300,000 to install 250 HPWHs in MCE’s service area.

The HPWH Contractor Incentive Program has also created a resource of all electrification programs serving the Bay Area and has developed HPWH resources⁵⁴ to help contractors and homeowners understand the benefits of this technology. MCE has contributed to a memo sharing learnings from the first year of the program, including contractor barriers to participation.⁵⁵

xi. Other

MCE has no additional information in response to this sub-section xi.

b. Disadvantaged Communities

In total, MCE serves 54,897 customer accounts located within DACs. This represents approximately 9.5% of MCE’s total customer accounts (approximately 580,000).

MCE is dedicated to reducing pollution impacts and encouraging the development, health, and prosperity of DAC within and outside our service area. In addition to the measures and programs described above, MCE’s commitment is reflected in the practices, programs, and policies described below.

Green Access and Community Solar Connection Programs

As described in Section d.ii., above, MCE is collaborating with the CPUC, IOUs, and other CCAs to develop community solar programs for customers in DACs. These programs will be supported

⁵⁴ <https://www.bayren.org/contractors/heat-pump-water-heater-hpwh-incentive-participating-contractors>.

⁵⁵ https://www.bayren.org/sites/default/files/2022-02/hpwh_learnings_may_2021_bayren_1.pdf

by the development of an additional 5.92 MW of new, local, clean energy capacity.

Sustainable Workforce and Diversity Policy

As described in Section d.ii., above, in 2017, MCE’s Board approved a Sustainable Workforce and Diversity Policy⁵⁶ to facilitate and encourage diversity and a sustainable workforce.

More recently, in 2022 MCE adopted Sustainable Workforce Guidelines⁵⁷ to create a more detailed plan for implementing its Sustainable Workforce and Diversity Policy.

These efforts have resulted in significant local developments. To date, MCE has helped build almost 48 MW of new renewable projects in our service area. All local projects over 1 MW were built with union labor. Additionally, in 2021 MCE launched two new community solar programs, Community Solar Connection and Green Access. These programs offer qualifying customers living in a CalEnviroScreen-designated DAC access to 100% renewable energy and a 20% discount on their electricity bills for up to 20 years. Both programs will be supported by the development of additional new clean energy resources.

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

c. Commission Direction of Actions

MCE is not seeking any specific direction of actions from the Commission at this time. However, MCE notes that it is aware of the Commission’s recent *Administrative Law Judge’s Ruling Seeking Comments on Staff Paper on Procurement Program and Potential Near-Term Actions to Encourage Additional Procurement* (“ALJ Ruling”).⁵⁸ MCE looks forward to exploring the options for a programmatic approach to procurement to meet the goals of the IRP process as outlined in the *Staff Paper on Programmatic Approaches to Electricity Procurement* included with the ALJ Ruling. Whichever programmatic approach the Commission ultimately adopts, it is critical for the Commission to ensure that any new program equitably reflects an LSE’s full contribution to

⁵⁶ See MCE November 16, 2017, Board of Directors Meeting Packet, Agenda Item No. 7 Attachment A <https://www.mcecleanenergy.org/wp-content/uploads/2020/05/MCE-Board-Meeting-Packet-November-2017.pdf>

⁵⁷ See https://www.mcecleanenergy.org/wp-content/uploads/2022/05/MCE-Sustainable-Workforce-Guidelines_05122022.pdf

⁵⁸ *Administrative Law Judge’s Ruling Seeking Comments on Staff Paper on Procurement Program and Potential Near-Term Actions to Encourage Additional Procurement*, issued September 8, 2022.

system reliability and achievement of California’s environmental goals and allows for flexibility to accommodate continuously evolving grid needs.

V. Lessons Learned

MCE shares the Commission’s commitment to robust and comprehensive integrated resource planning. MCE also understands the procedural and substantive complexity that defines IRP development at the state agency level and that continues through to individual LSEs as they respond to and integrate statutory and regulatory requirements into their resource planning efforts. However, in addition to the statutory requirements articulated in 454.52(a)(1)(A) -(I), MCE’s resource planning process must also give deference to its Board of Directors, which is granted statutory authority to govern MCE’s procurement and approve MCE’s IRP under 454.52(b)(3) and 366.2(a)(5). To meet all of the aforementioned statutory objectives and requirements, it is critical for MCE and other similarly situated LSEs to expect and receive timely and clear guidance from the Commission and adequate time to incorporate this guidance into its planning process. Administrative Law Judge Fitch alluded to this in the July 15, 2022 Ruling in which Energy Division Staff was directed to provide “final versions of the CSP Calculators and RDT . . .” within a reasonable period of time following July 1, 2022.⁵⁹ Despite this clear guidance, updated RDTs were provided to LSEs on Friday, September 30, 2022.⁶⁰ MCE appreciates these updates and the diligent work being done by Energy Division Staff, but revised templates and revised guidance this late in the process, no matter how insignificant or helpful, are disruptive to and dismissive of LSEs’ internal processes and timelines, particularly in the case of CCAs where other law governs procedure and timelines that must be followed when requesting their Boards take action. MCE urges the Commission to take steps in the next IRP cycle to adhere firmly to its timelines and the direction in its own rulings. Diligence on this front will aid all stakeholders in meeting statutory requirements and comprehensively and thoroughly addressing the state’s resource planning efforts.

⁵⁹ Load Forecast Ruling issued June 15, 2022, at 14.

⁶⁰ Email from Ali Eshraghi to Commission-jurisdictional LSEs, *Aggregated CAM Resources for LSEs [sic] Plan Development*, sent September 30, 2022; LSEs were initially advised of this update on Friday, September 23, 2022, via an email from James McGarry to Commission-jurisdictional LSEs, *Notice of IRP Template Update and Q&A document [sic]*, sent September 23, 2022.

Glossary of Terms

Alternative Portfolio: LSEs are permitted to submit “Alternative Portfolios” developed from scenarios using different assumptions from those used in the Preferred System Plan with updates. 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) methodology: the methodology used to estimate GHG, and criteria pollutant 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.

Effective Megawatts (MW): perfect capacity equivalent MW, such as the MW calculated by applying an ELCC % multiplier to nameplate MW.

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., a LOLE of 0.1.

Maximum Import Capability: a California ISO metric that represents a quantity in MWs of imports determined by the CAISO to be simultaneously deliverable to the aggregate of load in the ISO's Balancing Authority (BAA) Area and thus eligible for use in the Resource Adequacy process. The California ISO assess a MIC MW value for each intertie into the ISO's BAA and allocated yearly to the LSEs. A LSE's RA import showings are limited to its share of the MIC at each intertie.

Net Qualifying Capacity (NQC): 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.

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

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.*

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).*

Transmission Planning Process (TPP): *annual process conducted by the California Independent System Operator (CAISO) to identify potential transmission system limitations and areas that need reinforcements over a 10-year horizon.*

ATTACHMENT B

Calcs

resource	contract status	contracted_nameplate_capacity	is_hybrid_paired	can_charge_from_grid	contracted_generator_mw	contracted_storage_mw	contracted_storage_depth_mwh	buy_sell_own	contract_start_date_year	contract_start_date_month	contract_start_date_day
WHEAT1_6_LNDFIL	Online	2	NotHybrid		0	0	0	0	2013	7	1
PEABDY_2_LNDFIL	Online	2	NotHybrid		0	0	0	0	2013	7	1
GEYS13_7_UNIT13	Online	10	NotHybrid		0	0	0	0	2017	1	1
PLSMTG_7_LNCLND	Online	5	NotHybrid		0	0	0	0	2013	2	14
VOIAGR_2_VOYWD3	Online	0	NotHybrid		0	0	0	0	2018	12	29
NOVATO_6_LNDFIL	Online	4	NotHybrid		0	0	0	0	2017	9	14
BESKYN_2_A31SR1	Online	105	NotHybrid		0	0	0	0	2019	1	1
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2017	1	1
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2016	9	1
BSRTHV_2_DH1SR1	Online	80	NotHybrid		0	0	0	0	2020	12	17
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2016	10	6
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2016	10	6
TRNQLB_2_RO1SR1	Online	100	NotHybrid		0	0	0	0	2018	4	14
LTBERA_1_LB1SR1	Online	40	NotHybrid		0	0	0	0	2020	12	10
LTBEAR_1_LB3SR3	Online	20	NotHybrid		0	0	0	0	2020	12	10
LTBEAR_1_LB4SR4	Online	50	NotHybrid		0	0	0	0	2020	12	10
LTBEAR_1_LB4SR5	Online	50	NotHybrid		0	0	0	0	2020	12	10
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2012	10	23
MISTANG_2_SOLAR4	Online	30	NotHybrid		0	0	0	0	2015	6	25
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2020	8	30
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2020	8	30
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2019	8	1
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2019	8	1
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2019	8	1
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2021	3	30
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2021	3	30
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2020	9	30
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2018	12	10
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2018	7	31
EXISTING_GENERIC_SOLAR_FIXED	Online	0	NotHybrid		0	0	0	0	2019	5	14
GORCAN_1_SOLAR2	Online	11	NotHybrid		0	0	0	0	2015	5	22
GOOSLK_1_SOLAR1	Online	12	NotHybrid		0	0	0	0	2015	5	22
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2015	5	22
RICHMNV_1_CHVSR2	Online	9	NotHybrid		0	0	0	0	2017	12	22
RICHMNV_1_SOLAR	Online	2	NotHybrid		0	0	0	0	2017	12	22
KANCONV_6_UNIT	Online	11	NotHybrid		0	0	0	0	2021	7	5
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2021	3	30
EXISTING_GENERIC_SOLAR_FIXED	Online	5	NotHybrid		0	0	0	0	2021	9	30
EXISTING_GENERIC_SOLAR_FIXED	Online	2	NotHybrid		0	0	0	0	2022	5	21
STRAUSSWIND	Development	91	NotHybrid		0	0	0	0			
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2021	12	1
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2021	10	1
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2021	12	1
NEW_GENERIC_SOLAR_FIXED	Development	5	NotHybrid		0	0	0	0	2022	11	30
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid		0	0	0	0	2021	11	1
EXISTING_GENERIC_BIOMASS/WOOD	Online	1	NotHybrid		0	0	0	0	2022	7	16
GOOSLK_1_SOLAR1	Online	0	NotHybrid		0	0	0	Self	2021	9	6
GORCAN_1_SOLAR2	Online	0	NotHybrid		0	0	0	Self	2021	11	1
GOOSLK_1_SOLAR1	Online	0	NotHybrid		0	0	0	Self	2022	1	17
NEW_GENERIC_SOLAR_LAXIS	Development	100	NewSolarNewStorage	NO	100	92		368	2025	3	1
NEW_GENERIC_SOLAR_LAXIS	Development	2	NewSolarNewStorage	NO	2	0.8		32	2024	2	22
NEW_GENERIC_SOLAR_LAXIS	Development	0	NotHybrid		0	0	0	0	2023	12	31
NEW_GENERIC_SOLAR_LAXIS	Development	4	NotHybrid		0	0	0	0	2023	12	31
NEW_GENERIC_SOLAR_LAXIS	Development	110	NewSolarNewStorage	NO	110	60		240	2023	8	28
GOCOPP_2_CTG4	Online	81	NotHybrid		0	0	0	0	2023	5	1
AGRICO_7_UNIT	Online	50	NotHybrid		0	0	0	0	2020	1	1
BOGUE_1_UNITA1	Online	32	NotHybrid		0	0	0	0	2023	1	1
SUTTER_2_CISO	Online	70	NotHybrid		0	0	0	0	2021	1	1
EXISTING_GENERIC_COMBINED_CYCLE	Online	25	NotHybrid		0	0	0	0	2022	1	1
EXISTING_GENERIC_COMBINED_CYCLE	Online	15	NotHybrid		0	0	0	0	2022	7	1
EXISTING_GENERIC_COMBINED_CYCLE	Online	15	NotHybrid		0	0	0	0	2023	1	1
EXISTING_GENERIC_DR	Online	20	NotHybrid		0	0	0	0	2023	4	1
NEW_GENERIC_BATTERY_STORAGE	Development	185	NotHybrid		0	0	0	740	2024	4	1
CAMCHE_1_PL1X3	Online	0	NotHybrid		0	0	0	0	2015	7	1
PARDEB_6_UNITS	Online	0	NotHybrid		0	0	0	0	2023	1	1
EXISTING_GENERIC_INSTATE_LARGE_H	Online	0	NotHybrid		0	0	0	0	2024	1	1
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid		0	0	0	0	2021	1	1
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid		0	0	0	0	2021	1	1
EXCHEC_7_UNIT1	Online	0	NotHybrid		0	0	0	0	2022	1	1
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid		0	0	0	0	2023	1	1
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid		0	0	0	0	2022	5	20
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid		0	0	0	0	2023	1	1
EXISTING_GENERIC_INSTATE_LARGE_H	Online	0	NotHybrid		0	0	0	0	2015	1	1
EXISTING_GENERIC_INSTATE_LARGE_H	Online	0	NotHybrid		0	0	0	0	2025	1	1
EXISTING_GENERIC_INSTATE_LARGE_H	PlannedExisting	0	NotHybrid		0	0	0	Buy	2024	1	1
EXISTING_GENERIC_DR	Online	0	NotHybrid		0	0	0	Buy	2023	1	1
NEW_GENERIC_WIND	PlannedNew	100	NotHybrid		0	0	0	0	2026	1	1
CREZ_GENERIC_NEW_MEXICO_WIND	PlannedNew	70	NotHybrid		0	0	0	0	2020	1	1
CREZ_GENERIC_MORRO_BAY_OFFSHOR	PlannedNew	95	NotHybrid		0	0	0	0	2033	1	1
NEW_GENERIC_GEOTHERMAL	PlannedNew	75	NotHybrid		0	0	0	0	2030	1	1
NEW_GENERIC_BATTERY_STORAGE	PlannedNew	40	NotHybrid		0	0	320	0	2026	1	1
EXISTING_GENERIC_BIOMASS/WOOD	Online	0	NotHybrid		0	0	0	Buy	2023	1	1
EXISTING_GENERIC_SOLAR_FIXED	Online	0	NotHybrid		0	0	0	Buy	2023	1	1

EXISTING_GENERIC_WIND	Online	0	NotHybrid	0	0	0	0	0	Buy	2023	1	1
EXISTING_GENERIC_INSTATE_SMALL_H	Online	0	NotHybrid	0	0	0	0	0	Buy	2023	1	1
EXISTING_GENERIC_GEO_THERMAL	Online	0	NotHybrid	0	0	0	0	0	Buy	2023	1	1
EXISTING_GENERIC_BIOMASS_WOOD	PlannedExisting	0	NotHybrid	0	0	0	0	0	0	2023	1	1
EXISTING_GENERIC_SOLAR_FIXED	PlannedExisting	0	NotHybrid	0	0	0	0	0	0	2023	1	1
EXISTING_GENERIC_WIND	PlannedExisting	0	NotHybrid	0	0	0	0	0	0	2023	1	1
EXISTING_GENERIC_INSTATE_SMALL_H	PlannedExisting	0	NotHybrid	0	0	0	0	0	0	2023	1	1
EXISTING_GENERIC_GEO_THERMAL	PlannedExisting	0	NotHybrid	0	0	0	0	0	0	2023	1	1
EXISTING_GENERIC_NW_HYDRO	PlannedExisting	0	NotHybrid	0	0	0	0	0	0	2023	1	1
NEW_GENERIC_BATTERY_STORAGE	PlannedNew	50	NotHybrid	0	0	0	0	400	0	2030	1	1
NEW_GENERIC_BATTERY_STORAGE	PlannedNew	200	NotHybrid	0	0	0	0	800	0	2028	1	1
NEW_GENERIC_BATTERY_STORAGE	PlannedNew	200	NotHybrid	0	0	0	0	800	0	2034	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	750	NotHybrid	0	0	0	0	0	0	2023	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	686	NotHybrid	0	0	0	0	0	0	2024	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	639	NotHybrid	0	0	0	0	0	0	2025	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	731	NotHybrid	0	0	0	0	0	0	2026	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	672	NotHybrid	0	0	0	0	0	0	2027	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	498	NotHybrid	0	0	0	0	0	0	2028	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	535	NotHybrid	0	0	0	0	0	0	2029	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	425	NotHybrid	0	0	0	0	0	0	2030	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	518	NotHybrid	0	0	0	0	0	0	2031	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	542	NotHybrid	0	0	0	0	0	0	2032	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	530	NotHybrid	0	0	0	0	0	0	2033	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	541	NotHybrid	0	0	0	0	0	0	2034	1	1
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	549	NotHybrid	0	0	0	0	0	0	2035	1	1
NEW_GENERIC_DR	Review	15	NotHybrid	0	0	0	0	0	0	2023	1	1
EXISTING_GENERIC_COMBINED_CYCLE	Online	44	NotHybrid	0	0	0	0	0	0	2024	1	1
EXISTING_GENERIC_COMBINED_CYCLE	Online	39	NotHybrid	0	0	0	0	0	0	2024	1	1
EXISTING_GENERIC_COMBINED_CYCLE	Online	61	NotHybrid	0	0	0	0	0	0	2024	1	1
EXISTING_GENERIC_COGEN	Online	4	NotHybrid	0	0	0	0	0	0	2024	1	1
EXISTING_GENERIC_COGEN	Online	3	NotHybrid	0	0	0	0	0	0	2024	1	1
EXISTING_GENERIC_COGEN	Online	1	NotHybrid	0	0	0	0	0	0	2024	1	1
EXISTING_GENERIC_BATTERY_STORAGE	Online	23	NotHybrid	0	0	0	0	93.23439546	0	2024	1	1
NEW_GENERIC_BATTERY_STORAGE	Development	6	NotHybrid	0	0	0	0	23.30859887	0	2025	1	1
NEW_GENERIC_BATTERY_STORAGE	Development	0	NotHybrid	0	0	0	0	0.385368835	0	2024	1	1

Calcs

2024	12	31	EnergyOnly	0	in state w	n/a	in state w	2023	2024	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	12	31	EnergyOnly	0	hydro	n/a	hydro	2023	2024	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	12	31	EnergyOnly	0	geotherma	n/a	geotherma	2023	2024	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2042	12	31	EnergyOnly	0	biomass w	n/a	biomass w	2023	2042	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2042	12	31	EnergyOnly	0	utility pv	n/a	utility pv	2023	2042	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2042	12	31	EnergyOnly	0	in state w	n/a	in state w	2023	2042	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2042	12	31	EnergyOnly	0	hydro	n/a	hydro	2023	2042	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2042	12	31	EnergyOnly	0	geotherma	n/a	geotherma	2023	2042	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2042	12	31	EnergyOnly	0	hydro	n/a	hydro	2023	2042	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2049	12	31	EnergyCapacity	1	8hr batter	n/a	8hr batter	2030	2049	100%	100%	0	0	0	0	0	44.5	42.56	40.62	38.68	36.74	34.8		
2047	12	31	EnergyCapacity	1	4hr batter	n/a	4hr batter	2028	2047	100%	100%	0	0	0	0	163.2	170.6	178	158.44	138.88	119.32	99.76	80.2	
2053	12	31	EnergyCapacity	1	4hr batter	n/a	4hr batter	2034	2053	100%	100%	0	0	0	0	0	0	0	0	0	0	99.76	80.2	
2023	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2023	2023	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2024	2024	100%	100%	579.022	0	0	0	0	0	0	0	0	0	0	0	0
2025	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2025	2025	100%	100%	0	545.5706	0	0	0	0	0	0	0	0	0	0	0
2026	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2026	2026	100%	100%	0	0	630.8817	0	0	0	0	0	0	0	0	0	0
2027	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2027	2027	100%	100%	0	0	0	582.1873	0	0	0	0	0	0	0	0	0
2028	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2028	2028	100%	100%	0	0	0	0	0	432.8511	0	0	0	0	0	0	0
2029	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2029	2029	100%	100%	0	0	0	0	0	0	459.8663	0	0	0	0	0	0
2030	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2030	2030	100%	100%	0	0	0	0	0	0	0	361.2277	0	0	0	0	0
2031	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2031	2031	100%	100%	0	0	0	0	0	0	0	0	446.2075	0	0	0	0
2032	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2032	2032	100%	100%	0	0	0	0	0	0	0	0	0	473.0909	0	0	0
2033	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2033	2033	100%	100%	0	0	0	0	0	0	0	0	0	0	468.6887	0	0
2034	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2034	2034	100%	100%	0	0	0	0	0	0	0	0	0	0	0	484.6144	0
2035	12	31	CapacityOnly	1	gas cc	n/a	gas cc	2035	2035	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	498.0705
2032	12	31	CapacityOnly	1	demand re	n/a	demand re	2032	2032	100%	100%	11.58606	11.96252	12.33898	11.6225	10.90682	11.97616	12.9455	10.7884	8.6313	0	0	0	0
2026	12	31	EnergyCapacity	1	gas cc	n/a	gas cc	2026	2026	100%	100%	37.38013	37.81115	38.24217	0	0	0	0	0	0	0	0	0	0
2025	12	31	EnergyCapacity	1	gas cc	n/a	gas cc	2024	2025	100%	100%	33.11748	33.49935	0	0	0	0	0	0	0	0	0	0	0
2024	12	31	EnergyCapacity	1	gas cc	n/a	gas cc	2024	2024	100%	100%	51.67638	0	0	0	0	0	0	0	0	0	0	0	0
2024	12	31	EnergyCapacity	1	cogen	n/a	cogen	2024	2024	100%	100%	3.402331	0	0	0	0	0	0	0	0	0	0	0	0
2025	12	31	EnergyCapacity	1	cogen	n/a	cogen	2024	2025	100%	100%	2.895601	2.889729	0	0	0	0	0	0	0	0	0	0	0
2026	12	31	EnergyCapacity	1	cogen	n/a	cogen	2024	2026	100%	100%	1.266825	1.264257	1.261688	0	0	0	0	0	0	0	0	0	0
2035	12	31	CapacityOnly	1	4hr batter	n/a	4hr batter	2024	2035	100%	100%	19.90554	20.13863	20.37172	19.69577	19.01982	19.88223	20.74465	18.46507	16.18549	13.90591	11.62633	9.346748	
2035	12	31	CapacityOnly	1	4hr batter	n/a	4hr batter	2025	2035	100%	100%	0	5.034657	5.092929	4.923942	4.754954	4.970559	5.186163	4.616268	4.046373	3.476478	2.906582	2.336687	
2035	12	31	EnergyCapacity	1	4hr batter	n/a	4hr batter	2024	2035	100%	100%	0.066352	0.067129	0.067906	0.065653	0.063399	0.066274	0.069149	0.06155	0.053952	0.046353	0.038754	0.031156	

CSPReportSheet

Resource	2024	2026	2030	2035	Units	Type
Large Hydro	845	525	525	525	GWh	GHG-Free
Imported Hydro	1,150	766	69	120	GWh	GHG-Free
Asset Controlling Supplier	-	-	-	-	GWh	GHG-Free (Partial)
Nuclear	-	-	-	-	GWh	GHG-Free
Biogas	80	80	80	30	GWh	RPS Eligible
Biomass	65	38	4	16	GWh	RPS Eligible
Geothermal	332	454	1,753	1,785	GWh	RPS Eligible
Small Hydro	291	106	37	69	GWh	RPS Eligible
Wind Resources						
Wind Existing California	606	783	438	461	GWh	RPS Eligible
Wind New PG&E	291	290	290	290	GWh	RPS Eligible
Wind New SCE SDG&E	-	263	263	263	GWh	RPS Eligible
Wind Pacific Northwest	-	-	-	-	GWh	RPS Eligible
Wind Wyoming	-	-	-	-	GWh	RPS Eligible
Wind New Mexico	-	-	250	250	GWh	RPS Eligible
Wind Offshore Morro Bay	-	-	-	400	GWh	RPS Eligible
Wind Offshore Humboldt	-	-	-	-	GWh	RPS Eligible
Solar Resources						
Solar Existing California	1,815	1,649	1,451	1,137	GWh	RPS Eligible
Solar New PG&E	-	-	-	-	GWh	RPS Eligible
Solar New SCE SDG&E	-	-	-	-	GWh	RPS Eligible
Solar Distributed	32	32	32	31	GWh	RPS Eligible
Hybrid						
Hybrid or Paired Solar and Battery	328	626	614	596	GWh	RPS Eligible
Storage & DR						
Shed DR	15	15	15	-	MW	GHG-Free
Pumped Storage	-	-	-	-	MW	n/a
Battery Storage	649	857	2,057	2,117	MWh Energy Capacity	n/a
User-Specified Profiles						
Storage Resource Custom Profile	-	-	-	-	MW	n/a
RPS Resource Custom Profile	-	-	-	-	GWh	RPS Eligible
GHG-free non-RPS Resource	-	-	-	-	GWh	GHG-Free
Coal						
Coal	-	-	-	-	GWh	n/a

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Table with columns: ha_unique_contract_id, prevous_CO2_month, previous_CO2_day, remediat_on_plan, signed_contract, notice_to_proceed, public_contract, buying_emerency_cacp_ty, NDC_reporting_source, procurement_origin, csp_resource_catrgory, csp_annual_2024, csp_annual_2025, csp_annual_2026, csp_annual_2027, macro_supertype, notes

Table with columns: ha_unique_contract_id, prevous_CO2_month, previous_CO2_day, remediat_on_plan, signed_contract, notice_to_proceed, public_contract, buying_emerency_cacp_ty, NDC_reporting_source, procurement_origin, csp_resource_catrgory, csp_annual_2024, csp_annual_2025, csp_annual_2026, csp_annual_2027, macro_supertype, notes

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resource	contract_status	contracted_nameplate_capacity	is_hybrid_paired	can_charge_from_grid	contracted_generator_mw	contracted_storage_mw	contracted_storage_depth_mwh	buy_sell_own	contract_start_date_year	contract_start_date_month	contract_start_date_day	contract_end_date_year
WHEATL_6_LNDFIL	Online	2	NotHybrid	0	0	0	0	0	2013	7	7	2031
PEABODY_2_LNDFIL	Online	2	NotHybrid	0	0	0	0	0	2013	7	7	2033
GOSS13_7_UNIT13	Online	10	NotHybrid	0	0	0	0	0	2017	2	1	2036
PLSNRG_7_LNCLND	Online	5	NotHybrid	0	0	0	0	0	2013	5	14	2033
VOYAGR_2_VOYWD3	Online	0	NotHybrid	0	0	0	0	0	2018	12	29	2030
NOVATO_6_LNDFIL	Online	4	NotHybrid	0	0	0	0	0	2017	9	14	2037
BGSKYN_2_AS2SR1	Online	105	NotHybrid	0	0	0	0	0	2019	1	1	2038
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2017	3	2	2037
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2016	12	9	2036
DSRTHV_2_DH1SR1	Online	80	NotHybrid	0	0	0	0	0	2020	12	17	2040
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2016	10	6	2036
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2016	10	6	2036
TRNGLB_2_RO1SR1	Online	100	NotHybrid	0	0	0	0	0	2018	4	14	2033
LTBERA_1_LB1SR1	Online	40	NotHybrid	0	0	0	0	0	2020	12	10	2040
LTBEAR_1_LB3SR3	Online	20	NotHybrid	0	0	0	0	0	2020	12	10	2040
LTBEAR_1_LB4SR4	Online	50	NotHybrid	0	0	0	0	0	2020	12	10	2040
LTBEAR_1_LB4SR5	Online	50	NotHybrid	0	0	0	0	0	2020	12	10	2040
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2012	10	23	2032
MSTANG_2_SOLAR4	Online	30	NotHybrid	0	0	0	0	0	2015	6	25	2032
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2020	8	30	2040
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2020	8	30	2040
EXISTING_GENERIC_SOLAR_FIXED	Online	4	NotHybrid	0	0	0	0	0	2019	9	1	2039
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2019	9	1	2039
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2019	9	1	2039
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2021	3	30	2041
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2021	3	30	2041
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2020	9	30	2040
EXISTING_GENERIC_SOLAR_FIXED	Online	2	NotHybrid	0	0	0	0	0	2018	12	10	2038
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2018	7	31	2038
EXISTING_GENERIC_SOLAR_FIXED	Online	0	NotHybrid	0	0	0	0	0	2019	5	14	2039
CORCAN_1_SOLAR2	Online	11	NotHybrid	0	0	0	0	0	2015	5	22	2040
GOOSLK_1_SOLAR1	Online	12	NotHybrid	0	0	0	0	0	2015	5	22	2040
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2015	5	22	2040
RICHMIN_1_CHE2R2	Online	3	NotHybrid	0	0	0	0	0	2017	12	22	2037
RICHMIN_1_SOLAR	Online	2	NotHybrid	0	0	0	0	0	2017	12	22	2037
KRNCNY_6_UNIT	Online	11	NotHybrid	0	0	0	0	0	2021	7	5	2036
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2021	9	30	2041
EXISTING_GENERIC_SOLAR_FIXED	Online	5	NotHybrid	0	0	0	0	0	2021	3	30	2041
EXISTING_GENERIC_SOLAR_FIXED	Online	3	NotHybrid	0	0	0	0	0	2021	3	30	2041
STRASSWIND	Development	91	NotHybrid	0	0	0	0	0	2021	8	21	2042
EXISTING_GENERIC_SOLAR_FIXED	Online	9	NotHybrid	0	0	0	0	0	2021	12	1	2041
EXISTING_GENERIC_SOLAR_FIXED	Online	1	NotHybrid	0	0	0	0	0	2021	10	1	2041
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2021	12	1	2041
NEW_GENERIC_SOLAR_FIXED	Development	5	NotHybrid	0	0	0	0	0	2022	11	30	2042
EXISTING_GENERIC_SOLAR_FIXED	Online	7	NotHybrid	0	0	0	0	0	2021	11	7	2041
EXISTING_GENERIC_BIOMASS/WOOD	Online	3	NotHybrid	0	0	0	0	0	2022	7	16	2032
GOOSLK_1_SOLAR1	Online	0	NotHybrid	0	0	0	0	Self	2021	9	1	2024
CORCAN_1_SOLAR2	Online	0	NotHybrid	0	0	0	0	Self	2021	11	1	2024
GOOSLK_1_SOLAR1	Online	0	NotHybrid	0	0	0	0	Self	2022	1	17	2024
NEW_GENERIC_SOLAR_1AXIS	Development	100	NewSolar/NewStorage	NO	100	92	368	0	2025	3	1	2040
NEW_GENERIC_SOLAR_1AXIS	Development	2	NewSolar/NewStorage	NO	2	0.8	3.2	0	2024	2	22	2044
NEW_GENERIC_SOLAR_1AXIS	Development	0	NotHybrid	0	0	0	0	0	2023	12	31	2043
NEW_GENERIC_SOLAR_1AXIS	Development	4	NotHybrid	0	0	0	0	0	2023	12	31	2043
NEW_GENERIC_SOLAR_1AXIS	Development	110	NewSolar/NewStorage	NO	110	60	240	0	2023	8	28	2038
COCOPP_2_CTG4	Online	81	NotHybrid	0	0	0	0	0	2023	5	1	2026
AGRICO_7_UNIT	Online	50	NotHybrid	0	0	0	0	0	2020	1	1	2030
BOGUE_1_UNIT1	Online	32	NotHybrid	0	0	0	0	0	2023	1	1	2024
SUTTER_2_CS0	Online	70	NotHybrid	0	0	0	0	0	2021	1	1	2027
EXISTING_GENERIC_COMBINED_CYCLE	Online	25	NotHybrid	0	0	0	0	0	2023	1	1	2028
EXISTING_GENERIC_COMBINED_CYCLE	Online	15	NotHybrid	0	0	0	0	0	2022	7	1	2030
EXISTING_GENERIC_COMBINED_CYCLE	Online	15	NotHybrid	0	0	0	0	0	2023	1	1	2030
EXISTING_GENERIC_DR	Online	20	NotHybrid	0	0	0	0	0	2023	4	1	2025
NEW_GENERIC_BATTERY_STORAGE	Development	185	NotHybrid	0	0	0	740	0	2024	4	1	2034
CAMCHE_1_PL1X3	Online	0	NotHybrid	0	0	0	0	0	2015	7	7	2025
PARDEB_8_UNITS	Online	0	NotHybrid	0	0	0	0	0	2023	1	1	2024
EXISTING_GENERIC_INSTATE_LARGE_H	Online	0	NotHybrid	0	0	0	0	0	2024	1	1	2024
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid	0	0	0	0	0	2021	1	1	2024
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid	0	0	0	0	0	2021	1	1	2024
EXCHEC_7_UNIT_1	Online	0	NotHybrid	0	0	0	0	0	2022	1	1	2024
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid	0	0	0	0	0	2023	1	1	2025
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid	0	0	0	0	0	2020	5	20	2025
EXISTING_GENERIC_NW_HYDRO	Online	0	NotHybrid	0	0	0	0	0	2023	1	1	2025
EXISTING_GENERIC_INSTATE_LARGE_H	Online	0	NotHybrid	0	0	0	0	0	2015	1	1	2024
EXISTING_GENERIC_INSTATE_LARGE_H	Online	0	NotHybrid	0	0	0	0	0	2025	1	1	2054
EXISTING_GENERIC_INSTATE_LARGE_H	PlannedExisting	0	NotHybrid	0	0	0	0	Buy	2024	1	1	2043
EXISTING_GENERIC_DR	Online	0	NotHybrid	0	0	0	0	Buy	2023	1	1	2042
NEW_GENERIC_WIND	PlannedNew	100	NotHybrid	0	0	0	0	0	2026	1	1	2045
CREEZ_GENERIC_NEW_MEXICO_WIND	PlannedNew	70	NotHybrid	0	0	0	0	0	2030	1	1	2049
CREEZ_GENERIC_AKAROO_BAY_OFSHOE	PlannedNew	91	NotHybrid	0	0	0	0	0	2031	1	1	2051
NEW_GENERIC_GEOHERMAL	PlannedNew	75	NotHybrid	0	0	0	0	0	2030	1	1	2049
NEW_GENERIC_BATTERY_STORAGE	PlannedNew	40	NotHybrid	0	0	0	320	0	2026	1	1	2045
EXISTING_GENERIC_BIOMASS/WOOD	Online	0	NotHybrid	0	0	0	0	Buy	2023	1	1	2024
EXISTING_GENERIC_SOLAR_FIXED	Online	0	NotHybrid	0	0	0	0	Buy	2023	1	1	2024
EXISTING_GENERIC_WIND	Online	0	NotHybrid	0	0	0	0	Buy	2023	1	1	2024
EXISTING_GENERIC_INSTATE_SMALL_H	Online	0	NotHybrid	0	0	0	0	Buy	2023	1	1	2023
EXISTING_GENERIC_GEOHERMAL	Online	0	NotHybrid	0	0	0	0	Buy	2023	1	1	2024
EXISTING_GENERIC_BIOMASS/WOOD	PlannedExisting	0	NotHybrid	0	0	0	0	0	2023	1	1	2042
EXISTING_GENERIC_SOLAR_FIXED	PlannedExisting	0	NotHybrid	0	0	0	0	0	2023	1	1	2042
EXISTING_GENERIC_WIND	PlannedExisting	0	NotHybrid	0	0	0	0	0	2023	1	1	2042
EXISTING_GENERIC_INSTATE_SMALL_H	PlannedExisting	0	NotHybrid	0	0	0	0	0	2023	1	1	2042
EXISTING_GENERIC_GEOHERMAL	PlannedExisting	0	NotHybrid	0	0	0	0	0	2023	1	1	2042
EXISTING_GENERIC_NW_HYDRO	PlannedExisting	0	NotHybrid	0	0	0	0	0	2023	1	1	2042
NEW_GENERIC_BATTERY_STORAGE	PlannedNew	50	NotHybrid	0	0	0	400	0	2030	1	1	2049

Calcs

NEW_GENERIC_BATTERY_STORAGE	PlannedNew	200	NoHybrid	0	0	0	0	800	0	2028	1	1	2047
NEW_GENERIC_BATTERY_STORAGE	PlannedNew	200	NoHybrid	0	0	0	0	800	0	2034	1	1	2053
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	750	NoHybrid	0	0	0	0	0	0	2023	1	1	2023
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	686	NoHybrid	0	0	0	0	0	0	2024	1	1	2024
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	639	NoHybrid	0	0	0	0	0	0	2025	1	1	2025
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	731	NoHybrid	0	0	0	0	0	0	2026	1	1	2026
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	672	NoHybrid	0	0	0	0	0	0	2027	1	1	2027
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	498	NoHybrid	0	0	0	0	0	0	2028	1	1	2028
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	535	NoHybrid	0	0	0	0	0	0	2029	1	1	2029
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	423	NoHybrid	0	0	0	0	0	0	2030	1	1	2030
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	518	NoHybrid	0	0	0	0	0	0	2031	1	1	2031
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	542	NoHybrid	0	0	0	0	0	0	2032	1	1	2032
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	530	NoHybrid	0	0	0	0	0	0	2033	1	1	2033
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	541	NoHybrid	0	0	0	0	0	0	2034	1	1	2034
EXISTING_GENERIC_COMBINED_CYCLE	PlannedExisting	549	NoHybrid	0	0	0	0	0	0	2035	1	1	2035
NEW_GENERIC_DR	Review	15	NoHybrid	0	0	0	0	0	0	2023	1	1	2023
EXISTING_GENERIC_COMBINED_CYCLE	Online	44	NoHybrid	0	0	0	0	0	0	2024	1	1	2024
EXISTING_GENERIC_COMBINED_CYCLE	Online	39	NoHybrid	0	0	0	0	0	0	2024	1	1	2024
EXISTING_GENERIC_COMBINED_CYCLE	Online	61	NoHybrid	0	0	0	0	0	0	2024	1	1	2024
EXISTING_GENERIC_COGEN	Online	4	NoHybrid	0	0	0	0	0	0	2024	1	1	2024
EXISTING_GENERIC_COGEN	Online	3	NoHybrid	0	0	0	0	0	0	2024	1	1	2024
EXISTING_GENERIC_COGEN	Online	2	NoHybrid	0	0	0	0	0	0	2024	1	1	2024
EXISTING_GENERIC_BATTERY_STORAGE	Online	23	NoHybrid	0	0	0	0	93.23439546	0	2024	1	1	2025
NEW_GENERIC_BATTERY_STORAGE	Development	6	NoHybrid	0	0	0	0	23.30859887	0	2025	1	1	2035
NEW_GENERIC_BATTERY_STORAGE	Development	0	NoHybrid	0	0	0	0	0.385368835	0	2024	1	1	2035

Cals

Table with columns: resource, contract end date month, contract end date day, buying energy capacity, multiplier, resource type/contract type, start year, end year, hybrid start, short duration, and energy capacity values from 2024 to 2035. Includes various resource types like Wind, Solar, Hydro, and Battery Storage.

Calcs

NEW_GENERIC BATTERY STORAGE	12	31	EnergyCapacity	1	4hr_batter	n/a	4hr_batter	2028	2047	100%	100%	0	0	0	0	154.6	151.8	149	135.24	121.48	107.72	93.96	80.2
NEW_GENERIC BATTERY STORAGE	12	31	EnergyCapacity	1	4hr_batter	n/a	4hr_batter	2034	2053	100%	100%	0	0	0	0	0	0	0	0	0	0	93.96	80.2
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2023	2022	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2024	2024	100%	100%	581.8292	0	0	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2025	2025	100%	100%	0	551.2262	0	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2026	2026	100%	100%	0	0	640.9263	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2027	2027	100%	100%	0	0	0	587.4485	0	0	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2028	2028	100%	100%	0	0	0	0	433.8718	0	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2029	2029	100%	100%	0	0	0	0	0	460.5771	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2030	2030	100%	100%	0	0	0	0	0	0	361.4858	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2031	2031	100%	100%	0	0	0	0	0	0	0	447.0256	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2032	2032	100%	100%	0	0	0	0	0	0	0	0	474.4736	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2033	2033	100%	100%	0	0	0	0	0	0	0	0	0	470.556	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2034	2034	100%	100%	0	0	0	0	0	0	0	0	0	0	487.0462	0
EXISTING_GENERIC COMBINED CYCLE	12	31	CapacityOnly	1	gas_cc	n/a	gas_cc	2035	2035	100%	100%	0	0	0	0	0	0	0	0	0	0	0	501.0718
NEW_GENERIC DR	12	31	CapacityOnly	1	demand_re	n/a	demand_re	2023	2032	100%	100%	13.395	13.62527	13.85554	11.58527	9.315	9.08	8.865	7.524	6.183	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	EnergyCapacity	1	gas_cc	n/a	gas_cc	2024	2026	100%	100%	37.56135	38.20312	38.84488	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	EnergyCapacity	1	gas_cc	n/a	gas_cc	2024	2025	100%	100%	33.27804	33.84662	0	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COMBINED CYCLE	12	31	EnergyCapacity	1	gas_cc	n/a	gas_cc	2024	2024	100%	100%	51.92692	0	0	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COGEN	12	31	EnergyCapacity	1	cogen	n/a	cogen	2024	2024	100%	100%	3.268641	0	0	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COGEN	12	31	EnergyCapacity	1	cogen	n/a	cogen	2024	2025	100%	100%	2.781822	2.861703	0	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC COGEN	12	31	EnergyCapacity	1	cogen	n/a	cogen	2024	2026	100%	100%	1.217047	1.251995	1.286943	0	0	0	0	0	0	0	0	0
EXISTING_GENERIC BATTERY STORAGE	12	31	CapacityOnly	1	4hr_batter	n/a	4hr_batter	2024	2035	100%	100%	20.62911	21.01271	21.39129	19.70742	18.01755	17.69123	17.36491	15.76127	14.15764	12.55401	10.95038	9.346748
NEW_GENERIC BATTERY STORAGE	12	31	CapacityOnly	1	4hr_batter	n/a	4hr_batter	2025	2035	100%	100%	0	5.253175	5.349323	4.926855	4.504387	4.422807	4.341227	3.940319	3.539411	3.138503	2.737595	2.336687
NEW_GENERIC BATTERY STORAGE	12	31	EnergyCapacity	1	4hr_batter	n/a	4hr_batter	2024	2035	100%	100%	0.06876	0.070042	0.071324	0.065691	0.060058	0.058971	0.057883	0.052538	0.047192	0.041847	0.036501	0.031158

CSPReportSheet

Resource	2024	2026	2030	2035	Units	Type
Large Hydro	845	525	525	525	GWh	GHG-Free
Imported Hydro	1,150	766	69	120	GWh	GHG-Free
Asset Controlling Supplier	-	-	-	-	GWh	GHG-Free (Partial)
Nuclear	-	-	-	-	GWh	GHG-Free
Biogas	80	80	80	30	GWh	RPS Eligible
Biomass	65	38	4	16	GWh	RPS Eligible
Geothermal	332	454	1,753	1,785	GWh	RPS Eligible
Small Hydro	291	106	37	69	GWh	RPS Eligible
Wind Resources						
Wind Existing California	606	783	438	461	GWh	RPS Eligible
Wind New PG&E	291	290	290	290	GWh	RPS Eligible
Wind New SCE SDG&E	-	263	263	263	GWh	RPS Eligible
Wind Pacific Northwest	-	-	-	-	GWh	RPS Eligible
Wind Wyoming	-	-	-	-	GWh	RPS Eligible
Wind New Mexico	-	-	250	250	GWh	RPS Eligible
Wind Offshore Morro Bay	-	-	-	400	GWh	RPS Eligible
Wind Offshore Humboldt	-	-	-	-	GWh	RPS Eligible
Solar Resources						
Solar Existing California	1,815	1,649	1,451	1,137	GWh	RPS Eligible
Solar New PG&E	-	-	-	-	GWh	RPS Eligible
Solar New SCE SDG&E	-	-	-	-	GWh	RPS Eligible
Solar Distributed	32	32	32	31	GWh	RPS Eligible
Hybrid						
Hybrid or Paired Solar and Battery	328	626	614	596	GWh	RPS Eligible
Storage & DR						
Shed DR	15	15	15	-	MW	GHG-Free
Pumped Storage	-	-	-	-	MW	n/a
Battery Storage	649	857	2,057	2,117	MWh Energy Capacity	n/a
User-Specified Profiles						
Storage Resource Custom Profile	-	-	-	-	MW	n/a
RPS Resource Custom Profile	-	-	-	-	GWh	RPS Eligible
GHG-free non-RPS Resource	-	-	-	-	GWh	GHG-Free
Coal						
Coal	-	-	-	-	GWh	n/a

ATTACHMENT D

Supply Inputs

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Supply Inputs

Table with columns for month and day, and a large grid of empty cells for data entry.

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Demand Inputs

Table with multiple columns: Category, Unit, 2014, 2015, 2016, 2017, Notes. Rows include: Demand Inputs (2014-2017), Massed Demand (2014-2017), Demand Shaped (2014-2017), Active Demand Inputs (2014-2017), and Check Summary (2014-2017). Contains various sub-items like 'Behind The Meter Photovoltaics (BTM PV)', 'Behind The Meter Storage Capacity (BTM Storage)', and 'Behind The Meter Photovoltaics (BTM PV)'. Includes detailed notes on how values are calculated and aggregated.

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25 MMT in 2035					
Emissions Summary					
Emissions Total	Unit	2024	2026	2030	2035
CO ₂	MMt/yr	0.265	0.390	0.493	0.492
PM2.5	tonnes/yr	38	34	33	28
SO ₂	tonnes/yr	18	15	12	7
NOx	tonnes/yr	137	114	95	64
Emissions by resource type					
CO ₂	Unit	2024	2026	2030	2035
Coal	MMt/yr	-	-	-	-
CHP	MMt/yr	0.14	0.14	0.13	0.08
Biogas	MMt/yr	-	-	-	-
Biomass	MMt/yr	-	-	-	-
System Power	MMt/yr	0.13	0.25	0.36	0.41
Asset Controlling Supplier	MMt/yr	-	-	-	-
Total	MMt/yr	0.26	0.39	0.49	0.49
Average emissions intensity	tCO ₂ /MWh	0.046	0.068	0.083	0.081
Oversupply Emissions Credits	MMt/yr	0.27	0.23	0.04	0.04
PM2.5	Unit	2024	2026	2030	2035
Coal	tonnes/yr	-	-	-	-
CHP	tonnes/yr	8	8	7	4
Biogas	tonnes/yr	13	13	13	5
Biomass	tonnes/yr	19	11	1	4
System Power	tonnes/yr	(2)	3	12	14
Total	tonnes/yr	38	34	33	28
Average emissions intensity	kg/MWh	0.0067	0.0059	0.0056	0.0046
SO ₂	Unit	2024	2026	2030	2035
Coal	tonnes/yr	-	-	-	-
CHP	tonnes/yr	1	1	1	0
Biogas	tonnes/yr	10	10	10	4
Biomass	tonnes/yr	7	4	0	2
System Power	tonnes/yr	(0)	0	1	1
Total	tonnes/yr	18	15	12	7
Average emissions intensity	kg/MWh	0.0031	0.0026	0.0020	0.0012
NOx	Unit	2024	2026	2030	2035
Coal	tonnes/yr	-	-	-	-
CHP	tonnes/yr	36	35	34	18
Biogas	tonnes/yr	44	44	44	17
Biomass	tonnes/yr	58	32	3	13
System Power	tonnes/yr	(1)	3	14	17
Total	tonnes/yr	137	114	95	64
Average emissions intensity	kg/MWh	0.0237	0.0199	0.0160	0.0105
Supply and Demand Balance					
Demand Summary	Unit	2024	2026	2030	2035
Managed Retail Sales Forecast (assigned to LSE)	GWh	5,759	5,759	5,955	6,099
Baseline Demand, non-C&I	GWh	3,607	3,634	3,805	3,861
Baseline Demand, C&I	GWh	3,405	3,455	3,692	3,904
Electric Vehicle Load	GWh	244	346	550	841
Building Electrification	GWh	28	50	101	168
Energy Efficiency	GWh	(96)	(164)	(295)	(431)
BTM PV	GWh	(973)	(1,104)	(1,428)	(1,764)
Demand (at generator bus-bar)	GWh	6,217	6,218	6,431	6,587
Supply Summary	Unit	2024	2026	2030	2035
Large Hydro	GWh	845	525	525	525
Imported Hydro	GWh	1,150	766	69	120
Asset Controlling Supplier	GWh	-	-	-	-
Nuclear	GWh	-	-	-	-
Biogas	GWh	80	80	80	30
Biomass	GWh	65	38	4	16
Geothermal	GWh	332	454	1,753	1,785
Small Hydro	GWh	291	106	37	69
Wind CAISO	GWh	897	1,336	991	1,014
Wind Out Of State	GWh	-	-	250	250
Wind Offshore	GWh	-	-	-	400
Solar Utility Scale	GWh	1,815	1,649	1,451	1,137
Solar Distributed	GWh	32	32	32	31
Hybrid or Paired Solar and Battery	GWh	328	626	614	596
Shed DR	GWh	0.0	0.0	0.0	-
Pumped Storage	GWh	-	-	-	-
Battery Storage	GWh	(36)	(48)	(159)	(153)
Storage Resource Custom Profile	GWh	-	-	-	-
RPS Resource Custom Profile	GWh	-	-	-	-

GHG-free non-RPS Resource Custom Profile	GWh	-	-	-	-
Coal	GWh	-	-	-	-
IFM CHP	GWh	313	304	297	178
Supply Demand Balance Summary	Unit	2024	2026	2030	2035
LSE Supply, before curtailment and exports	GWh	6,113	5,868	5,943	5,999
Net Purchases, before curtailment and exports	GWh	104	350	488	588
Curtailment	GWh	(156)	(210)	(239)	(270)
Exports	GWh	(45)	(60)	(142)	(145)
Zero Emissions Power From System	GWh	-	-	18	33
Net System Power (incurs emissions)	GWh	306	620	851	970
Check: Supply equals demand		TRUE	TRUE	TRUE	TRUE
Renewable and GHG-Free %	Unit	2024	2026	2030	2035
Retail Sales	GWh	5,759	5,759	5,955	6,099
RPS-Eligible Delivered Renewable	GWh	3,684	4,111	4,973	5,058
GHG free	GWh	5,679	5,402	5,585	5,736
RPS-Eligible Delivered Renewable Percentage	% of retail sales	64%	71%	84%	83%
GHG-free Percentage	% of retail sales	99%	94%	94%	94%

<i>25 MMT in 2035</i>						
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Biomass	MMt/yr	-	-	-	-	
System Power	MMt/yr	0.13	0.25	0.36	0.41	
Asset Controlling Supplier	MMt/yr	-	-	-	-	
Total	MMt/yr	0.26	0.39	0.49	0.49	
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System Power	tonnes/yr	(0)	0	1	1	
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Supply Summary	Unit	2024	2026	2030	2035	
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Asset Controlling Supplier	GWh	-	-	-	-	
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Results

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GHG-free Percentage	% of retail sales	99%	94%	94%	94%

<i>Wind and solar values represent production potential (pre-curtailment).</i>	
<i>Curtailment is calculated at the portfolio level (as opposed to the resource level), and is included as a line item below</i>	
<i>Distributed solar generation that is in front of the meter</i>	
<i>Negative because storage losses represent net negative energy production</i>	
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<i>Negative because storage losses represent net negative energy production</i>	
Notes	
<i>Represents LSE's net power production, before curtailment and exports reduce the power available to displace CAISO dispatchable gas/unspecified imports</i>	
<i>The net system power that the LSE would consume (positive = consume from system, negative = supply to system) if dispatchable gas/unspecified imports were on the margin at the system level in all hours. For information only - not directly used to calculate LSE emissions.</i>	
<i>Power that, if supplied to the system, would not displace CAISO dispatchable gas and/or unspecified import emissions and would instead be curtailed</i>	
<i>Power that, if supplied to the system, would not displace CAISO dispatchable gas and/or unspecified import emissions and would instead be exported</i>	
<i>Power supplied to meet LSE demand that does not incur emissions. Oversupply conditions at the system level result in surplus zero emissions power in some hours.</i>	
<i>Power supplied by the system (or sent back to the system from if negative) in hours when CAISO dispatchable gas and/or unspecified imports are on the margin. The net system power produced or consumed is multiplied by the system power emissions rate in each hour.</i>	
Notes	
<i>Represents delivered renewable energy. Not directly comparable to production from an LSE's RPS-eligible resources.</i>	
<i>A small fraction of Asset Controlling Supplier imports are not counted as GHG-free</i>	
<i>Represents delivered renewable energy. Not directly comparable to production from an LSE's RPS-eligible resources.</i>	

Individual LSE Energy Load Forecast Assignments for Use in 2022 LSE IRPs					
Assigned per June 15, 2022 ALJ Ruling - https://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&docid=485625915					
Service Area	LSE CPUC ID	LSE Name	YEAR	TYPE	Final IRP Sales Forecast (GWH)
PGE		Pacific Gas and Electric (Direct Access)	2023	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2024	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2025	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2026	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2027	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2028	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2029	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2030	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2031	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2032	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2033	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2034	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2035	ESP	11,393.00
SCE		Southern California Edison (Direct Access)	2023	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2024	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2025	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2026	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2027	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2028	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2029	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2030	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2031	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2032	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2033	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2034	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2035	ESP	13,420.85
SDGE		San Diego Gas and Electric (Direct Access)	2023	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2024	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2025	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2026	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2027	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2028	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2029	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2030	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2031	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2032	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2033	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2034	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2035	ESP	3,940.00
PGE	PGE	Pacific Gas and Electric (Bundled)	2023	IOU	26,903.26
PGE	PGE	Pacific Gas and Electric (Bundled)	2024	IOU	27,098.07
PGE	PGE	Pacific Gas and Electric (Bundled)	2025	IOU	27,256.63
PGE	PGE	Pacific Gas and Electric (Bundled)	2026	IOU	27,398.95
PGE	PGE	Pacific Gas and Electric (Bundled)	2027	IOU	27,549.43
PGE	PGE	Pacific Gas and Electric (Bundled)	2028	IOU	27,650.24
PGE	PGE	Pacific Gas and Electric (Bundled)	2029	IOU	27,879.43
PGE	PGE	Pacific Gas and Electric (Bundled)	2030	IOU	28,019.56
PGE	PGE	Pacific Gas and Electric (Bundled)	2031	IOU	28,355.70
PGE	PGE	Pacific Gas and Electric (Bundled)	2032	IOU	28,612.64
PGE	PGE	Pacific Gas and Electric (Bundled)	2033	IOU	29,044.21
PGE	PGE	Pacific Gas and Electric (Bundled)	2034	IOU	29,434.18
PGE	PGE	Pacific Gas and Electric (Bundled)	2035	IOU	29,851.64
SCE	SCE	Southern California Edison (Bundled)	2023	IOU	51,695.20
SCE	SCE	Southern California Edison (Bundled)	2024	IOU	51,866.12
SCE	SCE	Southern California Edison (Bundled)	2025	IOU	52,196.12
SCE	SCE	Southern California Edison (Bundled)	2026	IOU	52,501.95
SCE	SCE	Southern California Edison (Bundled)	2027	IOU	52,943.78
SCE	SCE	Southern California Edison (Bundled)	2028	IOU	53,251.42
SCE	SCE	Southern California Edison (Bundled)	2029	IOU	53,601.83
SCE	SCE	Southern California Edison (Bundled)	2030	IOU	53,909.21
SCE	SCE	Southern California Edison (Bundled)	2031	IOU	54,293.31
SCE	SCE	Southern California Edison (Bundled)	2032	IOU	54,525.33
SCE	SCE	Southern California Edison (Bundled)	2033	IOU	54,791.53
SCE	SCE	Southern California Edison (Bundled)	2034	IOU	55,033.06

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SCE	SCE	Southern California Edison (Bundled)	2035	IOU	55,275.88
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2023	IOU	4,421.70
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2024	IOU	3,637.80
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2025	IOU	3,638.92
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2026	IOU	3,645.46
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2027	IOU	3,656.22
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2028	IOU	3,663.55
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2029	IOU	3,677.82
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2030	IOU	3,694.02
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2031	IOU	3,716.29
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2032	IOU	3,734.01
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2033	IOU	3,755.70
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2034	IOU	3,772.75
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2035	IOU	3,787.41
PGE	3CE	Central Coast Community Energy	2023	CCA	4,557.05
PGE	3CE	Central Coast Community Energy	2024	CCA	4,594.72
PGE	3CE	Central Coast Community Energy	2025	CCA	4,617.45
PGE	3CE	Central Coast Community Energy	2026	CCA	4,640.88
PGE	3CE	Central Coast Community Energy	2027	CCA	4,672.05
PGE	3CE	Central Coast Community Energy	2028	CCA	4,697.30
PGE	3CE	Central Coast Community Energy	2029	CCA	4,729.19
PGE	3CE	Central Coast Community Energy	2030	CCA	4,760.56
PGE	3CE	Central Coast Community Energy	2031	CCA	4,799.79
PGE	3CE	Central Coast Community Energy	2032	CCA	4,829.14
PGE	3CE	Central Coast Community Energy	2033	CCA	4,864.25
PGE	3CE	Central Coast Community Energy	2034	CCA	4,898.33
PGE	3CE	Central Coast Community Energy	2035	CCA	4,935.53
PGE	CPSF	CleanPowerSF	2023	CCA	2,943.85
PGE	CPSF	CleanPowerSF	2024	CCA	2,969.61
PGE	CPSF	CleanPowerSF	2025	CCA	2,992.90
PGE	CPSF	CleanPowerSF	2026	CCA	3,015.45
PGE	CPSF	CleanPowerSF	2027	CCA	3,039.05
PGE	CPSF	CleanPowerSF	2028	CCA	3,061.60
PGE	CPSF	CleanPowerSF	2029	CCA	3,089.80
PGE	CPSF	CleanPowerSF	2030	CCA	3,119.16
PGE	CPSF	CleanPowerSF	2031	CCA	3,152.83
PGE	CPSF	CleanPowerSF	2032	CCA	3,181.17
PGE	CPSF	CleanPowerSF	2033	CCA	3,215.15
PGE	CPSF	CleanPowerSF	2034	CCA	3,247.21
PGE	CPSF	CleanPowerSF	2035	CCA	3,292.89
PGE	EBCE	East Bay Community Energy	2023	CCA	6,651.95
PGE	EBCE	East Bay Community Energy	2024	CCA	6,739.80
PGE	EBCE	East Bay Community Energy	2025	CCA	6,815.88
PGE	EBCE	East Bay Community Energy	2026	CCA	6,887.17
PGE	EBCE	East Bay Community Energy	2027	CCA	6,954.65
PGE	EBCE	East Bay Community Energy	2028	CCA	7,026.50
PGE	EBCE	East Bay Community Energy	2029	CCA	7,100.58
PGE	EBCE	East Bay Community Energy	2030	CCA	7,179.74
PGE	EBCE	East Bay Community Energy	2031	CCA	7,259.20
PGE	EBCE	East Bay Community Energy	2032	CCA	7,326.11
PGE	EBCE	East Bay Community Energy	2033	CCA	7,393.58
PGE	EBCE	East Bay Community Energy	2034	CCA	7,461.20
PGE	EBCE	East Bay Community Energy	2035	CCA	7,539.97
PGE	KCCP	King City Community Power	2023	CCA	33.86
PGE	KCCP	King City Community Power	2024	CCA	34.12
PGE	KCCP	King City Community Power	2025	CCA	34.33
PGE	KCCP	King City Community Power	2026	CCA	34.55
PGE	KCCP	King City Community Power	2027	CCA	34.80
PGE	KCCP	King City Community Power	2028	CCA	35.05
PGE	KCCP	King City Community Power	2029	CCA	35.39
PGE	KCCP	King City Community Power	2030	CCA	35.73
PGE	KCCP	King City Community Power	2031	CCA	36.17
PGE	KCCP	King City Community Power	2032	CCA	36.54
PGE	KCCP	King City Community Power	2033	CCA	37.00
PGE	KCCP	King City Community Power	2034	CCA	37.46
PGE	KCCP	King City Community Power	2035	CCA	37.95
PGE	MCE	Marin Clean Energy	2023	CCA	5,728.63
PGE	MCE	Marin Clean Energy	2024	CCA	5,758.94

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PGE	MCE	Marin Clean Energy	2025	CCA	5,755.61
PGE	MCE	Marin Clean Energy	2026	CCA	5,759.26
PGE	MCE	Marin Clean Energy	2027	CCA	5,766.74
PGE	MCE	Marin Clean Energy	2028	CCA	5,795.21
PGE	MCE	Marin Clean Energy	2029	CCA	5,827.36
PGE	MCE	Marin Clean Energy	2030	CCA	5,955.34
PGE	MCE	Marin Clean Energy	2031	CCA	5,982.79
PGE	MCE	Marin Clean Energy	2032	CCA	6,039.93
PGE	MCE	Marin Clean Energy	2033	CCA	6,040.19
PGE	MCE	Marin Clean Energy	2034	CCA	6,066.94
PGE	MCE	Marin Clean Energy	2035	CCA	6,098.58
PGE	PCEA	Peninsula Clean Energy Authority	2023	CCA	3,424.82
PGE	PCEA	Peninsula Clean Energy Authority	2024	CCA	3,455.72
PGE	PCEA	Peninsula Clean Energy Authority	2025	CCA	3,461.01
PGE	PCEA	Peninsula Clean Energy Authority	2026	CCA	3,495.78
PGE	PCEA	Peninsula Clean Energy Authority	2027	CCA	3,554.01
PGE	PCEA	Peninsula Clean Energy Authority	2028	CCA	3,620.17
PGE	PCEA	Peninsula Clean Energy Authority	2029	CCA	3,666.17
PGE	PCEA	Peninsula Clean Energy Authority	2030	CCA	3,721.49
PGE	PCEA	Peninsula Clean Energy Authority	2031	CCA	3,780.66
PGE	PCEA	Peninsula Clean Energy Authority	2032	CCA	3,847.92
PGE	PCEA	Peninsula Clean Energy Authority	2033	CCA	3,897.29
PGE	PCEA	Peninsula Clean Energy Authority	2034	CCA	3,960.71
PGE	PCEA	Peninsula Clean Energy Authority	2035	CCA	4,032.71
PGE	PIONEER	Pioneer Community Energy	2023	CCA	1,888.43
PGE	PIONEER	Pioneer Community Energy	2024	CCA	1,904.69
PGE	PIONEER	Pioneer Community Energy	2025	CCA	1,916.17
PGE	PIONEER	Pioneer Community Energy	2026	CCA	1,926.85
PGE	PIONEER	Pioneer Community Energy	2027	CCA	1,938.95
PGE	PIONEER	Pioneer Community Energy	2028	CCA	1,951.69
PGE	PIONEER	Pioneer Community Energy	2029	CCA	1,968.03
PGE	PIONEER	Pioneer Community Energy	2030	CCA	1,986.47
PGE	PIONEER	Pioneer Community Energy	2031	CCA	2,006.21
PGE	PIONEER	Pioneer Community Energy	2032	CCA	2,023.27
PGE	PIONEER	Pioneer Community Energy	2033	CCA	2,044.07
PGE	PIONEER	Pioneer Community Energy	2034	CCA	2,065.07
PGE	PIONEER	Pioneer Community Energy	2035	CCA	2,089.92
PGE	RCEA	Redwood Coast Energy Authority	2023	CCA	674.13
PGE	RCEA	Redwood Coast Energy Authority	2024	CCA	677.92
PGE	RCEA	Redwood Coast Energy Authority	2025	CCA	678.67
PGE	RCEA	Redwood Coast Energy Authority	2026	CCA	680.61
PGE	RCEA	Redwood Coast Energy Authority	2027	CCA	682.11
PGE	RCEA	Redwood Coast Energy Authority	2028	CCA	683.33
PGE	RCEA	Redwood Coast Energy Authority	2029	CCA	684.37
PGE	RCEA	Redwood Coast Energy Authority	2030	CCA	685.27
PGE	RCEA	Redwood Coast Energy Authority	2031	CCA	686.06
PGE	RCEA	Redwood Coast Energy Authority	2032	CCA	686.77
PGE	RCEA	Redwood Coast Energy Authority	2033	CCA	687.38
PGE	RCEA	Redwood Coast Energy Authority	2034	CCA	687.96
PGE	RCEA	Redwood Coast Energy Authority	2035	CCA	688.50
PGE	SJCE	San José Clean Energy	2023	CCA	3,789.74
PGE	SJCE	San José Clean Energy	2024	CCA	3,820.79
PGE	SJCE	San José Clean Energy	2025	CCA	3,844.49
PGE	SJCE	San José Clean Energy	2026	CCA	3,867.62
PGE	SJCE	San José Clean Energy	2027	CCA	3,894.50
PGE	SJCE	San José Clean Energy	2028	CCA	3,921.64
PGE	SJCE	San José Clean Energy	2029	CCA	3,957.58
PGE	SJCE	San José Clean Energy	2030	CCA	3,995.71
PGE	SJCE	San José Clean Energy	2031	CCA	4,040.38
PGE	SJCE	San José Clean Energy	2032	CCA	4,079.40
PGE	SJCE	San José Clean Energy	2033	CCA	4,126.86
PGE	SJCE	San José Clean Energy	2034	CCA	4,174.19
PGE	SJCE	San José Clean Energy	2035	CCA	4,227.40
PGE	SVCEA	Silicon Valley Clean Energy Authority	2023	CCA	3,654.29
PGE	SVCEA	Silicon Valley Clean Energy Authority	2024	CCA	3,681.47
PGE	SVCEA	Silicon Valley Clean Energy Authority	2025	CCA	3,700.66
PGE	SVCEA	Silicon Valley Clean Energy Authority	2026	CCA	3,720.83
PGE	SVCEA	Silicon Valley Clean Energy Authority	2027	CCA	3,744.51

PGE	SVCEA	Silicon Valley Clean Energy Authority	2028	CCA	3,767.83
PGE	SVCEA	Silicon Valley Clean Energy Authority	2029	CCA	3,799.80
PGE	SVCEA	Silicon Valley Clean Energy Authority	2030	CCA	3,833.43
PGE	SVCEA	Silicon Valley Clean Energy Authority	2031	CCA	3,874.42
PGE	SVCEA	Silicon Valley Clean Energy Authority	2032	CCA	3,909.98
PGE	SVCEA	Silicon Valley Clean Energy Authority	2033	CCA	3,953.07
PGE	SVCEA	Silicon Valley Clean Energy Authority	2034	CCA	3,995.93
PGE	SVCEA	Silicon Valley Clean Energy Authority	2035	CCA	4,043.64
PGE	SOMA	Sonoma Clean Power	2023	CCA	2,208.14
PGE	SOMA	Sonoma Clean Power	2024	CCA	2,227.09
PGE	SOMA	Sonoma Clean Power	2025	CCA	2,241.23
PGE	SOMA	Sonoma Clean Power	2026	CCA	2,254.51
PGE	SOMA	Sonoma Clean Power	2027	CCA	2,269.72
PGE	SOMA	Sonoma Clean Power	2028	CCA	2,285.47
PGE	SOMA	Sonoma Clean Power	2029	CCA	2,305.87
PGE	SOMA	Sonoma Clean Power	2030	CCA	2,328.20
PGE	SOMA	Sonoma Clean Power	2031	CCA	2,353.02
PGE	SOMA	Sonoma Clean Power	2032	CCA	2,374.63
PGE	SOMA	Sonoma Clean Power	2033	CCA	2,400.97
PGE	SOMA	Sonoma Clean Power	2034	CCA	2,427.39
PGE	SOMA	Sonoma Clean Power	2035	CCA	2,457.92
PGE	VCEA	Valley Clean Energy Alliance	2023	CCA	727.31
PGE	VCEA	Valley Clean Energy Alliance	2024	CCA	718.40
PGE	VCEA	Valley Clean Energy Alliance	2025	CCA	729.10
PGE	VCEA	Valley Clean Energy Alliance	2026	CCA	740.65
PGE	VCEA	Valley Clean Energy Alliance	2027	CCA	751.72
PGE	VCEA	Valley Clean Energy Alliance	2028	CCA	764.61
PGE	VCEA	Valley Clean Energy Alliance	2029	CCA	774.12
PGE	VCEA	Valley Clean Energy Alliance	2030	CCA	786.37
PGE	VCEA	Valley Clean Energy Alliance	2031	CCA	798.81
PGE	VCEA	Valley Clean Energy Alliance	2032	CCA	812.46
PGE	VCEA	Valley Clean Energy Alliance	2033	CCA	822.41
PGE	VCEA	Valley Clean Energy Alliance	2034	CCA	833.95
PGE	VCEA	Valley Clean Energy Alliance	2035	CCA	846.61
SCE	AVCE	Apple Valley Choice Energy	2023	CCA	257.34
SCE	AVCE	Apple Valley Choice Energy	2024	CCA	260.33
SCE	AVCE	Apple Valley Choice Energy	2025	CCA	262.17
SCE	AVCE	Apple Valley Choice Energy	2026	CCA	263.86
SCE	AVCE	Apple Valley Choice Energy	2027	CCA	266.23
SCE	AVCE	Apple Valley Choice Energy	2028	CCA	268.11
SCE	AVCE	Apple Valley Choice Energy	2029	CCA	269.93
SCE	AVCE	Apple Valley Choice Energy	2030	CCA	271.62
SCE	AVCE	Apple Valley Choice Energy	2031	CCA	273.14
SCE	AVCE	Apple Valley Choice Energy	2032	CCA	274.01
SCE	AVCE	Apple Valley Choice Energy	2033	CCA	275.00
SCE	AVCE	Apple Valley Choice Energy	2034	CCA	275.88
SCE	AVCE	Apple Valley Choice Energy	2035	CCA	276.96
SCE	3CE	Central Coast Community Energy	2023	CCA	553.70
SCE	3CE	Central Coast Community Energy	2024	CCA	551.01
SCE	3CE	Central Coast Community Energy	2025	CCA	548.29
SCE	3CE	Central Coast Community Energy	2026	CCA	545.56
SCE	3CE	Central Coast Community Energy	2027	CCA	542.84
SCE	3CE	Central Coast Community Energy	2028	CCA	540.12
SCE	3CE	Central Coast Community Energy	2029	CCA	537.41
SCE	3CE	Central Coast Community Energy	2030	CCA	534.72
SCE	3CE	Central Coast Community Energy	2031	CCA	532.07
SCE	3CE	Central Coast Community Energy	2032	CCA	529.42
SCE	3CE	Central Coast Community Energy	2033	CCA	533.00
SCE	3CE	Central Coast Community Energy	2034	CCA	536.46
SCE	3CE	Central Coast Community Energy	2035	CCA	540.25
SCE	CPASC	Clean Power Alliance	2023	CCA	10,901.82
SCE	CPASC	Clean Power Alliance	2024	CCA	11,015.38
SCE	CPASC	Clean Power Alliance	2025	CCA	11,087.48
SCE	CPASC	Clean Power Alliance	2026	CCA	11,154.57
SCE	CPASC	Clean Power Alliance	2027	CCA	11,248.74
SCE	CPASC	Clean Power Alliance	2028	CCA	11,321.00
SCE	CPASC	Clean Power Alliance	2029	CCA	11,397.82
SCE	CPASC	Clean Power Alliance	2030	CCA	11,466.83

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SCE	CPASC	Clean Power Alliance	2031	CCA	11,543.04
SCE	CPASC	Clean Power Alliance	2032	CCA	11,589.56
SCE	CPASC	Clean Power Alliance	2033	CCA	11,643.36
SCE	CPASC	Clean Power Alliance	2034	CCA	11,692.24
SCE	CPASC	Clean Power Alliance	2035	CCA	11,744.26
SCE	DCE	Desert Community Energy	2023	CCA	444.00
SCE	DCE	Desert Community Energy	2024	CCA	456.45
SCE	DCE	Desert Community Energy	2025	CCA	459.91
SCE	DCE	Desert Community Energy	2026	CCA	461.33
SCE	DCE	Desert Community Energy	2027	CCA	462.99
SCE	DCE	Desert Community Energy	2028	CCA	464.89
SCE	DCE	Desert Community Energy	2029	CCA	467.04
SCE	DCE	Desert Community Energy	2030	CCA	469.42
SCE	DCE	Desert Community Energy	2031	CCA	472.05
SCE	DCE	Desert Community Energy	2032	CCA	474.93
SCE	DCE	Desert Community Energy	2033	CCA	478.04
SCE	DCE	Desert Community Energy	2034	CCA	481.40
SCE	DCE	Desert Community Energy	2035	CCA	485.00
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2023	CCA	552.80
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2024	CCA	610.35
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2025	CCA	615.01
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2026	CCA	619.34
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2027	CCA	625.16
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2028	CCA	630.11
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2029	CCA	635.50
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2030	CCA	640.32
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2031	CCA	645.45
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2032	CCA	648.93
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2033	CCA	652.90
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2034	CCA	656.53
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2035	CCA	660.25
SCE	LCE	Lancaster Choice Energy	2023	CCA	589.26
SCE	LCE	Lancaster Choice Energy	2024	CCA	595.74
SCE	LCE	Lancaster Choice Energy	2025	CCA	599.86
SCE	LCE	Lancaster Choice Energy	2026	CCA	603.66
SCE	LCE	Lancaster Choice Energy	2027	CCA	608.98
SCE	LCE	Lancaster Choice Energy	2028	CCA	613.16
SCE	LCE	Lancaster Choice Energy	2029	CCA	617.43
SCE	LCE	Lancaster Choice Energy	2030	CCA	621.33
SCE	LCE	Lancaster Choice Energy	2031	CCA	625.23
SCE	LCE	Lancaster Choice Energy	2032	CCA	627.58
SCE	LCE	Lancaster Choice Energy	2033	CCA	630.28
SCE	LCE	Lancaster Choice Energy	2034	CCA	632.71
SCE	LCE	Lancaster Choice Energy	2035	CCA	635.45
SCE	OCPA	Orange County Power Authority	2023	CCA	3,581.79
SCE	OCPA	Orange County Power Authority	2024	CCA	3,942.95
SCE	OCPA	Orange County Power Authority	2025	CCA	3,973.07
SCE	OCPA	Orange County Power Authority	2026	CCA	4,001.06
SCE	OCPA	Orange County Power Authority	2027	CCA	4,038.60
SCE	OCPA	Orange County Power Authority	2028	CCA	4,070.64
SCE	OCPA	Orange County Power Authority	2029	CCA	4,105.44
SCE	OCPA	Orange County Power Authority	2030	CCA	4,136.55
SCE	OCPA	Orange County Power Authority	2031	CCA	4,169.66
SCE	OCPA	Orange County Power Authority	2032	CCA	4,192.14
SCE	OCPA	Orange County Power Authority	2033	CCA	4,217.79
SCE	OCPA	Orange County Power Authority	2034	CCA	4,241.19
SCE	OCPA	Orange County Power Authority	2035	CCA	4,265.26
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2023	CCA	225.46
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2024	CCA	227.74
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2025	CCA	229.23
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2026	CCA	230.63
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2027	CCA	232.58
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2028	CCA	234.09
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2029	CCA	235.74
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2030	CCA	237.21
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2031	CCA	238.91
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2032	CCA	239.98
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2033	CCA	241.22

SCE	PRIME	Pico Rivera Innovative Municipal Energy	2034	CCA	242.35
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2035	CCA	243.51
SCE	POMONA	Pomona Choice Energy	2023	CCA	386.84
SCE	POMONA	Pomona Choice Energy	2024	CCA	390.80
SCE	POMONA	Pomona Choice Energy	2025	CCA	393.61
SCE	POMONA	Pomona Choice Energy	2026	CCA	396.20
SCE	POMONA	Pomona Choice Energy	2027	CCA	399.73
SCE	POMONA	Pomona Choice Energy	2028	CCA	402.69
SCE	POMONA	Pomona Choice Energy	2029	CCA	405.84
SCE	POMONA	Pomona Choice Energy	2030	CCA	408.68
SCE	POMONA	Pomona Choice Energy	2031	CCA	411.58
SCE	POMONA	Pomona Choice Energy	2032	CCA	413.48
SCE	POMONA	Pomona Choice Energy	2033	CCA	415.67
SCE	POMONA	Pomona Choice Energy	2034	CCA	417.66
SCE	POMONA	Pomona Choice Energy	2035	CCA	419.77
SCE	RMEA	Rancho Mirage Energy Authority	2023	CCA	280.26
SCE	RMEA	Rancho Mirage Energy Authority	2024	CCA	283.27
SCE	RMEA	Rancho Mirage Energy Authority	2025	CCA	284.97
SCE	RMEA	Rancho Mirage Energy Authority	2026	CCA	286.55
SCE	RMEA	Rancho Mirage Energy Authority	2027	CCA	288.84
SCE	RMEA	Rancho Mirage Energy Authority	2028	CCA	290.47
SCE	RMEA	Rancho Mirage Energy Authority	2029	CCA	292.09
SCE	RMEA	Rancho Mirage Energy Authority	2030	CCA	293.58
SCE	RMEA	Rancho Mirage Energy Authority	2031	CCA	295.16
SCE	RMEA	Rancho Mirage Energy Authority	2032	CCA	295.99
SCE	RMEA	Rancho Mirage Energy Authority	2033	CCA	296.96
SCE	RMEA	Rancho Mirage Energy Authority	2034	CCA	297.83
SCE	RMEA	Rancho Mirage Energy Authority	2035	CCA	298.85
SCE	SJP	San Jacinto Power	2023	CCA	167.99
SCE	SJP	San Jacinto Power	2024	CCA	169.89
SCE	SJP	San Jacinto Power	2025	CCA	171.04
SCE	SJP	San Jacinto Power	2026	CCA	172.08
SCE	SJP	San Jacinto Power	2027	CCA	173.57
SCE	SJP	San Jacinto Power	2028	CCA	174.71
SCE	SJP	San Jacinto Power	2029	CCA	175.82
SCE	SJP	San Jacinto Power	2030	CCA	176.85
SCE	SJP	San Jacinto Power	2031	CCA	177.82
SCE	SJP	San Jacinto Power	2032	CCA	178.35
SCE	SJP	San Jacinto Power	2033	CCA	178.97
SCE	SJP	San Jacinto Power	2034	CCA	179.52
SCE	SJP	San Jacinto Power	2035	CCA	180.19
SCE	SBCE	Santa Barbara Clean Energy	2023	CCA	340.61
SCE	SBCE	Santa Barbara Clean Energy	2024	CCA	344.03
SCE	SBCE	Santa Barbara Clean Energy	2025	CCA	346.43
SCE	SBCE	Santa Barbara Clean Energy	2026	CCA	348.65
SCE	SBCE	Santa Barbara Clean Energy	2027	CCA	351.69
SCE	SBCE	Santa Barbara Clean Energy	2028	CCA	354.17
SCE	SBCE	Santa Barbara Clean Energy	2029	CCA	356.88
SCE	SBCE	Santa Barbara Clean Energy	2030	CCA	359.30
SCE	SBCE	Santa Barbara Clean Energy	2031	CCA	361.93
SCE	SBCE	Santa Barbara Clean Energy	2032	CCA	363.67
SCE	SBCE	Santa Barbara Clean Energy	2033	CCA	365.65
SCE	SBCE	Santa Barbara Clean Energy	2034	CCA	367.47
SCE	SBCE	Santa Barbara Clean Energy	2035	CCA	369.34
SDGE	CEA	Clean Energy Alliance	2023	CCA	1,266.71
SDGE	CEA	Clean Energy Alliance	2024	CCA	1,487.19
SDGE	CEA	Clean Energy Alliance	2025	CCA	1,496.06
SDGE	CEA	Clean Energy Alliance	2026	CCA	1,504.22
SDGE	CEA	Clean Energy Alliance	2027	CCA	1,512.16
SDGE	CEA	Clean Energy Alliance	2028	CCA	1,520.15
SDGE	CEA	Clean Energy Alliance	2029	CCA	1,528.80
SDGE	CEA	Clean Energy Alliance	2030	CCA	1,538.83
SDGE	CEA	Clean Energy Alliance	2031	CCA	1,551.38
SDGE	CEA	Clean Energy Alliance	2032	CCA	1,560.79
SDGE	CEA	Clean Energy Alliance	2033	CCA	1,571.53
SDGE	CEA	Clean Energy Alliance	2034	CCA	1,580.06
SDGE	CEA	Clean Energy Alliance	2035	CCA	1,589.35
SDGE	OCPA	Orange County Power Authority	2023	CCA	22.45

SDGE	OCPA	Orange County Power Authority	2024	CCA	169.46
SDGE	OCPA	Orange County Power Authority	2025	CCA	170.47
SDGE	OCPA	Orange County Power Authority	2026	CCA	171.40
SDGE	OCPA	Orange County Power Authority	2027	CCA	172.31
SDGE	OCPA	Orange County Power Authority	2028	CCA	173.22
SDGE	OCPA	Orange County Power Authority	2029	CCA	174.20
SDGE	OCPA	Orange County Power Authority	2030	CCA	175.35
SDGE	OCPA	Orange County Power Authority	2031	CCA	176.78
SDGE	OCPA	Orange County Power Authority	2032	CCA	177.85
SDGE	OCPA	Orange County Power Authority	2033	CCA	179.07
SDGE	OCPA	Orange County Power Authority	2034	CCA	180.04
SDGE	OCPA	Orange County Power Authority	2035	CCA	181.10
SDGE	SDCP	San Diego Community Power	2023	CCA	7,422.00
SDGE	SDCP	San Diego Community Power	2024	CCA	7,932.00
SDGE	SDCP	San Diego Community Power	2025	CCA	7,979.31
SDGE	SDCP	San Diego Community Power	2026	CCA	8,022.80
SDGE	SDCP	San Diego Community Power	2027	CCA	8,065.19
SDGE	SDCP	San Diego Community Power	2028	CCA	8,107.78
SDGE	SDCP	San Diego Community Power	2029	CCA	8,153.91
SDGE	SDCP	San Diego Community Power	2030	CCA	8,207.38
SDGE	SDCP	San Diego Community Power	2031	CCA	8,274.38
SDGE	SDCP	San Diego Community Power	2032	CCA	8,324.52
SDGE	SDCP	San Diego Community Power	2033	CCA	8,381.84
SDGE	SDCP	San Diego Community Power	2034	CCA	8,427.34
SDGE	SDCP	San Diego Community Power	2035	CCA	8,476.83
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2023	SMJ	132.48
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2024	SMJ	132.48
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2025	SMJ	133.49
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2026	SMJ	134.42
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2027	SMJ	135.68
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2028	SMJ	136.74
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2029	SMJ	137.83
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2030	SMJ	138.82
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2031	SMJ	139.78
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2032	SMJ	140.39
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2033	SMJ	141.09
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2034	SMJ	141.72
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2035	SMJ	142.42
Liberty Utilities	LIB	Liberty Utilities	2023	SMJ	557.67
Liberty Utilities	LIB	Liberty Utilities	2024	SMJ	557.67
Liberty Utilities	LIB	Liberty Utilities	2025	SMJ	561.20
Liberty Utilities	LIB	Liberty Utilities	2026	SMJ	564.80
Liberty Utilities	LIB	Liberty Utilities	2027	SMJ	568.80
Liberty Utilities	LIB	Liberty Utilities	2028	SMJ	571.91
Liberty Utilities	LIB	Liberty Utilities	2029	SMJ	575.63
Liberty Utilities	LIB	Liberty Utilities	2030	SMJ	579.47
Liberty Utilities	LIB	Liberty Utilities	2031	SMJ	583.93
Liberty Utilities	LIB	Liberty Utilities	2032	SMJ	587.55
Liberty Utilities	LIB	Liberty Utilities	2033	SMJ	591.50
Liberty Utilities	LIB	Liberty Utilities	2034	SMJ	595.24
Liberty Utilities	LIB	Liberty Utilities	2035	SMJ	599.16
PacifiCorp	PCORP	PacifiCorp	2023	SMJ	871.48
PacifiCorp	PCORP	PacifiCorp	2024	SMJ	874.56
PacifiCorp	PCORP	PacifiCorp	2025	SMJ	873.57
PacifiCorp	PCORP	PacifiCorp	2026	SMJ	876.03
PacifiCorp	PCORP	PacifiCorp	2027	SMJ	879.11
PacifiCorp	PCORP	PacifiCorp	2028	SMJ	884.04
PacifiCorp	PCORP	PacifiCorp	2029	SMJ	884.19
PacifiCorp	PCORP	PacifiCorp	2030	SMJ	886.08
PacifiCorp	PCORP	PacifiCorp	2031	SMJ	887.88
PacifiCorp	PCORP	PacifiCorp	2032	SMJ	892.46
PacifiCorp	PCORP	PacifiCorp	2033	SMJ	892.14
PacifiCorp	PCORP	PacifiCorp	2034	SMJ	894.41
PacifiCorp	PCORP	PacifiCorp	2035	SMJ	896.63

Individual LSE Behind-the-Meter Photovoltaic (BTM PV)								
<i>Assigned per June 15, 2022 ALJ Ruling - https://docs.cpuc.ca.gov/</i>								
				Generation (GWh) (measured at customer, not grossed up for				
Service At	Type	LSE CPUC	LSE Name	2023	2024	2025	2026	2027
PGE	IOU	PGE	Pacific Gas	3,907	4,240	4,552	4,867	5,198
PGE	ESP		Pacific Gas	1,655	1,783	1,903	2,024	2,149
PGE	CCA	3CE	Central Coas	662	719	771	824	881
PGE	CCA	CPSF	CleanPowerS	428	465	500	536	573
PGE	CCA	EBCE	East Bay Co	966	1,055	1,138	1,223	1,312
PGE	CCA	KCCP	King City Co	5	5	6	6	7
PGE	CCA	MCE	Marin Clean	832	901	961	1,023	1,088
PGE	CCA	PCEA	Peninsula C	497	541	578	621	671
PGE	CCA	PIONEER	Pioneer Com	274	298	320	342	366
PGE	CCA	RCEA	Redwood Co	98	106	113	121	129
PGE	CCA	SJCE	San José Cl	550	598	642	687	735
PGE	CCA	SVCEA	Silicon Valle	531	576	618	661	706
PGE	CCA	SOMA	Sonoma Cle	321	348	374	401	428
PGE	CCA	VCEA	Valley Clean	106	112	122	132	142
SCE	IOU	SCE	Southern Ca	4,975	5,374	5,783	6,212	6,661
SCE	ESP		Southern Ca	424	457	489	522	555
SCE	CCA	AVCE	Apple Valley	49	53	57	61	66
SCE	CCA	COBP	Baldwin Park	-	-	-	-	-
SCE	CCA	3CE	Central Coas	53	57	61	65	68
SCE	CCA	CPASC	Clean Power	731	795	856	919	986
SCE	CCA	DCE	Desert Comr	64	71	76	82	87
SCE	CCA	PALMDALE	Energy for F	53	63	68	73	79
SCE	CCA	LCE	Lancaster C	119	130	140	150	161
SCE	CCA	OCPA	Orange Cou	345	409	440	473	508
SCE	CCA	PRIME	Pico Rivera	14	16	17	18	19
SCE	CCA	POMONA	Pomona Ch	12	13	14	15	16
SCE	CCA	RMEA	Rancho Mira	72	78	84	90	97
SCE	CCA	SJP	San Jacinto	38	41	44	48	51
SCE	CCA	SBCE	Santa Barba	33	36	38	41	44
SCE	CCA	WCE	Western Cor	-	-	-	-	-
SDGE	IOU	SDGE	San Diego G	875	772	823	877	934
SDGE	ESP		San Diego G	779	836	891	948	1,006
SDGE	CCA	CEA	Clean Energ	251	316	338	362	386
SDGE	CCA	OCPA	Orange Cou	4	36	39	41	44
SDGE	CCA	SDCP	San Diego C	1,468	1,684	1,805	1,931	2,060

Forecast Assignments for Use in 2022 LSE IRPs							
<i>/SearchRes.aspx?docformat=ALL&docid=485625915</i>							
T&D losses)							
2028	2029	2030	2031	2032	2033	2034	2035
5,536	5,893	6,226	6,588	6,935	7,309	7,663	8,006
2,281	2,408	2,531	2,647	2,761	2,867	2,966	3,055
941	1,000	1,058	1,115	1,170	1,224	1,275	1,324
613	653	693	733	771	809	845	883
1,407	1,501	1,595	1,687	1,776	1,861	1,942	2,022
7	7	8	8	9	9	10	10
1,160	1,232	1,323	1,390	1,464	1,520	1,579	1,636
725	775	827	878	933	981	1,031	1,081
391	416	441	466	490	514	538	560
137	145	152	159	166	173	179	185
785	837	888	939	989	1,039	1,087	1,134
754	803	852	900	948	995	1,040	1,084
458	487	517	547	576	604	632	659
153	164	175	186	197	207	217	227
7,123	7,603	8,099	8,615	9,142	9,679	10,225	10,774
590	625	663	700	739	779	819	860
71	75	80	85	90	96	101	106
-	-	-	-	-	-	-	-
72	76	80	84	89	94	100	105
1,055	1,126	1,200	1,276	1,354	1,433	1,513	1,595
93	99	106	112	119	127	134	142
84	90	96	102	109	115	122	129
172	184	196	208	221	234	247	260
544	582	621	662	703	745	788	831
21	22	24	25	27	28	30	32
17	18	19	21	22	23	25	26
103	110	117	125	132	140	147	155
55	58	62	66	70	74	78	82
47	51	54	57	61	65	68	72
-	-	-	-	-	-	-	-
990	1,048	1,106	1,165	1,223	1,281	1,338	1,393
1,065	1,123	1,180	1,235	1,290	1,344	1,397	1,449
411	436	461	486	511	536	560	585
47	50	53	55	58	61	64	67
2,192	2,324	2,458	2,593	2,726	2,859	2,989	3,118

GHG Benchmarks

25 MMT in 2035								
GHG benchmarks assigned per June 15, 2022 ALJ Ruling - https://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&docid=485625915								
Utility	LSEs within Host Utility Territory	Proportion of Total Emissions	2030 Load (GWh)	2035 Load (GWh)	Proportion of 2030 Load within EDU	Proportion of 2035 Load within EDU	2030 GHG Emissions Benchmark (MMT)	2035 GHG Emissions Benchmark (MMT)
Bear Valley Electric Service	N/A	0.000587773	138.8195	142.4237	N/A	N/A	0.014	0.012
Liberty Utilities	N/A	0.002547815	579.4708	599.1643	N/A	N/A	0.063	0.051
Pacific Gas and Electric Company	Pacific Gas and Electric (Bundled)	0.338367402	28,019.5589	29,851.6421	0.360148471	0.366114920	3.013	2.466
	Pacific Gas and Electric (Direct Access)		11,393.0000	11,393.0000	0.146439548	0.139729241	1.225	0.941
	Central Coast Community Energy		4,760.5600	4,935.5300	0.061189700	0.060531718	0.512	0.408
	CleanPowerSF		3,119.1600	3,292.8900	0.040092020	0.040385589	0.335	0.272
	East Bay Community Energy		7,179.7353	7,539.9690	0.092284489	0.092473813	0.772	0.623
	King City Community Power		35.7300	37.9500	0.000459254	0.000465437	0.004	0.003
	Marin Clean Energy		5,955.3400	6,098.5800	0.076546765	0.074795923	0.640	0.504
	Peninsula Clean Energy Authority		3,721.4857	4,032.7067	0.047833993	0.049459058	0.400	0.333
	Pioneer Community Energy		1,986.4700	2,089.9200	0.025533026	0.025631786	0.214	0.173
	Redwood Coast Energy Authority		685.2700	688.5000	0.008808095	0.008444096	0.074	0.057
	San José Clean Energy		3,995.7100	4,227.4000	0.051358726	0.051846870	0.430	0.349
	Silicon Valley Clean Energy Authority		3,833.4300	4,043.6400	0.049272865	0.049593149	0.412	0.334
	Sonoma Clean Power		2,328.2000	2,457.9200	0.029925442	0.030145115	0.250	0.203
	Valley Clean Energy Alliance		786.3719	846.6143	0.010107605	0.010383286	0.085	0.070
PacifiCorp	N/A	0.007461402	886.0800	896.6300	N/A	N/A	0.204	0.168
Southern California Edison Company	Southern California Edison (Bundled)	0.331706007	53,909.2120	55,275.8803	0.620027603	0.622365246	4.933	3.993
	Southern California Edison (Direct Access)		13,420.8510	13,420.8510	0.154357628	0.151108788	1.228	0.969
	Apple Valley Choice Energy		271.6200	276.9600	0.003123991	0.003118363	0.025	0.020
	Baldwin Park, City of		0.0000	0.0000	0.000000000	0.000000000	0.000	0.000
	Central Coast Community Energy		534.7200	540.2500	0.006149991	0.006082813	0.049	0.039
	Clean Power Alliance		11,466.8300	11,744.2600	0.131883789	0.132231621	1.049	0.848
	Desert Community Energy		469.4200	485.0000	0.005398954	0.005460739	0.043	0.035
	Energy for Palmdale's Independent Choice		640.3184	660.2467	0.007364513	0.007433886	0.059	0.048
	Lancaster Choice Energy		621.3300	635.4500	0.007146121	0.007154694	0.057	0.046
	Orange County Power Authority		4,136.5522	4,265.2616	0.047575850	0.048023669	0.378	0.308
	Pico Rivera Innovative Municipal Energy		237.2100	243.5100	0.002728230	0.002741741	0.022	0.018
	Pomona Choice Energy		408.6800	419.7700	0.004700363	0.004726298	0.037	0.030
	Rancho Mirage Energy Authority		293.5800	298.8500	0.003376560	0.003364828	0.027	0.022
	San Jacinto Power		176.8500	180.1900	0.002034010	0.002028805	0.016	0.013
Santa Barbara Clean Energy	359.2973	369.3414	0.004132397	0.004158510	0.033	0.027		
Western Community Energy	0.0000	0.0000	0.000000000	0.000000000	0.000	0.000		
San Diego Gas & Electric Company	San Diego Gas and Electric (Bundled)	0.088426808	3,694.0194	3,787.4129	0.210418652	0.210708105	0.473	0.386
	San Diego Gas and Electric (Direct Access)		3,940.0000	3,940.0000	0.224430195	0.219197104	0.505	0.401
	Clean Energy Alliance		1,538.8253	1,589.3452	0.087654532	0.088421283	0.197	0.162
	Orange County Power Authority		175.3453	181.1020	0.009988018	0.010075388	0.022	0.018
	Solana Energy Alliance		0.0000	0.0000	0.000000000	0.000000000	0.000	0.000
	San Diego Community Power		8,207.3800	8,476.8300	0.467508603	0.471598119	1.052	0.863
TOTAL		0.7690972	183,906.4331758	189,964.9911526			18.852	15.213

ATTACHMENT E

Supply Point

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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Supply Point

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12	3	30
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12	3	60
12	3	70
12	3	80
12	3	90
12	3	100
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12	15	70
12	15	80
12	15	90
12	15	100
12	16	10
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12	16	30
12	16	40
12	16	50
12	16	60
12	16	70
12	16	80
12	16	90
12	16	100

2024-2026						
Demand Inputs						
		Units	2024	2025	2026	2026
Maximum Power Forward (Demand for LED)		Watts	1,230	1,274	1,317	6,218
Behind The Meter Photovoltaics (BTM PV) Forward (Demand for LED)		Watts	905	1,052	1,312	1,038
Behind The Meter Photovoltaics (BTM PV) Forward (Demand for BTM)		Watts	6,288	6,724	6,774	2,814
Behind The Meter Photovoltaics (BTM PV) Forward (for BTM Issues)		Watts	913	1,104	1,418	1,384
Calculated Demand of LED system (Demand for BTM Issues)		Watts	288	395	588	388
Customer's Reduced Fraction of Baseline Demand		Units	2024	2025	2026	2026
Customer's Reduced Fraction of BTM	Use Custom?	Yes	2,736	2,952	2,736	2,736
Customer's Reduced Fraction of BTM (Photovoltaics)	Use Custom?	Yes	2,736	2,952	2,736	2,736
Customer's Demand based on non-weighted share of Demand for BTM		Units	2024	2025	2026	2026
Baseline net energy demand		Watts	9,214	7,883	7,997	7,706
Electric Vehicle Load		Watts	244	340	500	681
Building Electrification		Watts	488	340	500	681
Energy Efficiency		Watts	(891)	(848)	(895)	(881)
Behind The Meter Photovoltaics (BTM PV)		Watts	(891)	(848)	(895)	(881)
Behind The Meter Storage Capacity (BTM Storage)		Watts	(2)	(2)	(2)	(2)
Behind The Meter Storage Capacity (BTM Storage)	Use Custom?	No	0	0	0	0
Behind The Meter Storage Capacity (BTM Storage)	Use Custom?	No	0	0	0	0
Behind The Meter Storage Capacity (BTM Storage)	Use Custom?	No	0	0	0	0
Active Demand (Inputs)		Watts	2024	2025	2026	2026
Baseline net energy demand		Watts	9,214	7,883	7,997	7,706
Electric Vehicle Load		Watts	244	340	500	681
Building Electrification		Watts	488	340	500	681
Energy Efficiency		Watts	(891)	(848)	(895)	(881)
Behind The Meter Photovoltaics (BTM PV)		Watts	(891)	(848)	(895)	(881)
Behind The Meter Storage Capacity (BTM Storage)		Watts	(2)	(2)	(2)	(2)
Calculated demand at lobby level generation bus bar		Watts	8,211	6,825	6,845	6,387
BTM OHP Calculation		Watts	2024	2025	2026	2026
Calculate kWh to meet the meter (BTM Combined heat and Power) generation		Watts	15,498	17,307	17,148	6,680
BTM OHP Calculation		Watts	15,498	17,307	17,148	6,680
Checks		Units	2024	2025	2026	2026
Current cap (positive) on demand inputs		Watts	18.1	18.2	18.2	18.2
Exceeds C&I generation load (demand generation & load)		Watts	0	0	0	0
Customer Demand Shaped (OPTIONAL, override default demand shape)	Use Custom Shape?	Yes	Yes	Yes	Yes	Yes
Customer Demand Shaped (OPTIONAL, override default demand shape)	Use Custom Shape?	No	No	No	No	No
Customer Demand Shaped (OPTIONAL, override default demand shape)	Use Custom Shape?	No	No	No	No	No
Customer Demand Shaped (OPTIONAL, override default demand shape)	Use Custom Shape?	No	No	No	No	No
Check Summary 1 of Customer Shape in BTM OHP	Yes	Yes	Yes	Yes	Yes	Yes
Check Summary 2 of Customer Shape in BTM OHP	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 2	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 3	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 4	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 5	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 6	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 7	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 8	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 9	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 10	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 11	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 12	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 13	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 14	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 15	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 16	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 17	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 18	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 19	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 20	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 21	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 22	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 23	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 24	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 25	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 26	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 27	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 28	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 29	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 30	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 31	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 32	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 33	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 34	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 35	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 36	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 37	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 38	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 39	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 40	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 41	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 42	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 43	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 44	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 45	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 46	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 47	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 48	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 49	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 50	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 51	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 52	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 53	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 54	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 55	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 56	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 57	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 58	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 59	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 60	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 61	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 62	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 63	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 64	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 65	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 66	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 67	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 68	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 69	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 70	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 71	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 72	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 73	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 74	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 75	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 76	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 77	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 78	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 79	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 80	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 81	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 82	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 83	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 84	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 85	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 86	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 87	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 88	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 89	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 90	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 91	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 92	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 93	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 94	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 95	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 96	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 97	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 98	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 99	Yes	Yes	Yes	Yes	Yes	Yes
BTM Storage Check, Between 1 and 100	Yes	Yes	Yes	Yes	Yes	Yes

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<i>30 MMT in 2035</i>									
LSEs within Utility Territory	2030 GHG Emissions Benchmark (MMT)	2035 GHG Emissions Benchmark (MMT)	2030 DA Load (GWh)	2035 DA Load (GWh)	ESP 2030 load within each IOU territory (GWh)	ESP 2035 load within each IOU territory (GWh)	ESP 2030 benchmark for each IOU territory (MMT)	ESP 2035 benchmark for each IOU territory (MMT)	
Pacific Gas and Electric Company (Direct Access)	1.6214	1.1776	11,393	11,393			0.000	0.000	
Southern California Edison Company (Direct Access)	1.6376	1.2201	13,421	13,421			0.000	0.000	
San Diego Gas and Electric Company (Direct Access)	0.6637	0.4982	3,940	3,940			0.000	0.000	
TOTAL			28,754	28,754	0	0	0.000	0.000	

Each ESP is required to calculate its own confidential GHG Emissions Benchmark based on its 2030 and 2035 load share within the host IOU's territory. For any ESP that serves load in more than one IOU service territory, that ESP should add up the separate GHG Emissions Benchmarks calculated based on its share of direct access load for each IOU service territory to result in a single benchmark. When filling out Columns F and G -- "ESP 2030 load within each IOU territory" and "ESP 2035 load within each IOU territory" -- each ESP should utilize the confidential load forecast communicated to it by Energy Division staff.

<i>30 MMT in 2035</i>						
Emissions Summary						
Emissions Total	Unit	2024	2026	2030	2035	
CO ₂	MMt/yr	0.277	0.380	0.500	0.514	
PM2.5	tonnes/yr	39	35	34	31	
SO ₂	tonnes/yr	18	15	12	7	
NOx	tonnes/yr	137	116	97	68	
Emissions by resource type						
	Unit	2024	2026	2030	2035	
CO ₂	MMt/yr	-	-	-	-	
Coal	MMt/yr	-	-	-	-	
CHP	MMt/yr	0.14	0.14	0.14	0.08	
Biogas	MMt/yr	-	-	-	-	
Biomass	MMt/yr	-	-	-	-	
System Power	MMt/yr	0.13	0.24	0.36	0.43	
Asset Controlling Supplier	MMt/yr	-	-	-	-	
Total	MMt/yr	0.28	0.38	0.50	0.51	
Average emissions intensity	tCO ₂ /MWh	0.048	0.066	0.084	0.084	
Oversupply Emissions Credits	MMt/yr	0.25	0.24	0.07	0.04	
PM2.5						
	Unit	2024	2026	2030	2035	
Coal	tonnes/yr	-	-	-	-	
CHP	tonnes/yr	8	8	8	5	
Biogas	tonnes/yr	13	13	13	5	
Biomass	tonnes/yr	19	11	1	4	
System Power	tonnes/yr	(1)	3	12	18	
Total	tonnes/yr	39	35	34	31	
Average emissions intensity	kg/MWh	0.0068	0.0061	0.0057	0.0052	
SO₂						
	Unit	2024	2026	2030	2035	
Coal	tonnes/yr	-	-	-	-	
CHP	tonnes/yr	1	1	1	0	
Biogas	tonnes/yr	10	10	10	4	
Biomass	tonnes/yr	7	4	0	2	
System Power	tonnes/yr	(0)	0	1	2	
Total	tonnes/yr	18	15	12	7	
Average emissions intensity	kg/MWh	0.0031	0.0026	0.0021	0.0012	
NOx						
	Unit	2024	2026	2030	2035	
Coal	tonnes/yr	-	-	-	-	
CHP	tonnes/yr	37	36	35	18	
Biogas	tonnes/yr	44	44	44	17	
Biomass	tonnes/yr	58	32	3	13	
System Power	tonnes/yr	(1)	4	14	20	
Total	tonnes/yr	137	116	97	68	
Average emissions intensity	kg/MWh	0.0239	0.0202	0.0162	0.0111	
Supply and Demand Balance						
Demand Summary	Unit	2024	2026	2030	2035	
Managed Retail Sales Forecast (assigned to LSE)	GWh	5,759	5,759	5,955	6,099	
Baseline Demand, non-C&I	GWh	3,607	3,634	3,805	3,861	
Baseline Demand, C&I	GWh	3,405	3,455	3,692	3,904	
Electric Vehicle Load	GWh	244	346	550	841	
Building Electrification	GWh	28	50	101	168	
Energy Efficiency	GWh	(96)	(164)	(295)	(431)	
BTM PV	GWh	(973)	(1,104)	(1,428)	(1,764)	

Demand (at generator bus-bar)	GWh	6,217	6,218	6,431	6,587
Supply Summary	Unit	2024	2026	2030	2035
Large Hydro	GWh	845	525	525	525
Imported Hydro	GWh	1,150	766	69	120
Asset Controlling Supplier	GWh	-	-	-	-
Nuclear	GWh	-	-	-	-
Biogas	GWh	80	80	80	30
Biomass	GWh	65	38	4	16
Geothermal	GWh	332	454	1,753	1,785
Small Hydro	GWh	291	106	37	69
Wind CAISO	GWh	897	1,336	991	1,014
Wind Out Of State	GWh	-	-	250	250
Wind Offshore	GWh	-	-	-	400
Solar Utility Scale	GWh	1,815	1,649	1,451	1,137
Solar Distributed	GWh	32	32	32	31
Hybrid or Paired Solar and Battery	GWh	328	626	614	596
Shed DR	GWh	0.0	0.0	0.0	-
Pumped Storage	GWh	-	-	-	-
Battery Storage	GWh	(36)	(48)	(121)	(122)
Storage Resource Custom Profile	GWh	-	-	-	-
RPS Resource Custom Profile	GWh	-	-	-	-
GHG-free non-RPS Resource Custom Profile	GWh	-	-	-	-
Coal	GWh	-	-	-	-
IFM CHP	GWh	323	315	312	182
Supply Demand Balance Summary	Unit	2024	2026	2030	2035
LSE Supply, before curtailment and exports	GWh	6,122	5,879	5,997	6,033
Net Purchases, before curtailment and exports	GWh	95	339	434	554
Curtailment	GWh	(181)	(182)	(307)	(327)
Exports	GWh	(54)	(51)	(126)	(163)
Zero Emissions Power From System	GWh	-	-	0	3
Net System Power (incurs emissions)	GWh	330	572	866	1,041
Check: Supply equals demand		TRUE	TRUE	TRUE	TRUE
Renewable and GHG-Free %	Unit	2024	2026	2030	2035
Retail Sales	GWh	5,759	5,759	5,955	6,099
RPS-Eligible Delivered Renewable	GWh	3,659	4,139	4,905	5,001
GHG free	GWh	5,654	5,430	5,499	5,649
RPS-Eligible Delivered Renewable Percentage	% of retail sales	64%	72%	82%	82%
GHG-free Percentage	% of retail sales	98%	94%	92%	93%

Notes
<i>Includes both in-CAISO and import emissions</i>
<i>Only In-CAISO emissions</i>
<i>Only In-CAISO emissions</i>
<i>Only In-CAISO emissions</i>
Notes
<i>Included in GHG emissions total</i>
<i>Includes emissions from in-CAISO dispatchable gas and unspecified imports</i>
<i>Includes both in-CAISO and import emissions</i>
<i>Emissions per MWh of sales</i>
<i>When hourly supply exceeds hourly load and system power is on the margin, LSE receives credit at the system power emissions rate. Impact included in Total.</i>
Notes
<i>Information only, not included in total</i>
<i>In-CAISO emissions only - unspecified import emissions excluded</i>
<i>Only In-CAISO emissions</i>
<i>Emissions per MWh of sales</i>
Notes
<i>Information only, not included in total</i>
<i>In-CAISO emissions only - unspecified import emissions excluded</i>
<i>Only In-CAISO emissions</i>
<i>Emissions per MWh of sales</i>
Notes
<i>Information only, not included in total</i>
<i>In-CAISO emissions only - unspecified import emissions excluded</i>
<i>Only In-CAISO emissions</i>
<i>Emissions per MWh of sales</i>
<i>Sales forecast (before T&D losses increase demand at generator bus-bar)</i>
<i>Summary of active inputs from Demand Inputs tab</i>

Notes
<i>Wind and solar values represent production potential (pre-curtailment). Curtailment is calculated at the portfolio level (as opposed to the resource level), and is included as a line item below</i>
<i>Distributed solar generation that is in front of the meter</i>
<i>Negative because storage losses represent net negative energy production</i>
<i>Negative because storage losses represent net negative energy production</i>
<i>Negative because storage losses represent net negative energy production</i>
Notes
<i>Represents LSE's net power production, before curtailment and exports reduce the power available to displace CAISO dispatchable gas/unspecified imports</i>
<i>The net system power that the LSE would consume (positive = consume from system, negative = supply to system) if dispatchable gas/unspecified imports were on the margin at the system level in all hours. For information only - not directly used to calculate LSE emissions.</i>
<i>Power that, if supplied to the system, would not displace CAISO dispatchable gas and/or unspecified import emissions and would instead be curtailed</i>
<i>Power that, if supplied to the system, would not displace CAISO dispatchable gas and/or unspecified import emissions and would instead be exported</i>
<i>Power supplied to meet LSE demand that does not incur emissions. Oversupply conditions at the system level result in surplus zero emissions power in some hours.</i>
<i>Power supplied by the system (or sent back to the system from if negative) in hours when CAISO dispatchable gas and/or unspecified imports are on the margin. The net system power produced or consumed is multiplied by the system power emissions rate in each hour.</i>
Notes
<i>Represents delivered renewable energy. Not directly comparable to production from an LSE's RPS-eligible resources.</i>
<i>A small fraction of Asset Controlling Supplier imports are not counted as GHG-free</i>
<i>Represents delivered renewable energy. Not directly comparable to production from an LSE's RPS-eligible resources.</i>

Individual LSE Energy Load Forecast Assignments for Use in 2022 LSE IRPs					
Assigned per June 15, 2022 ALJ Ruling - https://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&docid=485625915					
Service Area	LSE CPUC ID	LSE Name	YEAR	TYPE	Final IRP Sales Forecast (GWH)
PGE		Pacific Gas and Electric (Direct Access)	2023	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2024	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2025	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2026	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2027	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2028	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2029	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2030	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2031	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2032	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2033	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2034	ESP	11,393.00
PGE		Pacific Gas and Electric (Direct Access)	2035	ESP	11,393.00
SCE		Southern California Edison (Direct Access)	2023	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2024	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2025	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2026	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2027	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2028	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2029	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2030	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2031	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2032	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2033	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2034	ESP	13,420.85
SCE		Southern California Edison (Direct Access)	2035	ESP	13,420.85
SDGE		San Diego Gas and Electric (Direct Access)	2023	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2024	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2025	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2026	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2027	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2028	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2029	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2030	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2031	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2032	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2033	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2034	ESP	3,940.00
SDGE		San Diego Gas and Electric (Direct Access)	2035	ESP	3,940.00
PGE	PGE	Pacific Gas and Electric (Bundled)	2023	IOU	26,903.26
PGE	PGE	Pacific Gas and Electric (Bundled)	2024	IOU	27,098.07
PGE	PGE	Pacific Gas and Electric (Bundled)	2025	IOU	27,256.63
PGE	PGE	Pacific Gas and Electric (Bundled)	2026	IOU	27,398.95
PGE	PGE	Pacific Gas and Electric (Bundled)	2027	IOU	27,549.43
PGE	PGE	Pacific Gas and Electric (Bundled)	2028	IOU	27,650.24
PGE	PGE	Pacific Gas and Electric (Bundled)	2029	IOU	27,879.43
PGE	PGE	Pacific Gas and Electric (Bundled)	2030	IOU	28,019.56
PGE	PGE	Pacific Gas and Electric (Bundled)	2031	IOU	28,355.70
PGE	PGE	Pacific Gas and Electric (Bundled)	2032	IOU	28,612.64
PGE	PGE	Pacific Gas and Electric (Bundled)	2033	IOU	29,044.21
PGE	PGE	Pacific Gas and Electric (Bundled)	2034	IOU	29,434.18
PGE	PGE	Pacific Gas and Electric (Bundled)	2035	IOU	29,851.64
SCE	SCE	Southern California Edison (Bundled)	2023	IOU	51,695.20
SCE	SCE	Southern California Edison (Bundled)	2024	IOU	51,866.12
SCE	SCE	Southern California Edison (Bundled)	2025	IOU	52,196.12
SCE	SCE	Southern California Edison (Bundled)	2026	IOU	52,501.95
SCE	SCE	Southern California Edison (Bundled)	2027	IOU	52,943.78
SCE	SCE	Southern California Edison (Bundled)	2028	IOU	53,251.42

SCE	SCE	Southern California Edison (Bundled)	2029	IOU	53,601.83
SCE	SCE	Southern California Edison (Bundled)	2030	IOU	53,909.21
SCE	SCE	Southern California Edison (Bundled)	2031	IOU	54,293.31
SCE	SCE	Southern California Edison (Bundled)	2032	IOU	54,525.33
SCE	SCE	Southern California Edison (Bundled)	2033	IOU	54,791.53
SCE	SCE	Southern California Edison (Bundled)	2034	IOU	55,033.06
SCE	SCE	Southern California Edison (Bundled)	2035	IOU	55,275.88
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2023	IOU	4,421.70
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2024	IOU	3,637.80
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2025	IOU	3,638.92
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2026	IOU	3,645.46
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2027	IOU	3,656.22
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2028	IOU	3,663.55
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2029	IOU	3,677.82
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2030	IOU	3,694.02
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2031	IOU	3,716.29
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2032	IOU	3,734.01
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2033	IOU	3,755.70
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2034	IOU	3,772.75
SDGE	SDGE	San Diego Gas and Electric (Bundled)	2035	IOU	3,787.41
PGE	3CE	Central Coast Community Energy	2023	CCA	4,557.05
PGE	3CE	Central Coast Community Energy	2024	CCA	4,594.72
PGE	3CE	Central Coast Community Energy	2025	CCA	4,617.45
PGE	3CE	Central Coast Community Energy	2026	CCA	4,640.88
PGE	3CE	Central Coast Community Energy	2027	CCA	4,672.05
PGE	3CE	Central Coast Community Energy	2028	CCA	4,697.30
PGE	3CE	Central Coast Community Energy	2029	CCA	4,729.19
PGE	3CE	Central Coast Community Energy	2030	CCA	4,760.56
PGE	3CE	Central Coast Community Energy	2031	CCA	4,799.79
PGE	3CE	Central Coast Community Energy	2032	CCA	4,829.14
PGE	3CE	Central Coast Community Energy	2033	CCA	4,864.25
PGE	3CE	Central Coast Community Energy	2034	CCA	4,898.33
PGE	3CE	Central Coast Community Energy	2035	CCA	4,935.53
PGE	CPSF	CleanPowerSF	2023	CCA	2,943.85
PGE	CPSF	CleanPowerSF	2024	CCA	2,969.61
PGE	CPSF	CleanPowerSF	2025	CCA	2,992.90
PGE	CPSF	CleanPowerSF	2026	CCA	3,015.45
PGE	CPSF	CleanPowerSF	2027	CCA	3,039.05
PGE	CPSF	CleanPowerSF	2028	CCA	3,061.60
PGE	CPSF	CleanPowerSF	2029	CCA	3,089.80
PGE	CPSF	CleanPowerSF	2030	CCA	3,119.16
PGE	CPSF	CleanPowerSF	2031	CCA	3,152.83
PGE	CPSF	CleanPowerSF	2032	CCA	3,181.17
PGE	CPSF	CleanPowerSF	2033	CCA	3,215.15
PGE	CPSF	CleanPowerSF	2034	CCA	3,247.21
PGE	CPSF	CleanPowerSF	2035	CCA	3,292.89
PGE	EBCE	East Bay Community Energy	2023	CCA	6,651.95
PGE	EBCE	East Bay Community Energy	2024	CCA	6,739.80
PGE	EBCE	East Bay Community Energy	2025	CCA	6,815.88
PGE	EBCE	East Bay Community Energy	2026	CCA	6,887.17
PGE	EBCE	East Bay Community Energy	2027	CCA	6,954.65
PGE	EBCE	East Bay Community Energy	2028	CCA	7,026.50
PGE	EBCE	East Bay Community Energy	2029	CCA	7,100.58
PGE	EBCE	East Bay Community Energy	2030	CCA	7,179.74
PGE	EBCE	East Bay Community Energy	2031	CCA	7,259.20
PGE	EBCE	East Bay Community Energy	2032	CCA	7,326.11
PGE	EBCE	East Bay Community Energy	2033	CCA	7,393.58
PGE	EBCE	East Bay Community Energy	2034	CCA	7,461.20
PGE	EBCE	East Bay Community Energy	2035	CCA	7,539.97
PGE	KCCP	King City Community Power	2023	CCA	33.86
PGE	KCCP	King City Community Power	2024	CCA	34.12
PGE	KCCP	King City Community Power	2025	CCA	34.33

PGE	KCCP	King City Community Power	2026	CCA	34.55
PGE	KCCP	King City Community Power	2027	CCA	34.80
PGE	KCCP	King City Community Power	2028	CCA	35.05
PGE	KCCP	King City Community Power	2029	CCA	35.39
PGE	KCCP	King City Community Power	2030	CCA	35.73
PGE	KCCP	King City Community Power	2031	CCA	36.17
PGE	KCCP	King City Community Power	2032	CCA	36.54
PGE	KCCP	King City Community Power	2033	CCA	37.00
PGE	KCCP	King City Community Power	2034	CCA	37.46
PGE	KCCP	King City Community Power	2035	CCA	37.95
PGE	MCE	Marin Clean Energy	2023	CCA	5,728.63
PGE	MCE	Marin Clean Energy	2024	CCA	5,758.94
PGE	MCE	Marin Clean Energy	2025	CCA	5,755.61
PGE	MCE	Marin Clean Energy	2026	CCA	5,759.26
PGE	MCE	Marin Clean Energy	2027	CCA	5,766.74
PGE	MCE	Marin Clean Energy	2028	CCA	5,795.21
PGE	MCE	Marin Clean Energy	2029	CCA	5,827.36
PGE	MCE	Marin Clean Energy	2030	CCA	5,955.34
PGE	MCE	Marin Clean Energy	2031	CCA	5,982.79
PGE	MCE	Marin Clean Energy	2032	CCA	6,039.93
PGE	MCE	Marin Clean Energy	2033	CCA	6,040.19
PGE	MCE	Marin Clean Energy	2034	CCA	6,066.94
PGE	MCE	Marin Clean Energy	2035	CCA	6,098.58
PGE	PCEA	Peninsula Clean Energy Authority	2023	CCA	3,424.82
PGE	PCEA	Peninsula Clean Energy Authority	2024	CCA	3,455.72
PGE	PCEA	Peninsula Clean Energy Authority	2025	CCA	3,461.01
PGE	PCEA	Peninsula Clean Energy Authority	2026	CCA	3,495.78
PGE	PCEA	Peninsula Clean Energy Authority	2027	CCA	3,554.01
PGE	PCEA	Peninsula Clean Energy Authority	2028	CCA	3,620.17
PGE	PCEA	Peninsula Clean Energy Authority	2029	CCA	3,666.17
PGE	PCEA	Peninsula Clean Energy Authority	2030	CCA	3,721.49
PGE	PCEA	Peninsula Clean Energy Authority	2031	CCA	3,780.66
PGE	PCEA	Peninsula Clean Energy Authority	2032	CCA	3,847.92
PGE	PCEA	Peninsula Clean Energy Authority	2033	CCA	3,897.29
PGE	PCEA	Peninsula Clean Energy Authority	2034	CCA	3,960.71
PGE	PCEA	Peninsula Clean Energy Authority	2035	CCA	4,032.71
PGE	PIONEER	Pioneer Community Energy	2023	CCA	1,888.43
PGE	PIONEER	Pioneer Community Energy	2024	CCA	1,904.69
PGE	PIONEER	Pioneer Community Energy	2025	CCA	1,916.17
PGE	PIONEER	Pioneer Community Energy	2026	CCA	1,926.85
PGE	PIONEER	Pioneer Community Energy	2027	CCA	1,938.95
PGE	PIONEER	Pioneer Community Energy	2028	CCA	1,951.69
PGE	PIONEER	Pioneer Community Energy	2029	CCA	1,968.03
PGE	PIONEER	Pioneer Community Energy	2030	CCA	1,986.47
PGE	PIONEER	Pioneer Community Energy	2031	CCA	2,006.21
PGE	PIONEER	Pioneer Community Energy	2032	CCA	2,023.27
PGE	PIONEER	Pioneer Community Energy	2033	CCA	2,044.07
PGE	PIONEER	Pioneer Community Energy	2034	CCA	2,065.07
PGE	PIONEER	Pioneer Community Energy	2035	CCA	2,089.92
PGE	RCEA	Redwood Coast Energy Authority	2023	CCA	674.13
PGE	RCEA	Redwood Coast Energy Authority	2024	CCA	677.92
PGE	RCEA	Redwood Coast Energy Authority	2025	CCA	678.67
PGE	RCEA	Redwood Coast Energy Authority	2026	CCA	680.61
PGE	RCEA	Redwood Coast Energy Authority	2027	CCA	682.11
PGE	RCEA	Redwood Coast Energy Authority	2028	CCA	683.33
PGE	RCEA	Redwood Coast Energy Authority	2029	CCA	684.37
PGE	RCEA	Redwood Coast Energy Authority	2030	CCA	685.27
PGE	RCEA	Redwood Coast Energy Authority	2031	CCA	686.06
PGE	RCEA	Redwood Coast Energy Authority	2032	CCA	686.77
PGE	RCEA	Redwood Coast Energy Authority	2033	CCA	687.38
PGE	RCEA	Redwood Coast Energy Authority	2034	CCA	687.96
PGE	RCEA	Redwood Coast Energy Authority	2035	CCA	688.50

PGE	SJCE	San José Clean Energy	2023	CCA	3,789.74
PGE	SJCE	San José Clean Energy	2024	CCA	3,820.79
PGE	SJCE	San José Clean Energy	2025	CCA	3,844.49
PGE	SJCE	San José Clean Energy	2026	CCA	3,867.62
PGE	SJCE	San José Clean Energy	2027	CCA	3,894.50
PGE	SJCE	San José Clean Energy	2028	CCA	3,921.64
PGE	SJCE	San José Clean Energy	2029	CCA	3,957.58
PGE	SJCE	San José Clean Energy	2030	CCA	3,995.71
PGE	SJCE	San José Clean Energy	2031	CCA	4,040.38
PGE	SJCE	San José Clean Energy	2032	CCA	4,079.40
PGE	SJCE	San José Clean Energy	2033	CCA	4,126.86
PGE	SJCE	San José Clean Energy	2034	CCA	4,174.19
PGE	SJCE	San José Clean Energy	2035	CCA	4,227.40
PGE	SVCEA	Silicon Valley Clean Energy Authority	2023	CCA	3,654.29
PGE	SVCEA	Silicon Valley Clean Energy Authority	2024	CCA	3,681.47
PGE	SVCEA	Silicon Valley Clean Energy Authority	2025	CCA	3,700.66
PGE	SVCEA	Silicon Valley Clean Energy Authority	2026	CCA	3,720.83
PGE	SVCEA	Silicon Valley Clean Energy Authority	2027	CCA	3,744.51
PGE	SVCEA	Silicon Valley Clean Energy Authority	2028	CCA	3,767.83
PGE	SVCEA	Silicon Valley Clean Energy Authority	2029	CCA	3,799.80
PGE	SVCEA	Silicon Valley Clean Energy Authority	2030	CCA	3,833.43
PGE	SVCEA	Silicon Valley Clean Energy Authority	2031	CCA	3,874.42
PGE	SVCEA	Silicon Valley Clean Energy Authority	2032	CCA	3,909.98
PGE	SVCEA	Silicon Valley Clean Energy Authority	2033	CCA	3,953.07
PGE	SVCEA	Silicon Valley Clean Energy Authority	2034	CCA	3,995.93
PGE	SVCEA	Silicon Valley Clean Energy Authority	2035	CCA	4,043.64
PGE	SOMA	Sonoma Clean Power	2023	CCA	2,208.14
PGE	SOMA	Sonoma Clean Power	2024	CCA	2,227.09
PGE	SOMA	Sonoma Clean Power	2025	CCA	2,241.23
PGE	SOMA	Sonoma Clean Power	2026	CCA	2,254.51
PGE	SOMA	Sonoma Clean Power	2027	CCA	2,269.72
PGE	SOMA	Sonoma Clean Power	2028	CCA	2,285.47
PGE	SOMA	Sonoma Clean Power	2029	CCA	2,305.87
PGE	SOMA	Sonoma Clean Power	2030	CCA	2,328.20
PGE	SOMA	Sonoma Clean Power	2031	CCA	2,353.02
PGE	SOMA	Sonoma Clean Power	2032	CCA	2,374.63
PGE	SOMA	Sonoma Clean Power	2033	CCA	2,400.97
PGE	SOMA	Sonoma Clean Power	2034	CCA	2,427.39
PGE	SOMA	Sonoma Clean Power	2035	CCA	2,457.92
PGE	VCEA	Valley Clean Energy Alliance	2023	CCA	727.31
PGE	VCEA	Valley Clean Energy Alliance	2024	CCA	718.40
PGE	VCEA	Valley Clean Energy Alliance	2025	CCA	729.10
PGE	VCEA	Valley Clean Energy Alliance	2026	CCA	740.65
PGE	VCEA	Valley Clean Energy Alliance	2027	CCA	751.72
PGE	VCEA	Valley Clean Energy Alliance	2028	CCA	764.61
PGE	VCEA	Valley Clean Energy Alliance	2029	CCA	774.12
PGE	VCEA	Valley Clean Energy Alliance	2030	CCA	786.37
PGE	VCEA	Valley Clean Energy Alliance	2031	CCA	798.81
PGE	VCEA	Valley Clean Energy Alliance	2032	CCA	812.46
PGE	VCEA	Valley Clean Energy Alliance	2033	CCA	822.41
PGE	VCEA	Valley Clean Energy Alliance	2034	CCA	833.95
PGE	VCEA	Valley Clean Energy Alliance	2035	CCA	846.61
SCE	AVCE	Apple Valley Choice Energy	2023	CCA	257.34
SCE	AVCE	Apple Valley Choice Energy	2024	CCA	260.33
SCE	AVCE	Apple Valley Choice Energy	2025	CCA	262.17
SCE	AVCE	Apple Valley Choice Energy	2026	CCA	263.86
SCE	AVCE	Apple Valley Choice Energy	2027	CCA	266.23
SCE	AVCE	Apple Valley Choice Energy	2028	CCA	268.11
SCE	AVCE	Apple Valley Choice Energy	2029	CCA	269.93
SCE	AVCE	Apple Valley Choice Energy	2030	CCA	271.62
SCE	AVCE	Apple Valley Choice Energy	2031	CCA	273.14
SCE	AVCE	Apple Valley Choice Energy	2032	CCA	274.01

SCE	AVCE	Apple Valley Choice Energy	2033	CCA	275.00
SCE	AVCE	Apple Valley Choice Energy	2034	CCA	275.88
SCE	AVCE	Apple Valley Choice Energy	2035	CCA	276.96
SCE	3CE	Central Coast Community Energy	2023	CCA	553.70
SCE	3CE	Central Coast Community Energy	2024	CCA	551.01
SCE	3CE	Central Coast Community Energy	2025	CCA	548.29
SCE	3CE	Central Coast Community Energy	2026	CCA	545.56
SCE	3CE	Central Coast Community Energy	2027	CCA	542.84
SCE	3CE	Central Coast Community Energy	2028	CCA	540.12
SCE	3CE	Central Coast Community Energy	2029	CCA	537.41
SCE	3CE	Central Coast Community Energy	2030	CCA	534.72
SCE	3CE	Central Coast Community Energy	2031	CCA	532.07
SCE	3CE	Central Coast Community Energy	2032	CCA	529.42
SCE	3CE	Central Coast Community Energy	2033	CCA	533.00
SCE	3CE	Central Coast Community Energy	2034	CCA	536.46
SCE	3CE	Central Coast Community Energy	2035	CCA	540.25
SCE	CPASC	Clean Power Alliance	2023	CCA	10,901.82
SCE	CPASC	Clean Power Alliance	2024	CCA	11,015.38
SCE	CPASC	Clean Power Alliance	2025	CCA	11,087.48
SCE	CPASC	Clean Power Alliance	2026	CCA	11,154.57
SCE	CPASC	Clean Power Alliance	2027	CCA	11,248.74
SCE	CPASC	Clean Power Alliance	2028	CCA	11,321.00
SCE	CPASC	Clean Power Alliance	2029	CCA	11,397.82
SCE	CPASC	Clean Power Alliance	2030	CCA	11,466.83
SCE	CPASC	Clean Power Alliance	2031	CCA	11,543.04
SCE	CPASC	Clean Power Alliance	2032	CCA	11,589.56
SCE	CPASC	Clean Power Alliance	2033	CCA	11,643.36
SCE	CPASC	Clean Power Alliance	2034	CCA	11,692.24
SCE	CPASC	Clean Power Alliance	2035	CCA	11,744.26
SCE	DCE	Desert Community Energy	2023	CCA	444.00
SCE	DCE	Desert Community Energy	2024	CCA	456.45
SCE	DCE	Desert Community Energy	2025	CCA	459.91
SCE	DCE	Desert Community Energy	2026	CCA	461.33
SCE	DCE	Desert Community Energy	2027	CCA	462.99
SCE	DCE	Desert Community Energy	2028	CCA	464.89
SCE	DCE	Desert Community Energy	2029	CCA	467.04
SCE	DCE	Desert Community Energy	2030	CCA	469.42
SCE	DCE	Desert Community Energy	2031	CCA	472.05
SCE	DCE	Desert Community Energy	2032	CCA	474.93
SCE	DCE	Desert Community Energy	2033	CCA	478.04
SCE	DCE	Desert Community Energy	2034	CCA	481.40
SCE	DCE	Desert Community Energy	2035	CCA	485.00
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2023	CCA	552.80
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2024	CCA	610.35
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2025	CCA	615.01
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2026	CCA	619.34
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2027	CCA	625.16
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2028	CCA	630.11
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2029	CCA	635.50
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2030	CCA	640.32
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2031	CCA	645.45
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2032	CCA	648.93
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2033	CCA	652.90
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2034	CCA	656.53
SCE	PALMDALE	Energy for Palmdale's Independent Choice	2035	CCA	660.25
SCE	LCE	Lancaster Choice Energy	2023	CCA	589.26
SCE	LCE	Lancaster Choice Energy	2024	CCA	595.74
SCE	LCE	Lancaster Choice Energy	2025	CCA	599.86
SCE	LCE	Lancaster Choice Energy	2026	CCA	603.66
SCE	LCE	Lancaster Choice Energy	2027	CCA	608.98
SCE	LCE	Lancaster Choice Energy	2028	CCA	613.16
SCE	LCE	Lancaster Choice Energy	2029	CCA	617.43

SCE	LCE	Lancaster Choice Energy	2030	CCA	621.33
SCE	LCE	Lancaster Choice Energy	2031	CCA	625.23
SCE	LCE	Lancaster Choice Energy	2032	CCA	627.58
SCE	LCE	Lancaster Choice Energy	2033	CCA	630.28
SCE	LCE	Lancaster Choice Energy	2034	CCA	632.71
SCE	LCE	Lancaster Choice Energy	2035	CCA	635.45
SCE	OCPA	Orange County Power Authority	2023	CCA	3,581.79
SCE	OCPA	Orange County Power Authority	2024	CCA	3,942.95
SCE	OCPA	Orange County Power Authority	2025	CCA	3,973.07
SCE	OCPA	Orange County Power Authority	2026	CCA	4,001.06
SCE	OCPA	Orange County Power Authority	2027	CCA	4,038.60
SCE	OCPA	Orange County Power Authority	2028	CCA	4,070.64
SCE	OCPA	Orange County Power Authority	2029	CCA	4,105.44
SCE	OCPA	Orange County Power Authority	2030	CCA	4,136.55
SCE	OCPA	Orange County Power Authority	2031	CCA	4,169.66
SCE	OCPA	Orange County Power Authority	2032	CCA	4,192.14
SCE	OCPA	Orange County Power Authority	2033	CCA	4,217.79
SCE	OCPA	Orange County Power Authority	2034	CCA	4,241.19
SCE	OCPA	Orange County Power Authority	2035	CCA	4,265.26
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2023	CCA	225.46
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2024	CCA	227.74
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2025	CCA	229.23
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2026	CCA	230.63
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2027	CCA	232.58
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2028	CCA	234.09
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2029	CCA	235.74
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2030	CCA	237.21
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2031	CCA	238.91
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2032	CCA	239.98
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2033	CCA	241.22
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2034	CCA	242.35
SCE	PRIME	Pico Rivera Innovative Municipal Energy	2035	CCA	243.51
SCE	POMONA	Pomona Choice Energy	2023	CCA	386.84
SCE	POMONA	Pomona Choice Energy	2024	CCA	390.80
SCE	POMONA	Pomona Choice Energy	2025	CCA	393.61
SCE	POMONA	Pomona Choice Energy	2026	CCA	396.20
SCE	POMONA	Pomona Choice Energy	2027	CCA	399.73
SCE	POMONA	Pomona Choice Energy	2028	CCA	402.69
SCE	POMONA	Pomona Choice Energy	2029	CCA	405.84
SCE	POMONA	Pomona Choice Energy	2030	CCA	408.68
SCE	POMONA	Pomona Choice Energy	2031	CCA	411.58
SCE	POMONA	Pomona Choice Energy	2032	CCA	413.48
SCE	POMONA	Pomona Choice Energy	2033	CCA	415.67
SCE	POMONA	Pomona Choice Energy	2034	CCA	417.66
SCE	POMONA	Pomona Choice Energy	2035	CCA	419.77
SCE	RMEA	Rancho Mirage Energy Authority	2023	CCA	280.26
SCE	RMEA	Rancho Mirage Energy Authority	2024	CCA	283.27
SCE	RMEA	Rancho Mirage Energy Authority	2025	CCA	284.97
SCE	RMEA	Rancho Mirage Energy Authority	2026	CCA	286.55
SCE	RMEA	Rancho Mirage Energy Authority	2027	CCA	288.84
SCE	RMEA	Rancho Mirage Energy Authority	2028	CCA	290.47
SCE	RMEA	Rancho Mirage Energy Authority	2029	CCA	292.09
SCE	RMEA	Rancho Mirage Energy Authority	2030	CCA	293.58
SCE	RMEA	Rancho Mirage Energy Authority	2031	CCA	295.16
SCE	RMEA	Rancho Mirage Energy Authority	2032	CCA	295.99
SCE	RMEA	Rancho Mirage Energy Authority	2033	CCA	296.96
SCE	RMEA	Rancho Mirage Energy Authority	2034	CCA	297.83
SCE	RMEA	Rancho Mirage Energy Authority	2035	CCA	298.85
SCE	SJP	San Jacinto Power	2023	CCA	167.99
SCE	SJP	San Jacinto Power	2024	CCA	169.89
SCE	SJP	San Jacinto Power	2025	CCA	171.04
SCE	SJP	San Jacinto Power	2026	CCA	172.08

SCE	SJP	San Jacinto Power	2027	CCA	173.57
SCE	SJP	San Jacinto Power	2028	CCA	174.71
SCE	SJP	San Jacinto Power	2029	CCA	175.82
SCE	SJP	San Jacinto Power	2030	CCA	176.85
SCE	SJP	San Jacinto Power	2031	CCA	177.82
SCE	SJP	San Jacinto Power	2032	CCA	178.35
SCE	SJP	San Jacinto Power	2033	CCA	178.97
SCE	SJP	San Jacinto Power	2034	CCA	179.52
SCE	SJP	San Jacinto Power	2035	CCA	180.19
SCE	SBCE	Santa Barbara Clean Energy	2023	CCA	340.61
SCE	SBCE	Santa Barbara Clean Energy	2024	CCA	344.03
SCE	SBCE	Santa Barbara Clean Energy	2025	CCA	346.43
SCE	SBCE	Santa Barbara Clean Energy	2026	CCA	348.65
SCE	SBCE	Santa Barbara Clean Energy	2027	CCA	351.69
SCE	SBCE	Santa Barbara Clean Energy	2028	CCA	354.17
SCE	SBCE	Santa Barbara Clean Energy	2029	CCA	356.88
SCE	SBCE	Santa Barbara Clean Energy	2030	CCA	359.30
SCE	SBCE	Santa Barbara Clean Energy	2031	CCA	361.93
SCE	SBCE	Santa Barbara Clean Energy	2032	CCA	363.67
SCE	SBCE	Santa Barbara Clean Energy	2033	CCA	365.65
SCE	SBCE	Santa Barbara Clean Energy	2034	CCA	367.47
SCE	SBCE	Santa Barbara Clean Energy	2035	CCA	369.34
SDGE	CEA	Clean Energy Alliance	2023	CCA	1,266.71
SDGE	CEA	Clean Energy Alliance	2024	CCA	1,487.19
SDGE	CEA	Clean Energy Alliance	2025	CCA	1,496.06
SDGE	CEA	Clean Energy Alliance	2026	CCA	1,504.22
SDGE	CEA	Clean Energy Alliance	2027	CCA	1,512.16
SDGE	CEA	Clean Energy Alliance	2028	CCA	1,520.15
SDGE	CEA	Clean Energy Alliance	2029	CCA	1,528.80
SDGE	CEA	Clean Energy Alliance	2030	CCA	1,538.83
SDGE	CEA	Clean Energy Alliance	2031	CCA	1,551.38
SDGE	CEA	Clean Energy Alliance	2032	CCA	1,560.79
SDGE	CEA	Clean Energy Alliance	2033	CCA	1,571.53
SDGE	CEA	Clean Energy Alliance	2034	CCA	1,580.06
SDGE	CEA	Clean Energy Alliance	2035	CCA	1,589.35
SDGE	OCPA	Orange County Power Authority	2023	CCA	22.45
SDGE	OCPA	Orange County Power Authority	2024	CCA	169.46
SDGE	OCPA	Orange County Power Authority	2025	CCA	170.47
SDGE	OCPA	Orange County Power Authority	2026	CCA	171.40
SDGE	OCPA	Orange County Power Authority	2027	CCA	172.31
SDGE	OCPA	Orange County Power Authority	2028	CCA	173.22
SDGE	OCPA	Orange County Power Authority	2029	CCA	174.20
SDGE	OCPA	Orange County Power Authority	2030	CCA	175.35
SDGE	OCPA	Orange County Power Authority	2031	CCA	176.78
SDGE	OCPA	Orange County Power Authority	2032	CCA	177.85
SDGE	OCPA	Orange County Power Authority	2033	CCA	179.07
SDGE	OCPA	Orange County Power Authority	2034	CCA	180.04
SDGE	OCPA	Orange County Power Authority	2035	CCA	181.10
SDGE	SDCP	San Diego Community Power	2023	CCA	7,422.00
SDGE	SDCP	San Diego Community Power	2024	CCA	7,932.00
SDGE	SDCP	San Diego Community Power	2025	CCA	7,979.31
SDGE	SDCP	San Diego Community Power	2026	CCA	8,022.80
SDGE	SDCP	San Diego Community Power	2027	CCA	8,065.19
SDGE	SDCP	San Diego Community Power	2028	CCA	8,107.78
SDGE	SDCP	San Diego Community Power	2029	CCA	8,153.91
SDGE	SDCP	San Diego Community Power	2030	CCA	8,207.38
SDGE	SDCP	San Diego Community Power	2031	CCA	8,274.38
SDGE	SDCP	San Diego Community Power	2032	CCA	8,324.52
SDGE	SDCP	San Diego Community Power	2033	CCA	8,381.84
SDGE	SDCP	San Diego Community Power	2034	CCA	8,427.34
SDGE	SDCP	San Diego Community Power	2035	CCA	8,476.83
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2023	SMJ	132.48

Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2024	SMJ	132.48
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2025	SMJ	133.49
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2026	SMJ	134.42
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2027	SMJ	135.68
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2028	SMJ	136.74
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2029	SMJ	137.83
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2030	SMJ	138.82
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2031	SMJ	139.78
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2032	SMJ	140.39
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2033	SMJ	141.09
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2034	SMJ	141.72
Bear Valley Electric Service	BEAR	Bear Valley Electric Service	2035	SMJ	142.42
Liberty Utilities	LIB	Liberty Utilities	2023	SMJ	557.67
Liberty Utilities	LIB	Liberty Utilities	2024	SMJ	557.67
Liberty Utilities	LIB	Liberty Utilities	2025	SMJ	561.20
Liberty Utilities	LIB	Liberty Utilities	2026	SMJ	564.80
Liberty Utilities	LIB	Liberty Utilities	2027	SMJ	568.80
Liberty Utilities	LIB	Liberty Utilities	2028	SMJ	571.91
Liberty Utilities	LIB	Liberty Utilities	2029	SMJ	575.63
Liberty Utilities	LIB	Liberty Utilities	2030	SMJ	579.47
Liberty Utilities	LIB	Liberty Utilities	2031	SMJ	583.93
Liberty Utilities	LIB	Liberty Utilities	2032	SMJ	587.55
Liberty Utilities	LIB	Liberty Utilities	2033	SMJ	591.50
Liberty Utilities	LIB	Liberty Utilities	2034	SMJ	595.24
Liberty Utilities	LIB	Liberty Utilities	2035	SMJ	599.16
PacifiCorp	PCORP	PacifiCorp	2023	SMJ	871.48
PacifiCorp	PCORP	PacifiCorp	2024	SMJ	874.56
PacifiCorp	PCORP	PacifiCorp	2025	SMJ	873.57
PacifiCorp	PCORP	PacifiCorp	2026	SMJ	876.03
PacifiCorp	PCORP	PacifiCorp	2027	SMJ	879.11
PacifiCorp	PCORP	PacifiCorp	2028	SMJ	884.04
PacifiCorp	PCORP	PacifiCorp	2029	SMJ	884.19
PacifiCorp	PCORP	PacifiCorp	2030	SMJ	886.08
PacifiCorp	PCORP	PacifiCorp	2031	SMJ	887.88
PacifiCorp	PCORP	PacifiCorp	2032	SMJ	892.46
PacifiCorp	PCORP	PacifiCorp	2033	SMJ	892.14
PacifiCorp	PCORP	PacifiCorp	2034	SMJ	894.41
PacifiCorp	PCORP	PacifiCorp	2035	SMJ	896.63

Individual LSE Behind-the-Meter Photovoltaic (BTM PV)								
<i>Assigned per June 15, 2022 ALJ Ruling - https://docs.cpuc.ca.gov/</i>								
				Generation (GWh) (measured at customer, not grossed up for				
Service At	Type	LSE	CPUC LSE Name	2023	2024	2025	2026	2027
PGE	IOU	PGE	Pacific Gas	3,907	4,240	4,552	4,867	5,198
PGE	ESP		Pacific Gas	1,655	1,783	1,903	2,024	2,149
PGE	CCA	3CE	Central Coas	662	719	771	824	881
PGE	CCA	CPSF	CleanPowerS	428	465	500	536	573
PGE	CCA	EBCE	East Bay Co	966	1,055	1,138	1,223	1,312
PGE	CCA	KCCP	King City Co	5	5	6	6	7
PGE	CCA	MCE	Marin Clean	832	901	961	1,023	1,088
PGE	CCA	PCEA	Peninsula C	497	541	578	621	671
PGE	CCA	PIONEER	Pioneer Com	274	298	320	342	366
PGE	CCA	RCEA	Redwood Co	98	106	113	121	129
PGE	CCA	SJCE	San José Cl	550	598	642	687	735
PGE	CCA	SVCEA	Silicon Valle	531	576	618	661	706
PGE	CCA	SOMA	Sonoma Cle	321	348	374	401	428
PGE	CCA	VCEA	Valley Clean	106	112	122	132	142
SCE	IOU	SCE	Southern Ca	4,975	5,374	5,783	6,212	6,661
SCE	ESP		Southern Ca	424	457	489	522	555
SCE	CCA	AVCE	Apple Valley	49	53	57	61	66
SCE	CCA	COBP	Baldwin Park	-	-	-	-	-
SCE	CCA	3CE	Central Coas	53	57	61	65	68
SCE	CCA	CPASC	Clean Power	731	795	856	919	986
SCE	CCA	DCE	Desert Comr	64	71	76	82	87
SCE	CCA	PALMDALE	Energy for F	53	63	68	73	79
SCE	CCA	LCE	Lancaster C	119	130	140	150	161
SCE	CCA	OCPA	Orange Cou	345	409	440	473	508
SCE	CCA	PRIME	Pico Rivera	14	16	17	18	19
SCE	CCA	POMONA	Pomona Chd	12	13	14	15	16
SCE	CCA	RMEA	Rancho Mira	72	78	84	90	97
SCE	CCA	SJP	San Jacinto	38	41	44	48	51
SCE	CCA	SBCE	Santa Barba	33	36	38	41	44
SCE	CCA	WCE	Western Cor	-	-	-	-	-
SDGE	IOU	SDGE	San Diego G	875	772	823	877	934
SDGE	ESP		San Diego G	779	836	891	948	1,006
SDGE	CCA	CEA	Clean Energ	251	316	338	362	386
SDGE	CCA	OCPA	Orange Cou	4	36	39	41	44
SDGE	CCA	SDCP	San Diego C	1,468	1,684	1,805	1,931	2,060

Forecast Assignments for Use in 2022 LSE IRPs							
<i>/SearchRes.aspx?docformat=ALL&docid=485625915</i>							
T&D losses)							
2028	2029	2030	2031	2032	2033	2034	2035
5,536	5,893	6,226	6,588	6,935	7,309	7,663	8,006
2,281	2,408	2,531	2,647	2,761	2,867	2,966	3,055
941	1,000	1,058	1,115	1,170	1,224	1,275	1,324
613	653	693	733	771	809	845	883
1,407	1,501	1,595	1,687	1,776	1,861	1,942	2,022
7	7	8	8	9	9	10	10
1,160	1,232	1,323	1,390	1,464	1,520	1,579	1,636
725	775	827	878	933	981	1,031	1,081
391	416	441	466	490	514	538	560
137	145	152	159	166	173	179	185
785	837	888	939	989	1,039	1,087	1,134
754	803	852	900	948	995	1,040	1,084
458	487	517	547	576	604	632	659
153	164	175	186	197	207	217	227
7,123	7,603	8,099	8,615	9,142	9,679	10,225	10,774
590	625	663	700	739	779	819	860
71	75	80	85	90	96	101	106
-	-	-	-	-	-	-	-
72	76	80	84	89	94	100	105
1,055	1,126	1,200	1,276	1,354	1,433	1,513	1,595
93	99	106	112	119	127	134	142
84	90	96	102	109	115	122	129
172	184	196	208	221	234	247	260
544	582	621	662	703	745	788	831
21	22	24	25	27	28	30	32
17	18	19	21	22	23	25	26
103	110	117	125	132	140	147	155
55	58	62	66	70	74	78	82
47	51	54	57	61	65	68	72
-	-	-	-	-	-	-	-
990	1,048	1,106	1,165	1,223	1,281	1,338	1,393
1,065	1,123	1,180	1,235	1,290	1,344	1,397	1,449
411	436	461	486	511	536	560	585
47	50	53	55	58	61	64	67
2,192	2,324	2,458	2,593	2,726	2,859	2,989	3,118

25 MMT in 2035					
GHG benchmarks assigned per June 15, 2022 ALJ Ruling - https://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&docid=485625915					
Utility	LSEs within Host Utility Territory	Proportion of Total Emissions	2030 Load (GWh)	2035 Load (GWh)	Proportion of 2030 Load within EDU
Bear Valley Electric Service	N/A	0.000587773	138.8195	142.4237	N/A
Liberty Utilities	N/A	0.002547815	579.4708	599.1643	N/A
Pacific Gas and Electric Company	Pacific Gas and Electric (Bundled)	0.338367402	28,019.5589	29,851.6421	0.360148471
	Pacific Gas and Electric (Direct Access)		11,393.0000	11,393.0000	0.146439548
	Central Coast Community Energy		4,760.5600	4,935.5300	0.061189700
	CleanPowerSF		3,119.1600	3,292.8900	0.040092020
	East Bay Community Energy		7,179.7353	7,539.9690	0.092284489
	King City Community Power		35.7300	37.9500	0.000459254
	Marin Clean Energy		5,955.3400	6,098.5800	0.076546765
	Peninsula Clean Energy Authority		3,721.4857	4,032.7067	0.047833993
	Pioneer Community Energy		1,986.4700	2,089.9200	0.025533026
	Redwood Coast Energy Authority		685.2700	688.5000	0.008808095
	San José Clean Energy		3,995.7100	4,227.4000	0.051358726
	Silicon Valley Clean Energy Authority		3,833.4300	4,043.6400	0.049272865
	Sonoma Clean Power		2,328.2000	2,457.9200	0.029925442
Valley Clean Energy Alliance	786.3719	846.6143	0.010107605		
PacifiCorp	N/A	0.007461402	886.0800	896.6300	N/A
Southern California Edison Company	Southern California Edison (Bundled)	0.331706007	53,909.2120	55,275.8803	0.620027603
	Southern California Edison (Direct Access)		13,420.8510	13,420.8510	0.154357628
	Apple Valley Choice Energy		271.6200	276.9600	0.003123991
	Baldwin Park, City of		0.0000	0.0000	0.000000000
	Central Coast Community Energy		534.7200	540.2500	0.006149991
	Clean Power Alliance		11,466.8300	11,744.2600	0.131883789
	Desert Community Energy		469.4200	485.0000	0.005398954
	Energy for Palmdale's Independent Choice		640.3184	660.2467	0.007364513
	Lancaster Choice Energy		621.3300	635.4500	0.007146121
	Orange County Power Authority		4,136.5522	4,265.2616	0.047575850
	Pico Rivera Innovative Municipal Energy		237.2100	243.5100	0.002728230
	Pomona Choice Energy		408.6800	419.7700	0.004700363
	Rancho Mirage Energy Authority		293.5800	298.8500	0.003376560
	San Jacinto Power		176.8500	180.1900	0.002034010
	Santa Barbara Clean Energy		359.2973	369.3414	0.004132397
Western Community Energy	0.0000	0.0000	0.000000000		
San Diego Gas & Electric Company	San Diego Gas and Electric (Bundled)	0.088426808	3,694.0194	3,787.4129	0.210418652
	San Diego Gas and Electric (Direct Access)		3,940.0000	3,940.0000	0.224430195
	Clean Energy Alliance		1,538.8253	1,589.3452	0.087654532
	Orange County Power Authority		175.3453	181.1020	0.009988018
	Solana Energy Alliance		0.0000	0.0000	0.000000000
	San Diego Community Power		8,207.3800	8,476.8300	0.467508603
TOTAL		0.7690972	183,906.4331758	189,964.9911526	

Proportion of 2035 Load within EDU	2030 GHG Emissions Benchmark (MMT)	2035 GHG Emissions Benchmark (MMT)
N/A	0.014	0.012
N/A	0.063	0.051
0.366114920	3.013	2.466
0.139729241	1.225	0.941
0.060531718	0.512	0.408
0.040385589	0.335	0.272
0.092473813	0.772	0.623
0.000465437	0.004	0.003
0.074795923	0.640	0.504
0.049459058	0.400	0.333
0.025631786	0.214	0.173
0.008444096	0.074	0.057
0.051846870	0.430	0.349
0.049593149	0.412	0.334
0.030145115	0.250	0.203
0.010383286	0.085	0.070
N/A	0.204	0.168
0.622365246	4.933	3.993
0.151108788	1.228	0.969
0.003118363	0.025	0.020
0.000000000	0.000	0.000
0.006082813	0.049	0.039
0.132231621	1.049	0.848
0.005460739	0.043	0.035
0.007433886	0.059	0.048
0.007154694	0.057	0.046
0.048023669	0.378	0.308
0.002741741	0.022	0.018
0.004726298	0.037	0.030
0.003364828	0.027	0.022
0.002028805	0.016	0.013
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	18.852	15.213

ATTACHMENT F



MARIN COUNTY | NAPA COUNTY | UNINCORPORATED CONTRA COSTA COUNTY | UNINCORPORATED SOLANO COUNTY
BENICIA | CONCORD | DANVILLE | EL CERRITO | FAIRFIELD | LAFAYETTE | MARTINEZ | MORAGA | OAKLEY
PINOLE | PITTSBURG | PLEASANT HILL | RICHMOND | SAN PABLO | SAN RAMON | VALLEJO | WALNUT CREEK

Board of Directors Meeting
Thursday, October 20, 2022
7:00 P.M.

This Meeting will be conducted via teleconference pursuant to the requirements of [Assembly Bill No. 361](#). By using teleconference for this meeting, MCE continues to promote social distancing measures recommended by local officials.

Members of the public who wish to observe the Meeting and/or offer public comment may do so telephonically via the following teleconference call-in number and meeting ID:

For Viewing Access Join Zoom Meeting:

<https://us02web.zoom.us/j/82085254745?pwd=dWs0b1NTbWNYbjRJbVZLMVZzZjZrUT09>

Dial: (669) 900-9128
Webinar ID: 820 8525 4745
Meeting Passcode: 205749

Agenda Page 1 of 2

1. Roll Call/Quorum
2. Board Announcements (Discussion)
3. Public Open Time (Discussion)
4. Resolution No. 2022-12 Authorizing Continued Remote Teleconference Meetings for the Board of Directors and Every Committee of the Board of Directors Pursuant to Government Code 54953(e) (Action)
5. Report from Chief Executive Officer (Discussion)
6. Consent Calendar (Discussion/Action)
 - C.1 Approval of 8.18.22 Board Meeting Minutes
 - C.2 Approval of 9.29.22 Board Retreat Minutes
 - C.3 Approved Contracts for Energy Update

Agenda Page 2 of 2

7. Addition of Board Members to Committees (Discussion/Action)
8. Approval of CPUC Integrated Resource Plan (Discussion/Action)
9. Approval of Power Purchase Agreement with Mayacma Geothermal, LLC (Discussion/Action)
10. Implementation of Electrification Rate Schedule E-ELEC (Discussion/Action)
11. Proposed Amendments to MCE Policy 014: Investment Policy (Discussion/Action)
12. Budget Update and Possible Rate Increase in FY 2022/23 (Discussion)
13. Board Matters & Staff Matters (Discussion)
14. Adjourn

The Board may discuss and/or take action on any or all of the items listed on the agenda irrespective of how the items are described.

DISABLED ACCOMMODATION: If you are a person with a disability which requires an accommodation, or an alternative format, please contact the Clerk of the Board at (925) 378-6732 as soon as possible to ensure arrangements for accommodation.

Attachment C:
Key Acronyms

Acronym	Term
CAISO	California Independent System Operator
CCA	Community Choice Aggregator
CEC	California Energy Commission
CPUC	California Public Utilities Commission
CSP	Clean System Power Tool
EGS	Enhanced Geothermal Systems
ELCC	Effective Load Carrying Capacity
ERMP	Energy Risk Management Policy
GHG	Greenhouse Gas
IRP	Integrated Resource Plan
LSE	Load Serving Entity
MTR	Mid Term Reliability
PCP	Preferred Conforming Portfolio
PRM	Planning Reserve Margin
PSP	Preferred System Plan
RA	Resource Adequacy
RDT	Resource Data Template
RPS	Renewables Portfolio Standard
SOD	Slice of Day
TPP	Transmission Planning Process



Open Season 2026

Technical Committee

June 5, 2026

What is Open Season?

MCE's all-source solicitation for long-term, large-scale renewable energy and storage projects

Objectives:

- Continue to build out MCE's long-term portfolio
- Fulfill internal goals and external regulatory obligations
- Provide a hedge against market price volatility across multiple products
- Support new renewable energy and storage development



What MCE Has Built Through Long-Term Contracts

~77.5%

of MCE renewable energy from long-term contracts (2026)*

1,100+ MW

of new renewables built statewide to serve MCE customers

638 MW

of renewable energy contracted in 13 new long-term agreements since 2021

Energy Storage: 7 long-term contracts secured for **774 MW** of storage – shifting renewable energy to hours of peak demand and adding grid reliability. A benefit for hourly accounting & energy cost.

Procurement Orders

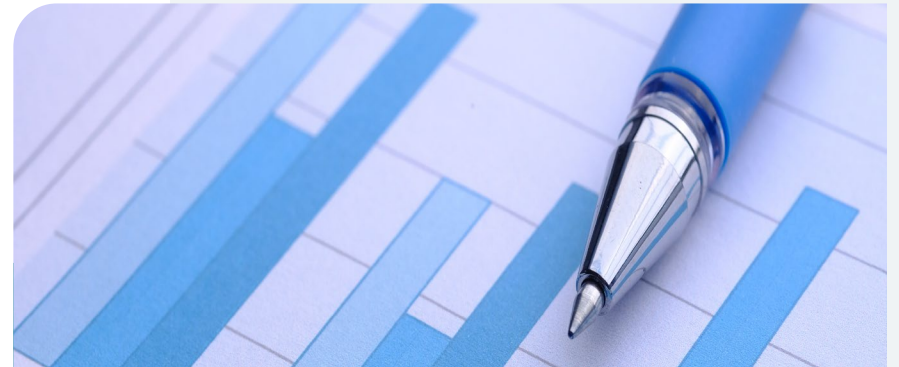
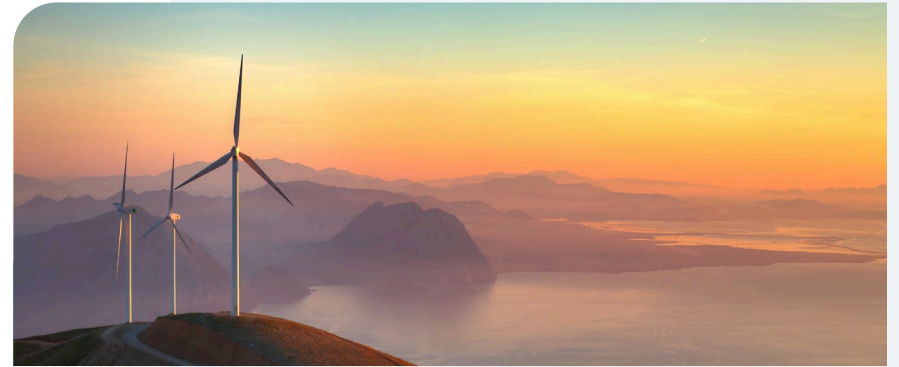
- **2019 - IRP Procurement Order (D.19-11-016)**
 - Ordered 3,300 MW of new capacity by 2023 in tranches
 - MCE share: 87.5 MW of Qualifying Capacity*
- **2021 - Mid Term Reliability (MTR) Order (D.21-06-035)**
 - Ordered 11,500 MW of new capacity by 2026 in tranches between 2023 & 2026 and with certain requirements (i.e. Long Lead Time (LLT) Resources, Diablo Canyon Replacement, etc.)
 - MCE share: 332 MW of Qualifying Capacity
- **2023 - Supplemental MTR Order (D.23-02-040)**
 - Ordered an additional 4,000 MW to come online between 2026-2027 and extended LLT deadline to June 1, 2028
 - MCE share: 122 MW of Qualifying Capacity
- **2026 - Procurement Order (D.26-02-057)**
 - Ordered an additional 6,000 MW to come online between 2030-2032 in annual tranches with 25 percent of requirement coming from clean firm and/or long duration energy storage resources.
 - MCE share: 60 MW of Qualifying Capacity in 2030, 2031, and 2032 each (180 MW total).

* Technology Specific discount factors are applied to Contracted Capacity by the CPUC to calculate Qualifying Capacity.

Open Season Targets

This year, MCE has a preference for the following categories of projects:

- Wind and Geothermal (complementary to current portfolio)
- PCC1 Generation
- Long-duration storage
- Comparable options for Procurement Order obligations
- New-build, repowers, and existing projects
- Special category for projects seeking to enter CAISO Interconnection Queue ("Cluster 16") Study Process



How does Open Season work?

Step 1: Marketing & Outreach

- Extensive distribution lists (Over 450 contacts);
- Cross-channel marketing (e.g., industry newsletters, trade groups, social media)
- Conference attendance and word-of-mouth

Step 2: Receive Offers

- Hosted on MCE's website
- Streamlined offer submission process (refined with each solicitation)

Step 3: Evaluate Offers

- Projects evaluated based on forecasted project benefits, utilizing expert consultant forecasts, and performing risk analyses & project due diligence

Step 4: Select Shortlist

- Staff proposes shortlist based on qualitative and quantitative scoring
- With management approval, project enters exclusive negotiating phase

Step 5: Negotiate Contracts

- Successful negotiations culminate in Staff seeking Technical Committee approval to execute contracts

Evaluation Criteria



Qualitative Criteria

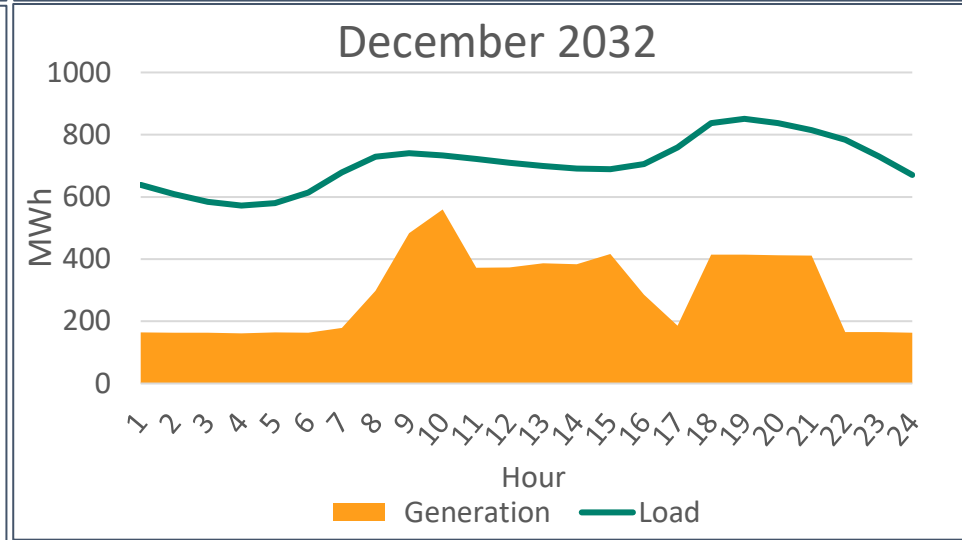
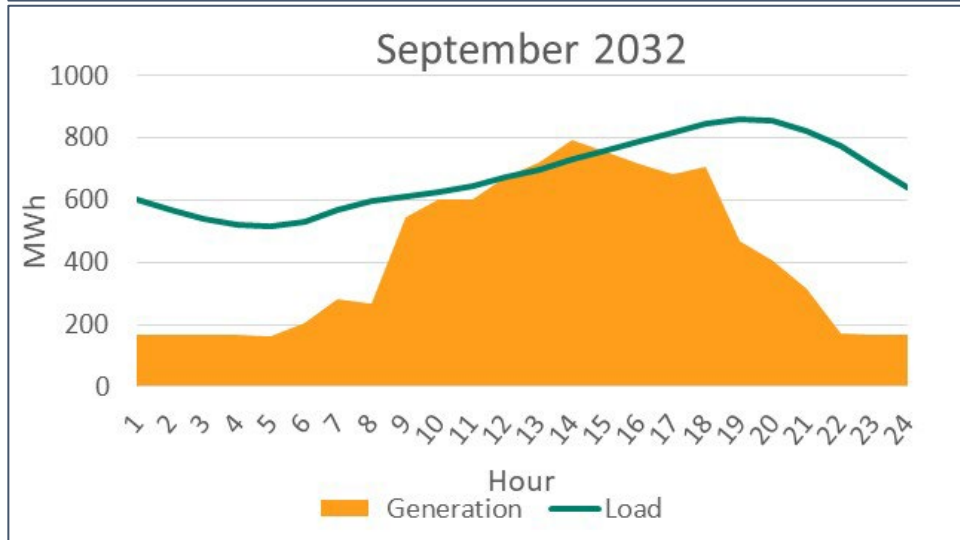
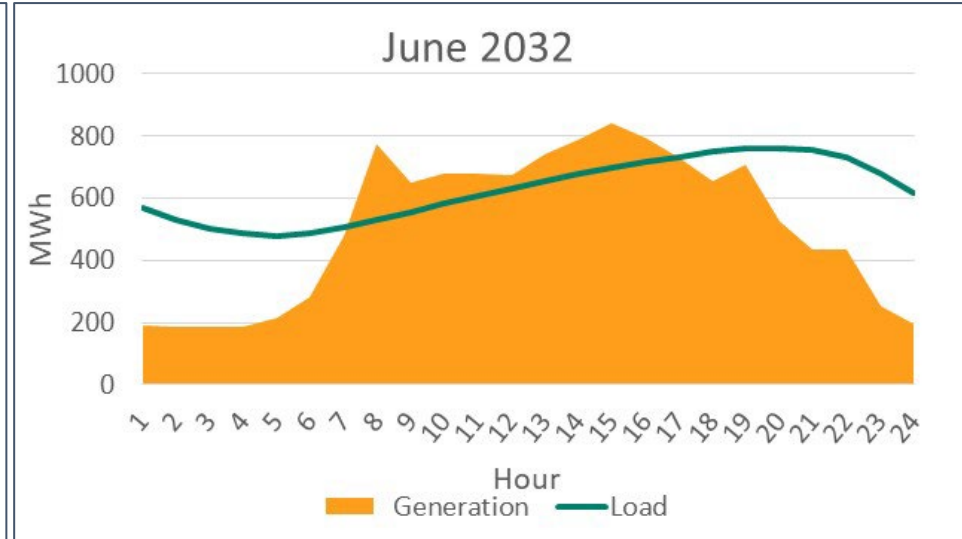
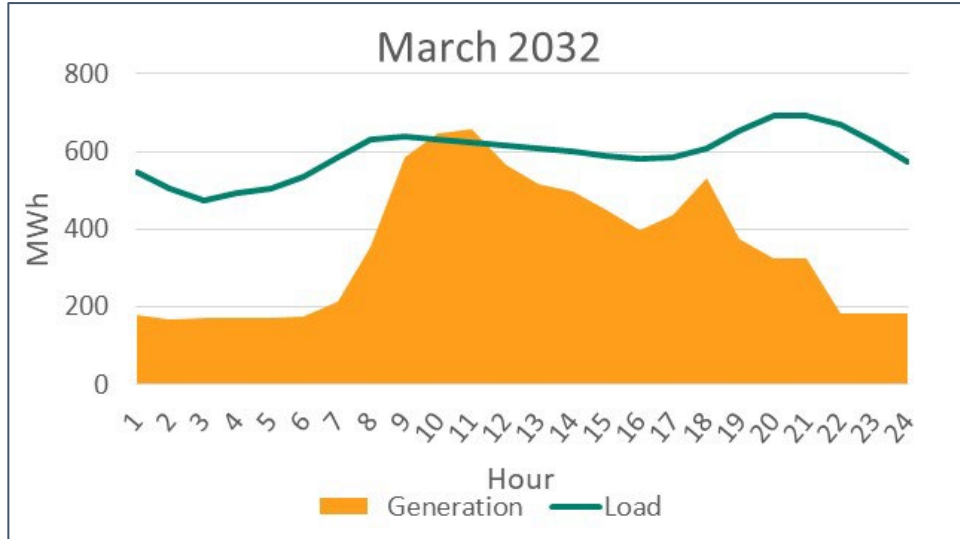
- **Project location and viability:** development and permitting risks
- **Community sentiment and benefits:** local opposition, workforce development
- **Counterparty credibility & business practices:** local hire and labor agreements
- **Commercial viability:** market-standard contracting provisions
- **Supply chain risks:** tax credits and tariffs



Quantitative Criteria

- **Portfolio fit:** generation profile relative to MCE's load and supply profiles
- **Product offerings:** PCC1 energy, resource adequacy, ancillary services
- **Project location:** hedge value for MCE load costs, cost of import rights, if applicable
- **Technology type:** Resource Adequacy (RA) value
- **Contract Price & Term Length:** notional value
- **Performance Guarantees:** MCE's risk mitigation

MCE's Seasonal Load-Supply Balance



**Actual profile could vary based on actual generation, load and CAISO system portfolio*

Schedule

Activity	Date
Marketing & Outreach	May through end of solicitation process
Solicitation Launch Date	June 17 th
Offer due date	July 13 th
Evaluate, rank, and shortlist projects	Rolling basis through Q3 2026
Negotiate and finalize contracts	Rolling basis through Q1 2027
Seek contract approval from Technical Committee	Pursuant to contract negotiations

Thank you



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info@mceCleanEnergy.org