OPERATIONAL INTEGRATED RESOURCE PLAN

2022–2032

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MCE Empowering Our Clean Energy Future

CONTRA COSTA | MARIN | NAPA | SOLANO

I. Executive Summary

MCE's mission is to confront the climate crisis by eliminating fossil fuel GHG emissions, producing renewable energy, and creating equitable community benefits.

As California's first Community Choice Aggregation (CCA) program, MCE is a groundbreaking, not-for-profit, public agency that has been setting the standard for energy innovation in its member communities since 2010. MCE offers more renewable energy at cost-competitive rates, significantly reducing energy-related greenhouse gas (GHG) emissions while delivering economic and workforce benefits by reinvesting millions of dollars in local energy programs. MCE is a load-serving entity that serves more than 1,240 MW of peak load. MCE provides electricity service to more than 575,000 customer accounts representing more than one million residents and businesses in 37 member communities across four Bay Area counties: Contra Costa, Marin, Napa, and Solano.

MCE provides service to approximately 87% of eligible electricity customers within its service area and is the default electric generation provider for any new or relocated customers therein.

For more information about MCE, visit mceCleanEnergy.org.

Figure 1: MCE service area, including new communities receiving MCE service in 2022

Front cover photos left to right: 3.5 MW Redwood Landfill-to-Gas Project, Marin County; 30 MW Mustang Solar Project, Kings County; 42 MW Voyager II Wind Farm, Kern County.

MCE Energy Services

MCE's standard service, Light Green, currently represents 97.8% of MCE customer accounts (96.5% of load) and has consisted of at least 60% renewable energy since 2017, meeting state goals 13 years ahead of schedule (see figure 2). Light Green is expected to reach 85% renewable energy by 2029 and is on track to become 95% GHG-free by 2023 (see table 1).

MCE offers two 100% renewable service options: Deep Green, sourced solely from wind and solar energy and representing 2.2% of MCE accounts (3.5% of load); and Local Sol, sourced exclusively from local solar energy produced within MCE's service area and representing 0.03% of MCE accounts (0.02% of load).

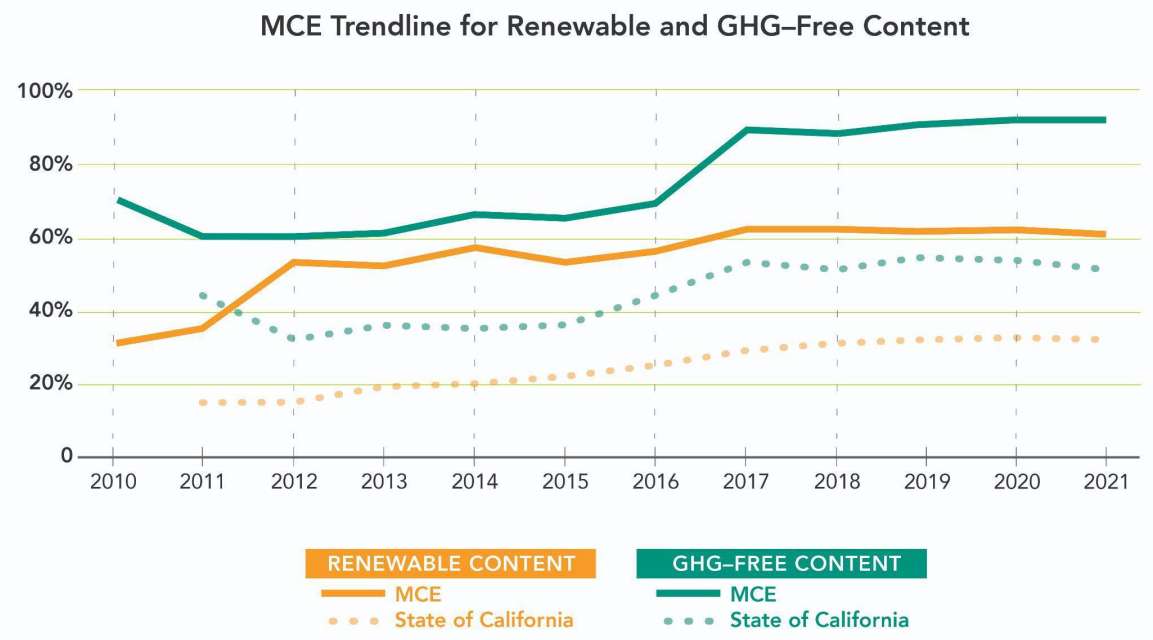


Figure 2: MCE trendline for renewable and GHG-free content[1]

MCE Programs

MCE offers a suite of customer programs to incentivize local renewable energy development, grow the clean energy economy, and support energy equity across its communities. These programs include rebates for energy efficiency, energy storage, electric vehicle (EV) charging, income-qualifying EVs, and heat pump water heaters. Through these programs, MCE has:

- Provided $5.60 million in energy efficiency rebates since 2013;

[1] As reported to the California Energy Commission via the Power Source Disclosure Program

- Procured and helped develop 48 MW of new renewable projects in MCE's service area including MCE Solar Charge, an 80-kW solar carport system at MCE's San Rafael office with 10 Level 2 EV charging ports available to MCE staff and the public;
- Distributed $330,000 for solar rebates to 688 income-qualified customers for more than 1.4 MW of solar since 2012;
- Distributed free portable, batteries to 200 low-income and Medical Baseline customers, worth $550,000, in partnership with regional Centers for Independent Living at no cost to recipients;
- Provided more than $1.5 million in rebates for over 1000 electric vehicle charging ports installed throughout MCE's service area; and
- In partnership with BayREN's Home+ program, provided $103,000 in incentives for heat pump water heater installations.

MCE's Equity Commitment

MCE has been committed to environmental justice since its launch in 2010 and continues to work with member communities to advance equity through tailored programs and services. MCE has prioritized equitable access to clean energy benefits that support customers who have been underserved by traditional energy programs or who are most impacted from the frontline effects of fossil fuel generation.

To address historical economic inequities, most MCE programs have carve-outs for lower-income customers. For example, the MCE Cares Credit Program has provided low-income customers over $4.2 million in bill relief, and MCE's Low-Income Families and Tenants (LIFT) Program helps families reduce indoor pollution impacts to increase health and prosperity. MCE's commitment to energy equity is reflected in:

- Partnerships with community-based organizations (CBOs) including schools and programs in support of underserved and vulnerable individuals;
- Strategic recruiting and hiring practices such as targeted job postings, partnerships with CBOs, education and employment organizations, physical attendance at job recruitment fairs, and blind résumé reviews; and
- MCE's programs and policies described in Sections III and IV including:
    - Behind-the-Meter Energy Storage and Resilience
    - Demand Response and Flexibility
    - Distributed Energy Resources
    - Transportation Electrification
    - Green Access and Community Solar Connection
    - COVID-19 Customer Support
    - Equity in Power Purchasing
    - Workforce and Supplier Diversity

Over MCE's 12 years of operation, these programs have:

- Contributed $98 million in local renewable energy development;
- Invested more than $650,000 directly into workforce development, including the training of 217 individuals;

- Supported 2.8 million labor hours through new renewable energy project development, 1.3 million of which were through union partnerships; and
- Generated strong community partnerships with workforce development agencies such as RichmondBUILD, Marin City Community Development Corporation, Rising Sun Center for Opportunity, Future Build, Association for Energy Affordability, and Strategic Energy Innovations.

Overall, since 2010 MCE has contributed almost $214 million (figure 3) in community reinvestment through cost savings ($31.5 million), local renewable energy projects ($98 million), energy efficiency ($24 million), energy resiliency ($12 million), solar incentives ($23 million), local employment, vendor contracts, and sponsorships ($9 million), and customer programs ($16 million).

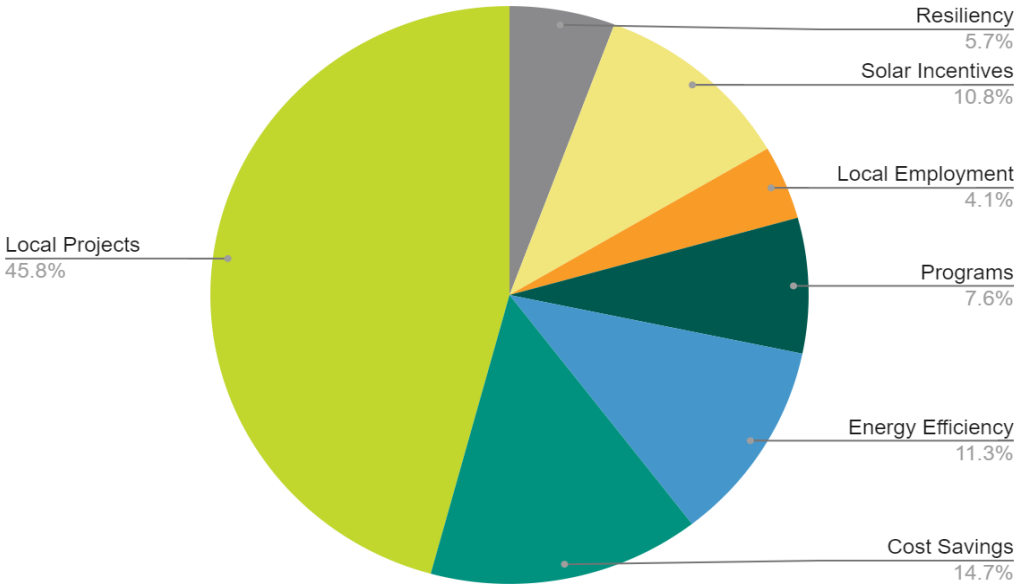


Figure 3: MCE local reinvestment by category

MCE Energy Procurement

In 2021, MCE procured approximately 5.3 million MWh of electricity for its customers.[2] MCE projects that by 2032, its loss-adjusted load will be approximately 6.4 million MWh. For 2023, MCE anticipates that 98% of its total retail sales will be sourced from Power Content Category 1 (PCC 1) renewables[3],

[2] In 2021, MCE provided its customers with 5,333,206 MWh of retail electricity, as measured at the customer meters, but MCE is also responsible for procuring the electricity that is lost to the distribution system. For this reason, MCE must procure toward its "loss-adjusted load," which is approximately 106% of its retail sales.

[3] MCE no longer procures Power Content Category 2 or 3 renewable energy.

large hydroelectric,[4] and Asset Controlling Supplier (ACS) energy.[5] PCC 1 power is produced from renewable resources located in California. As mentioned above and shown in table 1, MCE's Light Green service option is expected to be 95% GHG-free[6] by 2023 and is expected to reach 85% renewable energy by 2029. MCE's procurement strategy through 2032 includes:

- Bring online at least 332 MW of incremental net qualifying capacity[7] by 2026 to meet the California Public Utilities Commission's (CPUC) mid-term reliability Integrated Resource Planning (IRP) mandate. Translating the 332 MW of net qualifying capacity into nameplate capacity amounts to approximately 600 MW of new, wholesale capacity, which includes renewables paired with storage, stand-alone storage, and clean firm/baseload capacity. This procurement is in addition to approximately 700 MW of new California renewables that MCE has already procured. To meet the CPUC mid-term reliability mandate, MCE plans to bring online:
    - At least 29 MW of clean firm/baseload capacity;
    - At least 29 MW of long-duration storage (defined as capable of discharging at full capacity for a minimum of eight hours);
    - At least 185 MW of stand-alone four-hour storage; and
    - 210 MW of new solar paired with 152 MW of four-hour storage.
- Increase purchases of Resource Adequacy (RA) from non-fossil resources.

Table 1: MCE Light Green portfolio targets[8]

10-Year Light Green Portfolio Targets (%)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
PCC 1 Renewable	60%	60%	65%	70%	75%	80%	85%	85%	85%	85%
PCC 2 Renewable	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Large Hydro + ACS	37%	37%	32%	27%	22%	17%	12%	12%	12%	12%
Total Renewable	**60%**	**60%**	**65%**	**70%**	**75%**	**80%**	**85%**	**85%**	**85%**	**85%**
Total Renewable + Large Hydro + ACS	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**
GHG-Free Equivalent	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**

[4] Large hydroelectric resources are greater than 30 MW. While such resources provide GHG-free power, they do not qualify as renewable power that can be used to meet California's Renewables Portfolio Standard (RPS) requirements, per the CEC's RPS Eligibility Guidebook.

[5] ACS energy is primarily large hydroelectric energy from the Pacific Northwest, but it also contains relatively small amounts of nuclear energy and unspecified system energy.

[6] As counted by the Power Source Disclosure Program

[7] Net qualifying capacity describes the amount of capacity from any resource that can be counted toward meeting Resource Adequacy (RA) requirements in the CPUC's RA program. This is oftentimes less than the wholesale number of MW procured, which is often referred to as nameplate capacity. As such, MCE will procure significantly more than 332 MW to meet the CPUC mandate.

[8] Actual content percentages may differ from projections if resource availability or market conditions preclude cost-effective procurement or if annual load comes in higher or lower than expected. With respect to MCE's Light Green "GHG-Free Equivalent" metric, beginning with MCE's 2020 results, this percentage will be derived as follows: [MCE Light Green MT CO2e, per CEC Power Content Label] / [(MWh of MCE Light Green Retail Sales) x (0.428 MT CO2e/MWh)]. For reference, 0.428 MT CO2e/MWh is the emissions factor for unspecified electricity, per the California Air Resources Board.

II. Introduction to Integrated Resource Planning

MCE was formed to empower its member communities to choose supply-side and demand-side resources that reflect their specific values and needs. Member community values and needs are reflected in the procurement principles, goals, targets, and directives reviewed and adopted by MCE's governing Board via MCE's Operational Integrated Resource Plan (OIRP). Since 2014, MCE has prepared an annual OIRP that documents MCE's load and resource objectives for the upcoming ten-year planning period. MCE's 2023 OIRP (this document) has a planning period of 2023 through 2032 and takes into account numerous dimensions:

- Load forecasts based on the number and types of customers, potential service territory expansions, opt-out rates, electrification trends, demand-side resources, and weather;
- 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, including regulatory mandates;
- Market price hedging needs;
- Goals for local resources, local resiliency, and local workforce development; and
- Goals for more equitable communities.

MCE's OIRP is updated annually and submitted for approval to MCE's Technical Committee of the Board. Approval is made in consideration of applicable regulatory requirements, MCE's resource planning policies, energy market conditions, anticipated changes in electricity consumption, planned inclusion of new member communities, ongoing procurement activities, and any other considerations that may affect the manner in which MCE carries out its resource planning activities. MCE's OIRP has four primary purposes:

- To quantify resource needs, in conjunction with load expectations, over the planning period[9];
- To prioritize resource preferences and articulate relevant energy procurement policies;
- To provide guidance to the energy procurement processes by MCE staff; and
- To communicate MCE's resource planning objectives and framework to the public and key stakeholders.

MCE's OIRP is well-aligned with the biennial Integrated Resource Plan (IRP) submitted to the CPUC for certification pursuant to Cal. Pub. Util. Code Section 454.52(b)(3) ("Compliance IRP"). These two IRPs are developed concurrently in even years and reflect consistent long-term procurement planning strategies and goals. Importantly, state law provides that MCE's procurement activities be governed solely by its Board, except where state law expressly provides otherwise. As such, MCE's procurement must follow Board-adopted mandates as reflected in its OIRP and comply with external mandates from state regulatory bodies pursuant to their regulatory authority over CCAs.

[9] Within this OIRP, resources include renewable energy, large hydroelectric energy, ACS energy, energy storage, RA, hedges against CAISO load payments, behind-the-meter generation and/or storage, demand response, and energy efficiency.

III. MCE Customers and Load Forecast

MCE's long-term load forecast is a ten-year projection of the energy (reflected in GWh) that its customers will consume annually. The forecast is driven primarily by the number and types of customers that MCE expects to serve, in conjunction with weather projections. It also incorporates the load-modifying effects of electrification, behind-the-meter solar and/or storage (via net energy metering), and energy efficiency. The forecast is also adjusted to incorporate the power that MCE expects to lose to the distribution system. Figure 4 shows MCE's loss-adjusted load forecast for the planning period, with net energy metering and energy efficiency shown above the Net Load line to represent what MCE's load would have been without these important load-side resources.

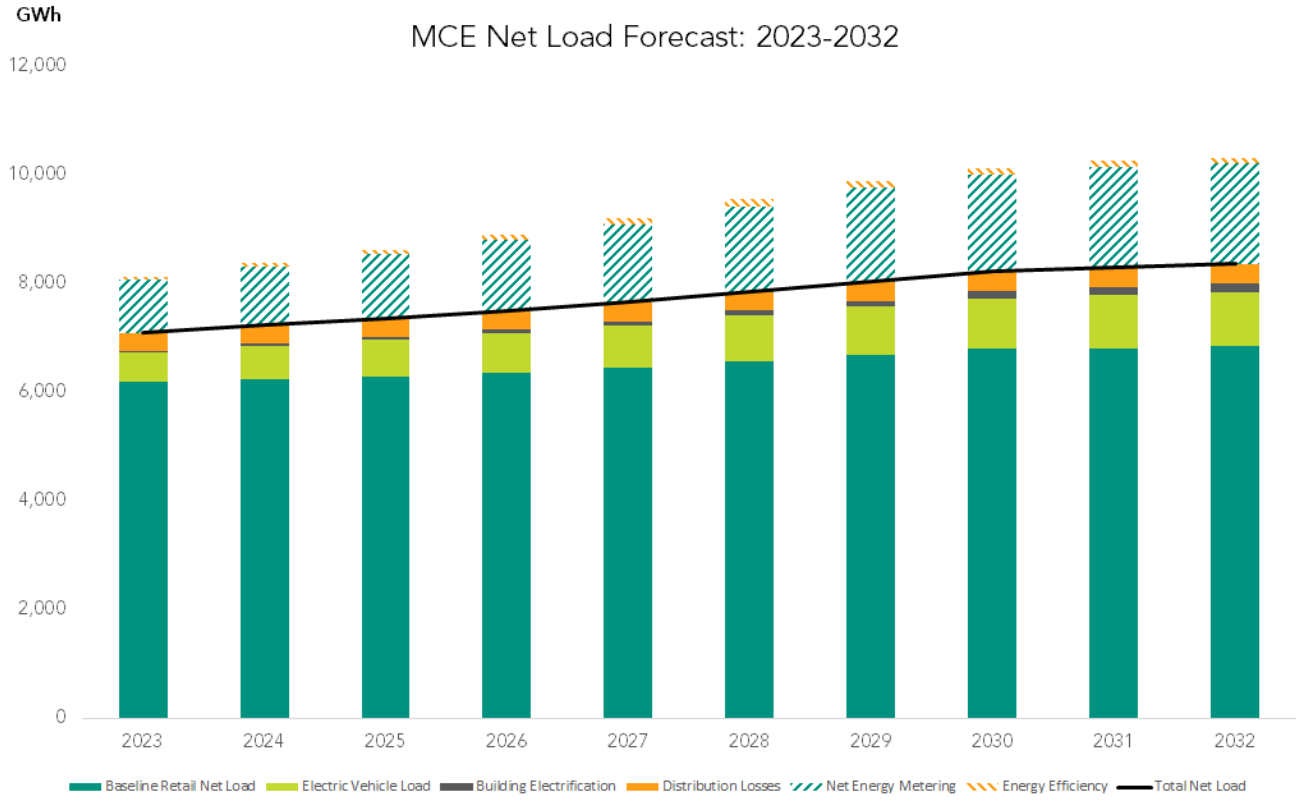


Figure 4: MCE loss-adjusted load forecast, 2023-2032[10]

[10] MCE is responsible for procuring the electricity that is lost to the distribution system. For this reason, MCE must procure toward its "loss-adjusted load," which is approximately 106% of its retail sales. MCE settles separately with the CAISO for transmission system losses.

Enrolled Customers

MCE has been serving customers since 2010, and now supports a peak load of approximately 1,240 MW. MCE provides electricity service to approximately 575,000 customer accounts and more than one million residents and businesses in 37 member communities across four Bay Area counties: Contra Costa, Marin, Napa, and Solano. MCE has an average customer participation rate of 86.9% across its service area and a Deep Green participation rate of 2.2%. For additional information on MCE's customer enrollment by customer account and load, see figure 5. Figures 6 and 7 provide a breakdown of customer enrollment rates by community.

The scope of this OIRP is limited to MCE's Board-approved service area. In accordance with Policy No. 007 - New Customer Communities, MCE may include additional communities that request service during the planning period. Any specific resource planning impacts related to future inclusion of additional member communities would be addressed by MCE's Board of Directors prior to the completion of such processes and incorporated into future OIRPs. For a list of MCE's enrollment phases, refer to Appendix B.

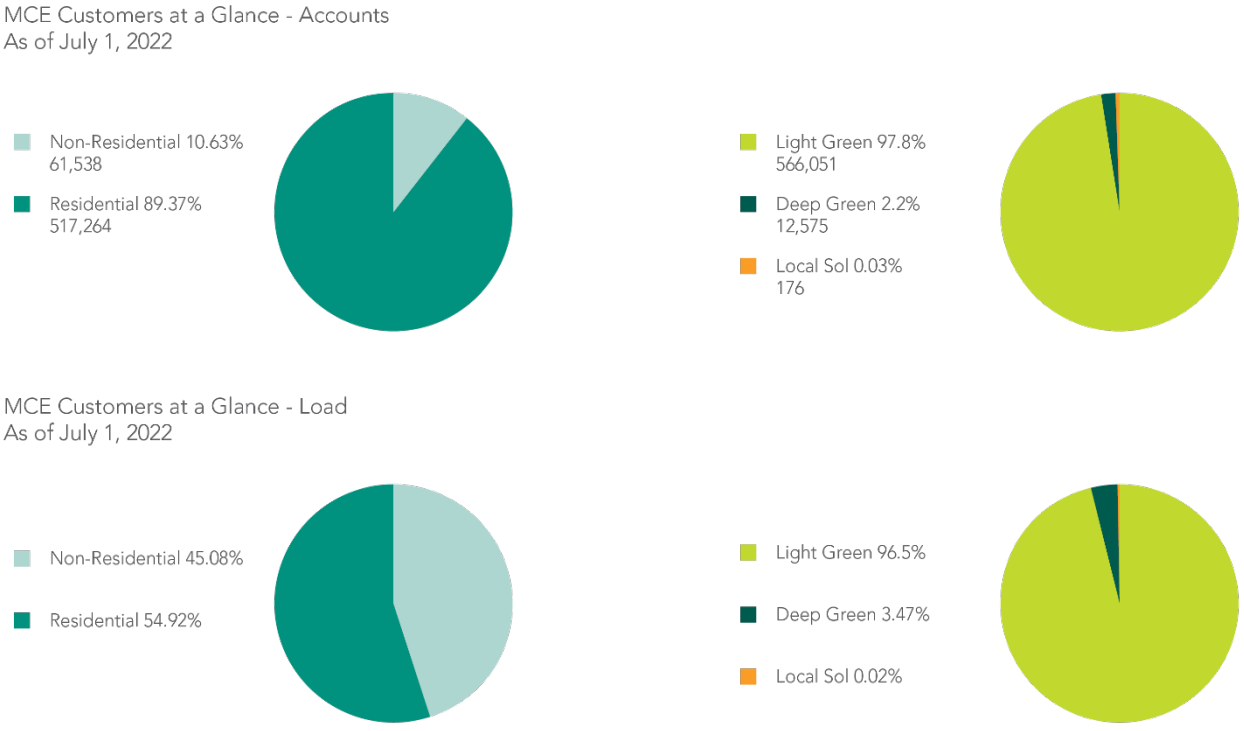


Figure 5: MCE customer accounts and load

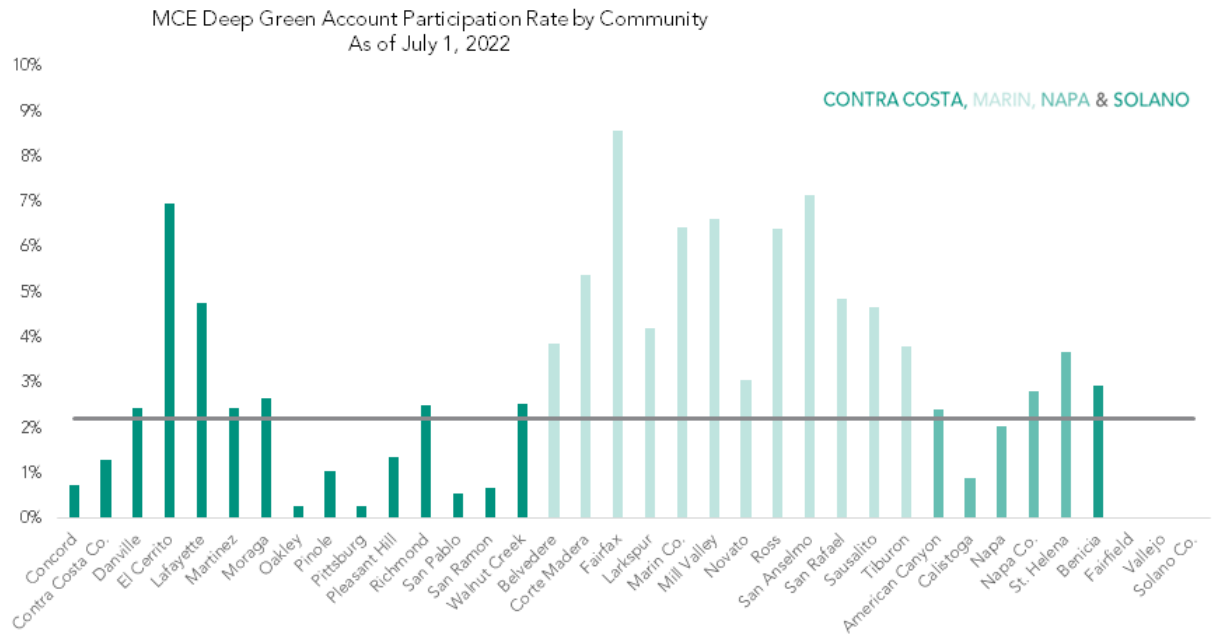


Figure 6: MCE Deep Green participation rates

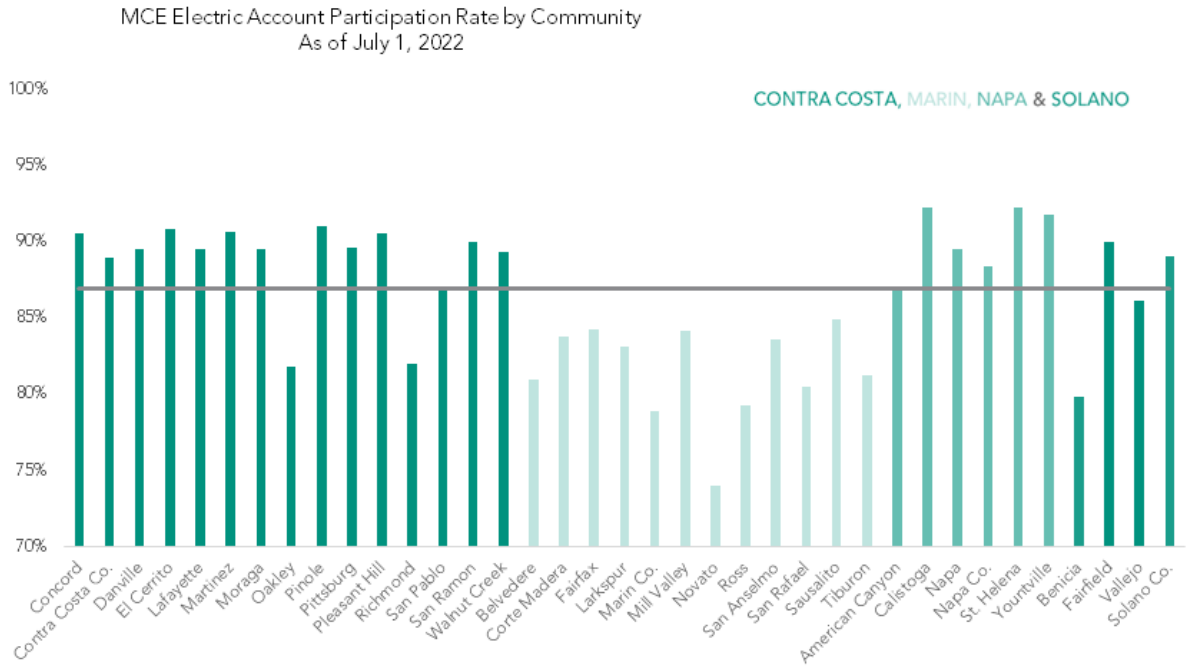


Figure 7: MCE overall participation rates

Baseline Customer and Consumption Forecast

MCE's electricity demand forecast starts with an assessment of customers by end-use classification. Monthly energy consumption estimates, based on weather-derived historical data, are applied to yield a monthly energy forecast by customer class. Hourly class-specific load profiles are then used to break down the monthly energy forecast into more granular time-of-use and peak demand values. As mentioned above, MCE makes adjustments for the load impacts of electrification, net energy metering, and energy efficiency in its forecasts.

Customer Energy Choices

MCE offers customers three energy choices (described in table 2 below). Light Green is MCE's standard service, offering a minimum of 60% renewable electricity to the bulk of MCE's customers. Deep Green offers customers 100% renewable energy, half from wind resources and half from solar resources. Local Sol offers a second 100% renewable energy option of locally sourced solar for those who prefer to purchase power exclusively within MCE's service area. Figure 8 highlights MCE's power content by service option for 2021.

Table 2: MCE customer energy choices

LIGHT GREEN SERVICE	
Standard Option 97.8% of MCE accounts, 96.5% of load	• Minimum 60% RPS-qualifying renewable energy • Also contains large hydroelectric energy, ACS energy, and CAISO system power
DEEP GREEN SERVICE	
Opt Up Option 2.2% of MCE accounts, 3.5% of load 25 of MCE's member municipalities have chosen to enroll in MCE Deep Green	• 100% RPS-qualifying renewable energy (solar and wind only) • Half of the premium charged to customers is allocated to MCE's Local Renewable Energy and Program Development Fund
LOCAL SOL SERVICE	
Opt Up Option 0.03% of MCE accounts, 0.02% of load	• Established in 2014, began serving customers in 2017 • 100% locally sourced solar from the Cooley Quarry project in Novato, California • 300 customer capacity of 2,885 MWh/year

2021 Electric Power Generation Mix*

Specific Purchases	Percent of Total Retail Sales (kWh) MCE Light Green	MCE Deep Green	MCE Local Sol
Renewable	**61%**	**100%**	**100%**
Biomass & Biowaste	6%	0%	0%
Geothermal	6%	0%	0%
Eligible Hydroelectric	1%	0%	0%
Solar	31%	50%	100%
Wind	16%	50%	0%
Coal	**0%**	**0%**	**0%**
Large Hydroelectric	**37%**	**0%**	**0%**
Natural Gas	**0%**	**0%**	**0%**
Nuclear	**1%**	**0%**	**0%**
Other	**0%**	**0%**	**0%**
Unspecificed Sources of Power **	**2%**	**0%**	**0%**
Total	**100%**	**100%**	**100%**

*The figures above may not sum up to 100 percent due to rounding.

**Unspecified sources of power refers to electricity that is not traceable to a specific generating facility, such as electricity traded through open market transactions. Unspecified sources of power are typically a mix of all resource types, and may include renewables.

Figure 8: MCE's 2021 electric power generation mix

Behind-the-Meter Energy Storage and Resilience

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.

On May 26th 2022, MCE was approved to join the implementation of a $5 million Electric Program Investment Charge (EPIC) grant from the California Energy Commission (CEC) to develop an Advanced Energy Community (AEC). The grant will develop a pilot Virtual Power Plant (VPP) within the City of Richmond which 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. This provides smart, demand-side management opportunities through a network of flexible, energy storage plus solar systems with real-time monitoring and control via a state-of-the-art Distributed Energy Resources Management System (DERMS) software platform. 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 1MW of solar, 2MWh of energy storage, and 1.5MW 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 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.

Demand Response and Flexibility

MCE's innovative battery energy storage system (BESS) program (described above) reduces customer costs and GHG emissions with a goal of providing 3.24 MW of RA capacity by the end of the planning period. Under this program, an aggregated fleet of BESS are monitored and automatically dispatched as a virtual power plant to reduce MCE's peak demands and shift loads out of the 4–9 p.m. period to alleviate peak demand. This strategy also helps alleviate possible solar curtailment during the midday hours by charging BESS from solar photovoltaic (PV). MCE plans to expand this load-shifting effort to include the monitoring and control of other customer-owned DERs.

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.

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 Peak FLEXmarket incentivizes regular load shifting and also calls demand response events during periods of extreme grid stress.

Distributed Energy Resources

MCE will continue utilizing distributed energy resources (DERs) to increase use of renewable energy, reduce GHG emissions, increase local workforce opportunities, and help customers save money. MCE defines DERs to include behind-the-meter generation and storage, demand response, load shifting, load management, EVs, and energy efficiency.

This OIRP builds on existing tools and pilot programs to usher in wider-scale DER deployment in MCE's service area and statewide, while creating opportunities for new programs and technologies that:

- Develop local energy and capacity projects;
- Explore market designs;
- Create tools to quickly analyze and evaluate the suitability of specific DER solutions;
- Emphasize DER pilots that reduce MCE's exposure to wholesale market volatility;
- Shift energy use away from peak evening hours when solar energy production is low and market prices are typically high; and
- Match MCE's load shape to our resources.

Transportation Electrification

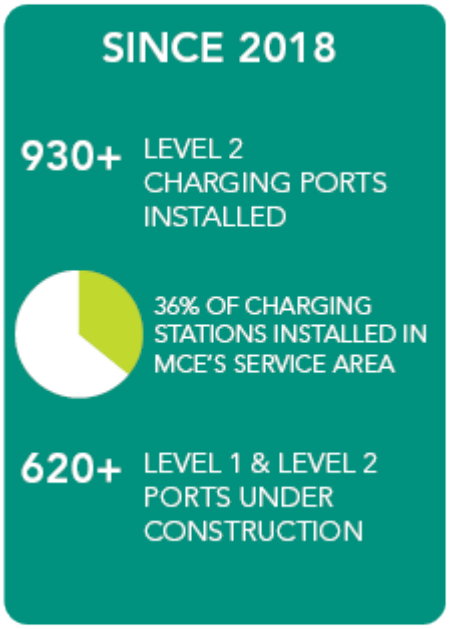
As part of its broader strategy to reduce GHG emissions through buildings and transportation electrification, MCE has been working on several EV-related initiatives since 2017. These include demand response-enabled charging devices, equity-centered incentives for EVs, and funding for charging stations. 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 household 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 4,000 enrolled customers by May 2023.

Since 2018, MCE has supported or funded 1,550 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 620 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 California Energy Commission (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 244 customers purchase or lease a new EV and will expand in fiscal year 2022/2023 to include used EVs as well.

Energy Efficiency

MCE is an administrator of California's ratepayer-funded, energy efficiency programs alongside investor-owned utilities (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 CPUC. MCE has received CPUC 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 (figure 9).

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.

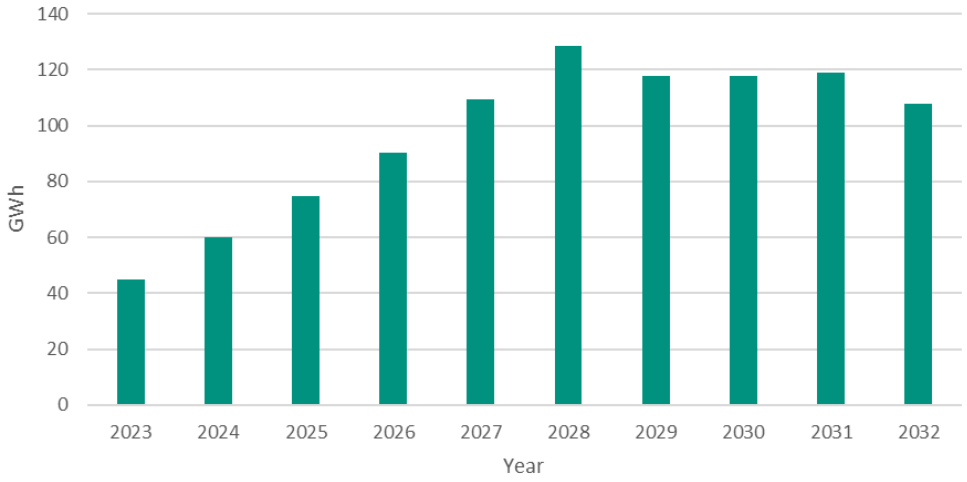


Figure 9: MCE cumulative annual energy efficiency impacts (GWh)

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 61,500 customers (10.6% 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 (DACs) at little to no cost for the customer. MCE contributed $900 per solar installation to qualifying low-income, single-family residents. 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.

Energy Equity

Green Access and Community Solar Connection Programs

MCE is collaborating with the CPUC, IOUs, and other CCAs to develop community solar programs for customers in CalEnviroScreen designated disadvantaged communities (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 over 3,000 customers, and MCE prioritizes customers who live in the highest scoring DACs, 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.

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 will develop 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. Customers will be eligible to enroll in this program as soon as the solar resources come online, possibly as early as the end of 2023.

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

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 lower-income 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 spring of 2022, when MCE employees returned to the offices.

MCE also launched two webpages providing a comprehensive list of COVID support resources for residential and small business customers, by county. At the end of 2021, MCE partnered with 11 local CBOs to distribute bill-savings program flyers in English and Spanish. MCE noted an increase in website traffic to our bill-savings pages after distributing this flyer.

Equity in Power Purchasing

MCE's 2021 Open Season solicitation was the first year that suppliers were encouraged to consider community benefits and equity metrics when submitting offers. Inclusion of community benefits was also part of Open Season 2022. Some of the optional elements that MCE solicited in offers as part of Open Season included:

- 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.

Workforce and Supplier Diversity

MCE has long been committed to supporting the economic health and sustainability of member communities. As demonstrated by MCE's Sustainable Workforce and Diversity Policy 011, originally adopted in 2014, MCE supports sustained and fairly compensated local job opportunities through participation in the energy industry. The policy outlines specific efforts to prioritize workforce development through MCE's Feed-in Tariff, energy efficiency projects, contracts for services and supplies, and direct hire of MCE staff. To the extent allowed by state law, MCE seeks to create market incentives and partnerships to encourage a diverse and sustainable workforce through its support for:

- Fair compensation in direct hiring, renewable development projects, customer programs, internships, and procurement services;
- Development of locally generated renewable energy within MCE's service area;
- Direct use of union members from multiple trades;
- Quality training, apprenticeship, and pre-apprenticeship programs;
- Direct use of businesses local to MCE's service area;
- Development of California-based job opportunities;
- Business and workforce initiatives located in low-income and frontline communities;
- Direct use of Disabled Veteran-owned Business Enterprises (DVBE) and LGBT-owned Business Enterprises (LGBTBE);
- Direct use of green and sustainable businesses; and
- Hiring practices that promote diversity in the workplace.

More recently, in 2022 MCE adopted Sustainable Workforce Guidelines to create a more detailed plan for implementing Policy 011, 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 PLA between MCE and International Brotherhood of Electrical Workers (IBEW) Local 302. Projects within Napa, Marin, or Solano County must participate in a Project Labor Agreement (PLA) of similar scope and requirements with participating unions for workforce hired as described in the 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 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 (described in section Energy Equity, 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.

MCE's Sustainable Workforce Policy also directs MCE to purchase goods and services from local businesses wherever possible. While more than 90% of MCE's annual budget is spent on power purchases, MCE is proud to have contracted with small and local businesses for $57,030,427 worth of services in 2021, and continues to identify new ways to expand our local economic impact. While Proposition 209 prevents MCE, as a government agency, from taking direct steps to increase our procurement from many categories of diverse businesses, MCE has tracked and reported on its procurement from diverse businesses for the last two years. In 2021, MCE contracted for $1,002,197 worth of business that are women-owned; minority-owned; disabled veteran-owned, and LGBT-owned.

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 provides the multiple benefits of lower energy consumption, saving customers money, reducing greenhouse gas pollution, and building more equitable communities. 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, an LED retrofit project for city streetlights, and electrification.
- 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 our commitment to creating equitable green jobs, MCE has been an active participant in the regional High Road Training Partnership (HRTP) 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 — 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, 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, MCE launched the Workforce, Education, and Training (WE&T) Program in 2020 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 on-ramp 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 on-ramps to career pathways, providing job security, and building the economic health of member communities.

Supplier Diversity

To further MCE's tracking and reporting of labor practices and the diversity of its supplier base, MCE has been building relationships with the CPUC's General Order 156 Supplier Diversity staff and Clearinghouse since 2018. This effort has included MCE staff attending CPUC symposiums and hosting annual Certify & Amplify informational workshops since 2019 to educate local businesses on the process and contracting opportunities available through Supplier Diversity certification.

Since 2019, MCE has made an effort to collect voluntary information on diversity and labor practices from its suppliers, including its power suppliers. In compliance with California Proposition 209, the Affirmative Action Initiative, MCE explicitly does not give preferential treatment to bidders based on race, sex, color, ethnicity, or national origin. MCE collects this information only after contracts are signed, and the information does not influence any current or future solicitation or selection processes.

In 2019, SB 255 was signed into law to require CCA participation in this annual reporting program to the CPUC . The report outlines agency procurement from diverse business enterprises, as well as strategies for increasing procurement from small, local, and diverse businesses. In 2021, MCE submitted its first Supplier Diversity Report to the CPUC and continues to explore ways in which it can ensure that diverse communities have access to MCE's contracting opportunities, within the constraints of Proposition 209.

MCE hosted our fourth annual Certify & Amplify event in June 2022, continuing to educate diverse and local businesses about expanding contracting opportunities. In addition to providing a platform for our repeat speakers (Bezawit Dilgassa from the CPUC and Teresa Rubio-Dorsey from Veteran Launch), this year, for the first time, the webinar featured a speaker from the California Department of General Services. Wayne Gross spoke about additional certification opportunities for small businesses and disabled veteran-owned businesses.

Due in part to engagement with the California Hispanic Chamber, this year marked the first year that MCE's Certify & Amplify Webinar was also a bilingual event, with live interpretations provided in Spanish during the event and all pre- and post-event materials available in both languages. By providing bilingual outreach materials, MCE expanded our supplier diversity audience to include more diverse perspectives.

IV. Planning Policies

MCE's policy, established by MCE's founding documents and directed on an ongoing basis by MCE's Board, guides the development of this OIRP and related procurement activities. MCE's key resource planning policies are to:

- Reduce GHG emissions and other pollutants associated with the electric power sector through increased use of renewable, GHG-free, and low-GHG energy resources;
- Maintain competitive electric rates and increase control over energy costs through management of a diversified resource portfolio;
- Benefit the local economy by offering competitive electricity rates and customer programs, and investing in infrastructure, energy, and workforce-development programs within MCE's service area;
- Help customers reduce energy consumption and electric bills by supporting and administering enhanced customer energy efficiency, cost-effective distributed generation, and other demand-side programs;
- Enhance system reliability through investments in supply- and demand-side resources;
- Actively monitor and manage operating and market risks to promote MCE's continued financial strength and stability; and
- Support supplier and workforce diversity as permitted by law.

The OIRP translates these broad policy objectives into a more specific energy procurement strategy, taking into consideration MCE's projected customer needs and existing resource commitments over the planning period.

Regulatory Requirements

When planning its power supply portfolio for the upcoming ten-year planning period, MCE must take into account numerous regulatory requirements, some of which are briefly described below. For more detailed information on the regulations underlying this OIRP, see Appendix C.

Renewable Portfolio Standard and Senate Bill 100 (2018)

California's Renewable Portfolio Standard (RPS) requires California load-serving entities (LSEs) to supply their retail sales with minimum quantities of eligible renewable energy. Senate Bill 100 directs all LSEs to procure 60% of their portfolios from RPS-eligible resources by 2030, and 100% of their retail sales from zero-carbon resources (or eligible renewable resources) by 2045. MCE met the 2030 RPS requirement 13 years ahead of schedule.

Resource Adequacy

Resource Adequacy (RA), a California program jointly administered by the CEC , the CPUC, and CAISO, directs LSEs to secure forward capacity and offer it into the CAISO's Day-Ahead and Real-Time markets to ensure that there will be enough supply in the right locations and with sufficient ramping capability to meet load. The RA program consists of three products: System RA, Local RA, and Flexible RA. Local RA obligations are assigned to a Central Procurement Entity starting in 2023.

In addition, per CPUC Decisions (D.) 19-11-016 and D. 21-06-035, LSEs are required to procure "Incremental System Capacity," which is new-build RA-eligible capacity that will be available to the CAISO to meet near-, mid-, and long-term reliability needs. Collectively, this procurement represents almost 15,000 MW of net qualifying capacity that is to be online from 2021 through 2026. Between these 2 mandates, MCE is responsible for procuring 420 MW of net qualifying capacity (87.5 MW under D.19-11-016; 332 MW under D.21-06-035), which translates to more than 600 MW of new, wholesale capacity by 2026. MCE is planning to meet this need via procurement of a diverse collection of resources that includes over 200 MW of solar paired with over 150 MW of four-hour battery storage; approximately 200 MW of stand-alone battery storage; 29 MW from clean, baseload resources, such as geothermal; and 29 MW from long-duration storage, which is defined as storage capable of discharging at its full capacity for at least eight hours. MCE's procurement to date towards these compliance requirements is illustrated in Table 9 below.

Power Source Disclosure

California law requires LSEs to disclose the types of power resources used to supply retail sales. This mandate, known as the Power Source Disclosure program (PSD), is a consumer information program managed by the CEC on an annual basis. A key output of the PSD program is the Power Content Label (PCL, figure 8 above). The PCL is an LSE-specific document that shows the breakdown of power resource types for each of the LSE's energy products used to serve retail load, as well as a breakdown of resource types for the overall California grid. The PCL is distributed to customers each summer.

MCE Light Green Procurement Targets

Reducing GHG emissions is at the heart of MCE's mission. With this in mind, MCE is structuring a Light Green portfolio that will be approximately 95% GHG-free in 2023 and beyond, subject to market and regulatory changes (see table 3). To structure such a clean Light Green portfolio by 2023, MCE will procure three products: (1) RPS-eligible renewable energy (2) large hydroelectric energy, and (3) Asset Controlling Supplier (ACS) energy, the vast majority of which is large hydroelectric.[11] RPS-qualifying renewable energy will continue to account for at least 60% of MCE's Light Green portfolio and will ramp up to 85% by 2029.

As shown in table 3 below, MCE is targeting a Light Green portfolio that is 95% GHG-free. MCE has chosen a 95% target because as part of its PCC 1 renewable energy portfolio, MCE has contracts for geothermal and biofuel that are known to produce small amounts of carbon dioxide and other GHGs during electric power generation,[12] and MCE procures ACS energy that includes relatively small portions of GHG-emitting power. A significant portion of the large hydroelectric power in the Pacific Northwest is embedded in ACS, and MCE has determined that the benefit of access to this hydroelectric supply outweighs the downside of taking these embedded emissions.

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[11] The California Air Resources Board (CARB) recognizes three ACSs: Bonneville Power Administration, Powerex, and Tacoma Power. On its website, CARB publishes the emissions factors for each of these three suppliers: Mandatory GHG Reporting - Asset Controlling Supplier.

[12] Technology-specific emissions factors can be found in table A.III.2 of the 2014 IPCC report available at: Technology-specific Cost and Performance Parameters.

Table 3: MCE Light Green portfolio targets[13]

10-Year Light Green Portfolio Targets	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
PCC 1 Renewable	60%	60%	65%	70%	75%	80%	85%	85%	85%	85%
PCC 2 Renewable	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Large Hydro + ACS	37%	37%	32%	27%	22%	17%	12%	12%	12%	12%
Total Renewable	**60%**	**60%**	**65%**	**70%**	**75%**	**80%**	**85%**	**85%**	**85%**	**85%**
Total Renewable + Large Hydro + ACS	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**	**97%**
GHG-Free Equivalent	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**	**95%**

Utility Scale Energy Storage

Energy storage is critical to California meeting its reliability and environmental objectives. With respect to reliability objectives, energy storage can help the state meet its capacity needs, which will be amplified by the retirement of natural gas-fired power plants and the future decommissioning of California's last nuclear power plant, Diablo Canyon. For reliability, energy storage can provide energy to the grid including scheduled energy and regulation energy required by the California Independent System Operator (CAISO) to manage grid frequency. This energy service is particularly important during specific times of the day when solar and wind are not available to serve load. With respect to environmental objectives, energy storage can help the state meet its renewable and GHG goals by charging when there is excess renewable generation, thereby avoiding the need to curtail such power.

MCE's 2022 CPUC IRP analysis highlighted a need for 634 MW of grid level storage capacity over the course of the planning period. Some of this storage procurement will be applied to MCE's 332 MW of net qualifying capacity to meet its mid-term reliability procurement mandate from the CPUC. The rest will be above and beyond current mandates and will serve to further balance MCE's portfolio and contribute to grid reliability.

In 2021, the CPUC mandated that jurisdictional LSEs collectively procure a minimum of 1,000 MW of long-duration storage by 2026.[14] MCE's share of this long-duration storage is 29 MW.

[13] Actual content percentages may differ from projections if resource availability or market conditions preclude cost-effective procurement or if annual load comes in higher or lower than expected. With respect to MCE's Light Green "GHG-Free Equivalent" metric, beginning with MCE's 2020 results, this percentage will be derived as follows: [MCE Light Green MT CO2e, per CEC Power Content Label] / [(MWh of MCE Light Green Retail Sales) x (0.428 MT CO2e/MWh)]. For reference, 0.428 MT CO2e/MWh is the emissions factor for unspecified electricity, per the California Air Resources Board.

[14] CPUC Decision 21-06-035.

Joint CCA Procurement Efforts

In 2021 MCE partnered with three other CCAs to launch California Community Choice Financing Authority (CCCFA), a first-of-its-kind renewable energy prepay bond agency. This prepay structure helps MCE reduce the cost of power purchasing and allows us to shift ratepayer dollars to deliver cheaper and local clean energy programs.

In fall 2021, MCE and partners at CCCFA issued California's first ever municipal non-recourse Clean Energy Project Revenue Bonds through the California Community Choice Financing Authority (CCCFA). Since last year, three separate bond issuances, valued at over $3 billion for thirty-year terms, support the purchase of clean electricity to serve over 2.5 million residents and businesses across the Bay Area and Central Valley. The three Clean Energy Project Revenue Bonds prepay for the purchase of over 650 megawatts of clean electricity – enough to power 265,000 homes and reduce 330,000 metric tons of greenhouse gas emissions annually.

MCE's transaction was underwritten by Goldman Sachs and produced approximately $700 million in bond proceeds. The issue received an investment grade "A2" rating from Moody's Investors and a "Green Climate Bond" designation from Kestrel Verifiers. The transaction will reduce the cost of the renewable energy from the prepaid projects by over $2.5 million a year for MCE ratepayers. .

Since 2010, MCE has contributed almost $214 million in community reinvestment.

Non-Fossil Resource Adequacy

MCE is making meaningful efforts to purchase RA from clean resources in an effort to eliminate the need for polluting fossil-based resources which cause climate change and impact human health. MCE is planning to meet RA targets with renewables, large hydro/ACS and energy storage (see Energy Storage section above). To the extent that the methodologies for calculating Qualifying Capacities and NQCs are significantly changed over the course of the planning period, MCE may have to adjust its non-fossil RA target.

V. Resources

Existing Resource Commitments

Table 4 lists MCE's 83 purchase contracts for renewable energy, storage, large hydroelectric/ACS energy, and CAISO load hedging via fixed-price forward contracts. Table 4 excludes MCE's numerous RA-only contracts from existing facilities, and it is only a snapshot in time. MCE's portfolio of contracts is continually evolving.

Table 4: MCE portfolio of resources as of 9/20/2022[15]

Counterparty	Generation Facility	Generation Technology	Contract MW	Term	Annual GWh	Generation Location
Renewables: Contract Terms ≥ 10 years						
AES	MCE Solar One	Solar PV	11	2018-2037	22	Contra Costa, CA
AES	Antelope Expansion II	Solar PV	105	2019-2038	284-312	Lancaster, CA
Baywa	Strauss Wind	Wind	99	2022-2041	300	Santa Barbara, CA
Calpine Energy Services, L.P.	Geysers	Geothermal	10	2017-2026	88	Sonoma, CA
Central Marin Sanitation Agency	CMSA (FIT)	Biogas	1.0	2022-2032	4	Marin, CA
Clearway	Daggett	Solar PV + Battery Storage	110 MW PV + 60 MW BESS	2023-2037	319-342	San Bernardino, CA
ConEdison	Great Valley Solar 1	Solar PV	100	2018-2033	279-290	Fresno, CA
Dominion	Goose Lake	Solar PV	12	2015-2040	29-34	Kern, CA
Dominion	Corcoran	Solar PV	11	2015-2040	25-30	Kings, CA
Dominion	Buck Institute	Solar PV	1	2015-2040	2	Marin, CA
DRES Quarry LLC	Cooley Quarry 1 (FIT)	Solar PV	1	2017-2037	3	Marin, CA
DRES Quarry LLC	DRES Quarry 2.4 (FIT)	Solar PV	0.1	2019-2039	0.3	Marin, CA
East Bay Municipal Utility District	Pardee & Camanche Powerhouses	Small Hydro	34	2015-2025	70	San Joaquin, CA
EDF Renewables	Desert Harvest	Solar PV	80	2020-2040	237-262	Riverside, CA
Fallon Two Rock Rd Solar Farm LLC	Fallon Two Rock Rd (FIT)	Solar PV	1	2023-2043	2	Marin, CA
G2 Energy	Ostrom	Landfill Gas	1.7	2013-2031	12	Yuba, CA
G2 Energy	Hay Rd	Landfill Gas	1.4	2013-2033	11	Solano, CA
Genpower	Lincoln Landfill	Landfill Gas	4.8	2013-2033	27	Placer, CA
Hayworth-Fabian, LLC	Oakley RV and Boat Storage (FIT)	Solar PV	1	2018-2038	2	Contra Costa, CA
Hayworth-Fabian, LLC	Oakley Phase 3	Solar PV	1	2022-2042	2	Contra Costa, CA
Kern and Tule Hydro LLC	Kern Hydro	Small Hydro	12	2021-2036	57	Kern, CA
Larkspur Real Estate Partnership I	Cost-Plus (FIT)	Solar PV	0.3	2016-2036	1	Marin, CA
Longroad	Little Bear 4	Solar PV	50	2020-2040	124-137	Fresno, CA
Longroad	Little Bear 1	Solar PV	40	2020-2040	99-109	Fresno, CA
Longroad	Little Bear 3	Solar PV	20	2020-2040	50-55	Fresno, CA
Longroad	Little Bear 5	Solar PV	50	2020-2040	124-137	Fresno, CA
Napa Jamieson Canyon, LLC	Napa Self Storage 2 (FIT)	Solar PV	0.66	2022-2042	1	Napa, CA
Northshore Solar Partners LLC	Freethy Industrial Park 2 (FIT)	Solar PV	1	2016-2036	2	Contra Costa, CA
Northshore Solar Partners LLC	Freethy Industrial Park 1 (FIT)	Solar PV	1	2016-2036	2	Contra Costa, CA
RE Mustang 4 LLC	RE Mustang	Solar PV	30	2015-2032	79-84	Kings, CA
RP Napa Solar 1, LLC	American Canyon Solar A (FIT)	Solar PV	1	2019-2039	3	Napa, CA
RP Napa Solar 1, LLC	American Canyon Solar B (FIT)	Solar PV	1	2019-2039	3	Napa, CA
RP Napa Solar 1, LLC	American Canyon Solar C (FIT)	Solar PV	1	2019-2039	3	Napa, CA
RP Napa Solar 2, LLC	Soscol Ferry C (FIT)	Solar PV	1	2020-2040	3	Napa, CA

[15] Table 4 excludes MCE's RA-only contracts from existing facilities but includes all other purchase contracts.

RP Napa Solar 2, LLC	Soscol Ferry D (FIT)	Solar PV	1	2020-2040	3	Napa, CA
RP Napa Solar 3, LLC	Silveira Ranch A (FIT)	Solar PV	1	2021-2041	2	Napa, CA
RP Napa Solar 3, LLC	Silveira Ranch B (FIT)	Solar PV	1	2021-2041	2	Marin, CA
RP Napa Solar 3, LLC	Silveira Ranch C (FIT)	Solar PV	1	2021-2041	2	Napa, CA
RPCA Solar 2, LLC	Byron Hot Springs (FIT)	Solar PV	1	2021-2041	3	Contra Costa, CA
RPCA Solar 3, LLC	Byron Highway Solar (FIT)	Solar PV	5	2022-2042	14	Contra Costa, CA
RPCA Solar 4, LLC	Lake Herman Solar (FIT)	Solar PV	5	2021-2041	13	Solano, CA
San Rafael Airport LLC	San Rafael Airport 2 (FIT)	Solar PV	1	2020-2040	2	Marin, CA
San Rafael Airport LLC	San Rafael Airport (FIT)	Solar PV	1	2012-2032	2	Marin, CA
Small World Trading CO	EO Products (FIT)	Solar PV	0.056	2018-2038	0.1	Marin, CA
Voyager Wind III, LLC	Voyager	Wind	43	2018-2030	138	Kern, CA
Waste Management	Redwood Landfill	Landfill Gas	4	2017-2037	31	Marin, CA
Golden Fields Solar IV, LLC	Golden Fields	Solar PV	100 MW PV + 75 MW BESS	2025-2040	322	Kern, CA
Ranch Sereno Clean Power LLC	Ranch Sereno	Solar PV	2 MW PV + .8 MW BESS	2024-2044	5	Contra Costa, CA
CES Electron Farm One	Conflitti	Solar PV	4.64	2023-2043	12	Fresno, CA
Counterparty	**Generation Facility**	**Generation Technology**	**Contract MW**	**Term**	**Annual GWh**	**Generation Location**
Renewables: Contract Terms < 10 years						
Pattern Energy Management Services LLC	Various Wind	PCC1	N/A	2022-2023	300	NM
NextEra Energy Marketing, LLC	Biomass	PCC1	N/A	2023	155	CA
Powerex Corp.	Multiple	PCC1	N/A	2021-2023	50-100	British Colombia, Canada
Portland General Electric Company	Multiple	PCC1	N/A	2022	75	WA, OR
Pacific Gas & Electric Company	Multiple	PCC1	N/A	2023-2024	970	Various
Morgan Stanley Capital Group	Multiple	PCC1	N/A	2021-2023	50	CA, WA, OR, ID
Morgan Stanley Capital Group	Multiple	PCC1	N/A	2021-2023	100	CA, WA, OR, ID
Large Hydroelectric / ACS						
Shell Energy North America	Multiple	Large Hydro	N/A	2023	250	WA
Brookfield Energy Marketing LP	Multiple	Large Hydro/ACS	59-1,300	2021-2024	100-225	Pacific Northwest
Shell Energy North America	Multiple	Large Hydro	N/A	2023-2023	200	CA
Morgan Stanley Capital Group	Multiple	Large Hydro	N/A	2021-2024	400	MT, WA, ID
Western Area Power Administration	Central Valley Project	Large Hydro	N/A	2015-2024	25	CA
Western Area Power Administration	Central Valley Project	Large Hydro	N/A	2025-2054	25	CA
Powerex Corp.	Multiple	Large Hydro	N/A	2023-2025	250	British Colombia, Canada
Powerex Corp.	Multiple	Large Hydro/ACS	N/A	2022-2025	150-317	British Colombia, Canada
Tenaska Power Services Co.	Exchequer Hydro	Large Hydro	N/A	2022-2024	300	CA
Shell Energy North America	Multiple	Large Hydro	N/A	2024-2024	200	CA
Fixed Price Forward Contracts						
Direct Energy Business Marketing	N/A	N/A	N/A	2024-2025	55-82	N/A
Direct Energy Business Marketing	N/A	N/A	N/A	2024-2026	24-96	N/A
Exelon Generation Company	N/A	N/A	N/A	2023-2025	28-122	N/A
Exelon Generation Company	N/A	N/A	N/A	2021-2025	73-100	N/A
Shell Energy North America	N/A	N/A	N/A	2020-2024	69-339	N/A
Morgan Stanley Capital Group	N/A	N/A	N/A	2023-2023	545	N/A
Exelon Generation Company, LLC	N/A	N/A	N/A	2021-2023	232-315	N/A
Morgan Stanley Capital Group	N/A	N/A	N/A	2024-2025	20-96	N/A
Morgan Stanley Capital Group	N/A	N/A	N/A	2022-2025	23-123	N/A
Morgan Stanley Capital Group	N/A	N/A	N/A	2022-2025	25-41	N/A
NextEra Energy Marketing, LLC	N/A	N/A	N/A	2023-2024	64-96	N/A
Shell Energy North America	N/A	N/A	N/A	2022-2025	96-193	N/A
Shell Energy North America	N/A	N/A	N/A	2022-2025	62-368	N/A
Shell Energy North America	N/A	N/A	N/A	2022-2026	49-153	N/A
Transalta Energy Marketing (U.S.)	N/A	N/A	N/A	2023	122	N/A
NextEra	N/A	N/A	N/A	2023-2023	621	N/A
New Build Energy Storage						
Hecate Grid Humidor Storage 185 LLC	N/A	N/A	185 MW BESS	2024-2034	N/A	Los Angeles, CA

Projected 2023 Resource Mix

As shown in figure 10 below, MCE anticipates that 98% of its total 2023 retail sales will be sourced from renewables, large hydroelectric, and ACS energy. This estimated retail sales includes all necessary supply to serve retail sales for MCE's Light Green, Deep Green, and Local Sol product offerings.

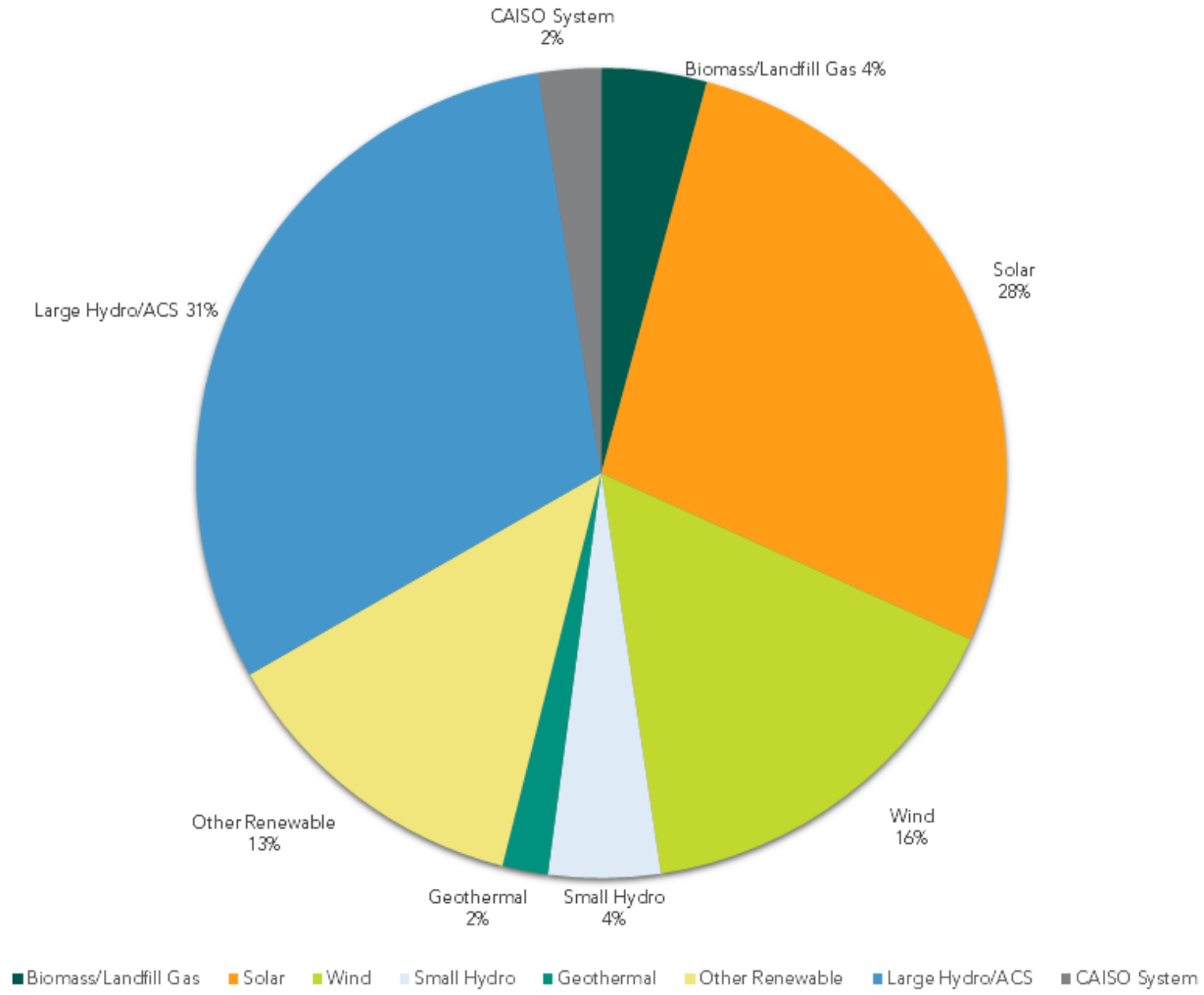

Figure 10: MCE 2023 estimated resource mix[16]

[16] The estimated resource mix excludes Energy Efficiency/NEM

Resource Needs

Beyond its current contractual commitments, MCE will procure additional energy products as necessary to ensure that the future energy needs of its customers are met in a clean, reliable, and cost-effective manner. This section sets forth MCE's planned resource volumes and quantifies the net resource need or "open position" that remains after accounting for production from MCE's existing resource portfolio. As shown in figure 11, MCE has established procurement targets for renewable energy, large hydroelectric, and ACS, and established targets for planning reserves. To the extent that MCE's energy needs are not fulfilled through the use of renewable, large hydroelectric, and ACS, it should be assumed that such supply will be sourced from CAISO system power, which represents energy purchases from the wholesale market that are not directly associated with specific generators.

Renewable Resources

MCE plans to provide Light Green customers with energy that is at least 60% renewable through 2024 and 85% renewable by 2029. MCE will also procure PCC 1 renewable energy for its Deep Green customers and is projecting that the number of such Deep Green customers will grow steadily over the planning period. In summary, MCE plans to procure significant quantities of PCC 1 renewable energy, as figure 11 below illustrates. Figure 11 displays the types of resources required to meet MCE's loss-adjusted load (i.e., load including the power lost to the distribution system).

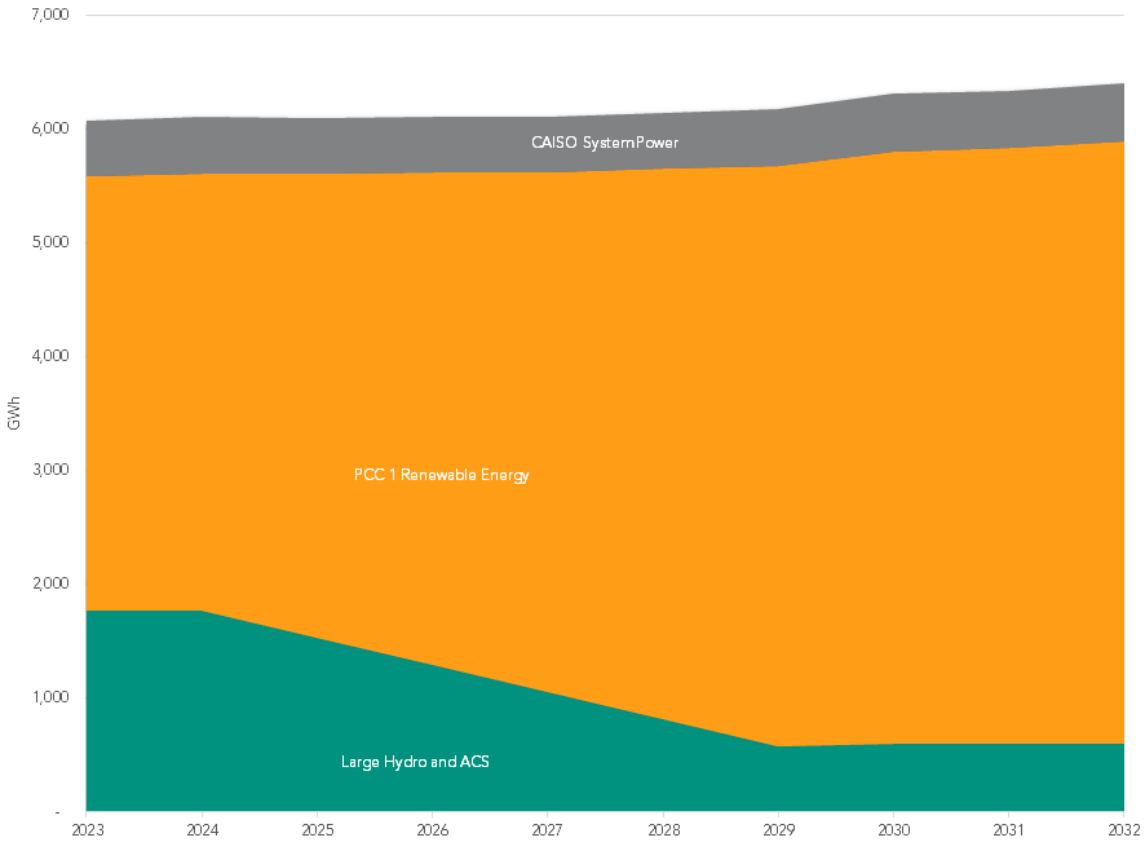

Figure 11: MCE procurement targets (GWh), 2023-2032

Renewable Open Positions

MCE's renewable power content targets continue to exceed California's minimum RPS requirements and will continue to do so throughout the planning period, as shown in the first portion of table 5. MCE has executed a number of long-term power purchase agreements (PPAs) with new, California-based generating facilities that will produce PCC 1-eligible renewable energy.[17] To supplement its core procurement of PCC 1 resources under long-term contracts, MCE engages in short-term contracts for renewable energy supplies to balance and optimize its portfolio. As shown in the second portion of table 5 below, MCE has secured contracts for renewable energy volumes in excess of applicable California RPS procurement requirements through 2025. Relative to its own RPS targets for Light Green and Deep Green, MCE needs additional renewable energy volumes for 2023 and beyond, as shown in the third portion of table 5.

Table 5: MCE renewable energy balance, 2023–2032

	2023	2024	2025	2026	2027	2028	2029	2031	2032
Retail Sales (GWh)	5,729	5,759	5,756	5,759	5,767	5,795	5,827	5,983	6,040
CA RPS Compliance Requirement	41%	44%	47%	49%	52%	55%	57%	62%	63%
MCE Light Green RPS Target	60%	60%	65%	70%	75%	80%	85%	85%	85%
MCE Deep Green RPS Target	100%	100%	100%	100%	100%	100%	100%	100%	100%
CA RPS Compliance Requirement (GWh)	2,366	2,534	2,688	2,839	2,999	3,170	3,339	3,691	3,829
MCE RPS Energy Contracted (GWh)	3,489	3,145	2,877	2,777	2,679	2,670	2,657	2,493	2,477
CA RPS Compliance Net Short/(Long) (GWh)	(1,123)	(611)	(189)	63	320	500	682	1,198	1,353
MCE (LG+DG) RPS Target (GWh)	3,822	3,842	4,082	4,325	4,572	4,835	5,103	5,236	5,285
MCE RPS Energy Contracted (GWh)	3,489	3,145	2,877	2,777	2,679	2,670	2,657	2,493	2,477
MCE (LG+DG) Net Short/(Long) (GWh)	333	697	1,205	1,549	1,893	2,165	2,446	2,743	2,808

[17] 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. Whereas MCE has an established preference for in-state resources, it may consider contracting with out-of-state, PCC 1-qualified resources to the extent that they offer increased value or other desirable portfolio attributes during the planning period.

Large Hydroelectric and ACS

For its Light Green customers, MCE has outlined a 2023 portfolio, of which 100% will be sourced from renewables, large hydroelectric, and ACS.[18] Starting in 2025, MCE plans to steadily ramp down its use of large hydroelectric and ACS power as it correspondingly ramps up its use of PCC 1 renewables. MCE's large hydroelectric/ACS targets and open positions are shown in table 6 below. MCE procures large hydroelectric from resources across the western interconnection, but with a focus on California and the Pacific Northwest. ACS power is sourced from the two existing ACS suppliers: Bonneville Power Administration and Tacoma Power.

Table 6: MCE large hydroelectric/ACS balance, 2023–2032

MCE Light Green Portfolio	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Large Hydro/ACS Target (%)	37%	37%	32%	27%	22%	17%	12%	12%	12%	12%
Large Hydro/ACS Target (GWh)	1,764	1,773	1,530	1,291	1,052	816	579	594	597	604
Large Hydro/ACS Under Contract (GWh)	1,762	1,495	574	24	24	25	24	24	24	25
Large Hydro/ACS Open Position (GWh)	2	278	956	1,266	1,027	792	555	569	573	580

Fixed-Price Forward Contracts

MCE uses fixed-price forward contracts (i.e., "fixed for floating" contracts) to hedge CAISO day-ahead market price exposure associated with its portfolio. More specifically, for the volumes and hours that MCE does not have supply contracts that yield CAISO day-ahead revenue, MCE uses fixed-price forward contracts, as much as possible, where MCE pays a fixed price per megawatt-hour in order to receive a floating price that clears for each hour. This helps hedge MCE's CAISO day-ahead market price exposure because the floating price (North Path 15) is correlated with MCE's CAISO load price (PG&E's default-load aggregation point). These contracts are an important complement to MCE's portfolio, which includes contracts where MCE is not entitled to the CAISO revenue.[19] As MCE procures increasing portions of fixed-price renewables with storage and fixed-price large hydroelectric/ACS, MCE will ramp down its use of fixed-price forward contracts.

Resource Adequacy

MCE meets California's RA program requirements by procuring qualifying RA through PPAs and RA-only contracts. As mentioned in Section IV (and explained in more detail in Appendix C), MCE currently must secure three types of RA: System RA, Local RA, and Flexible RA, although starting in 2023 the responsibility to procure local RA shifts away from individual LSEs to a Central Procurement Entity (CPE). Importantly, Local RA supply under contract with MCE and any Local RA supply procured

[18] The volume procured for Light Green will be matched by 100% carbon free power from PCC 1 renewables, large hydroelectric, and ACS resources. Dynamic and variable hourly needs may be met with system power.

[19] For example, MCE uses index plus contracts where the supplier schedules power into the CAISO that contractually constitutes a bundled power delivery to MCE, but the supplier keeps the CAISO revenue, and MCE pays the supplier for the power content attribute.

by the CPE counts toward MCE's System RA requirement, and MCE's Flexible RA requirement is fulfilled with local or system resources. In other words, MCE's total System RA requirement represents the total capacity that MCE must buy under the RA program, as shown in tables 7 and 8 below. Moreover, the RA program is expected to undergo significant structural changes in 2025 as the CPUC's RA framework seeks to meet capacity needs on an hourly basis rather than on a monthly peak load basis. Accordingly, MCE will likely need to re-evaluate and adjust its RA procurement over the planning horizon to ensure it has sufficient capacity under contract to meet its hourly capacity requirements.

Table 7: MCE system and local net RA requirements, 2023–2032

Average Net Requirement Across All Months	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Net System RA Requirement (MW)	970	975	980	985	990	994	999	1,004	1,009	1,015
Forecasted CPE and Other Allocations (MW)	195	196	197	198	199	200	201	202	203	204
Total System RA Requirement (MW)	1,165	1,171	1,177	1,183	1,188	1,194	1,200	1,206	1,212	1,218

Table 8: MCE flexible RA requirements, 2023

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flexible RA Requirement (MW)	469	483	453	447	415	425	361	390	352	375	473	536

Table 9: MCE incremental system capacity

September Net Qualifying Capacity	2020	2021	2022	2023	2024	2025	2026
Cumulative Incremental System Capacity Requirement (MW)	-	43.75	65.63	145.50	173	43	58
Cumulative Incremental System Capacity Contracted (MW)	-	73.41	73.41	159.99	175.7	75	
Cumulative Incremental System Capacity Net Short/(Long) (MW)	-	(29.66)	(7.78)	(14.49)	(2.7)	(32)	58

VI. Procurement

MCE's Procurement Process

MCE has a well-established procurement process that includes the following ten key activities:

1. Forecasting load 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 Requests for Offers (RFOs), bilateral discussions, or brokers;
5. Evaluating offers by using a combination of proprietary and public models;
6. Negotiating (and ultimately executing) PPAs, while enabling agreements and confirmations including credit provisions and collateral requirements;
7. Managing pre–Commercial Operation Date (COD) executed contracts and monitoring progress toward key development milestones (such as interconnection status, deliverability studies, siting, zoning, permitting, financing, construction, and commercial operation);
8. Managing post–COD executed contracts: obtaining generation forecasts, bidding and scheduling resources into the CAISO, validating and paying invoices;
9. Bidding and scheduling MCE's load and resources into the CAISO markets; and
10. Regulatory compliance reporting.

Renewable Energy Purchases

MCE uses a portfolio risk-management approach in its power purchasing program, seeking low-cost supply as well as diversity among technologies, production profiles, project sizes and locations, counterparties, length of contract, and timing of market purchases. All these factors are taken into consideration when MCE engages the market.

MCE continually manages its forward load obligations and supply commitments with the objective of balancing cost stability and cost minimization, while leaving some flexibility to take advantage of market opportunities or technological improvements that may arise. MCE closely monitors its open positions for PCC 1 renewable energy, which are based on calendar-year targets. MCE maintains portfolio coverage targets of up to 100% in the near term (zero to five years) and leaves a greater portion open in the medium- to long-term, consistent with generally accepted industry practice.

MCE seeks a mix of renewable energy technologies that will deliver energy in a profile that is generally consistent with its load shape. On that note, and as shown in figure 12 below, MCE is planning to procure significant quantities of new incremental system capacity over the planning period, resulting in over 600 MW of clean resources by 2026. In regard to generation project location,

MCE places the greatest value on locally sited, renewable energy projects, particularly those located within its service area or within approximately 100 miles. Of next highest preference are projects sited in the North Path 15 (NP15) region (generally, Northern California), followed by projects elsewhere in California, and finally, out-of-state resources.

The projected resource mix during the planning period is illustrated in figure 12 below. Figure 12 displays the projected resource mix needed to meet MCE's projected loss-adjusted load. Actual resource utilization to meet loss-adjusted load will depend upon market conditions and resource availability.

MCE anticipates that its large hydroelectricity and ACS supplies will be met primarily through short- and medium-term purchases of California and Pacific Northwest hydroelectricity and ACS, but MCE is also exploring longer-term opportunities. MCE began taking delivery of hydroelectricity outside the CAISO in 2020, taking responsibility for importing into California and CAISO intertie scheduling. Becoming an importer of record will provide MCE with more opportunities to procure large hydroelectricity going forward.

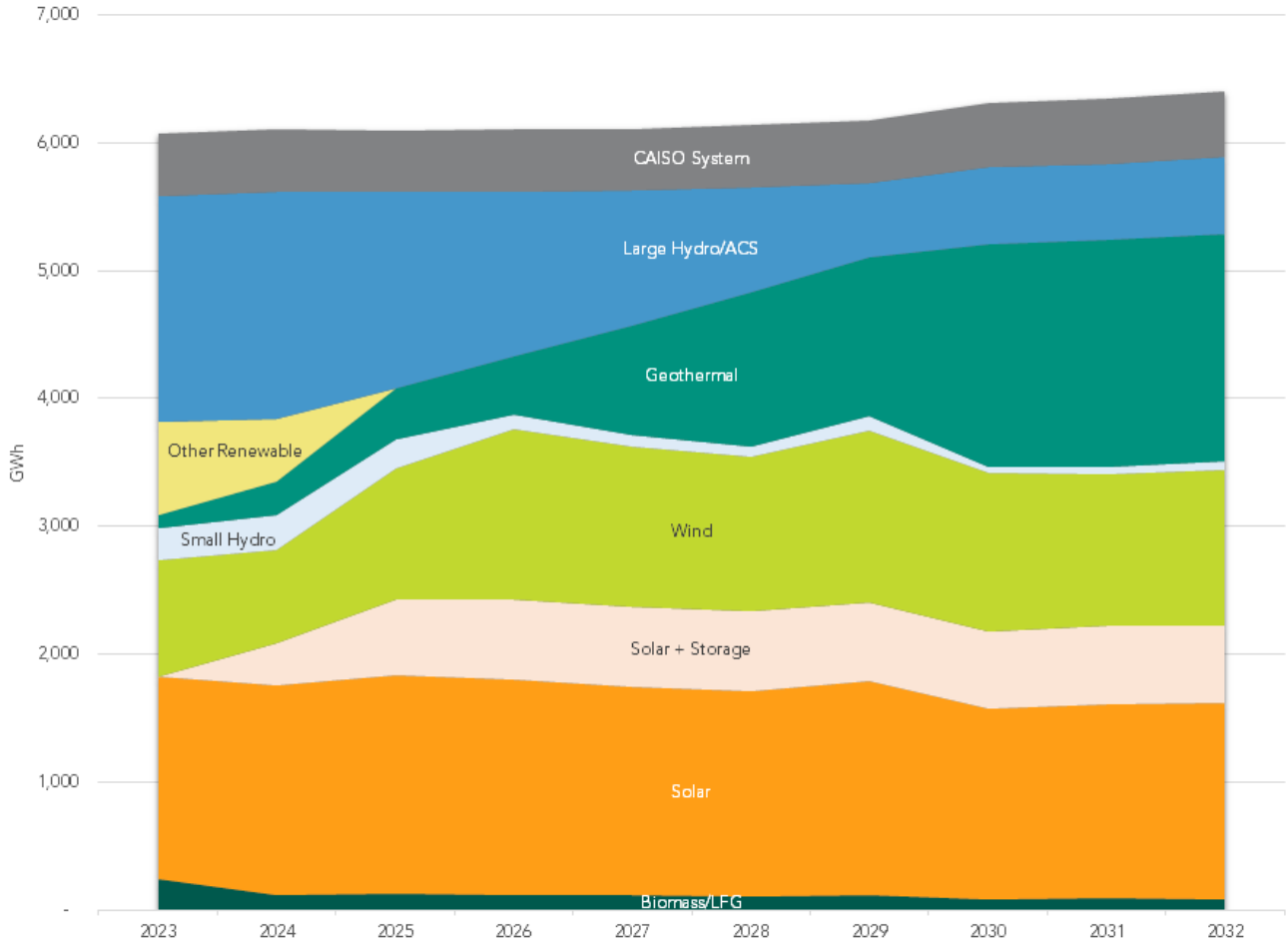

Figure 12: Projected MCE resource mix (GWh), 2023-2032

Feed-In Tariff

MCE's Feed-in Tariff (FIT) Program provides capacity for new renewable energy resources located in MCE's service area on a first-come, first-served basis. The FIT offering allows developers to finance local renewable energy projects, while catalyzing local job creation associated with the construction, operation, and maintenance of these local projects. By providing attractive, above-market rates, this program incentivizes renewable development in MCE communities where it otherwise would not be built.

MCE's initial FIT Program, which offered 15 MW of capacity to projects sized up to 1 MW, is fully subscribed. Starting in 2018, MCE began the second phase of its FIT Program, adding an additional 10 MW of capacity and an updated Tariff for projects in MCE's service area up to 1 MW. Another 20 MW of capacity was offered for new FIT Plus projects sized between 1 MW to 5 MW, with a new applicable Tariff. By 2021 all capacity in the FIT+ Program was fully subscribed. In 2022, the FIT Program for projects sized under 1 MW was closed and the funds were reallocated to the FIT+ Program to add 10 MW of new generation capacity paired with 18 MW of storage. Table 10 provides an update on the status of MCE's FIT and FIT Plus projects as of September 20, 2022. All FIT-related documents are available on MCE's FIT website.

Table 10: MCE Feed-In Tariff (FIT) and FIT Plus projects

Project Name	Capacity (MW)	Annual Output (MWh)	Commercial Operation Date
San Rafael Airport	0.972	1,651	Oct 2012
Cost-Plus	0.261	548	Sep 2016
Freethy Industrial Park Unit #1	0.998	2,094	Oct 2016
Freethy Industrial Park Unit #2	0.998	2,094	Oct 2016
Cooley-Quarry 1 (Local Sol)	0.990	2,864	Jul 2017
Central Marin Sanitary Agency	0.750	1,314	Jul 2017
Oakley RV & Boat Storage	0.900	1,750	Jul 2018
EO Products	0.056	92	Dec 2018
DRES Quarry 2.4	0.100	285	May 2019
American Canyon Solar A	0.990	2,645	Sept 2019
American Canyon Solar B	0.990	2,645	Sept 2019
San Rafael Airport Unit #2	0.972	2,037	Aug 2020
Soscol Ferry C	0.990	2,601	Jan 2021
Soscol Ferry D	0.990	2,601	Jan 2021

Silveira Ranch A	0.990	2,386	Apr 2021
Silveira Ranch B	0.990	2,386	Apr 2021
Silveira Ranch C	0.990	2,386	Apr 2021
Lake Herman Solar	5.000	13,064	Sept 2021
Oakley Phase 3	0.938	1,622	Apr 2022
Byron Hot Springs	.990	2,739	TBD
Fallon Two Rock Rd Solar Farm	0.960	1,622	TBD
Byron Highway Solar	5.000	14,000	TBD
Napa Self Storage 2	0.658	1,054	TBD
CMSA Expanded Biogas Generator	0.245	2,146	TBD
Ranch Sereno Clean Power	2.000	4,844	TBD
Total	30.708	76,391	

Fixed-Price Forward Contracts

MCE will continue to engage in fixed-price forward contracts in order to hedge the market price risk associated with its load in CAISO. In doing so, MCE considers a variety of factors including cost control and competitiveness. Entering into fixed-price forward contracts enables MCE to meet budget and rate-setting objectives by increasing cost certainty. However, it is appropriate to maintain modest flexibility for incorporation of new supply- or demand-side resources and limited exposure to CAISO market prices to ensure optimal resource portfolio diversification. In light of these considerations, the contracting guidelines for fixed-price energy contracts in table 11 below will be used during the planning period:

Table 11: MCE fixed-price energy contracting guidelines

Time Horizon	**Fixed-Price Energy Contracting Guidelines**
Current Year	90% to 105%
Year Two	60% to 95%
Year Three and Beyond	Up to 70%

The contracting guidelines above serve to inform MCE's hedging targets used to mitigate price and supply risk. Execution of master power purchase and sale agreements with multiple, credit-worthy counterparties has enabled, and will continue to enable, energy purchases through transaction-specific confirmations whenever appropriate, consistent with the policies set forth in this plan.

Resource Adequacy Transactions

MCE may engage in purchases or sales of RA capacity from generation resources that qualify to meet RA requirements in accordance with CPUC and CAISO regulations. Terms may range from one month to ten years or more. RA is also often bundled with energy and renewable attributes under MCE's renewable energy PPAs.

Procurement Methods

In order to effectively plan and manage its portfolio, MCE differentiates contracts by their term length including:

- Short-term: up to twelve months;
- Medium-term: longer than twelve months, up to five years;
- Intermediate-term: longer than five years, up to ten years; and
- Long-term: longer than ten years.

Based upon the expected contract length, MCE may use a variety of methods including competitive solicitations, standard contract offerings, and bilaterally negotiated agreements throughout the planning period.

For long-, intermediate-, and medium-term purchase commitments, MCE typically uses competitive solicitations, such as its Open Season solicitation, or standard offer contracts like FIT. Through a competitive solicitation, MCE issues an RFO and concurrently evaluates multiple proposals in the context of market conditions before entering negotiations with those respondents that provide the most compelling offers. Occasionally, MCE will issue ad hoc competitive solicitations or engage in independent bilateral negotiations to meet specific resource needs for which inclusion in an annual solicitation is not appropriate.

With regard to short-term power purchases, MCE may negotiate bilateral agreements directly, especially for unique or time-sensitive transactions that do not lend themselves to inclusion in a competitive solicitation. Alternatively, particularly in markets with sufficient transparency to ensure competitive outcomes, MCE may negotiate short-term transactions via its scheduling coordinator or independent energy brokers or marketers. Additionally, starting in 2023, MCE has an option of taking allocations from PG&E's RPS-PCIA portfolio. MCE can take allocations for RPS energy for both short term (within compliance period) and long term (greater than 10 years).[20]

MCE procures energy and Resource Adequacy consistent with its Board-approved Energy Risk Management Policy 015.

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[20] On May 20, 2021, the CPUC adopted D.21-05-003, which approved a new allocation process for RPS energy from investor-owned utilities (IOUs) to other load-serving entities (LSEs), including MCE. The allocated RPS energy would come from IOU RPS resources that MCE customers pay for through the PCIA fee. The PCIA fee recovers above-market costs for commitments made by IOUs before their customers departed to other providers, like CCAs.

Procurement Authorities

MCE's energy procurement throughout the planning period will be consistent with the delegation of authorities of the Board, including Resolution 2018-03, and any other delegation of authorities or relevant Board resolutions.

MCE's Investment Grade Credit Ratings

In 2018, MCE was the first CCA to receive a rating. In 2019, MCE was the first CCA to receive two investment grade ratings after Fitch Ratings awarded MCE a BBB rating with a Stable Outlook. In August of 2020, Fitch upgraded MCE to BBB+ with a Stable Outlook citing MCE's strengthening financial position. S&P Global Ratings reviewed and awarded MCE an "A" rating with a Stable Outlook in February of 2021 and affirmed the "A" rating and Stable Outlook in May of 2022.

These credit rating agencies evaluate MCE as an investment worthy entity due to demonstrated evidence that the CCA business model is working on sound operational and financial evidence, ensures full recovery of costs through independent local rate-setting, has strong financial flexibility due to positive cash flows, and adequate liquidity levels. In 2020 MCE increased the targeted liquidity reserve to 240 days cash-on-hand (DCOH) and its target Net Position from 40% to 60% of operating expenses. As of the end of the March 31, 2021 fiscal year, MCE maintained over 196 DCOH and a Net Position of 46% of operating expenses. MCE expects to meet these new targets of 240 DCOH and 60% of operating expenses by June 30, 2023.

Appendix A: Load and Resource Table

Table 12: MCE resource balance

MCE Resource Balance (August 2022)

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
I. Energy Requirements (GWh)										
Baseline Retail Load	6,195	6,248	6,284	6,353	6,448	6,575	6,688	6,799	6,811	6,845
Energy Efficiency	(45)	(60)	(75)	(90)	(109)	(128)	(118)	(118)	(119)	(108)
Distributed Generation	(980)	(1,078)	(1,186)	(1,304)	(1,435)	(1,578)	(1,736)	(1,788)	(1,842)	(1,851)
Electric Vehicle Load	536	613	683	737	785	833	884	937	990	995
Building Electrification	23	36	50	64	78	93	109	125	142	160
Retail Load (Net of EE/DG/EV)	5,729	5,759	5,756	5,759	5,767	5,795	5,827	5,955	5,983	6,040
Distribution Line Losses and Unaccounted For Energy	344	346	345	346	346	348	350	357	359	362
Total Energy Requirements	**6,072**	**6,104**	**6,101**	**6,105**	**6,113**	**6,143**	**6,177**	**6,313**	**6,342**	**6,402**
II. Volume Targets										
Light Green Renewable Energy Volume Targets (GWh)										
Portfolio Content Category 1	2,861	2,875	3,109	3,346	3,586	3,842	4,104	4,207	4,230	4,279
Portfolio Content Category 2	-	-	-	-	-	-	-	-	-	-
Portfolio Content Category 3 (REC Only)	-	-	-	-	-	-	-	-	-	-
Subtotal, Light Green Renewable Energy Volume Targets	2,861	2,875	3,109	3,346	3,586	3,842	4,104	4,207	4,230	4,279
Deep Green Incremental Renewable Energy Volume Targets (GWh)										
Portfolio Content Category 1	961	967	973	980	986	993	999	1,006	1,006	1,006
Large Hydro/ACS Energy Volume Targets (GWh)	1,764	1,773	1,530	1,291	1,052	816	579	594	597	604
III. Contracted Resources										
Renewable Resources Under Contract (GWh)										
Portfolio Content Category 1	3,489	3,145	2,877	2,777	2,679	2,670	2,657	2,648	2,493	2,477
Portfolio Content Category 2	-	-	-	-	-	-	-	-	-	-
Portfolio Content Category 3 (REC Only)	-	-	-	-	-	-	-	-	-	-
Subtotal, Renewable Resources Under Contract	3,489	3,145	2,877	2,777	2,679	2,670	2,657	2,648	2,493	2,477
Large Hydro/ACS Resources Under Contract (GWh)	1,762	1,495	574	24	24	25	24	24	24	25
IV. Open Positions										
Renewables Open Position (GWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Portfolio Content Category 1	333	697	1,205	1,549	1,893	2,165	2,446	2,565	2,743	2,808
Portfolio Content Category 2	-	-	-	-	-	-	-	-	-	-
Portfolio Content Category 3	-	-	-	-	-	-	-	-	-	-
Total Renewables Open Position (GWh)	**333**	**697**	**1,205**	**1,549**	**1,893**	**2,165**	**2,446**	**2,565**	**2,743**	**2,808**
Large Hydro/ACS Open Position (GWh)	**2**	**278**	**956**	**1,266**	**1,027**	**792**	**555**	**569**	**573**	**580**

Appendix B: MCE Enrollment Phases

Table 13: MCE enrollment phases

MCE Phase	Description	Number of Accounts at Enrollment Date	Implementation Date
Phase 1	MCE Member (municipal) accounts and a subset of residential, commercial and/or industrial accounts, comprising approximately 20% of total customer load within MCE's original member agencies	8,500	May 7, 2010
Phase 2A	Additional commercial and residential accounts, comprising approximately 20% of total customer load within MCE's original member agencies (incremental addition to Phase 1)	6,100	Aug 2011
Phase 2B	Remaining accounts within Marin County	79,000	Jul 2012
Phase 3	Residential, commercial, agricultural, and street lighting accounts within the City of Richmond	35,000	Jul 2013
Phase 4A	Residential, commercial, agricultural, and street lighting accounts within the unincorporated areas of Napa County	14,000	Feb 2015
Phase 4B	Residential, commercial, agricultural, and street lighting accounts within the cities of San Pablo, Benicia, and El Cerrito	30,000	May 2015
Phase 5	Residential, commercial, agricultural, and street lighting accounts within the Town of Yountville and the cities of American Canyon, Calistoga, Lafayette, Napa, St. Helena, and Walnut Creek	83,000	Sep 2016
Phase 6	Residential, commercial, agricultural, and street lighting accounts within the cities of Concord, Danville, Martinez, Moraga, Oakley, Pinole, Pittsburg, San Ramon, and unincorporated Contra Costa County	216,300	Apr 2018
Phase 7	Residential, commercial, agricultural, and street lighting accounts within unincorporated Solano County	11,000	Apr 2020
Phase 8	Residential, commercial, agricultural, and street lighting accounts within the cities of Pleasant Hill and Vallejo	64,000	Apr 2021
Phase 9	Residential, commercial, agricultural, and street lighting accounts within the City of Fairfield	44,000	Apr 2022

Appendix C: Regulatory Requirements

Renewable Portfolio Standard

California's Renewable Portfolio Standard (RPS) program requires California load-serving entities (LSEs) to supply their retail sales with minimum quantities of eligible renewable energy. As shown in table 14 below, the RPS requirements have increased over the years, and such requirements (expressed as percentages of retail sales) are enforced within discrete compliance periods. For each compliance period, LSEs such as MCE, are required to meet the weighted average of the RPS requirements for that period, with retail sales providing the weights.

For example, in compliance period #3, LSEs are required to supply their retail sales with at least the following portion of renewable energy: [(2021 sales x 35.8%) + (2022 sales x 38.5%) + (2023 sales x 41.3%) + (2024 sales x 44%)] / [2021 through 2024 sales].

Table 14: RPS requirements by compliance period

Year	Compliance Period	RPS Requirement (% of Retail Sales)
2011	1	20.0
2012	1	20.0
2013	1	20.0
2014	2	21.7
2015	2	23.3
2016	2	25.0
2017	3	27.0
2018	3	29.0
2019	3	31.0
2020	3	33.0
2021	4	35.8
2022	4	38.5
2023	4	41.3
2024	4	44.0
2025	5	46.7
2026	5	49.3
2027	5	52.0
2028	6	54.7
2029	6	57.3

2030	6	60.0
2031	7	60.0
2032	7	60.0

In order to supply their retail sales with minimum portions of renewable energy, LSEs must acquire and retire renewable energy credits (RECs). Each REC represents the environmental and renewable attributes associated with 1 MWh of eligible renewable energy. Each REC is created when the electricity is generated and is assigned a vintage year and month. RECs are created in a database known as the Western Renewable Energy Generation Information System (WREGIS), which is used across the Western Interconnection (AC) power grid to track the environmental and renewable attributes of wholesale electricity. When acquiring and retiring RECs to meet its RPS requirements, MCE must also comply with additional requirements related to three Portfolio Content Categories (PCCs), defined as follows:

- PCC 1: RECs bundled with electricity from renewable facilities with a first point of interconnection within a California Balancing Authority (CBA), or RECs from facilities that schedule electricity into a CBA, and without substitute energy. In other words, these are RECs bundled with electricity that comes from the renewable energy facility. If that facility is outside a CBA, the electricity must be scheduled into a CBA, and only the fraction of the schedule actually generated by the renewable facility may count (i.e., any ancillary services needed to support the schedule are not counted).
- PCC 2: RECs bundled with electricity from renewable facilities, where the physical renewable generation is sunk outside of a CBA, and substitute energy is imported into a CBA within the same calendar year. In other words, PCC 2 RECs are bundled with electricity, but the electricity scheduled into the CBA does not have to come from the renewable energy facility. Instead, the electricity is provided by a substitute facility that is not necessarily renewable, as long as the electricity is scheduled into the CBA within the same calendar year.
- PCC 3: RECs produced by a renewable facility, but are unbundled and sold without the associated electricity.

In accordance with its RPS requirements, MCE must acquire and retire RECs in line with PCC-related restrictions. Table 15 shows the PCC-related restrictions for compliance period 4.

Table 15: RPS PCC restrictions for compliance period 4

Year	Compliance Period	RPS Requirement (% of Retail Sales)	PCC 1 Minimum (% of RPS)	PCC 3 Maximum (% of RPS)
2021	4	35.8	75	10
2022	4	38.5	75	10
2023	4	41.3	75	10
2024	4	44.0	75	10

Senate Bill 350

Pursuant to the Clean Energy Pollution Reduction Act, SB 350 (2015), and starting with Compliance Period 4 (began January 1, 2021), at least 65% of the RECs retired for the purpose of meeting the Procurement Quantity Requirement (PQR) must come from contracts that are ten or more years in duration.

Senate Bill 100

The Renewables Portfolio Standard, outlined in Senate Bill (SB) 100 (2018), is California's key program that advances renewable energy. SB 100 directs all LSEs to procure 60% of their portfolios from RPS-eligible resources by 2030 (as explained in the RPS section above). SB 100 also directs LSEs to source 100% of their retail sales from zero-carbon resources (or eligible renewable resources) by 2045. In March 2021, California regulators (CEC, California Air Resources Board, and the CPUC) issued a joint agency report to clarify which specific resources count toward meeting the 2045 requirement.

Power Source Disclosure

California law requires LSEs to disclose the types of power resources used to supply retail sales. This mandate, known as the Power Source Disclosure (PSD) program, is a consumer information program managed by the CEC on an annual basis. A key result of the PSD program is the Power Content Label (PCL), which is an LSE-specific document that shows the breakdown of power resource types for each of the LSE's retail products and includes the breakdown of resource types for the overall California grid. The PCL is distributed to customers each summer.

AB 1110 (2016), the Greenhouse Gasses Emissions Intensity Reporting: Retail Electricity Suppliers, directs the CEC to adopt a methodology for the calculation of GHG emissions intensity for each electricity product offered by a retail supplier, such as MCE. Based on CEC rulemaking activities thus far, such GHG emissions will be reported beginning with 2020 PCLs (which will be produced and distributed in the summer of 2021). As part of this GHG emission reporting methodology, PCC 2 resources will be assigned GHG emissions based on the intensity of the substitute power being imported into California. In addition, beginning with 2019 PCLs, the CEC has disaggregated ACS power into its underlying technology types, the vast majority of which is large hydroelectric.

Resource Adequacy

The Resource Adequacy (RA) program is a California program jointly administered by the CPUC, CEC, and CAISO that directs LSEs to procure forward capacity to ensure that electricity demand can be met every moment of the day. The procured RA capacity must be offered into the CAISO's Day-Ahead and Real-Time markets to ensure there will be enough supply in the right locations and with sufficient ramping capability to meet load during all times of the day and night. The RA program directs LSEs to procure three products: System RA, Local RA, and Flexible RA, with Local RA obligations being assigned to a Central Procurement Entity (CPE) starting in 2023, per CPUC Decision 20-06-002. LSEs' RA system and flexible RA requirements are offset by CPE procurement and other CPUC-directed procurement made on behalf of LSEs by the incumbent utility through a Cost Allocation Mechanism (CAM).

In addition to MCE's monthly RA compliance under the RA program, which is procurement from existing resources and focused on near-term reliability needs, the CPUC administers a biannual IRP process to identify mid- and long-term procurement needs to ensure a sufficient amount of capacity is built and ultimately available to meet RA program needs.

To meet the above-mentioned needs, the CPUC has issued 2 unprecedented procurement orders since 2019. MCE is required to address short-term system reliability pursuant to CPUC Decision 19-11-016. This decision requires LSEs to procure "Incremental System Capacity," which is largely new RA capacity that is in addition to the resources on the CPUC's existing baseline list of resources. MCE's share of the short-term incremental System Capacity compliance obligation is 87.5 MW, 50% of which must have been online by August 1, 2021; 75% online by August 1, 2022; and 100% online by August 1, 2023.

Furthermore, pursuant to CPUC Decision 21-06-035, LSEs are required to procure additional incremental capacity to meet a mid-term reliability procurement order that seeks to address future gas and nuclear generator retirements. MCE's share of this obligation is 332 MW of NQC (this is in addition to the previous 87.5 MW mandated by Decision 19-11-016) of incremental system capacity by 2026. This procurement will include a mix of renewables, stand-alone storage, renewable hybrid configurations, long-duration storage, and renewable baseload resources. Of MCE's 332 MW requirement, 58 MW must be online by or before August 1, 2023; 173 MW must be online by or before June 1, 2024; an additional 43 MW must be online by or before June 1, 2025; and a final 58 MW by June 1, 2026. The latter 58 MW must be split equally between long-duration storage and baseload generation.

System RA: In order to meet its System RA requirements, MCE must demonstrate that it has secured capacity equal to 115% of its expected peak load for each month of the year. To demonstrate compliance, LSEs must submit a year-ahead filing on or about October 31 of each year, and twelve individual monthly filings. For the year-ahead filing, MCE must demonstrate it has procured 90% of the 115% system requirement for the upcoming year's five summer months, defined as May through September.[21] When demonstrating System RA capacity, MCE must count only the NQC of each resource included in its filings. The NQC of a resource is published by CAISO and is the capacity (one number for each month of the year) that an LSE can rely upon to meet a given month's peak load system conditions. For wind and solar resources, the NQC calculations must consider the intermittent and seasonal nature of such resources, and are based on an Effective Load Carrying Capacity (ELCC) methodology that further reduces the amount a solar or wind resource can contribute toward meeting an LSE's RA requirements.

Local RA: To achieve its Local RA requirements through 2022, MCE must demonstrate that it has procured capacity in specific transmission-constrained (i.e., local) areas equal to its assigned share of CAISO's need for each month of the year. The assigned requirement for each local area is one number for the entire year, but MCE must show that it has secured enough capacity in each month to

[21] For the 12 monthly filings (each submitted 45 days in advance of the relevant month), MCE must demonstrate it has procured 100% of the 115% requirement. For reference, the 115% requirement is often referred to as the expected peak load plus a 15% planning reserve margin.

meet this number. CAISO has established a list of seven local areas in PG&E's transmission area: Humboldt; North Coast/North Bay; Sierra; Stockton; Greater Bay Area; Greater Fresno; and Kern.

In accordance with CPUC Decision 19-02-022, MCE must procure Local RA three years in advance (i.e., MCE must demonstrate it has procured 100% of its year-one requirement, 100% of its year-two requirement, and 50% of its year-three requirement). However, with CPUC Decision 20-06-002, Local RA obligations have been assigned to a CPE starting in 2023. As such, MCE's RA compliance filings going forward will only reflect MCE's procurement towards its System and Flexible RA requirements.

Flexible RA: To meet its Flexible RA requirements, MCE must demonstrate that it has procured Flexible capacity (i.e., resources with operational attributes that can respond quickly to grid needs in real time) equal to its assigned share of CAISO's flexibility need (based in part on the largest expected three-hour ramp of system load) for each month of the year. In MCE's year-ahead filing, MCE must demonstrate it has procured 90% of its assigned flexible-capacity requirement for each month of the upcoming year. For the twelve individual monthly filings, MCE must demonstrate 100% of its assigned flexible capacity requirement. When demonstrating Flexible RA capacity, MCE must count only the Effective Flexible Capacity (EFC) of each resource it includes in its filings. The EFC of a resource is published each year by CAISO and is the capacity (one number for each month of the year) that an LSE can rely upon to help meet that month's system ramping needs. For this reason, only resources that can ramp and sustain energy output for at least three hours are eligible to receive an EFC value. Flexible RA is offered in the market as a bundled product, so LSEs will purchase either System or Local resources which are coupled with an EFC value.

The CPUC recently adopted a "Slice-of-Day" framework[22] that will require MCE to procure RA resources to meet its capacity needs in every hour. These hourly capacity requirements will be set on a monthly basis, based on the worst day of the month. The transition to the new RA framework will take place over the next couple of years, with a test year in 2024 and full implementation in 2025. This change will have a significant impact on how MCE does RA procurement and might lead to significant changes in the RA market as well.

Energy Storage

The California Energy Storage Bill, AB 2514 (2010) directed the CPUC to establish energy storage targets for IOUs, CCAs, and other LSEs. CPUC Decision 13-10-040 established an energy storage procurement target for CCAs and electric service providers equal to 1% of their forecasted 2020 peak load. Based upon current load forecasts, the decision requires MCE to install 12 MW of energy storage no later than 2024. Beginning on January 1, 2016, and every two years thereafter, MCE has filed and must continue to file an advice letter demonstrating compliance with this requirement, progress toward meeting this target, and a description of the methodology for ensuring projects are cost-effective.

[22]Decision D2206050 - Decision Adopting Local Capacity Obligations 2023-2025, Flexible Capacity Obligations For 2023, And Reform Track Framework.

In CPUC Decision 17-04-039, the CPUC adopted an "automatic limiter" that modifies the CCA energy storage obligation. By applying the limiter, each CCA's total energy storage obligation should not exceed the energy storage obligation of the incumbent IOU, including any IOU-procured storage resources that receive cost recovery from the CCA's customers through distribution rates and non-bypassable charges.

Appendix D: Key Acronyms and Terminology

Key Legislation

AB 32 – Assembly Bill 32, the Global Warming Solutions Act of 2006 | AB 32 is an environmental law in California that established a timetable to bring California into near compliance with the provisions of the Kyoto Protocol.

AB 117 – Assembly Bill 117, Foundational Legislation for Community Choice Aggregation | AB 117 is the California legislation passed in 2002 that enabled Community Choice aggregation, authored by then-Assemblywoman Carole Migden.

SB 790 – Senate Bill 790, Charles McGlashan Community Choice Aggregation Act | SB 790, authored by state Senator Mark Leno, was passed in 2012. This bill instituted a code of conduct, associated rules, and enforcement procedures for IOUs regarding how they interact with CCAs. This bill also clarified a CCA's equal right to participating in ratepayer–funded energy efficiency programs.

SB 350 – Senate Bill 350, Clean Energy and Pollution Reduction Act of 2015 | SB 350 established California's 2030 greenhouse gas reduction target of 40% below 1990 levels. It sets 2030 targets for energy efficiency and renewable electricity, along with other actions aimed at reducing emissions across the energy and transportation sectors to meet the 2050 goal of reducing emissions to 80% below 1990 levels.

Terminology

Bundled Customers | Bundled customers receive both their electricity generation and distribution services from the same entity. If a customer opts out of MCE service, they would be a bundled customer of PG&E.

Unbundled Customers | Unbundled customers receive their electricity generation and distribution services from separate entities. Customers of MCE are considered unbundled customers because they purchase their electricity generation services from MCE and their electricity distribution services from PG&E.

Tiered Rates | A rate structure in which the retail price of electricity increases incrementally as a customer reaches certain thresholds (or tiers) of total monthly usage. In other words, at 'Tier 1' (up to a determined kWh/month), a customer pays a set $/kWh price, whereas at 'Tier 2' usage (above a higher determined kWh/month) a customer pays a higher set $/kWh price.

Key Acronyms

ACS – Asset Controlling Supplier | An ACS is a specific type of power supplier registered with CARB that owns or operates interconnected electricity generating facilities. ACS power can be reported using state-approved emissions factors.

CAISO – California Independent System Operator | The CAISO operates the California transmission grid and is sometimes referred to as the "air traffic controller" of the grid. The CAISO manages, but does not own, the transmission system, and oversees grid maintenance.

CalCCA – California Community Choice Association | CalCCA is a trade association consisting of the currently operating CCAs around the State of California. Other groups that are considering CCA or in the process of launching can join as affiliate members.

CAM – Cost Allocation Mechanism | CAM is a mechanism for passing through Resource Adequacy costs of generation resources (generally new resources brought online by an investor–owned utility (IOU) such as PG&E) to customers that do not receive generation service from the IOU. The generation facility is supposed to fulfill a system or local area reliability need.

CAP – Climate action plan | CAPs are produced by municipalities to help aid in the reduction of greenhouse gas emissions (GHG) within their jurisdiction. They document GHG emission inventories, strategies for meeting reduction targets, community goals and municipal goals, and other sustainability metrics. These documents are often updated yearly but can be updated less often. Some communities may not have a CAP.

CARB – California Air Resources Board | CARB is the State's agency established by California's Legislature in 1967 to: 1) attain and maintain healthy air quality, 2) conduct research to determine the causes of and solutions to air pollution, and 3) address the issue of motor vehicles emissions. Today CARB is tasked with implementing the State's efforts to reduce and track the reduction of GHGs emitted statewide, by overseeing the AB 32 Scoping Plan and managing major GHG-related programs like Cap-and-Trade and the Low Carbon Fuel Standard. CARB, with guidance from the governor and legislature, controls how revenues from these programs are spent to further the State's GHG reducing efforts.

CARE – California Alternate Rates for Energy program | CARE allows low–income energy customers to receive a 30–35% discount on their electric and natural gas bills. Customers may be eligible for CARE if they are enrolled in public assistance programs such as Food Stamps and Temporary Assistance for Needy Families (TANF). Eligible CCA customers can continue to access the CARE discount with no changes.

CCA – Community Choice Aggregation | CCA refers to the statutory authority of cities and counties to procure energy on behalf of electricity customers within their jurisdictions. In other words, CCA allows cities and counties to aggregate the buying power of individual electricity customers within their borders to secure an alternative energy supply. MCE is the first operational CCA in California. Other operational CCAs in California include Sonoma Clean Power (SCP) and Lancaster Choice Energy (LCE).

CCE – Community Choice Energy | CCE is used interchangeably with CCA by the public and other entities.

CEC – California Energy Commission | The CEC is California's primary energy policy and planning agency. It has responsibility for activities that include forecasting future energy needs, promoting

energy efficiency through appliance and building standards, and supporting renewable energy technologies.

C&I – Commercial and Industrial | C&I customers have different rates and programs than residential customers. C&I customers can vary widely from industrial users to small businesses.

CPUC – California Public Utilities Commission | The CPUC, also simply called "the Commission," is the entity that regulates privately-owned utilities in the State of California, including those that provide natural gas and water, electric power, telecommunications, railway services, and for–hire passenger carriers. The CPUC has limited jurisdiction over CCAs.

DA – Direct access | DA is an option that allows eligible customers to purchase their electricity directly from competitive generation providers. There are legislatively mandated caps on DA that have gradually increased since the energy crisis. Large energy users in particular seek the cost certainty associated with being on DA service.

DER – Distributed energy resource | DER is a relatively new term that refers to a broad number of energy resource types (rooftop solar, fuel cells, energy storage, demand response, electric vehicles, energy efficiency controls, etc.) that are deployed along the distribution grid level. DERs can be controlled in aggregate to behave like localized generation resources, thereby increasing local grid reliability while meeting the constraints of broader grid reliability needs.

DG – Distributed generation | DG refers to small, modular power sources located at the point of power consumption. One example of residential distributed generation is an array of solar panels installed on a home's roof.

DGEMS – Distributed generation-enabled microgrid services | DGEMS is a PG&E proposal to implement new distributed energy resources in order to reduce impacts of Public Safety Power Shutoff (PSPS) events.

DR – Demand response | DR is a way of controlling customers' electricity demand through either voluntary or obligatory programs via manual or automated control systems. While there are many different flavors of DR designed to attain distinct types of benefits, DR is generally intended to shift electricity demand to better align with real-time electricity supply.

DSM – Demand–side management | DSM is methods used to manage and shift demand for energy, most often to times of the day when the cost of energy is less. DSM activities include energy efficiency programs, electricity load shifting activities and devices, and fuel substitutions.

EE – Energy efficiency | EE is a way of managing and restraining the growth in energy consumption. It refers to using less energy to provide the same service. For example, efficient windows keep the heat out in summer so that air conditioners run less often and save electricity.

ESAP – Energy Savings Assistance Program | ESAP provides no-cost weatherization services to low-income households that meet the California Alternate Rates for Energy (CARE) income guidelines. Some of the services provided include attic insulation, energy-efficient refrigerators, energy-efficient furnaces, and weather stripping.

ESP – Electricity Service Provider | ESPs are non-utility entities that offer direct access (DA) electric service to customers within the service territory of an electric utility. CCAs are not considered ESPs. However, ESPs, CCAs, and investor-owned utilities (IOUs) are all considered load-serving entities (LSEs).

FERA – Family Electric Rate Assistance | FERA is a monthly bill discount program that is eligible to customers who income-qualify and have three or more individuals living in their household.

FIT – Feed-In Tariff | FITs are long-term, standard-offer contracts offered by electricity retailers to small-scale renewable developers for the procurement of renewable energy. MCE currently offers a FIT program that enjoys a high level of participation and encourages local development of renewable energy.

GHG – Greenhouse gas | GHGs are gasses in Earth's atmosphere that prevent heat from escaping into space. The burning of fossil fuels, such as coal and oil, and deforestation have caused the concentrations of GHGs to increase significantly in the Earth's atmosphere. This increase in GHGs is the driving force behind climate change.

IDSM – Integrated demand-side management | IDSM is generally used to refer to the integration and coordination of various energy technologies and services on the customer's side of the utility meter. Energy efficiency, energy conservation, demand response, advanced metering, and distributed generation technologies are offered as elements of the IDSM solution. Services may also include specialized rate structures or education programs. IDSM is viewed as a way to reduce the negative impact of organizational silos among utilities and regulators and to improve customer understanding of available options.

IOU – Investor-owned utility | IOU refers to an electric utility provider that is a private company, owned by shareholders. The three IOUs in California are Pacific Gas and Electric (PG&E), Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E). Historically, IOUs in California have operated as regulated monopolies overseen by the California Public Utilities Commission (CPUC). Approximately four out of five of California's electricity customers are served by one of the State's three IOUs. The other 20% of customers are served by Publicly Owned Utilities (POUs, also known as Municipal Utility Districts, or MUDs), which are local government-run utilities, such as the Sacramento Municipal Utility District (SMUD) or Palo Alto Utilities. See MUD and POU below.

ITC – Investor Tax Credit | The ITC offers incentives for developers to create more solar resources to stimulate local economic and job growth while increasing renewable resources.

LFGTE – Landfill gas to energy | LFGTE is the process of creating energy from the burning of landfill gas. This process reduces emissions by using the methane produced in landfills to create a clean electricity supply instead of being flared.

LIHEAP – Low Income Home Energy Assistance Program | LIHEAP is a federally funded program that will pay a customer's energy bill once per year if they're facing shutoff and will provide home weatherization services. Preference for home weatherization is given to those with infants and toddlers under three years of age. Customers must be qualified to participate based on income and number of household occupants.

LSE – Load-serving entity | LSEs are a categorization term that refers to investor-owned IOUs, ESPs, and CCAs, all of which offer generation service in the IOU's service territory. POUs are excluded from this categorization.

MUD – Municipal Utility District | MUDs are public agencies where a local government serves its own customers with bundled electricity. For example, Sacramento Municipal Utility District (SMUD) serves its customers with power and controls both the lines and the generation. This is different from IOUs, which are investor owned, and from CCAs, which don't own the infrastructure.

NBC – Non-bypassable charge | NBCs are line-item charges that all distribution customers (both bundled and unbundled) must pay. Types of NBCs include the Power Charge Indifference Adjustment (PCIA), though only unbundled customers pay the PCIA. The Public Purpose Program (PPP) charge is also an NBC.

NEM – Net energy metering | NEM is a rate category for customers with on-site energy generation (e.g., rooftop solar), in which the amount a customer pays each month is the "net" amount between what they generate and what they use. NEM allows a customer to be credited when their renewable generation system generates more power than is used on-site. The customer continues to pay for electricity when more power is used on-site than the system produces.

OBF – On bill financing | OBF is a financing mechanism in which repayment is integrated into a customer's utility bill.

OIR – Order Instituting Rulemaking | OIR is a legislative tool that allows the CPUC to thoroughly investigate a specific issue and the items related to it. This process generally allows the commission to review legislative concerns with input from stakeholders at a more detailed level.

PACE – Property Assessed Clean Energy | PACE is a way of financing energy efficiency upgrades or renewable energy installations for buildings. In areas with PACE legislation in place, municipal governments offer a specific bond to investors and then loan the money to consumers and businesses to put toward an energy retrofit. The loans are repaid over the assigned terms (typically 15 to 20 years) via an annual assessment on their property tax bill. One of the most notable characteristics of PACE programs is that the loan is attached to the property rather than an individual.

PAM – Portfolio Allocation Mechanism | PAM is a mechanism for passing through long-term contract costs of generation resources. The proposal would have replaced the PCIA (see next entry), but is currently not under consideration at the CPUC.

PCIA – Power Charge Indifference Adjustment | The PCIA is an "exit fee" that is intended to protect bundled utility customers from paying the "stranded costs" associated with the IOU previously procuring energy on behalf of the customer now being served by a CCA. When customers leave bundled service to purchase electricity from an alternative supplier, such as MCE, the IOU, which had previously contracted for wholesale energy generation to serve these customers, is able to charge these departing customers the cost of that power.

PDP – Peak day pricing | PDP is a demand response option for commercial customers in PG&E bundled service, and is not available to MCE customers. Other DR programs are available if

customers choose MCE and are no longer eligible for PDP, but it is the responsibility of the customer to find a new program.

POLR – Provider of Last Resort | The POLR is referenced in the event that a CCA, MUD, or POU should fail. The IOUs are the POLR, making PG&E the POLR for MCE's service area.

POU – Publicly Owned Utility | POUs (aka Municipal Utility Districts or MUDs) are local, publicly owned electric utilities administered by a board of publicly appointed representatives or democratically elected leaders (similar to a CCA). POUs are not within the jurisdiction of the CPUC, and are thus subject to different regulation and enforcement than investor-owned utilities (IOUs), electricity service providers (ESPs), and CCAs. See MUD above.

PPA – Power purchase agreement | PPA is the method through which MCE procures wholesale electricity. These agreements are signed with electric generators in California and the Pacific Northwest to ensure that enough energy is purchased on MCE's behalf to meet state requirements for procurement.

PPP – Public Purpose Program | PPP charges are NBCs collected from all bundled and unbundled customers in order to fund programs such as discounts for low-income customers on the CARE rate and energy efficiency programs.

PSPS – Public Safety Power Shutoff | PSPS events occur during fire season when PG&E or other IOUs intentionally shut down power in order to reduce the risk of fire in a high-risk time period usually indicated by dry conditions with high winds. These may last several hours or many days depending on the severity of the event. PG&E is required to check all lines that were shut off before restarting power to ensure safety.

PTC – Production Tax Credit | The PTC is a tax credit available to make production of new wind resources cost-effective for developers to promote jobs and economic growth.

PV – Photovoltaic | PV is solar electric generation by conversion of light into electrons. The most commonly known form of solar electric power is roof panels on homes.

RA – Resource Adequacy | RA refers to a statewide mandate for all load-serving entities (LSEs) to procure a certain quantity of electricity resources that will ensure the safe and reliable operation of the grid in real time, over the course of the calendar year (115%). RA also provides incentives for the siting and construction of new resources needed for reliability in the future.

RFP, RFO, RFQ, or RFI – Request For Proposals, Offers, Qualifications, or Information | RFPs and RFOs are open market opportunities for contracts with MCE. As a public agency, when MCE looks for new project proposals, contract proposals, or energy contract offers, it goes to the open market for solicitation. Contractors, developers, and generators will submit offers or proposals depending on what the contracts are for, and MCE will select candidates to enter into contracts based on a number of criteria. RFQs and RFIs are simply a request for information from the market and are not directly connected to a contract.

RPS – Renewable Portfolio Standard | The RPS was created in 2002 under Senate Bill 1078 and most recently modified by SB (1X) 2 (2011). A RPS is a requirement that all load-serving entities (LSEs) maintain a minimum percentage of renewable electricity resources within their broader generation supply portfolio. The present RPS requires all of California's LSEs to have no less than 33% renewable generation content by 2020. The legislature and the CPUC are exploring means to adopt a higher RPS mandate.

T&C – Terms and conditions | All electric services and programs have terms and conditions. By California state law, when customers enroll in MCE's services, they must receive a copy of the T&C within an allocated time period after the start of service.

T&D – Transmission and distribution | Roughly half of the electric bill consists of T&D charges from PG&E. MCE does not control T&D and has no influence on how these charges are determined. Sometimes T&D is used as shorthand for the PG&E portion of an MCE customer's bill.

TOU – Time-of-Use pricing | An electric rate schedule in which energy costs vary depending on the time of usage. For example, customers may pay more for energy used during "peak" usage hours or during the morning and/or evening when intermittent resources (such as solar energy) are less available.

ZNE – Zero net energy | A building is ZNE if the amount of energy provided by on-site renewable energy sources is equal to the amount of energy used by the building.

MCE Acronyms

AIR – Agricultural and Industrial Resource Program | MCE energy efficiency program for agricultural and industrial customers.

IRP – Integrated Resource Plan | MCE's IRP is a procurement plan that is submitted to the CPUC on a yearly basis. It includes contracts, goals, updates on enrollment, procurement and development, information about MCE's service area, emissions information, financial information, and program information.

LIFT – Low–Income Families and Tenants Program | LIFT is a pilot program run by the customer programs team that focuses on providing energy efficiency services to underserved communities. Underserved communities are defined as customers who do not have access to traditional services due to inability to meet program requirements for a variety of reasons.