

# Standard LSE Plan

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CENTRAL COAST COMMUNITY ENERGY

2022 INTEGRATED RESOURCE PLAN

NOVEMBER 1, 2022

## Contents

I. Executive Summary.....	3
II. Study Design.....	6
a. Objectives .....	6
b. Methodology .....	6
i. Modeling Tool(s).....	6
ii. Modeling Approach .....	7
III. Study Results.....	8
a. Conforming and Alternative Portfolios.....	8
b. Preferred Conforming Portfolio .....	9
i. Resources meet the GHG emissions reduction targets established by the State Air Resources Board. ....	9
ii. Procure at least 60 percent eligible renewable energy resources by December 31, 2030.....	10
iii. Enable each electrical corporation to fulfill its obligation to serve its customers at just and reasonable rates. ....	10
iv. Minimize impacts on ratepayers' bills.....	10
v. Ensure system and local reliability on both near-term and long-term basis	10
vi. Comply with paragraph (1) subdivision (b) of Section 399.13 of PU Code Section 454.52(a)(1), RPS procurement for each compliance period shall be from its contracts of 10 years or more in duration.....	11
vii. Procure at least 60 percent eligible renewable energy resources by December 31, 2030.....	11
viii. Strengthen the diversity, sustainability, and resilience of the bulk transmission and distribution systems, and local communities.....	11
ix. Enhance distribution systems and demand-side energy management.	11
x. Minimize localized air pollutants and other greenhouse gas emissions, with early priority on disadvantaged communities .....	12
c. GHG Emissions Results .....	12

d.	Local Air Pollutant Minimization and Disadvantaged Communities .....	12
i.	Local Air Pollutants .....	12
ii.	Focus on Disadvantaged Communities .....	13
e.	Cost and Rate Analysis.....	15
f.	System Reliability .....	16
g.	High Electrification Planning .....	16
h.	Existing Resource Planning .....	16
i.	Hydro Generation Risk Management.....	16
j.	Long Duration Storage Planning.....	17
k.	Clean Firm Power Planning .....	18
l.	Out-of-State Wind Planning .....	18
m.	Offshore Wind Planning.....	19
n.	Transmission Planning .....	19
IV.	Action Plan .....	20
a.	Proposed Procurement Activities and Potential Barriers.....	20
i.	Resources to meet D.19-11-016 procurement requirements .....	20
ii.	Resources to meet D.21-06-035 procurement requirements, including: 20	
a.	1,000 MW of firm zero-emitting resource requirements .....	20
b.	1,000 MW of long-duration storage resource requirements .....	20
c.	2,500 MW of zero-emissions generation, generation paired with storage, or demand response resource requirements .....	21
d.	All other procurement requirements.....	21
iii.	Offshore wind .....	21
iv.	Out-of-state wind.....	22
v.	Other renewable energy not described above.....	22
vi.	Other energy storage not described above.....	22
vii.	Other demand response not described above.....	22
viii.	Other energy efficiency not described above.....	22

ix. Other distributed generation not described above .....	23
x. Transportation electrification, including any investments above and beyond what is included in Integrated Energy Policy Report (IEPR) .....	23
xi. Building electrification, including any investments above and beyond what is included in Integrated Energy Policy Report (IEPR) .....	23
b. Disadvantaged Communities .....	24
c. Commission Direction of Actions .....	26
V. Lessons Learned .....	27
<i>Glossary of Terms</i> .....	28

## I. Executive Summary

Central Coast Community Energy (CCCE), formerly known as the Monterey Bay Community Power Authority, is a Community Choice Aggregator established in 2017 pursuant to Public Utilities Code Section 366.2 and operating as a Joint Powers Authority (JPA) pursuant to Government Code section 6500 et seq. In accordance with the requirements of California Public Utilities Code Sections 454.51 and 454.52 and Commission Decision 20-03-028, CCCE provides this Integrated Resource Plan (IRP) to the California Public Utilities Commission (“the Commission”) for certification and use in the Commission’s statewide planning process. CCCE has developed a Preferred Conforming Portfolio (PCP) that both meets CCCE’s internal procurement goals and produces greenhouse gas (GHG) emissions below CCCE’s assigned benchmarks for both the 30 Million Metric Tons (MMT) and 25 MMT scenarios. Additionally, this IRP demonstrates that CCCE’s Preferred Conforming Portfolio contributes CCCE’s share of reliability, renewable integration, and other shared resource requirements under both GHG scenarios. CCCE respectfully requests that the Commission certify this IRP.

CCCE serves 436,000 customers throughout the Central Coast, including residential, commercial, and agricultural customers in communities located within Monterey, San Benito, San Luis Obispo, Santa Barbara, and Santa Cruz counties. CCCE has established an innovative procurement strategy to accelerate the reduction of GHG emissions. This strategy commits CCCE to meet 60% of its demand with new clean and renewable resources by the year 2025 and 100% by 2030 with balancing on a monthly basis.

In order to achieve these goals CCCE’s procurement strategy has prioritized long-term contracts that bring new clean resources online as quickly as possible. To date CCCE has executed 19 long-term power purchase agreements (PPAs) and energy storage agreements (ESAs), 17 of which have brought or will bring new resources online. These new resources consist of seven solar plus energy storage projects,

one standalone solar facility, one wind facility, three geothermal projects, and five standalone storage facilities. CCCE has secured these contracts through a combination of individual and joint resource solicitations, including as a member of California Community Power (CC Power), a joint action agency CCCE formed with seven other CCAs. Most recently, in June 2022 CCCE's Operations Board of Directors approved taking a share of the 125 MW of new construction geothermal projects for Firm Clean Resources to meet a subset of the Commission's procurement mandate (D.21-06-035) that were secured through a CC Power solicitation.

CCCE remains one of the earliest CCAs in California to receive an investment grade credit issuer credit rating. In 2020, CCCE was the first CCA to receive an 'A' rating from S&P. S&P reaffirmed this 'A' rating in May 2022. The 'A' rating recognizes CCCE's financial stability and its strong customer base within the agency's growing service area. S&P's rating action recognized the benefits of CCCE's shift to a cost-of-service rate-setting model, solid financial metrics, and robust plan for improving CCCE's liquidity and finances.

CCCE is pursuing a diverse resource mix that both helps achieve its commitment to meeting 100% of demand with new clean and renewable resources by 2030 and contributes to the broader decarbonization of the grid. CCCE's current procurement policy pursues aggressive deployment of new solar PV and wind, new and existing geothermal resources, and various energy storage technologies both standalone and paired with solar. CCCE is also pursuing offshore wind generation, an emerging technology in California with significant potential grid benefit due to its flat generation profile and high capacity factor compared to onshore wind. The auction for leases in federal waters scheduled for December 6, 2022 will be an important step forward in bringing these resources online.

CCCE is also investing in programs to help its member communities electrify their building and transportation sectors, access electric vehicle charging infrastructure, evaluate potential benefits of distributed energy resources (e.g., reducing peak demand), and promote resiliency. While CCCE has not included any custom profiles for electrification in its Preferred Conforming Portfolio, these programs are a critical part of CCCE services to its customers and its mission to help decarbonize the entire economy within its service area. These programs are described in detail in the Action Plan section.

Finally, CCCE is dedicated to developing resources locally where that has benefits for CCCE's member communities and contributes to CCCE's procurement goals. CCCE has executed three PPAs for utility-scale storage facilities totaling 32 MW to be installed in CCCE's service area. CCCE is also in process of implementing a Front of the Meter battery storage program for large critical facilities in CCCE member communities. Critical facilities being investigated for participation include but are not limited to hospitals, fire stations, police stations, storage sites for critical records. CCCE intends to begin installing the first tranche of batteries at different 6 sites in 2023, with a goal of reaching 100 MW over the next several years. These facilities will contribute to both local reliability and CCCE's clean energy goals.

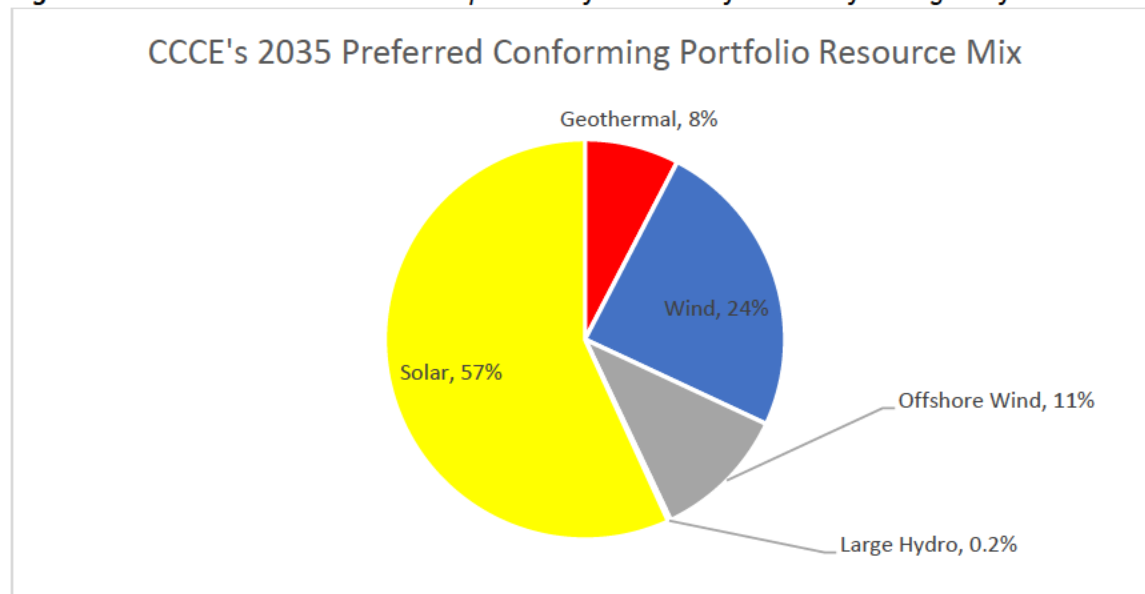
#### **CCCE's Preferred Conforming Portfolio (PCP)**

Table 1 and Figure 1 show CCCE's Preferred Conforming Portfolio in 2035.

**Table ES-1. Resource Composition of CCCE's Preferred Conforming Portfolio in 2035**

Contract Status	Technology Type	Existing Generation (MW)	New Generation (MW)	New Storage Capacity (MW)
Executed	Energy Storage (Cal Flats BESS)			60
	Solar PV + Energy Storage		555	173
	Solar only		150	
	Wind		33	
	Geothermal	66	32	
	Large Hydro (30-year WAPA contract)	7		
	Standalone Energy Storage (4-hour)			10
	Standalone Energy Storage (8-hour)			32
	<b>Total Executed</b>	<b>73</b>	<b>770</b>	<b>275</b>
Planned	Solar PV + Energy Storage		645	322
	Solar only		315	
	Wind		655	
	Offshore Wind		200	
	Standalone Energy Storage (4-hour)			385
	Standalone Energy Storage (8-hour)			235
	<b>Total Planned</b>	<b>0</b>	<b>1,815</b>	<b>942</b>
	<b>Total 2035 Portfolio</b>	<b>73</b>	<b>2,585</b>	<b>1,217</b>

**Figure ES-1. Generation Resource Composition of CCCE's Preferred Conforming Portfolio in 2035**



CCCE's Preferred Conforming Portfolio:

- Has 2035 emissions of -0.31 MMT/yr, significantly lower than CCCE's assigned GHG benchmarks in both emissions scenarios

- Meets all relevant reliability metrics
- Reflects CCCE's policy of only contracting for renewable energy that qualify as PCC1 under the Renewable Portfolio Standard requirements (bundled REC/energy from resource located in or interconnected to CAISO)
- Provides more than CCCE's load-proportional share of renewable integration resources
- Can be used in either a 25 MMT or 30 MMT Preferred System Plan due to the emissions being lower than both of CCCE's assigned GHG benchmarks.

## II. Study Design

### a. Objectives

The analysis performed to develop the Preferred Conforming Portfolio had the following objectives:

- Fully comply with CCCE's Board-adopted procurement goals
- Achieve economic, reliability, environmental, security, and other benefits and performance characteristics that are consistent with the goals set forth in Public Utilities Code Section 454.52(a)(1)(A-I)
- Achieve the resource adequacy requirements established pursuant to Public Utilities Code Section 380 and fully provide CCCE's share of system reliability and renewable integration resources.  
Achieve procurement and performance goals cost-effectively to minimize rate impacts on CCCE's customers.
- Achieve procurement necessary to satisfy the Mid-Term Reliability (MTR) requirements
- Produced GHG emissions below CCCE's assigned GHG benchmarks

### b. Methodology

#### i. Modeling Tool(s)

CCCE used the PowerSIMM modeling platform developed by Ascend Analytics to perform the analysis behind the Preferred Conforming Portfolio. PowerSIMM's Automated Resource Selection (ARS) module was used to run capacity expansion scenarios with CCCE's load and resources. ARS outputs provided portfolios that meet CCCE's supply needs at the least cost. After assembling supply portfolios from the ARS modeling, the modeling team evaluated portfolios in production cost models to understand the hourly operation of the portfolios with potential new resources. Both RESOLVE and ARS optimize future resource selections to meet electric system planning goals at least cost while meeting system constraints for capacity, RPS, energy, emission limits, or other requirements. The RESOLVE model included the CAISO territory to estimate future resource builds serving CAISO load. ARS models covered CCCE's load and supply portfolio to optimize CCCE's resource selection based on CCCE's needs and the CAISO inputs from the RESOLVE model. In the ARS models, all out of state resources are assumed to be available for import.

A key difference between the RESOLVE model and ARS is that RESOLVE simulates operations on a limited set of representative days each year and uses a deterministic approach. ARS simulates resource dispatch over all future days and across multiple futures paths to determine an optimal set of resources.

The Commission uses the Strategic Energy Risk Valuation Model (SERVM) as a separate tool more specifically designed to examine system reliability and production cost once an optimal portfolio has been determined by RESOLVE. CCCE employed PowerSIMM's dispatch module to investigate hourly operations of potential future portfolios and evaluate production cost once an optimal portfolio had been determined by ARS. Like SERVM, PowerSIMM is a probabilistic model that has temporal and geographic granularity in modeling existing and selected resources.

## ii. Modeling Approach

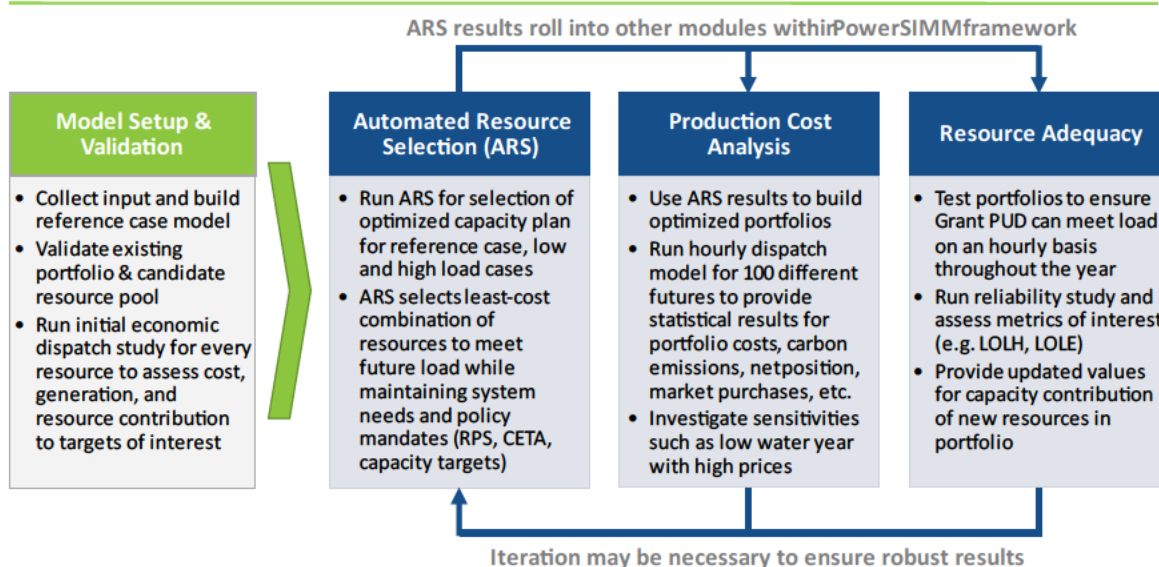
To evaluate the potential future resources described in this IRP CCCE employed Ascend's PowerSIMM modeling platform, the Automated Resource Selection (ARS) module, for resource selection, and the dispatch module was used to investigate hourly operations of potential future portfolios.

An overview of the modeling framework is shown in Figure 2. Staff from CCCE and Ascend Analytics first gathered historical generation data, cost projections, and other relevant input to set up the model. Staff verified that modeled systems behaved as anticipated under alternative weather and pricing conditions. Staff then ran an economic dispatch study for every resource to assess costs, generation, and contribution to targets of interest. These inputs were fed to the Automated Resource Selection module, which selected new resources based on minimizing the cost of procuring and operating new and existing resources while also meeting system requirements such as maintaining a sufficient planning reserve margin and complying with CCCE's procurement goals and the 25MMT emissions benchmark. Once portfolios were selected, they were evaluated using an hourly dispatch model to understand their operational feasibility and the overall implications of the portfolio. To better capture the uncertainty in future conditions, a stochastic framework enabled simulation of a wide range of scenarios where market prices, weather patterns, renewable generation, and load significantly vary. To capture the risk associated with the distribution of portfolio costs resulting from the stochastic simulation, staff used the "risk premium" metric that indicates the cost at risk or the actuarial value of a portfolio's exposure to market price volatility, variation in generation and load, and changes in weather conditions.



Figure 2. Modeling framework to develop compliant, reliable, and least cost portfolios in PowerSIMM

## Modeling Overview



## III. Study Results

### a. Conforming and Alternative Portfolios

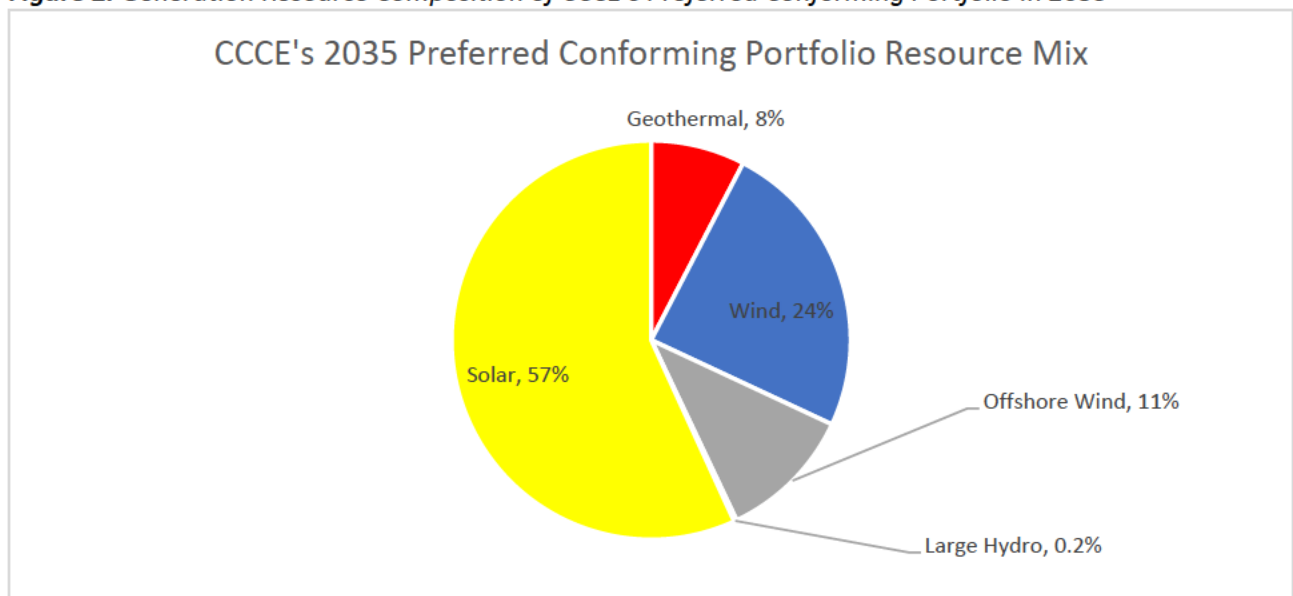
CCCE is submitting one Preferred Conforming Portfolio (PCP) that meets the requirements of both the 25 MMT and 30 MMT GHG scenarios. Table 1 and Figure 2 show the portfolio of renewable resources comprising the PCP. Table 1 also distinguishes between the resources currently under contract and the resources that are planned for future contracting.

Table 1. Resource Composition of CCCE's Preferred Conforming Portfolio in 2035

Contract Status	Technology Type	Existing Generation (MW)	New Generation (MW)	New Storage Capacity (MW)
Executed	Energy Storage (Cal Flats BESS)			60
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Planned	Total Executed	73	770	275
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	Standalone Energy Storage (8-hour)			235
	Total Planned	0	1,815	942
Total 2035 Portfolio		73	2,585	1,217

**Figure 2. Generation Resource Composition of CCCE's Preferred Conforming Portfolio in 2035**



## b. Preferred Conforming Portfolio

CCCE's Preferred Conforming Portfolio is compliant with the requirements in PU Code Section 454.52(a)(1) and meets the following requirements:

- i. Resources meet the GHG emissions reduction targets established by the State Air Resources Board.

CCCE's Preferred Conforming Portfolio produces emissions below CCCE's assigned GHG benchmarks for the 25 MMT and 30 MMT GHG scenarios in both 2030 and 2035. The PCP's forecasted GHG emissions are -0.10 MMT in 2030 and -0.31 MMT in 2035, substantially lower than all four of CCCE's assigned GHG benchmarks. The negative emissions are due to CCCE's commitment to a meeting 100% of demand with new clean and renewable resources by 2030 with monthly balancing, which requires procurement of clean and renewable energy in excess of CCCE's annual load.

- ii. Procure at least 60 percent eligible renewable energy resources by December 31, 2030

CCCE's PCP is comprised of diverse clean and renewable resources sufficient to meet 100% of CCCE demand with monthly balancing by 2030, substantially higher than the 60% State target.

- iii. Enable each electrical corporation to fulfill its obligation to serve its customers at just and reasonable rates.

This section is not applicable as CCCE is not an electrical corporation.

- iv. Minimize impacts on ratepayers' bills

CCCE's Preferred Conforming Portfolio (PCP) is designed to meet CCCE's procurement commitments and obligations as cost-effectively as possible. Technology costs were incorporated into the Automated Resource Selection modeling that developed the PCP, and the cost of individual offers bid into future Requests for Offers will inform which specific projects ultimately correspond to the planned resources incorporated in the PCP. This second evaluation during the RFO process may mean that the ultimate resource composition of CCCE's 2030 portfolio is different from the PCP if other resource types are found to be more cost-effective while still meeting all other procurement criteria.

Despite these efforts, CCCE notes that a combination of market conditions and regulatory actions since the previous IRPs were submitted have contributed to sharply increased resource costs. Some of these changes have been global or national in scope, as the supply chain disruptions caused by Covid-19 and the temporary halt in solar panel imports due to the U.S. Department of Justice tariff investigation. However, the nature of previous IRP resource mandates has also directly exacerbated price increases by creating a seller's market that encourages rent-seeking behavior by resource developers. Developers actively follow regulatory proceedings and are aware of the resources LSEs are mandated to procure. Decision 19-11-016 and Decision 21-06-035 forced all Commission-jurisdictional LSEs out into the market to procure specific resources on an expedited timeline that is the same for all LSEs. This has driven an increase in the price of projects eligible for compliance with these mandates, as developers know LSEs are willing to pay a premium to avoid noncompliance with the mandates. There are also multiple known instances of developers seeking to raise prices or otherwise disrupt PPAs that were signed months or years before these mandates were issued in order to either match higher current prices or create grounds for terminating the PPA. All of these activities increase resource costs and ultimately retail electricity rates without providing any additional grid services, and CCCE encourages the Commission to prioritize removing these perverse developer incentives in its ongoing reform of the IRP procurement program.

- v. Ensure system and local reliability on both near-term and long-term basis

CCCE's PCP is designed to further grid reliability while decarbonizing the grid by employing a mix of clean and renewable technologies that either generate throughout the day or help move generation to hours of high demand. Foremost among the technologies in the PCP that bolster system and local reliability are various forms of energy storage. The PCP contains over 1,000 MW of new energy storage diversified

along several axes: duration, technology type, location, and standalone vs pairing with solar generation. In addition to the more widely commercialized lithium-ion technology, CCCE is pursuing projects based on both vanadium flow and compressed air technology. Both are long-duration projects that will address the net peak reliability challenge and help commercialize alternative storage technologies with significant potential grid benefit. Additionally, local reliability will be particularly well served by the 100 MW of 1-3 MW front-of-the-meter storage that CCCE has committed to building throughout its service area. These small utility-scale storage facilities will both contribute to broader decarbonization of the grid and be capable of local grid support during times of broader system instability.

Renewable baseload resources are another important component of the PCP's contribution to system and local reliability. The PCP in 2035 contains 98 MW of geothermal and 200 MW of offshore wind. Both of these resources have relatively flat generation profiles and high capacity factors, and will be critical to taking over responsibility for nighttime demand alongside long-duration storage. The geothermal resources are already under contract, and CCCE intends to pursue the offshore wind when that opportunity becomes available following the federal auction for leases scheduled for December 2022.

- vi. Comply with paragraph (1) subdivision (b) of Section 399.13 of PU Code Section 454.52(a)(1), RPS procurement for each compliance period shall be from its contracts of 10 years or more in duration.

CCCE's PCP shows that each compliance period achieves CCCE's RPS goals with more than the required percentage of contracts of 10 years or more in duration.

- vii. Procure at least 60 percent eligible renewable energy resources by December 31, 2030

CCCE's procurement goal of meeting 100% of demand with new clean and renewable resources by 2030 with monthly balancing will produce a portfolio that exceeds the 60% Renewable Portfolio Standard requirement by December 31, 2030. CCCE already meets the 2030 60% RPS standard with executed resource PPAs.

- viii. Strengthen the diversity, sustainability, and resilience of the bulk transmission and distribution systems, and local communities

The technological and geographic diversity of CCCE's Preferred Conforming portfolio aligns with the diverse resource portfolio that will be necessary to achieve California's GHG reduction goals while maintaining grid reliability. CCCE's solicitations takes both forms of resource diversity into account and future resource selections will consider both the composition of CCCE's existing portfolio and the value of candidate resources from a grid reliability and decarbonization perspective.

- ix. Enhance distribution systems and demand-side energy management.

CCCE's Front-of-the-Meter (FTM) storage project is specifically designed to bolster local reliability and distribution system integrity. In 2023 CCCE will begin deploying up to 100 MW of FTM energy storage systems within the CCCE service area, each sized between 1 to 3 MW. These projects will contribute to

both system and local reliability regularly by helping to shift renewable generation from peak generation hours to the more constrained net peak. Additionally, these projects will have the ability to help maintain electrical service locally during times of broader grid instability.

- x. Minimize localized air pollutants and other greenhouse gas emissions, with early priority on disadvantaged communities

CCCE's PCP achieves results and performance characteristics consistent with the Public Utilities Code Section 454.52(a)(1)(H) goal of minimizing localized air pollutants and other GHG emissions. The diverse mix of renewable and storage resources in the PCP and the monthly balancing of the 100% new clean and renewable resource commitment in 2030 help minimize CCCE's reliance on unspecified system power, the primary source of localized air pollutants in the PCP. Additionally, the FTM storage projects will be able to help support local reliability during times of broader grid stability, potentially reducing the need for fossil-based back-up generators.

### c. GHG Emissions Results

CCCE's Preferred Conforming Portfolio produces GHG emissions well below CCCE's assigned GHG benchmarks in both the 30 MMT and 25 MMT scenarios. This outcome is driven by CCCE's commitment to serving 100% of its load with clean and renewable resources by 2030 balanced on a monthly basis. The renewable generation in excess of annual load required to achieve monthly balancing of results in negative emissions by 2030 that continues into 2035. Table 2, below, shows the CO<sub>2</sub> emissions associated with the PCP compared to CCCE's assigned benchmarks under both scenarios.

**Table 2: PCP CO<sub>2</sub> Emissions Using the 25 MMT Clean System Power Calculator**

	Unit	2024	2026	2030	2035
CO <sub>2</sub>	MMt/yr	1.50	0.58	(0.10)	(0.31)
Assigned 30 MMT scenario benchmark	MMt/yr			0.74	0.56
Assigned 25 MMT scenario benchmark	MMt/yr			0.56	0.45

### d. Local Air Pollutant Minimization and Disadvantaged Communities

#### i. Local Air Pollutants

Table 3, below, shows the PCP's local air pollutant emissions calculated using the 25 MMT scenario Clean System Power calculator. These emissions come primarily from system power, as the PCP does not include any contracts with fossil resources.

**Table 3: PCP Local Air Pollutant Emissions Using the 25 MMT Clean System Power Calculator**

	Unit	2024	2026	2030	2035
PM2.5	tonnes/yr	51	18	(1)	(13)

SO2	tonnes/yr	5	2	(0)	(1)
NOx	tonnes/yr	84	44	17	(12)

ii. Focus on Disadvantaged Communities

SB 350 requires that the Commission take efforts to improve the air quality and economic conditions in communities identified as disadvantaged as defined by Health and Safety Code section 39711.

Disadvantaged communities include areas disproportionately affected by environmental pollution and other hazards that lead to negative public health effects, exposure, or environmental degradation or areas with high concentrations of low income, high unemployment, low levels of homeownership, high rent burdens, sensitive populations, or low levels of education. Health and Safety Code section 39711(a). The Commission identifies “disadvantaged communities” utilizing CalEPA’s CalEnviroScreen tool.

Table 4 reflects the CCCE communities designated by CalEnviroScreen 4.0 (“CES4.0”) as disadvantaged, although CCCE recognizes that underserved communities expand well beyond CES4.0’s limited reach.

**Table 4: CCCE 2022 Disadvantaged Communities (DAC)\***

Census Tract	County	Approximate Location	Total Population (2017)	CCCE Customer Accounts Non-Residential**	CCCE Customer Accounts Residential**
6053000900	Monterey	Salinas	5,657	147	1157
6087110400	Santa Cruz	Watsonville	8,077	351	1661
6083002502	Santa Barbara	Unincorporated Santa Barbara County area	7,573	259	1912
6053010101	Monterey	Unincorporated Monterey County area	5,024	221	710
6087110300	Santa Cruz	Watsonville	7,275	261	1193
6083003001	Santa Barbara	Goleta	5,766	620	1517
<b>Totals</b>			<b>39,372</b>	<b>1,859</b>	<b>8,150</b>

\*DAC defined as a census tract with a CES4.0 Overall Score Percentile 75% and above.

\*\* Customer count of CCCE customers with premise location found on associated Census Tract as of August 2022

Currently CCCE serves 10,009 customer accounts, 2.3% of total accounts, located within designated DACs. Additional evaluation of the percentage of poverty in CCCE’s service area demonstrates the limited effectiveness of utilizing the CES4.0 Overall Score Percentile to, correctly, designate disadvantaged communities. CCCE’s analysis of CES4.0’s Poverty Percentile data shows that at the 75% percentile, CCCE’s service area would support a total population of 256,182 residents, much greater than the CES4.0’s Overall Score Percentile 75% and above population identified of 39,372. Further



analysis utilizing CES4.0's Poverty Percentile at the 50% percentile, CCCE's service area serves a population of 468,756.

Recognizing that many underserved and marginalized communities are not represented in the CES4.0 profile, CCCE conducts additional outreach to all underserved customers to ensure they have access to information and resources regarding rate assistance programs. CCCE utilizes both a leveraged digital messaging and direct energy education outreach through CCCE's first-of-its-kind Farmworker Outreach program throughout our central coast and inland service regions.

CCCE's mission is to serve our central coast community by providing reliable, affordable, clean electricity and electrification programs to reduce greenhouse gas emissions and strengthen our local economy. In addition to procuring clean renewable energy, CCCE is realizing its mission by catalyzing regional climate action through energy programs strategically focused on the electrification of transportation, buildings, and agriculture. These programs enable our customers and communities to reduce greenhouse gas emissions by switching from vehicles, equipment, and appliances that burn fossil fuel to clean, all-electric versions. This work is not only critical for addressing the climate emergency, but also for driving the local economy and increasing equitable access to the significant benefits of clean energy and electrification.

While primarily focused on greenhouse gas reduction, CCCE's approach to energy program design and implementation minimizes local air pollutants and supports investment in disadvantaged, low-income, and underserved communities in a variety of ways. Some of the Energy Programs doing so are detailed here:

- *New Construction Electrification Program (NCEP)*: Building off of its success in its first two iterations, CCCE continued to offer incentives to local housing developers to construct all-electric multi-family housing projects across CCCE's service area. CCCE reserved \$1.5 million for this program in FY 21 – 22, and unlike previous iterations, will only provide incentives to support affordable, all-electric housing. This program promotes GHG emissions reductions, indoor air quality, occupant safety, and energy bill savings for customers by eliminating natural gas or propane equipment/appliances.
- *California Electric Vehicle Infrastructure Incentive Project (CALeVIP)*: In coordination with State and regional funding partners, CCCE continues to support the CALeVIP – South Central Coast Incentive Project in FY 21 – 22 by providing incentives for public DC Fast Chargers and Level 2 EV Chargers. Following an earlier CALeVIP program serving CCCE's northern service area, the SCCIP made a total of \$12 million in funds available over two years in San Luis Obispo, Santa Barbara, and Ventura counties. CCCE is contributing \$1,750,000 with our funding available to CCCE customers and 50% of the funds dedicated to DACs and low-income communities.
- *Electrify Your Ride (EYR)*: In FY 21 – 22, CCCE launched the second iteration of the Electrify Your Ride Program to provide rebates to residential, commercial/agricultural, and public agency customers. This revamped program will have a \$2.85 million incentive budget and will offer rebates to customers for

electric vehicles, EV chargers, EV readiness (to cover time and material electrical costs associated with installation, and E-bikes. In addition to offering more rebates, this program will also offer two levels of enhanced incentives for low-income customers, as well as an enhanced incentive for e-bikes purchased from local bike shops.

- *Agriculture Electrification Program:* In FY 21 - 22, CCCE is implementing the third iteration of the Agriculture Electrification Program to provide incentives to local agricultural businesses to replace fossil fuel powered equipment with all electric equipment, including irrigation pumps, tractors, and other ag-related equipment. This program has a \$600,000 incentive budget and will provide enhanced incentives for projects that will have GHG impacts and/or those applied for by “small businesses” in our service area. By replacing diesel (and other fossil fuel) powered equipment with all-electric equipment, CCCE helps reduce greenhouse gas emissions as well as human exposure to harmful petrochemicals and criteria pollutants associated with ag equipment. Many of the projects that CCCE has supported through this program have been in DACs and other low-income communities.
- *Electric School Bus Program:* In FY 21 - 22, CCCE launched the third iteration of the Electric School Bus Program to incentivize public schools and school districts to purchase all-electric school buses. For this program, CCCE reserved \$1 million and will continue to contribute up to 50% of the cost of a bus, not to exceed \$200,000. By electrifying school buses, CCCE is helping schools reduce greenhouse gas emissions and reduce the exposure of students and others to harmful air pollution. Several of the electric buses that CCCE has helped fund are in DACs and low-income or Title 1 school districts.
- *Electrify Your Home Program:* In FY 21 – 22, CCCE launched Electrify Your Home to provide incentives to contractors and installers who install all-electric heat pump water heating and space conditioning technologies in existing single-family homes and multi-family properties. This program has a \$1.6 million incentive budget and provides enhanced incentives for low-income customers. It also includes workforce education and training opportunities for local contractors focused on equipment installation and how to market and sell heat pump technology. This program will promote GHG emissions reductions, indoor air quality, occupant safety, and energy bill savings for customers by eliminating natural gas or propane equipment/appliances. CCCE will provide enhanced incentives for underserved customers including those who are low-to-moderate income and/or living in DACs.

As further discussed in Section IV (“Action Plan”) below, CCCE is committed to continuing to improve and maximize its Energy Programs portfolio to increase investment in DACs and reduce economic, health, and environmental burdens from burning fossil fuels.

#### e. Cost and Rate Analysis

CCCE finds its Preferred Conforming Portfolio is reasonable from a cost perspective. and achieves environmental, reliability, and other benefits in a cost-effective manner. The modeling CCCE conducted during the development of the PCP found that the resource composition of the PCP adequately



balanced cost and rate impacts with GHG reduction, system reliability, and other benefits described in this narrative.

#### f. System Reliability

CCCE's Preferred Conforming Portfolio meets reliability and peak demand requirements and will contribute to grid reliability. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

#### g. High Electrification Planning

If electrification drives CCCE's future demand higher than the current forecast, CCCE will maintain its procurement goals and procure additional resources to meet the new demand. CCCE would apply the same procurement approach and general priorities behind the Preferred Conforming Portfolio to the incremental resources, taking into account impacts the incremental demand might have on CCCE's load shape. If the incremental demand due to electrification were to significantly change CCCE's load shape, future resource solicitations would reflect CCCE's changing resource needs.

#### h. Existing Resource Planning

Seventeen of CCCE's nineteen PPAs to date are with new resources. Going forward, all of the planned resources and contracts in the Preferred Conforming Portfolio are new resources. CCCE's competitive solicitation process does not exclude existing projects from providing offers, so if an existing resource were to make a competitive bid it could be accepted. But the solicitation does indicate a preference for new construction in order to meet CCCE's commitment to 100% new clean and renewable resources by 2030.

#### i. Hydro Generation Risk Management

California's hydro generation system is vulnerable to drought and has experienced lower

than average hydro generation during droughts in 2007-2009 and 2012-2016. In a more recent year, 2021, the gross MWh produced excluding exports was the lowest since production began in 2001.<sup>1</sup> Bearing the threats of climate change, lower generation is anticipated to continue.

Electrical generation from hydroelectric facilities depends on the volume of water available to flow through turbine generators. A lack of precipitation in drought years creates low water availability and hence lower hydro generation output. Hydro systems without large reservoirs that can store water for multiple years and that can average out generation over time are at particular risk.

Drought risk can impact generation system reliability. For hydro generation systems with at least some water storage and dispatch flexibility, the risk primarily manifests as an energy constraint as opposed to a capacity constraint. During droughts, such systems can generate up to their maximum capacity for short periods of time but cannot do so for long periods because of a lack of water due to the drought. Hydro systems with no effective water storage will be energy and capacity limited in a drought.

In 2018, CCCE was awarded a small allocation of large hydro from the Central Valley Project (CVP) as provided for under Western Area Power Administration's 2025 Power Marketing Plan. The contract is 30 years in term, structured as a run-of-river for which CCCE will be responsible for its share of project cost. Deliveries from the contract will begin in 2025.

In CCCE's formative years, the agency previously relied on significant purchases of GHG-free energy from hydro generators to maintain its prior Board-approved goal of being 100% carbon free on its power content label. CCCE managed its hydrological risk by contracting with both Pacific Northwest (PNW) and California suppliers. The reduced availability of affordable large hydropower from the PNW contributed to CCCE adopting a new procurement strategy in 2020. That new strategy (to accelerate the procurement of clean and renewable resources) eliminated CCCE's reliance on short-term purchases of GHG-free large hydropower energy from existing in-state and out-of-state suppliers and instead increases the number of long-term contracts for new renewable resources in its portfolio. This approach includes geothermal resources that can deliver baseload generation. Thus, other than its small long-term contract for hydro energy, CCCE will not be reliant on hydro to meet its GHG emissions benchmarks in 2030 or 2035.

## j. Long Duration Storage Planning

Decision 21-06-035, or the Mid-Term Reliability (MTR) decision, ordered LSEs to procure 2,000 MW of long lead-time (LLT) resources by 2026. Half of this 2,000 MW must be long-duration storage and the other half firm, zero-emitting generation resources. CCCE's assigned portion of that 2,000 MW is 51 MW, creating a requirement of 25.5 MW of long-duration storage by 2026.

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<sup>1</sup> See [CEC CA Hydroelectric Statistics and Data \(2021\)](#)

[REDACTED]

#### k. Clean Firm Power Planning

Decision 21-06-035 requires CCCE to procure 25.5 MW of firm, zero-emitting resources by 2026.

[REDACTED]

#### l. Out-of-State Wind Planning

CCCE's Preferred Conforming Portfolio contains 475 MW of planned new out-of-state wind resources in 2026, adding an additional 180 MW in subsequent years for a total of 655 MW by 2035. This planned new wind is split between New Mexico, the Pacific Northwest, and Wyoming as shown in Table 6 below.

**Table 6. Annual Incremental Out-of-State Wind Resources in the Preferred Conforming Portfolio**

Wind Resource Type	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total MW
New Mexico	155	55	20	85	0	0	0	0	0	0	315
Pacific Northwest	280	20	0	0	0	0	0	0	0	0	300
Wyoming	40	0	0	0	0	0	0	0	0	0	40
Total MW	475	75	20	85							655

CCCE did model in-state wind as a potential resource, but it was not selected due to the higher prices compared to out-of-state options. However, CCCE's resource solicitation process is open to both in-state and out-of-state resources, and applies a qualitative bonus in the evaluation process to in-state offers. CCCE's one executed wind PPA to date has been with an in-state wind resource in Riverside County, California, and the actual distribution of future wind PPAs between in-state and out-of-state resources will depend on the characteristics of the specific offers received in future solicitations.

### m. Offshore Wind Planning

CCCE's Preferred Conforming Portfolio contains 200 MW of offshore wind in the Morro Bay area projected to come online in 2030. CCCE has been closely following the development prospects for offshore wind in the Morro Bay area, both for this resource's value as renewable generation with a relatively flat profile and high capacity factor and for the opportunity it presents to develop local generation resources.

In August 2019 CCCE entered into a Memorandum of Understanding (MOU) with Castle Wind LLC to demonstrate intention to negotiate a power purchase agreement to take a portion of a planned 1,000 MW floating offshore wind farm, 30 miles off the coast of the City of Morro Bay. The announcement of the federal auction for leases to be held on December 6, 2022 represents an important step forward in the development process, and CCCE hopes to sign a power purchase agreement for these resources once the process is sufficiently advanced. However, given the emerging nature of the technology and the extensive onshore infrastructure and process necessary to bring offshore wind resources online, the projected 2030 online date is an estimate and may need to be pushed back.

### n. Transmission Planning

Ensuring sufficient transmission to support the generation resources needed to reach California's grid decarbonization goals is an important challenge, and CCCE monitors plans for transmission expansion on the CAISO system. When selecting resources from among solicitation responses, the intersection with transmission planning is built in as an indirect selection criterion through interconnection status. However, apart from the storage and offshore wind resources planned for within CCCE's service area, CCCE does not solicit offers for projects in specific locations based on transmission planning. CCCE solicitations are open to projects from in- and out-of-state locations, and a variety of variables including cost, portfolio diversity, and contribution to CCCE's GHG reduction goals and compliance requirements are used alongside interconnection status to determine which offers are accepted. Securing deliverability more quickly by locating a planned project near available transmission capacity would make a developer's bid more competitive and more likely to be selected.

Following from this, the geographic distribution of planned resources in CCCE's Preferred Conforming Portfolio is an estimate of which resources will provide the most value to CCCE customers based on CCCE's procurement commitments and forecasted resource costs and generation characteristics. CCCE is not pursuing the specific geographic distribution of resources shown in the PCP, and if future solicitations show offers in other locations to be most competitive then they will be the ones selected. Availability of transmission capacity as reflected in interconnection status is one variable whose changing nature could affect which resources are ultimately selected.

## IV. Action Plan

### a. Proposed Procurement Activities and Potential Barriers

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

In Decision 19-11-016 the Commission ordered LSEs to collectively procure a total of 3,300 MW of incremental system capacity by 2023. CCCE's assigned share of that system capacity need is 57.4 MW.

[REDACTED]

#### ii. Resources to meet D.21-06-035 procurement requirements, including:

##### a. 1,000 MW of firm zero-emitting resource requirements

CCCE's assigned share of the 1,000 MW of firm zero-emitting resources required by Decision 21-06-035 is 25.5 MW. [REDACTED]

[REDACTED]

##### b. 1,000 MW of long-duration storage resource requirements

Decision 21-06-035 also required LSEs to procure 1,000 MW of long-duration storage resources by 2026. CCCE's assigned portion of this is 25.5 MW.

[REDACTED]

- c. 2,500 MW of zero-emissions generation, generation paired with storage, or demand response resource requirements

CCCE's assigned portion of this 2,500 MW is 63 MW. [REDACTED]

[REDACTED]

[REDACTED] CCCE encourages the Commission to structure any future IRP procurement mandates on a net short rather than pro rata basis, as discussed further in in section IV(c), Commission Direction of Actions.

- d. All other procurement requirements

[REDACTED]

[REDACTED]

While CCCE has and will continue to make an aggressive effort to comply with the timelines of D.21-16-035, several factors have complicated the process and provide insight into how future mandates might be more effectively structured. These are discussed further in section IV(c) on Commission Direction of Actions, and CCCE encourages Commission staff to structure future IRP resource mandates on a net short rather than pro rata load share basis. This will not address the resource delays caused by pandemic-related supply chain disruptions and other global events but will remove the perverse incentives created by the mandates themselves. [REDACTED]

[REDACTED]

- iii. Offshore wind

CCCE has actively been pursuing offshore wind opportunities. In 2019, CCCE signed a Memorandum of Understanding with Castle Wind LLC, the developer of the offshore Morro Bay project. CCCE anticipates

that the offshore wind will be online by 2030. After the conclusion of the Department of Interior's Bureau of Ocean Energy Management (BOEM) auction in late 2022 or early 2023, CCCE intends to run an RFO to select one of the developers who have secured site leases for developing floating offshore wind in the Morro Bay call area. The Preferred Conforming Portfolio includes 200 MW of offshore wind from the Morro Bay call area, an increase of 125 MW of offshore wind from CCCE's 2020 IRP submission.

#### iv. Out-of-state wind

CCCE's Preferred Conforming Portfolio includes 655 MW of out-of-state wind by 2030 with no additional capacity added by 2035. This is distributed between 315 MW in New Mexico, 300 MW in the Pacific Northwest, and 40 MW in Wyoming.

This geographic distribution should be viewed as an estimate and placeholder, because geographic distribution is not in and of itself a primary procurement goal for CCCE. CCCE does value portfolio diversity, and geographic diversity is part of that variable. But each marginal contract's contribution to geographic diversity depends on the contracts signed before it, so committing in advance to specific quantities in specific regions does not further that goal. The ultimate distribution of CCCE's out-of-state wind resources will depend on the specific offers CCCE receives in future solicitations. To this end, CCCE's ongoing competitive solicitations are structured to accommodate proposals for out-of-state wind resources. CCCE has also had bilateral discussions with developers for out-of-state wind resources that include planning for transmission availability.

#### v. Other renewable energy not described above

In addition to the efforts described above, CCCE will conduct competitive solicitations both independently and jointly with other load-serving entities to procure the resources needed to meet 100% of demand with new clean and renewable resources with monthly balancing by 2030.

#### vi. Other energy storage not described above

CCCE has is in process of implementing a Front-of-the-Meter battery storage program for large critical facilities within our service area. Critical facilities being investigated for participation include but are not limited to hospitals, fire stations, police stations, storage sites for critical records. CCCE intends to begin installing the first tranche of batteries at different 6 sites in 2023, with a goal of reaching 100 MW over the next several years.

#### vii. Other demand response not described above

CCCE's Preferred Conforming Portfolio does not contain additional demand response in excess of the state trajectory. However, CCCE is supporting demand response by participating in the residential Emergency Load Reduction Program.

#### viii. Other energy efficiency not described above

CCCE's Preferred Conforming Portfolio does not contain additional energy efficiency in excess of the state trajectory.

ix. Other distributed generation not described above

CCCE's Preferred Conforming Portfolio does not contain additional distributed generation in excess of the state trajectory.

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

CCCE is committed to continuing to improve its transportation electrification programs to increase investment in DACs and reduce economic, health, and environmental burdens from burning fossil fuels.

*Electrify Your Ride (EYR):* In FY 22 – 23 CCCE will launch the third iteration of its Electrify Your Ride Program. It will provide rebates to residential, commercial/agricultural, and public agency customers for electric vehicles, EV chargers, and EV readiness (to cover time and material electrical costs associated with installation). In addition to a larger program budget and enhanced incentives for low-income customers, the FY 22 – 23 program will offer incentives for Level 3/DC Fast Charger equipment at publicly available sites and free concierge services to multifamily and publicly available property owners to procure EVSE. Site selection for DCFC infrastructure will focus on disadvantaged, underserved, and low-income communities.

*Electric Bus Program:* In FY 22 - 23 CCCE will launch the fourth iteration of its Electric Bus Program to incentivize public schools and school districts, as well as public transit agencies to purchase all-electric buses. By electrifying buses, CCCE is helping schools and public transit agencies reduce greenhouse gas emissions and reduce the exposure of students and passengers to harmful air pollution. CCCE will continue to place emphasis on supporting schools located in DACs and low-income communities.

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

CCCE is committed to continuing to improve and grow its building electrification programs to increase investment in DACs and reduce economic, health, and environmental burdens from burning fossil fuels.

*New Construction Electrification Program (NCEP):* In FY 22 – 23, CCCE will launch the fourth iteration of its New Construction Electrification Program. This program will continue to offer incentives to local housing developers to construct all-electric affordable, multi-family housing projects across CCCE's service area. In addition, this program will offer incentives for all-electric and affordable farmworker housing and Accessory Dwelling Units, as well as infill projects and wildfire rebuilds. NCEP reduces GHG emissions while simultaneously improving indoor air quality, occupant safety, and energy bill savings for customers by eliminating natural gas or propane equipment/appliances.

*Electrify Your Home Program (EYH):* In FY 22 - 23, CCCE will launch the second iteration of its Electrify Your Home to provide incentives to contractors and installers who install all-electric heat pump water heating and space conditioning technologies in existing single-family homes and multi-family properties. This program will continue to provide enhanced incentives for low-income customers and workforce education and training opportunities for local contractors focused on equipment installation



and how to market and sell heat pump technology. EYH reduces GHG emissions while simultaneously improving indoor air quality, occupant safety, and energy bill savings for customers by eliminating natural gas or propane equipment/appliances.

## **b. Disadvantaged Communities**

CCCE supports a wide array of community, business, and trade organizations that promote the growth and development of small and diverse businesses, as well as the health and economic well-being of disadvantaged communities across the CCCE service territory. As part of CCCE's ongoing commitment to economic vitality throughout the Central Coast, CCCE staff attended, sponsored and facilitated over 300 events and external activities during 2021-2022. These opportunities enable CCCE to share resources and provide information about CCCE's energy programs available to eligible customers, utility payment assistance, and the benefits of using clean and renewable power. CCCE looks forward to continuing supporting these events and activities in the future.

In addition to supporting events, CCCE staff hosted virtual webinars, workshops, and public forums to bolster outreach and gather valuable feedback about community needs and increase participation in energy programs.

### **Community Advisory Council**

CCCE has a Community Advisory Council (CAC) comprised of fifteen members, each representing a geographic region of CCCE's service area. The CAC provides feedback on CCCE's proposals and policy recommendations and advocates for their community needs. CCCE utilizes this council as a direct link to the communities we serve and gains local insight to the unique circumstances and happenings of our geographically diverse service area to better serve our customers.

### **Underserved Communities Outreach Plan**

CCCE staff worked with its Community Advisory Council on a comprehensive Underserved Communities Outreach Plan based on community feedback, staff insights, and recommendations from community-based organizations. The plan covers advertising, event sponsorships and strategic partnerships as well as identifying needs and geographical location of vulnerable populations.

### **CCCE Webinars in English and Spanish**

CCCE staff hosted dozens of virtual events to educate households and businesses about CCCE services, enrollment, and energy programs. To best accommodate all members of enrolling communities, events were offered during lunchtime hours, in the afternoon and evenings. All events had at least one option entirely in Spanish. While not directly focused on contracting opportunities, these outreach activities provided a critical introduction to CCCE and its business activities to our expansive and diverse service area. In 2021 and 2022 CCCE increased participation in activities and outreach to economic development organizations that represented local and diverse business owners to encourage vendor registration and increase awareness around energy programs available to local small to medium business owners.

**Community Immigrant Services Network of Empowerment (CISNE) Round Table**

CCCE staff participated in monthly round table meetings attended by regional non-profits and community organizations that support disadvantaged and underserved communities.

**Field Farmworker Outreach Promotion**

In partnership with Univision, La Tricolor 99.5, La Ley 100.3 and Entravision, CCCE is continuing its commitment to educating farmworkers, many of whom are part of the region's most ethnically diverse and disadvantaged communities. Although COVID-19 restrictions limited activities in 2020, CCCE continued meeting with the advisory group on a quarterly basis to provide updates, share resources, identify areas for improvement and assist with the ongoing planning and preparation for CCCE energy programs. In addition to the relaunch of the Farmworker Outreach promotion in Monterey County in 2021, CCCE was also able to leverage these same partnerships and expand outreach to farmworkers in Santa Barbara County as well. During the 2021 promotional season CCCE distributed Personal Protective Equipment to over 500 farmworkers over a total of 10 events.

**Promotores of San Luis Obispo and Santa Barbara Counties**

CCCE participates in regular meetings, resource fairs, and webinars with the Promotores to provide resources to the underserved Hispanic communities. The Promotores effort replicates the successful Community Immigrant Services Network of Empowerment (CISNE) Round Table that is active in CCCE's northern service area.

**Fund for Santa Barbara County**

CCCE participates in regular meetings attended by nonprofits and community leaders to share resources and discuss opportunities to support underserved communities.

**California Green Business Network**

CCCE works closely with three Green Business Certification Programs in its service area to provide direct support to local green business owners looking to opt up to CCCE's 100% renewable energy offering, 3CPrime.

**CCCE Underserved Communities Ad Hoc Committee**

Staff worked with an ad hoc committee of the Community Advisory Council to develop a plan informing (1) how CCCE defines underserved communities; (2) how CCCE engages and supports underserved communities; (3) specifying CCCE's role in outreach and engagement activities with underserved communities, including program design and outreach, and (4) identifying strategies and tactics to improve engagement with the underserved communities, including translation of written materials and collaboration with Community-Based Organizations.

### **Broadband Access**

The agency continues to pursue opportunities to support broadband access for underserved communities, which is vital to economic participation and opens the door to power demand management programs that will increase reliability as the grid shifts to cleaner power.

### **Supporting Small, Local, and Diverse Businesses**

In 2021, CCCE also filed its first Supplier Diversity Report with the Commission as the foundation for continued and transparent growth in this area of community reinvestment. Procurement and spending activities are directed whenever possible to small, local, and diverse business enterprises. In so doing, CCCE maximizes its economic impact in the region, delivers on the promise of its mission, and works toward meeting the statewide objectives set by Senate Bill 255. Additionally, many program incentives are tiered to provide the greatest benefit to customers with the fewest resources, thereby encouraging greater participation by those who have historically faced barriers to access.

### **Energy Programs**

CCCE's Energy Programs are designed help to address equity and the unique needs and priorities of the Central Coast's diverse communities. Achieving these objectives requires consistent community engagement to gain a clear understanding of what CCCE communities need most. It also requires that programs be designed, funded, and implemented to increase access for customers living in disadvantaged, underserved, and low-income communities. All of CCCE's energy programs will continue to have equitable access as a key design, implementation, and outreach consideration. Nearly all programs will offer increased incentives for income-qualified applicants. Other programs have or will have funding allocation criteria or targets specific to DACs. And others may not exclusively target disadvantaged communities but will nevertheless provide significant equity benefits. For example, our New Construction Electrification Program has and will fund affordable housing and our Electric Bus Program will support Title 1 schools and mass transportation.

## **c. Commission Direction of Actions**

While CCCE has and will continue to make an aggressive effort to comply with the timelines of D.21-16-035, several factors have complicated the process and provide insight into how future mandates might be more effectively structured. Firstly, by assigning capacity requirements on a pro rata load share basis, the mandate's structure penalizes the load-serving entities that were most proactive in contracting for new clean resources. CCCE has multiple long-term PPAs that were excluded from compliance with D.19-11-016 and D.21-16-035 for being executed too soon. These contracts reflect an effort begun immediately upon CCCE's launch based on CCCE member communities' commitment to decarbonizing the grid as quickly as possible. They contribute to grid decarbonization and reliability and thus presumably lowered the incremental capacity need mandated in D.19-11-016 and D.21-16-035.

However, the pro rata structure of the mandates meant that these investments did not reduce CCCE's incremental capacity obligation. If resource investments made in the present have no effect on the size

of procurement mandates an LSE may receive in the future, LSEs are incentivized to wait until each mandate is issued to sign contracts rather than pursuing new resources proactively in order to avoid over-procurement. Given that the stated goal of D.19-11-016 and D.21-16-035 is to bring new capacity online more quickly, the structure of the mandates creates an incentive for LSEs that is directly counter to the policy goals of these two decisions. In the future, CCCE recommends that the Commission structure any mandates on a net short rather than pro rata basis, sizing each LSE's incremental capacity requirement to reflect the contributions it has already made to grid reliability and decarbonization.

Secondly, the public, compressed, and uniform procurement timeline imposed on all LSEs by these two decisions has combined with external market circumstances to encourage rent-seeking behavior by developers that is slowing resource development. The compressed timeline on which LSEs must meet these requirements has created a price premium for projects eligible towards compliance with these two Decisions. Over the past several years legitimate supply chain disruptions caused by the pandemic and other events have caused and continue to cause delays and cost increases for many new resource projects. However, in some cases developers have also sought termination of contracts that were executed early enough to be ineligible for compliance but, if terminated, would be eligible for resale at a much higher price due to the new contract date making them compliance-eligible. These disputes take time that delays bringing the resources online and effort that could otherwise have been spent pursuing additional new resources. This is another way in which the current mandate structure leads to inefficient outcomes, because the cutoff date for eligible compliance resources creates an arbitrary value divide between "baseline" and "incremental" resources that does not reflect a difference in the grid services provided.

CCCE acknowledges that the Commission is examining the structure of future IRP procurement mandates as well as potential changes to resource eligibility for D.19-11-016 and D.21-16-035 compliance, and looks forward to working further Commission staff on these efforts.

## V. Lessons Learned

CCCE appreciates the updates the Commission has made since the last IRP cycle to make IRP development more efficient and provide the Commission with more accurate information. The ability to submit a single Preferred Conforming Portfolio if that portfolio met the GHG benchmarks of the 25 MMT GHG scenario was significant improvement, as it avoided the need to create a second PCP solely for IRP compliance purposes that did not reflect CCCE's procurement goals or planned future actions. This was the case with CCCE's 46 MMT scenario in the previous cycle.

The addition of an automatic Clean System Power calculator input table to the Resource Data Template was also very helpful. In the previous cycle many of these conversions had to be done manually by each LSE, leaving room for variation and error. Being able to copy and paste the RDT outputs directly into the CSP ensures that all IRPs are being evaluated uniformly.

## **Glossary of Terms**

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

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

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

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

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

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

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

**Clean System Power (CSP) methodology:** the methodology used to estimate GHG and criteria pollutant emissions associated with an LSE’s Portfolio based on how the LSE will expect to rely on system power on an hourly basis.

**Community Choice Aggregator:** a governmental entity formed by a city or county to procure electricity for its residents, businesses, and municipal facilities.

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

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

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

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

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

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

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

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

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

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

**Long term:** more than 5 years unless otherwise specified.

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

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

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

**Loss of Load Expectation (LOLE):** a metric that quantifies the expected frequency of loss-of-load events per year. Loss-of-load is any instance where available generating capacity is insufficient to serve electric demand. If one or more instances of loss-of-load occurring within the same day regardless of duration

are counted as one loss-of-load event, then the LOLE metric can be compared to a reference point such as the industry probabilistic reliability standard of “one expected day in 10 years,” i.e. an LOLE of 0.1.

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

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

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

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

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

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

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

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

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

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

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

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

**Standard LSE Plan:** type of integrated resource plan that an LSE is required to file if it serves load within the CAISO balancing authority area (unless the LSE demonstrates exemption from the IRP process).

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