Standard LSE Plan

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

2026 INTEGRATED RESOURCE PLAN

August 10, 2026

Table of Contents

I. Introduction & Executive Summary 1
II. Study Design 1
a. Objectives 3
b. Methodology 4
i. Modeling Tool(s) 4
ii. Modeling Approach 5
iii. Alternative Assumptions 7
III. Study Results 7
a. Conforming and Alternative Portfolios 7
b. Preferred Conforming Portfolio 9
c. GHG Emissions Results 12
d. Local Air Pollutant Minimization and Disadvantaged Communities 13
i. Local Air Pollutants 13
ii. Focus on Disadvantaged Communities 13
e. Cost and Rate Analysis 16
f. System Reliability Analysis 16
h. Hydro Generation Risk Management 20
i. Long-Duration Storage Planning 21
j. Clean Firm Power Planning 21
k. Non-CAISO, including Out-of-State, Wind Planning 21
l. Offshore Wind Planning 21
m. Transmission Planning 22
IV. Action Plan 23
a. Proposed Procurement Activities and Potential Barriers 23
i. Resources to meet IRP mandated procurement requirements, including D.21-06-035 and D.23-02-040: 24
ii. Plans for resources that are currently non-candidate in CPUC's IRPs not described above 24
iii. Other renewable and/or zero carbon resources not described above 24
iv. Other energy storage not described above 24
v. Other demand response not described above 24
vi. Other energy efficiency not described above 24
vii. Other distributed generation not described above 24

viii. Transportation electrification, including any investments that correspond to different levels than what is included in Integrated Energy Policy Report (IEPR) 25

ix. Building electrification, including any investments that correspond to different levels than what is included in Integrated Energy Policy Report (IEPR) 25

x. Potential Centralized Procurement, pursuant to AB-1373 25

xi. Other 26

b. Disadvantaged Communities (DACs) 26

c. LSEs' Tribal Customers 26

d. Procurement Products 27

e. Commission Direction of Actions 27

V. Lessons Learned 27

Glossary of Terms 28

I. Introduction & Executive Summary

The University of California is the world's leading public research university system, comprised of 10 campuses, 5 medical centers, 3 national labs, approximately 300,000 students and 220,000 faculty and staff. The Regents of the University of California ("UC"), in its role as an Electric Service Provider ("ESP"), does not have a service area and does not serve customers in the traditional sense. Instead, UC manages an energy supply portfolio on behalf of participating Direct Access ("DA") campuses and facilities through a combination of short- and long-term purchases and sales. UC is the primary commodity electricity provider for the following UC campuses and facilities:

- UC San Francisco and Medical Center
- UC Berkeley
- UC Santa Cruz
- UC Merced
- UC Santa Barbara
- UC Irvine and Medical Center
- UC San Diego and Medical Center
- UC Office of the President
- Portions of UC Davis and Medical Center, UC Los Angeles and Medical Center, and UC Agriculture and Natural Resources Facilities

UC's Clean Power Program ("CPP") operates as a cost-based, not-for-profit ESP and only serves UC-affiliated DA-eligible electricity accounts. Our renewable energy solicitations are typically aimed at procuring renewable energy for all UC campuses, not limited to the needs of UC's Clean Power Program. For this reason, and as a result of ongoing internal portfolio optimization, the ultimate resource mix that is retired for compliance purposes may differ from the currently planned or procured quantities.

In accordance with the requirements of California Public Utilities Code ("PUC") Sections 454.51 and 454.52 and California Public Utilities Commission ("Commission" or "CPUC") Decision ("D.") 18-02-018, D.22-02-004, *Administrative Law Judge's Ruling Setting Requirements for Individual Integrated Resource Plans Due June 1, 2026*,[1] *Email Ruling Granting Joint Request for Extension of Load Serving Entity ("LSE") Integrated Resource Plan ("IRP") Filings*,[2] and

[1] Rulemaking ("R.") 25-06-019, *Administrative Law Judge's Setting Requirements for Individual Integrated Resource Plans Due June 1, 2026,* issued on January 1, 2026 ("Final Load Forecast and GHG Benchmark Ruling"), January 16, 2026.

[2] R.25-06-019, *Email Ruling Granting Joint Request for Extension of Load Serving Entity ("LSE") Integrated Resource Plan ("IRP") Filings*, March 9, 2026.

guidance provided by the Commission's Energy Division,[3] UC is providing its LSE-specific IRP to the Commission for certification and use in the Commission's statewide planning process.

This narrative provides a detailed description of the development and content of UC's Preferred Conforming Portfolio ("PCP"), the portfolio's compliance with applicable requirements, and an action plan detailing UC's next steps (to promote conformance with such requirements).

UC developed its IRP through the following steps:

- UC compiled data for its existing energy contracts, RA capacity contracts, and its share of capacity for allocated Cost Allocation Mechanism ("CAM") resources using the guidance provided by the Energy Division.
- For each IRP planning year, UC identified its short positions relative to known planning targets and its assigned load forecast.
- UC populated the Resource Data Template ("RDT") with all current contracts.
- UC identified future contracts it expects to secure for new solar, wind, and geothermal resources. UC prioritized the selection of future resources to ensure that UC's overall portfolio of new resources is varied, meets all regulatory goals and meets the goals expressed by UC's procurement and sustainability policies.
- UC used the Commission's Clean System Power ("CSP") calculator to check the GHG emissions associated with the resulting portfolio to ensure that these emissions are equivalent to or less than UC's assigned share of the 8 MMT benchmark.
- UC identified the resulting portfolio as both its 8 MMT Preferred Conforming Portfolio.
- UC checked its 8 MMT conforming portfolio for reliability by comparing the total portfolio net qualifying capacity ("NQC") against UC's RA requirements and adding in sufficient RA capacity to ensure reliability. UC's reliability sufficiency was verified through the "Reliability" tab of UC's 8 MMT Resource Data Template.

UC reached the following findings regarding its PCP:

- UC's PCP includes the procurement of the following resources:
    - New solar resources totaling 115 MW
    - New wind resources totaling 137 MW
    - New geothermal resources totaling 40 MW
    - Existing combined cycle resources totaling 56 MW (Capacity-Only)
    - Existing geothermal resources totaling 75 MW (Capacity-Only)
- UC's PCP provides for the following overall resource mix in 2045:
    - 115 MW of solar
    - 176 MW of wind
    - 40 MW of geothermal
    - 75 MW of geothermal (Capacity-Only)

[3] Energy Division Guidance can be accessed at: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/2024-27-irp-cycle-events-and-materials.

- The CSP calculator indicates that UC's PCP would result in 2045 emissions of -0.02 MMT. This is less than UC's assigned share of 2045 emissions [redacted]
- UC's PCP meets all relevant reliability metrics.

To implement its PCP, UC has developed the Action Plan described in Section IV, below. This action plan consists of continuing to monitor market, price, and technology trends, and conducting periodic solicitations for new resources as needed to comply with all applicable Commission directives in tandem with pursuing UC system-wide clean energy and other internal policy goals.

II. Study Design

Load Assignments for Each LSE

UC used the finalized energy and peak demand load forecasts and behind-the-meter photovoltaic ("BTM PV") information that has been developed pursuant to an ALJ January 16th, 2026 Ruling.

Required and Optional Portfolios

UC has developed a single portfolio using our individual load assignment along with inputs and assumptions consistent with the finalized materials posted on the 2024-2026 IRP Cycle Events and Materials Website and designated it as our Preferred Conforming Portfolio ("PCP"). This portfolio is consistent with state goals because it achieves emissions that are equal to or less than UC's assigned proportional share of an 8 MMT by 2045 GHG target and complies with all other conforming portfolio requirements. The RDTand CSP calculator included with this Narrative Template are consistent with UC's PCP.

GHG Emissions Benchmark

Since UC is an Electric Service Providers (ESP) with load in all three IOU service territories, we used the table in the "ESP GHG Benchmark" tab of the CSP calculator to calculate our own confidential GHG Emissions Benchmarks based on our 2045 direct access load shares within each IOU service territory.

a. Objectives

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

1. Identify an 8 MMT Conforming Portfolio with emissions equal to or less than UC's proportional share of the 8 MMT GHG reduction benchmarks, as determined using the Commission's emissions calculator.
2. Identify an 8 MMT portfolio that achieves economic, reliability, environmental, security, and other benefits and performance characteristics that are consistent with the goals set forth in Section 454.52(a)(1)(A-I).

3. Identify a portfolio that achieves the resource adequacy ("RA") requirements established pursuant to PUC Section 380 and provides UC's share of system reliability resources.
4. Identify a portfolio that complies with all of UC system-wide goals and policies.
5. Identify a portfolio that is compliant with UC's obligations under the Renewables Portfolio Standard ("RPS") program.
6. Identify a portfolio that is cost-effective.

b. Methodology

i. Modeling Tool(s)

UC used multiple modeling tools to develop its IRP, including Python for Power System Analysis ("PyPSA Model"), an open-source portfolio optimization model, and the CSP calculator developed by the CPUC. UC used the PyPSA Model to build portfolio evaluation scenarios. UC used these results to evaluate the incremental value of each candidate resource and portfolio configuration. Finally, UC evaluated the overall financial impact of its Preferred Conforming Portfolio ("PCP") to our financial outlook utilizing PyPSA Model outputs that track portfolio optimization outcomes in a least-cost framework.

PyPSA Optimization Model

PyPSA (Python for Power System Analysis) is an open-source framework for simulating and optimizing modern power systems. The multi-period investment optimization feature simultaneously optimizes capacity expansion across all investment periods (2026–2045), enabling the model to weigh near-term costs against long-term benefits while respecting technology learning curves, policy constraints (including the 8 MMT GHG emissions by 2045 mandate), and resource availability windows. By co-optimizing dispatch and investment decisions across the full planning horizon at once, the PyPSA Model identifies least-cost portfolio pathways that meet both reliability and decarbonization objectives.

The model represents UC's system as a two-node network: a UC node, comprising UC's existing and contracted resource stack, and a Market ("MKT") node, comprising candidate resources UC is evaluating for procurement. The two nodes are connected by a link that allows the optimizer to serve UC load from either node. UC's planning horizon is represented by five snapshot years (2028, 2030, 2035, 2040, and 2045) at hourly resolution, each treated as a representative investment period; the optimizer selects capacity for extendable Market resources and dispatches all resources simultaneously, subject to a system-wide CO_2 GHG emission constraint (0 metric tons by 2045) and a capacity-persistence constraint requiring that once a resource is contracted or built, its capacity cannot decrease during its operating life.

The PyPSA Model resembles RESOLVE in the sense that both are least-cost capacity-expansion and dispatch optimization tools operating over a multi-year planning horizon subject to policy and reliability constraints. The PyPSA Model differs from RESOLVE in some aspects because it uses specific contract economics to model take-or-pay obligations for both existing and potential resources, as opposed to a generalized levelized cost of energy approach. Regardless, they serve similar roles. The PyPSA Model allows for more efficient simulation of dispatch over long time horizons, allowing UC to consider a wider range of resource scenarios in constructing candidate portfolios. More simply, it allows UC to iterate through potential options much faster than RESOLVE.

Given that SERVM is used to calculate LSEs' allocated IRP reliability needs, it serves a different purpose than the PyPSA Model for evaluating resource portfolios. Inputs from SERVM are used to ensure the optimal portfolio selected from various iterations of the PyPSA Model meets the allocated reliability needs. In other words, SERVM serves a different modeling purpose than PyPSA and SERVM's results are a requirement UC's conforming portfolio adheres to.

Clean System Power Calculator

The CSP calculator is a tool developed by the CPUC for LSEs to estimate GHG emissions associated with their IRP portfolios. As stated in the CSP Tool Documentation, "The core function of the CSP calculator is to assign emissions associated with the CAISO system's dispatchable thermal generation and unspecified imports ("system power") to LSEs based on how each LSE plans to rely on CAISO system power to meet its load on an hourly basis. The tool also calculates emissions from other generation sources that can be attributed to an LSE's resource portfolio, including combined heat and power ("CHP") and coal, as well as criteria pollutant emissions from biogas and biomass. The CSP tool relies on hourly dispatch profiles and results from the CPUC's SERVM production cost and reliability model." UC used data from the CSP calculator as inputs to its IRP modeling, specifically annual load volumes at the generator busbar and hourly generation profiles of the specific technology types being evaluated.

ii. Modeling Approach

Load Forecast

UC developed this IRP using its assigned load forecast from the file "UCOP 2026 Filing Requirements Data" which was provided to us confidentially. As an ESP, UC was required to calculate its own confidential GHG Emissions Benchmarks based on its 2045 load shares, which it did by utilizing the "ESP GHG Benchmark" tab in the CSP calculator. UC also utilized the calculated demand at the utility-scale generator busbar as determined by the "Demand Inputs" tab of the CSP calculator.

UC's assigned load forecast and corresponding calculated demand at the busbar for the IRP Model Years (2028, 2030, 2035, 2040, 2045) are as follows:

Table 1: UC's IRP Model Years Load Forecast (GWh)

Year	Load Forecast	CSP Demand at Busbar
2028	[redacted]	
2030		
2035		
2040		
2045		

Load Shape

In developing its portfolio, UC used the default load shape from the CSPCalculator, which reflects the California Independent System Operator ("CAISO") hourly system average load shape forecast for the 2024 Integrated Energy Policy Report ("IEPR") Demand Forecast. UC also elected to specify that approximately 95% of UC's baseline demand comes from Commercial and Industrial ("C&I") loads, based on UC's historical load shape and unique service model. This customer input does not change UC's total annual energy volumes for both load and load modifiers, and these energy volumes remain consistent with UC's assigned load forecast.

Load-Proportional GHG Emissions Benchmark

UC's modeling was assessed against its 2045 load-proportional share of the 8 MMT benchmark, utilizing the CSP Calculator's "ESP GHG Benchmark" tab. This assessment yielded the following results:

Table 2: UC's Shares of GHG Reduction Benchmark

2045 Load Forecast (GWh)	UC's Share of Total 2045 Load within CAISO System	2045 GHG Benchmark (MMT)
[redacted]		

Compiling Existing Resources

To populate its baseline resource templates, UC added existing resources from the following procurement categories:

- Energy Contracts
- Capacity (Resource Adequacy) Contracts
- UC's assigned share of capacity for CAM resources, taken from Energy Division's Aggregated CAM Resources for LSEs Plan Development

Selecting New Resources

To identify its new resource procurement opportunities, UC utilized candidate generic solar, onshore wind, conventional geothermal, enhanced geothermal, and battery storage resources.

To identify the list of candidate specified and generic resources, UC referred to the CPUC's TPP Portfolio and other candidate resources included in the CPUC's Inputs and Assumptions Report.

Prices and maximum capacity constraints were set for each candidate resource based on the CPUC's Inputs and Assumptions Report. Hourly capacity factors for each resource type were pulled from the CSP calculator, to determine the generation profiles for all modeled resources, whether contracted or candidate. UC input the results of each PyPSA Model run into the CSP calculator and RDT to check for compliance with the assigned GHG emissions benchmarks and reliability needs. Additional model runs were completed as necessary to optimize the portfolio results, ensure reliability, and reduce reliance on system power.

Confirming Reliability
UC's portfolio was evaluated to ensure that sufficient dependable capacity (i.e., NQC) is available to meet peak load requirements. UC used technology-specific Effective Load Carrying Capacity ("ELCC") factors provided by the Commission to assess the contribution of each resource to system reliability.

Calculating GHG Emissions
UC calculated the emissions associated with its 8 MMT conforming portfolios using the Commission's CSPcalculator. The assigned load forecast, default load shapes, and behind the meter adjustments were used for this assessment, along with the planned supply portfolios. The results were checked against UC's calculated system-wide GHG Benchmark.

iii. Alternative Assumptions

UC did not adopt any alternative assumptions in place of the Commission's applicable Inputs and Assumptions.

III. Study Results

a. Conforming and Alternative Portfolios

As required by the Commission, UC is submitting a conforming portfolio that achieves UC's share of the 8 MMT by 2045 GHG target. UC is not submitting alternative portfolios.

UC's 2026 PCP
Table 3, below, provides a summary of UC's PCP in 2045, identifying resources by type and distinguishing between the following procurement categories:

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

In summary, to meet UC's projected 2045 retail energy demand of [redacted] as well as overall calculated busbar-level demand of [redacted], UC has selected a PCP composed primarily of the following resources:

- Existing wind (owned or under contract) – 39 MW
- New solar (future resources) – 115 MW
- New wind (future resources) – 137 MW
- New geothermal (future resources) – 40 MW

Table 3: UC's Preferred Conforming Portfolio Resource Category Breakdown

Resource Category[4]	Under Development	Owned or Contracted	Planned Existing	Planned New	Total
Existing OOS Wind	0	129	0	0	**129**
New CA Solar	0	0	0	325	**325**
New OOS Wind	0	0	0	329	**329**
New CA Wind	0	0	0	96	**96**
New Geothermal	0	0	0	306	**306**

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

- Existing combined cycle (planned procurement) – 56 MW
- Existing geothermal (planned procurement) – 75 MW

UC's PCP includes a mix of existing and new resources. Approximately 292 MW of UC's PCP is new nameplate capacity, reflecting UC's role as an active player in the State's development of new renewable resources. Furthermore, UC's PCP is comprised of a mix of resources by which UC can minimize program costs on behalf of participating campuses while still achieving the State's GHG-reduction targets.

UC's PCP Is Consistent with the 2025-2026 TPP Portfolio

UC's PCP is consistent with the procurement timing, resource mix, and operational attributes of the 2025-2026 Transmission Planning Process Portfolio with updates ("TPP Portfolio"),[5] as demonstrated in the following table:

[4] Quantities in GWh, unless otherwise noted.

[5] D.25-02-026, Decision Transmitting Electricity Resource Portfolios to The California Independent System Operator for 2025-2026 Transmission Planning Process, Feb. 26, 2026; D.25-07-043, Order Modifying and Denying Rehearing of D.25-02-026, July 25, 2025.

Table 4: New Build Comparison of UC's PCP vs 2025-2026 TPP Portfolio

Resource Category	UC's PCP (MW)	2025-2026 Base Case (MW)
Natural Gas	0	0
Geothermal	40	1,600
Biomass	0	200
In-State Wind	40.5	9,000
Out-of-State Wind	136	15,700
Offshore Wind	0	4,500
Solar	115	61,800
Li-ion Battery (4-hr)	0	15,700
Li-ion Battery (8-hr)	0	21,100
Pumped Hydro Storage (12-hr)	0	800
Long Duration Storage (8-12 hr)	0	500
Shed DR	0	0

UC's planned new procurement is relatively aligned with the Planned and Selected Capacity included in the 2025-2026 TPP Portfolio, in that the need for incremental wind (both in-state and out-of-state), solar, and geothermal have been identified. To the extent that the 2025-2026 TPP Portfolio assumptions for long lead time ("LLT") resources pursuant to AB 1373 are realized, UC would be able to claim a proportional share of Long Duration Energy Storage [redacted] Offshore Wind [redacted] and Geothermal [redacted] capacity. Such LLT resources are often difficult for individual LSEs to procure, because of the mismatch between project scale and LSE need, particularly for small LSEs such as UC. Incorporation of assumed AB 1373 procurement would bring UC's PCP into greater alignment with the 2025-2026 TPP Portfolio.

b. Preferred Conforming Portfolio

As demonstrated in Table 3, UC's PCP consists of a combination of:

- In-State Wind;
- Out-of-State Wind;
- Solar;
- Combined Cycle (capacity-only);
- Geothermal (energy and capacity-only);

As stated above, in accordance with Section 454.51(b)(3), UC has determined that the resource mix in its PCP achieves "economic, reliability, environmental, security, and other benefits and performance characteristics that are consistent with the goals set forth in [Section] 454.51(a)(1)]." These benefits and characteristics are discussed as follows.

Portfolio GHG emissions across the IRP Planning Horizon

Emissions from UC's selected zero-carbon resources (wind, solar, geothermal) are zero. Portfolio-wide emissions are therefore driven entirely by system power dispatch in the PyPSA Model. UC presents both the modeled dispatch emissions and the resulting CSP Emissions calculation to present a more comprehensive assessment of UC's PCP emissions performance. UC's PCP meets the benchmark in all model years based on either the gross calculated emissions from system power or via the CSP emissions results calculations.

Table 5: UC's GHG Benchmark vs PCP Emissions

Year	ESP GHG Benchmark (MMTCO2e)	PyPSA Model Calculated Emissions (MMTCO2e)	CSP Emissions Results (MMTCO2e)
2028	[redacted]	0.181	0.162
2030		0.033	0.028
2035		0.027	-0.005
2040		0.028	-0.046
2045		**0**	**-0.017**

60 percent Renewable Energy by 2030

UC's PCP achieves results and performance characteristics consistent with the Section 454.52(a)(1)(B) goal of ensuring that portfolios are composed of at least 60% eligible renewable resources. In 2030, UC's PCP would consist of 102% eligible renewable generation which meaningfully exceeds the 60% target.

Enable Each Electrical Corporation to Fulfill Its Obligation to Serve Customers at Just and Reasonable Rates

According to the PyPSA Model results, UC's Preferred Conforming achieves a blended, load-weighted cost of [redacted] per MWh across the 2028–2045 planning horizon [redacted] The portfolio is the result of a co-optimized capacity-expansion and dispatch model, which by construction selects the least-cost combination of contracted and market resources capable of meeting the load forecast in every hour of every modeled year, subject to a 2045 zero-carbon constraint. This co-optimization mechanically satisfies the "just and reasonable rates" test: no lower-cost feasible portfolio exists within the candidate resource set.

Minimizing Bill Impact

UC's PCP is expected to be reasonable from a cost perspective. In selecting resources for its conforming portfolios, UC carefully considered the cost implications of specific resource selections and procurement timing. This analysis was informed by UC's procurement experience and the standard assumptions and results of the Commission's RESOLVE/SERVM modeling. UC's procurement cycle is designed to take advantage of technological and cost improvements by incrementally adding new resource commitments over time.

Ensuring System and Local Reliability

UC's PCP achieves results and performance characteristics consistent with goal of ensuring system and local reliability, including the resource adequacy requirements of Section 380. While Pacific Gas and Electric ("PG&E") and Southern California Edison Company ("SCE") are responsible for procuring local resource adequacy within their service areas under the Central Procurement Entity framework, UC continues to procure local resource adequacy capacity as required within the San Diego Gas & Electric Company ("SDG&E") service area.

Ensure that at least 65 percent of RPS Procurement is From Long-Term Contracts

Consistent with Section 399.13(b)(1), UC's PCP is on pace to meet the requirement that 65% of its Renewables Portfolio Standards ("RPS") procurement must come from contracts of 10 years (long-term) or more for each compliance period. As discussed in UC's Draft 2026 RPS Procurement Plan, contracts with resources that are currently online are expected to meet the 65% long term RPS requirement through 2030, and the additional procurement identified in this IRP will supplement and eventually replace those resources as they reach the end of their contract terms.

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

UC's PCP relies on procurement from a variety of resource types including solar and wind, which have complimentary generation profiles, and geothermal, which provides baseload renewable energy. UC carefully evaluates the long-term generation load-matching and congestion risks of new resources and weighs potential options in the context of its existing supply and net demand on an hourly basis for the full duration of any contract period. UC's PCP achieves results and performance characteristics that strengthen the diversity, sustainability and resilience of the bulk transmission and distribution systems, as well as local communities.

Demand-Side Energy Management

On the demand side, UC campuses have extensive energy infrastructure that provides opportunities to shift load and, in some cases, even export electricity. Notably, the Governor's office has contacted UC in the past to request emergency grid support during extreme heat events. UC has continued to work on identifying opportunities that can provide additional grid support during emergency heat events, incremental to ramping down use of HVAC and lighting on campus. Options include expansion and optimization of thermal energy storage resources on campuses, along with providing ancillary grid support from other campus generation and storage resources including batteries, cogeneration facilities and backup generation units in situations with extreme supply shortfall. UC campuses cooperate to provide emergency support, where feasible, including ongoing participation in IOU demand response ("DR") programs such as the Emergency Load Reduction Program ("ELRP"), and working with DR aggregators to provide resource adequacy and other grid support. Overall, UC campuses operate like small to medium sized cities with on-site energy resources and building controls that are made available to support system reliability when called upon.

Minimizing Localized Air Pollutants with Emphasis on Disadvantaged Communities ("DACs")

UC's PCP achieves results and performance characteristics consistent with the goal of minimizing localized air pollutants and other GHG emissions with early priority on disadvantaged communities. UC's PCP relies exclusively on renewable generation and minimizes reliance on system power - which may include power from generators within DACs – resulting in very low GHGs and localized air pollution emissions over time.

Results from the 8 MMT CSP calculator indicate the following localized air pollutants associated with UC's PCP:

Table 6: Localized Air Pollutants Associated with UC's PCP

Emissions Total	Unit	2028	2030	2035	2040	2045
CO_2	MMt/yr	0.16	0.03	(0.005)	(0.05)	(0.02)
PM2.5	tonnes/yr	10	2	(1)	(3)	(1)
SO_2	tonnes/yr	1	0	(0)	(0)	(0)
NOx	tonnes/yr	13	3	0	(7)	(2)

Portfolio Diversity and Central Procurement

From the beginning, portfolio diversity has been a guiding principle for UC's Clean Power Program. UC has incorporated different resource types into our portfolio over time, and our PCP continues that trend going forward, consistent with the PUC Section 454.52(a)(1)(J). UC did not include the optional AB 1373 resource allocations, preferring instead to evaluate portfolio needs in the absence of central procurement. However, our modeling results illustrate the need for central procurement, particularly for long duration energy storage and offshore wind resources, which were not selected as part of UC's PCP using the PyPSA Model's least cost framework.

The biggest differences between UC's 8 MMT by 2045 portfolio conforming portfolio and our 25 MMT by 2035 portfolio submitted in 2022 are that our current PCP includes a substantial quantity of geothermal and does not include battery storage. These differences are primarily driven by (a) the lower system-wide GHG target (8 MMT versus 25 MMT), (b) the addition of 10 years to the planning horizon, which takes us past the term of most of UC's current renewable energy contracts, and (c) the introduction of a co-optimized dispatch and investment model (the PyPSA Model) into UC's IRP process.

c. GHG Emissions Results

UC used its load-based proportional share of the 8 MMT GHG Benchmark to determine the emissions target for its PCP. As shown in Table 5, UC's PCP meets the benchmark in all model years based on either the gross calculated emissions from system power using the PyPSA Model or the CSP emissions results calculations.

d. Local Air Pollutant Minimization and Disadvantaged Communities

i. Local Air Pollutants

The local air pollutants resulting from UC's PCP are shown in Table 6 and are exclusively a result of reliance on system power. Table 7, below, show the portion of load that is being served from system power each year for the respective portfolios.

Table 7: 8 MMT PCP Demand and System Power (GWh)

	2028	2030	2035	2040	2045
Demand (at generator bus bar)	[redacted]				
Net System Power					
% of Load Served by System Power					

UC discusses its plans to continue reducing reliance on system power in Section IV.

ii. Focus on Disadvantaged Communities

<u>UC Electric Service within DAC Territories</u>
UC has identified the following DACs that include a participating Clean Power Program campus or health center facility within their borders or are adjacent to such a facility. With this analysis, UC hopes to demonstrate the broad reach of the its Clean Power Program across the state and the steps UC has taken to quantify and reduce local air pollution, particularly in the DACs that UC serves.

As defined by the CalEPA in their CalEnviroScreen 4.0 tool, there are four categories of DACs:

- Census tracts receiving the highest 25 percent of overall scores (1,984 tracts).
- Census tracts lacking overall scores due to data gaps but receiving the highest 5 percent of cumulative pollution burden scores (19 tracts).
- Census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores (307 tracts).
- Lands under the control of federally recognized Tribes.

Table 8: UC Electric Service Provider - Census Tracts within DAC Territories

Census Tract	Zip Code	CalEnviroScreen 4.0 Score	City, County
6001401300	94705	80	Berkeley, Alameda
6001403000	94607	91	Oakland, Alameda
6013380000	94804	75	Richmond, Contra Costa
6019006802	93648	98	Parlier, Fresno
6019007802	93624	85	Five Points, Fresno
6019008502	93648	94	Parlier, Fresno
6037701801	90404	85	Santa Monica, Los Angeles
6059076204	92701	76	Santa Ana, Orange
6065046700	92518	98	Riverside, Riverside
6075980600	94124	83	San Francisco, San Francisco
6081602300	94080	83	South San Francisco, San Mateo
6107002400	93274	79	Tulare, Tulare
6113010203	95691	96	West Sacramento, Yolo

In total, about 6% of the CPP's 2025 annual load was located in or adjacent to DACs. The specific campuses and facilities include, but are not limited to:

UC Merced – Main Campus
UC Office of the President – Headquarters
UC San Francisco – Mission Bay, Hunter's Point and So. San Francisco
UC Los Angeles – Santa Monica Clinic
UC Agriculture & Natural Resources – Southcoast and Kearny

UC Power Procurement in DAC Territories

UC's main lever for minimizing local air pollutants and providing direct impact to underserved communities in DACs is through procurement decisions that reduce reliance on system power and increase renewable generation in DACs. UC's first two solar PPAs, Giffen and Five Points, are both located in DACs that have pollution burdens above the 70th percentile. UC's selection of these projects was informed by the benefits they could provide for the local communities in these underserved areas that are disproportionally impacted by air pollution. Table 9 shows a list of UCs current in-state renewable projects, with respective census tracts, CalEnviroScreen 4.0 scores, and pollution burden information.

Table 9: UC Power Procurement: Census Tracts within/near DAC Territories

Census Tract	Project Name	CalEnviroScreen 4.0 Score	Pollution Burden	Resource Type
6019007902	Five Points	75	70	Solar PV
6019008200	Giffen	83	76	Solar PV
6029005506	Golden Fields	56	41	Solar PV + Battery

UC does not procure energy directly from any natural gas or other fossil fuel power plants. UC's PCP seeks to minimize the use of system power, reducing potential indirect reliance on carbon-emitting generators that often have a disproportionate impact on DACs.

Based on the CSP results, UC does not rely on system power in 2035 and is net negative on local air pollutants. UC's projected GHG criteria pollutants position is expected to improve even further through 2045 with the addition of new renewable resources including solar, wind, and geothermal. UC's PCP aims to reduce dependence on resources that emit GHGs and other local pollutants, while supporting both reliability and affordability.

UC's procurement practices reflect a preference for clean generation resources located within or near DACs that support positive economic and environmental outcomes. UC incorporates qualitative evaluation criteria into our bid solicitation protocols covering topics such as the counterparty's corporate social responsibility policies and response from the community and local government to the proposed project.

UC's procurement guidelines require that all competitive solicitations allocate 15% of the points utilized to sustainability criteria, And UC has established a goal to direct 25% of its annual addressable procurement spend to economically and socially responsible suppliers, including qualifying small, diverse, and sustainable businesses. Furthermore, UC has submitted an annual Supplier Diveristy Plan to the CPUC since 2022, detailing CPP costs and procurement practices.

LSE Activities and Programs Impacting DACs

UC recently launched the UC Center for Climate Justice, one of the first university-based institutions dedicated to equitable climate action in the country, and the UC Center for Climate, Health and Equity, which will advance equitable and just climate solutions that promote human health. These initiatives will accelerate critical research at the intersection of climate change, social justice and health inequities.

e. Cost and Rate Analysis

Since UC's assigned load forecast is essentially flat across the planning horizon, total portfolio cost passes through to rates on a nearly per-MWh basis and total cost trends align closely with rate trends.

Table 10: UC PCP Cost and Rate Analysis

Period	$/MWh	Total Period Cost
2028	[redacted]	
2030		
2035		
2040		
2045		

Cost per MWh rises from 2028 through 2040 as UC layers on new zero-carbon capacity, with the largest step (roughly [redacted]) between 2035 and 2040 when the 2040 out-of-state wind and solar tranches come online. Rates then ease slightly in 2045 (down [redacted] from the 2040 peak) as UC's existing solar contracts and the initial term of UC's existing out-of-state wind contract retire off the take-or-pay ledger.

f. System Reliability Analysis

UC's conforming portfolios are expected to be reliable and will contribute UC's fair share to system reliability needs.

UC 8 MMT Conforming Portfolio

The effective capacity of UC's 8 MMT conforming portfolio is provided in Table 11, taken from the Resource Data Template dashboard. The net qualifying capacity for the month of September is shown for each year in Table 12:

Table 11: System Reliability Progress Tracking, 8 MMT Portfolio

[redacted]

Table 12: System Reliability Net Capacity Requirements & Position, 8 MMT Portfolio

[redacted]

[redacted]

Figure 1: UC’s Portfolio Capacity by Resource Type, 8 MMT Portfolio

[redacted]

Figure 2: UC's Portfolio Capacity by Contract Status, 8 MMT Portfolio

As shown in Table 12, UC's PCP contributes [redacted] of peak monthly NQC in 2035. Although not included in the table above, this NQC exceeds UC's peak load plus the established PRM. Of this total, [redacted] are related to new renewable and hybrid resources as well as new short- and long-duration storage resources. These numbers demonstrate that UC's preferred resource selections can effectively and reliability integrate a renewables-heavy portfolio, thus meeting and exceeding UC's share of any systemwide renewable integration resource requirement. To confirm the reliability of its portfolio, UC reviewed the dashboard tab of the Resource Data Template to ensure that the supply minus load equals zero for the month of September, when annual peak load is typically observed.

Figure 1 above shows UC's portfolio broken down by resource type and demonstrates that UC meets its reliability obligation from 2026 through 2045. Figure 2 provides information about the contract status of resources that compose UC's portfolio.

g. Existing Resource Planning

UC's PCP shows declining use of existing resources as UC plans to work with developers to add new renewable generation to the UC power mix. UC's portfolio utilizes existing combined cycle capacity in the near term with a transition to existing geothermal capacity over time as market penetration of baseload renewable capacity on the grid increases.

Compared to UC's 25 MMT PCP submitted in 2022, planned reliance on existing resources in 2035 has increased from 18.5% to 62.0%. These existing resources include renewable resources that are already online and under contract, expected allocations of CAM resources from the IOU portfolios, and expected resource adequacy contracts with existing generators. UC's current PCP shows a progression from 95% reliance on existing resources in 2026 to 50% reliance on existing resources in 2045.

Existing resources that UC plans to utilize in the near term are generally resources that have been available and successfully contracted with in the past. Some of these contracts have been for multi-year terms, which provides assurance that such resources will remain available. UC has chosen these resources in part due to their lower delivery risks compared to new resources. However, UC recognizes that there is a risk that some existing resources planned for use may ultimately not be available to meet UC's plans. UC's portfolios attempt to balance out these competing risks, and UC will adapt its plans should energy market conditions change.

h. Hydro Generation Risk Management

UC's current PCP does not include hydroelectric power. This differs from UC's 25 MMT PCP submitted in 2022, which did include hydroelectric power. Hydroelectric power is highly weather-dependent, difficult to predict, and generally not available for long-term contracting.

i. Long-Duration Storage Planning

Long-duration energy storage can be challenging for small LSEs to procure, since long-duration storage projects are typically implemented at a scale that vastly exceeds UC's procurement requirements. UC completed a Commission-approved obligation swap for our D.21-06-035 long duration storage requirement and is in talks with another LSE about procuring a slice of their already-contracted LDES project to meet the required 25% long lead time resource requirement associated with D.26-02-057.

j. Clean Firm Power Planning

UC's current PCP includes 40 MW of clean firm resources, including 20 MW of geothermal in 2030 and an additional 20 MW in 2035. This is a notable difference from UC's 25 MMT PCP submitted in 2022, which did not include any clean firm resources. Historically, the supply of clean firm resources has been very limited in California, and the procurement cost has been high relative to intermittent renewable options. However, the availability of geothermal resources both in California and across the west has improved somewhat with recent advancements in geothermal technology and the value of baseload renewable resources relative to their cost premium has increased significantly in an 8 MMT scenario. Out-of-state geothermal resources may trigger transmission upgrades and require Maximum Import Capability ("MIC") in order to claim the capacity towards resource adequacy compliance, but UC has recent experience obtaining MIC for our current out-of-state wind contract and is participating in working group aimed at reforming CAISO's MIC allocation process going forward. Despite all the challenges to their expanded use, clean firm resources are important contributors to reliability and offer operational attributes that cannot be replicated by other currently-available resource types.

k. Non-CAISO, including Out-of-State, Wind Planning

UC's 25 MMT by 2035 portfolio submitted in 2022 included 85 MW of New Mexico wind, which has since become operational under contract with UC. Our current PCP identifies an additional 97 MW of out-of-state wind, this time located in Wyoming. The benefits of out-of-state wind include high capacity factors and a generation shape that is complimentary to California's duck curve. The risks include long development timelines and the need to obtain MIC in order to claim the capacity benefits of the resources. That said, UC now has experience negotiating and contracting with out-of-state wind and obtaining MIC through CAISO's allocation process and is participating in efforts to reform that process going forward.

l. Offshore Wind Planning

UC's PCP does not include offshore wind. California has little experience with offshore wind development. Additionally, the permits required to further develop this nascent industry are at risk under the current federal administration. Although expected to provide benefits in comparison to existing wind resources, the cost and development risk are highly uncertain at this time, making offshore wind a suitable candidate for central procurement by the Department of Water Resources.

m. Transmission Planning

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

- UC prefers projects located in areas that can utilize existing transmission infrastructure with minimal upgrade/modification costs.
- UC prefers low-impact renewable energy projects that provide economic benefit to DACs, subject to community interest in siting projects within such locations.

Unlike the IOUs, UC is not a transmission and distribution ("T&D") system operator. UC does not enjoy the benefits of a granular knowledge of the IOU T&D systems, and UC is not in the best position to identify optimal resource locations. In practice, UC relies on project developers to conduct the research and technical studies necessary for siting potential generation projects. UC evaluates projects offered by developers based on a variety of criteria, including transmission availability, nodal prices and potential for congestion, project viability, environmental, workforce, and other factors. As such, UC generally utilized the PSP selected candidate resources as a guide for likely resource locations in its 2026 PCP. These should be treated as general expectations based on the aforementioned considerations, not definitive selections – actual project locations will be selected during UC's future solicitation processes. UC believes that the best way to keep costs down during resource solicitations is to not limit the potential locations of the resources. Competition among responders to resource solicitations ensures that UC can avail itself of the best possible resources, including allowing developers to select optimal project locations, taking into account factors such as the costs of any potential transmission upgrades. In order to help coordinate project development with commercial interest, UC has participated in CAISO's Cluster 15 Customer Interest Points allocation process and is planning to participate in the Cluster 16 process as well.

As discussed in prior sections, UC will remain flexible with respect to identifying specific resources for its supply portfolio. If UC's expected resource locations become infeasible due to various constraints, or if the Commission's modeling efforts indicate that certain resource locations are no longer feasible or desirable, UC would ultimately locate and contract for alternative resources in preferred locations. UC also remains open to attractive project opportunities in locations identified by developers, even if these locations differ than the assumptions used in this plan. Nevertheless, UC has identified indicative candidate resource region preferences for purposes of this plan.

UC's PCP includes a total of 292.5 MW of new resources that were not previously identified in our 25 MMT by 2035 portfolio in 2022. The following table provides a list of these resources, their identified locations, and UC's preferred alternate locations if the Commission's modeling finds that the selected locations are not feasible.

Table 13: New Resources PCP

New Resource	Size (MW)	Selected Location	Preferred Alternative Locations
Solar	115 MW	PG&E - Kern	PG&E - Fresno
In-State Wind	40.5 MW	PG&E - GBA	PG&E - NGBA
OOS Wind	97 MW	Wyoming	N/A
Geothermal	40 MW	SDGE - Imperial	Nevada

IV. Action Plan

a. Proposed Procurement Activities and Potential Barriers

UC will continue to evaluate our needs related to renewable and carbon-free generation that (a) meet RPS standards and other applicable requirements, (b) support achievement of state-wide GHG-reduction goals, and (c) comport with UC's system-wide clean energy policies. To the extent that additional resources are needed, UC will conduct future solicitations (both formal and informal, depending on factors such as product type, cost, term and overall risk profile) to fulfill such needs. While UC does not currently have any open solicitations, several of UC's prior renewable energy solicitations were aimed at procuring renewable energy attributes for all UC campuses, not limited to the needs of UC's Clean Power Program. Since UC does not bear the RPS and IRP requirements for the UC-affiliated load not served by our ESP, the opportunity exists to reallocate energy and attributes from UC's long-term contracts to the CPP.

UC has a well-established procurement process that it will use to steadily achieve its PCP over the next fifteen to twenty years (i.e., by 2045). UC's procurement process typically includes the following key activities:

- Identification of planned resources by type, desired online date, and capacity.
- Planning for procurement activities in consideration of UC's risk management guidance and business practices; resource acquisition lead times including, where applicable, development timelines; staff capacity; and financial considerations.
- Design and administration of resource solicitations. For new resources, these typically take the form of periodic request for offers processes, while for existing resources, procurement activity is more frequent and routinized.
- Careful negotiation of contract terms to ensure positive outcomes for UC program participants with appropriate risk mitigation.
- Ongoing contract management, including where applicable, careful monitoring of development milestones.
- Ongoing contract management, including where applicable, careful monitoring of generator performance after a resource has achieved commercial operation date ("COD").

UC plans to conduct further solicitations on an as-needed basis going forward. All future executed contracts and any internally reallocated shares of existing projects will be incorporated into the subsequent IRP cycles and other required CPUC reports.

i. Resources to meet IRP mandated procurement requirements, including D.21-06-035 and D.23-02-040:

UC's IRP-mandated procurement requirements pursuant to D.19-11-016, D.21-06-035 and D.23-02-040, and adjusted in accordance with Commission-approved obligation trades, have all been met, as documented in prior IRP Procurement Status Reports.

ii. Plans for resources that are currently non-candidate in CPUC's IRPs not described above

Not applicable. UC only allowed the PyPSA Model to select from CPUC-candidate resources.

iii. Other renewable and/or zero carbon resources not described above

Not applicable.

iv. Other energy storage not described above

Not applicable.

v. Other demand response not described above

Not applicable.

vi. Other energy efficiency not described above

The UC system has an internal policy goal to reduce growth-adjusted energy use intensity by 2% each year. Though this is more general to the UC system as a whole and not specifically conducted through the UC's ESP program, the cost savings do impact participating Clean Power Program accounts.

vii. Other distributed generation not described above

The UC system has seven operational behind the meter Combined Heat and Power ("CHP") facilities, five of which are located behind Direct Access meters served by UC's Clean Power Program. When they were installed between 1980 and 2012, the plants were the lowest-emission, most cost-effective options available. While the CHP plants continue to provide cost-effective and reliable power, hot water and steam, UC recognizes the need to transition away carbon-emitting fuel sources. To that end, each campus has completed a decarbonization plan aimed at meeting UC's 2045 GHG reduction goals, which align with the State's goals.

Although decarbonization planning is more general to the UC system as a whole and not specifically conducted through the UC's ESP, retiring onsite CHP plants could have a significant impact on load served by UC's Clean Power Program in the future. UC recognizes that BTM CHP emissions are currently modelled at the system level and allocated on a pro-rata basis to individual LSEs, but this could change in future iterations of the IRP.

viii. Transportation electrification, including any investments that correspond to different levels than what is included in Integrated Energy Policy Report (IEPR)

UC's Policy on Sustainable Practices encompasses sustainable transportation, including the operation of fleet vehicles in line with systemwide decarbonization goals. UC has adopted a policy requiring 50% of all vehicle acquisitions after July 1, 2023, to be zero-emission, plug-in hybrid, or dedicated clean transportation fueled vehicles. Additionally, all sedan and minivans purchased should be zero emission vehicles ("ZEVs") or plug-in hybrid electric vehicles ("PHEVs"). Moreover, UC sustainable transportation policy requires that 30% of commuter vehicles be ZEVs by 2050.

A 2024 internal UC assessment estimated that to replace the approximately 4,300 fossil-fueled vehicles in the systemwide fleet and support commuter needs, approximately 7,000 electric charging stations need to be added by 2030. These chargers would include a mix of Level 2 and Direct Current Chargers. In addition, these chargers would be installed with Vehicle-to-Grid and Adaptive Load Management abilities to increase peak demand reduction and load flexibility capabilities within UC's electric system.

UC has even considered the timing of the portfolio's known transportation electrification load with CAISO system peaks. On average in 2025, 42% of this load occurred during the super off-peak period (8AM through 4PM), 39% during the off-peak period (12AM through 8AM, 9PM through 12AM), and just 18% during the peak period (4PM through 9PM). Though transportation electrification planning is more general to the UC system as a whole and not specifically conducted through the CPP, transportation electrification at UC campuses will impact the CPP to the extent that they increase electric load behind participating Direct Access meters.

ix. Building electrification, including any investments that correspond to different levels than what is included in Integrated Energy Policy Report (IEPR)

As discussed in section IV(d)(vii) above, every UC campus is actively studying how to implement their decarbonization plans which will likely result in electrification of large portions of their infrastructure. Several campuses have already launched ambitious direct electrification efforts. UC's Policy on Sustainable Practices also addresses green building design, including a requirement for all new buildings to achieve a minimum of LEED Gold certification. Though building electrification planning is more general to the UC system as a whole and not specifically conducted through the UC's ESP, building electrification will likely increase UC's Clean Power Program load over time, to the extent that the electrification impacts facilities served by participating Direct Access accounts.

x. Potential Centralized Procurement, pursuant to AB-1373

UC did not include the optional AB 1373 resource allocations, preferring instead to evaluate portfolio needs in the absence of central procurement. UC will monitor central procurement activity and reevaluate our procurement strategy as needed; likely reducing the quantities of out-of-state wind and geothermal in our planned portfolio.

xi. Other

Not applicable.

b. Disadvantaged Communities (DACs)

UC provides electricity service solely to UC-affiliated facilities, and as such, does not have a strict geographic service territory or boundary like CCAs and IOUs that serve specific areas or counties. However, UC recognizes that its campuses and health centers are integral parts of their surrounding communities. Furthermore, the impact of UC's electricity service is not limited to the areas surrounding the campuses and health centers that we serve.

Supporting UC's educational and research goals by providing clean electricity to meet operational needs may be the most impactful to DACs. The UC system is California's largest and most significant engine for socio-economic mobility. UC consistently admits – and graduates - more first-generation students than other institutions of its caliber, and more than half of its California undergraduates pay no tuition. The UC system's ~$10 billion annual research and innovation budget represents nearly one tenth of all academic research conducted in the United States. Many of the environmental technologies and climate adaptation strategies being studied by UC today will help to reduce emissions and DAC pollution impacts tomorrow.

UC is dedicated to reducing pollution impacts and encouraging the development, health, and prosperity of DACs both within and outside of the locations UC serves. UC's Clean Power Program procurement and related policies support DACs in five distinct ways:

- Avoiding and reducing pollution impacts in DACs by not contracting with gas generators, whether located in DACs or elsewhere, and reducing reliance on system power over time
- Prioritizing procurement of clean generation resources that have strong community support and promote positive economic and environmental impacts in DACs
- Thoughtful consideration of how best to incorporate environmental justice issues into the overall context of UC policy
- Funding IOU programs that support economic development and pollution reduction in disadvantaged communities, through the payment of Commission-approved non-bypassable charges
- By generating energy cost savings and environmental benefits across the UC system, UC's Clean Power Program supports the UC's overall educational and research goals.

c. LSEs' Tribal Customers

UC does not serve tribal customers, since our unique business model means that all UC ESP customers are UC-affiliated entities.

d. Procurement Products

Not Applicable.

e. Commission Direction of Actions

UC encourages the Commission to adopt durable rules and processes to bring greater stability to the regulatory framework within which UC and other suppliers must plan and operate. Frequent rule changes disrupt UC's ability to execute long-term planning activities while minimizing program costs. Such regulatory changes can also result in a significant administrative burden, which disproportionately impacts small LSEs. Certain regulatory changes may necessitate duplicative procurement efforts and/or stranded investments that could disproportionately impact UC's relatively small portfolio.

V. Lessons Learned

UC recognizes the Commission's considerable efforts to continuously improve the IRP process. Increased emphasis on providing clear and accurate guidance for completing individual IRPs – particularly around completion of the RDT and CSP spreadsheets – would be appreciated, as it would help reduce and streamline the workflow required to prepare future reports.

Glossary of Terms

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

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

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

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

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

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

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

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

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

Conforming Portfolio*: the LSE portfolio that conforms to IRP Planning Standards, the 2045 LSE-specific GHG Emissions Benchmark, use of the LSE's assigned load forecast, use of inputs and assumptions matching those used in developing the Reference System Portfolio, as well as other IRP requirements including the filing of a complete Narrative Template, a Resource Data Template and Clean System Power Calculator*.

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

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

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

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

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

GHG Benchmark (or LSE-specific 2045 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 GHG planning target.*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Transmission Planning Process (TPP): *process conducted by the California Independent System Operator (CAISO) to identify potential transmission system limitations and areas that need reinforcements over 10-year and 15-year horizons.*