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**CALIFORNIA
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California Energy Commission

DRAFT COMMISSION GUIDELINES

Publicly Owned Utility Integrated Resource Plan Submission and Review Guidelines

Revised Third Edition

**Gavin Newsom, Governor
August 2022 | CEC-200-2022-005-D**

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DISCLAIMER

These guidelines were formally adopted by the California Energy Commission (CEC) on August 9, 2017, pursuant to Senate Bill 350: Clean Energy and Pollution Reduction Act (de León, chapter 547, Statutes of 2015). Public Utilities Code Section 9622, subdivision (c) gives the CEC authority to adopt guidelines to govern the submission of information and data and reports needed to support the CEC's review of the publicly owned utilities' Integrated Resource Plans. The requirements in these guidelines are based on Senate Bill 350 and Public Utilities Code Sections 9621 and 9622.

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ABSTRACT

The *Publicly Owned Utility Integrated Resource Plan Submission and Review Guidelines* specify the requirements for submitting information, data, and reports needed to support the California Energy Commission's review of integrated resource plans submitted by the specified publicly owned electric utilities in accordance with Senate Bill 350 (De León, Chapter 547, Statutes of 2015).

Keywords: Integrated resource plan, publicly owned utility, SB 350

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CHAPTER 1:

Introduction

The California Energy Commission (CEC) developed these *Publicly Owned Utility Integrated Resource Plan Submission and Review Guidelines* (guidelines) to implement and administer portions of Public Utilities Code (PUC) Section 9622, relating to publicly owned utility (POU) integrated resource plans (IRPs) as codified by the Clean Energy and Pollution Reduction Act of 2015 (SB 350).¹ IRPs are electricity system planning documents that describe how utilities plan to meet their energy and capacity resource needs, policy goals, physical and operational constraints, and other utility priorities (such as reducing rate impacts on customers' bills). SB 350 added PUC Sections 9621 and 9622 which apply to local publicly owned electric utilities with an average electrical demand exceeding 700 gigawatt-hours, as determined on a three-year average commencing January 1, 2013 ("Filing POUs" or "POUs"). These PUC Sections direct the CEC to review IRPs from Filing POUs for consistency with directives in SB 350 and other statutes, in accordance with these guidelines. The guidelines specify the requirements for submission of POU IRPs including information and data needed to support the CEC's review of IRPs. They also specify the CEC's process for reviewing IRPs and recommending corrections for deficiencies.

Under PUC Section 9622(c), the CEC's development and adoption of guidelines are exempt from the Administrative Procedure Act (Government Code Section 11340, et. al.), but the CEC is required to follow a specified public process, including posting a public notice for 30 days and providing the opportunity for public comment before adoption of the guidelines.

A. Background

Multiple laws and executive orders have established substantive clean energy goals to reduce the state's greenhouse gas (GHG) emissions. On October 7, 2015, Governor Edmund G. Brown Jr. signed SB 350 into law. SB 350 increases the Renewables Portfolio Standard (RPS) procurement target from 33 percent to 50 percent of retail sales by 2030 and requires the doubling of energy efficiency savings in retail end uses by 2030. On September 10, 2018, Governor Brown signed SB 100 (De León, Chapter 312, Statutes of 2018), which establishes state policy that eligible renewable energy resources and zero-carbon resources to supply 100 percent of retail sales of electricity to end-use customers by December 31, 2045. Governor Brown concurrently issued Executive Order B-55-18 to establish a new statewide goal to achieve carbon neutrality no later than 2045 and achieve and maintain net negative emissions thereafter.

SB 350 requires specified POUs to adopt IRPs consistent with PUC Section 9621. Many utilities already develop long-term planning documents intended to inform utility owners, ratepayers,

¹ Senate Bill 350 (De León, Chapter 547, Statutes of 2015) as amended by Senate Bill 1393 (De León, Chapter 677, Statutes of 2016), and Senate Bill 338 (Skinner, Chapter 389, Statutes of 2017).

investors, and governing board members of the planning strategy for achieving high-level policy goals.

SB 350 added PUC Section 9621(b)(1) requiring that POU IRPs be developed to achieve GHG emissions reduction targets established by the California Air Resources Board (CARB), in coordination with the California Public Utilities Commission (CPUC) and the CEC for the electricity sector and each local publicly owned electric utility. The targets reflect the electricity sector's percentage in achieving economywide GHG emissions reductions of 40 percent from 1990 levels by 2030. CARB adopted 2030 GHG emissions planning targets at their July 26, 2018, board meeting.² Individual POU GHG targets from the CARB report are provided in Appendix E. CARB may update GHG planning targets based on economywide trends and progress toward meeting the state's GHG emission reduction goals.³ The targets may be revised in coordination with CARB's Scoping Plan,⁴ which is updated at least every five years and will align with POUs submitting IRPs. Consult CARB for current planning targets.

PUC Section 9622 requires the CEC to review POU IRPs to determine consistency with PUC Section 9621. PUC Section 9622 also requires the CEC to provide recommendations to correct deficiencies within the IRP if the IRP is inconsistent with the requirements of PUC Section 9621. PUC Section 9622 authorizes the CEC to adopt guidelines for the submission of information, data, and reports needed to support its review of POU IRPs.

2 California Air Resources Board. July 2018. Staff Report: [Senate Bill 350 Integrated Resource Planning Electricity Sector Greenhouse Gas Planning Targets](https://www.arb.ca.gov/cc/sb350/staffreport_sb350_irp.pdf), https://www.arb.ca.gov/cc/sb350/staffreport_sb350_irp.pdf.

3 California Air Resources Board, [SB 350 GHG planning targets](https://www.arb.ca.gov/cc/sb350/sb350.htm), <https://www.arb.ca.gov/cc/sb350/sb350.htm>.

4 California Air Resources Board. May 2014. [First Update to the Climate Change Scoping Plan](https://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf), https://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf

CHAPTER 2:

Integrated Resource Plan Filing Contents

This chapter describes the content required by PUC Section 9621 to be included in the filing to support the CEC’s review. The IRP Filing⁵ must include the POU-adopted IRP. The CEC has identified the need for additional information to be provided, such as data and analyses used to support the IRP, which may not be in the adopted IRP. This information is necessary for the CEC to complete its review and is described in this chapter.

A. Planning Horizon

PUC Section 9621 requires each POU to adopt an IRP that ensures the utility achieves specific goals and targets by 2030, including meeting the electricity sector and utility-specific GHG reduction targets established by CARB that reflect the electricity sector’s percentage in achieving economywide GHG emissions reductions of 40 percent below 1990 levels and ensuring procurement of at least 50 percent of eligible renewable resources. SB 100 increases the renewable energy procurement target to 60 percent by 2030 and establishes a 100 percent renewable resource and zero-carbon goal for California by the end of 2045. The Governor’s carbon neutrality executive order establishes a goal of economy-wide carbon neutrality by 2045. Each IRP Filing must include data and supporting information to demonstrate the utility is meeting these goals and targets. The minimum planning horizon that achieves this objective begins no later than January 1 of the year that the POU’s governing board adopts the plan and ends no earlier than December 31, 2045.

B. Scenarios and Sensitivity Analysis

IRP Filings and IRP Filing updates⁶ must meet the requirements of PUC Section 9621. POU’s are encouraged to evaluate scenarios and sensitivity analyses to consider the feasibility, cost-effectiveness, and rate impacts of alternative resource options. Although not required, POU’s are encouraged to submit analyses of alternatives, as they may provide information beneficial to ratepayers, other utilities, and policy makers.

C. Standardized Tables

POU’s must submit four standardized tables to the CEC as part of the IRP Filing. Annual data must be reported in the standardized tables through the planning horizon.

- Capacity Resource Accounting Table (CRAT): Annual peak capacity demand in each year and the contribution of each energy resource (capacity) in the POU’s portfolio to meet that demand.

⁵ For clarity, an *IRP Filing* is a POU adopted IRP accompanied by the four standardized tables and other Supporting Information while an *IRP* is just the integrated resource plan adopted by the POU.

⁶ An *IRP Filing update* is any IRP Filing submitted to the CEC after the initial IRP Filing is submitted by January 1, 2019.

- Energy Balance Table (EBT): Annual total energy demand and annual estimates for energy supply from various resources.
- RPS Procurement Table (RPT): A detailed summary of the POU resource plan to meet the RPS requirements.
- GHG Emissions Accounting Table (GEAT): Annual GHG emissions associated with each resource in the POU's portfolio to demonstrate compliance with the GHG emissions reduction targets established by CARB.

D. Supporting Information

Supporting information for an IRP Filing refers to:

1. Analyses, studies, data, and work papers, or other material that the POU used or relied on (including inputs and assumptions) in creating the IRP (such as market conditions at the time of the analyses, energy infrastructure, state policies and laws, and needs of the Filing POU) but that are not included in the IRP itself.
2. Additional information required by these guidelines. Supporting information supplements the data in the tables and must be submitted as part of the IRP Filing. The information can be developed specifically for the filing or can be an existing document submitted or incorporated by reference as described in Chapter 3.

The CEC recommends that supporting information be updated within the 24 months before IRP adoption. POU's should indicate where prior information remains relevant and retains value to avoid filing updated IRPs.

E. Additional Supporting Information

Additional supporting information for an IRP Filing refers to:

1. Analyses, studies, data, and work papers, or other material that the POU used or relied upon (including inputs and assumptions) in creating the IRP (such as market conditions at the time of the analyses, energy infrastructure, state policies and laws, and needs of the Filing POU) but are not included in the IRP itself.
2. Additional information required by these guidelines. Supporting information supplements the data in the tables and must be submitted as part of the filing. The information can be developed specifically for the filing or can be an existing document submitted or incorporated by reference as described in Chapter 3.

The CEC recommends that supporting information be updated within the 24 months before IRP adoption. POU's should indicate where prior information remains relevant and retains value in filing updated IRPs.

F. Demand Forecast

Complying with PUC Section 9621 requires Filing POU's to use or develop a demand forecast. The CEC recommends using the *California Energy Demand Forecast*, which is part of the *Integrated Energy Policy Report (IEPR)* for this task. The IEPR provides a cohesive approach

to identifying and solving the state’s pressing energy needs and issues. The report, which is crafted in collaboration with a range of stakeholders, develops and implements energy plans and policies.

1.1. Reporting Requirements

The Filing POUs must report annual forecasted peak demand (megawatt or MW) in the CRAT and annual forecasted retail sales, other loads, and net peak in the EBT. The demand forecast is necessary for determining the resource procurement needs of each POU. The method used for developing the demand forecast is needed by the CEC to support its review of the IRP.

2.2. Demand Forecast Method and Assumptions

The IRP Filing must describe the demand forecast method and assumptions used. If a demand forecast is developed by the CEC or another public source, the filing must include that forecast as part of supporting information.

If the POU develops the demand forecast, the filing must identify and explain underlying assumptions. For example, economic and demographic assumptions can include future estimates of unemployment, population growth, number of households, housing starts, global oil prices and global growth, gross state product, electric rates, and tax policies. To the extent economic conditions and demographic assumptions are used in filing POU demand forecasts and are primary drivers of demand growth, they must be provided as supporting information.

The CEC encourages POUs to include other demand forecast scenarios in their filing, such as forecasts based on outlooks for economic and demographic assumptions. For example, a high-growth case and a low-growth case.

3.3. Demand Forecast – Other Regions

If system modeling is used as part of the IRP development, the filing must include demand forecast assumptions for regions outside the POU’s jurisdiction.

G. Resource Procurement Plan

The IRP Filing must report the mix of resources used by the POU on the CRAT, EBT, GEAT, and RPS procurement must be reported on the RPT. In addition, to the extent the information is not included in the IRP, all inputs, assumptions, and methods must be provided as supporting information.

1.1. Diversified Procurement Portfolio

The IRP Filing must address procurement for a diversified procurement portfolio of short- and long-term electricity, electricity-related, and demand-response products and strategies or programs. This requirement can be met by providing the standardized tables and other filing requirements included in the guidelines, as discussed in the following sections.

2.2. RPS Planning Requirements

PUC Section 9621 requires POUs to adopt an IRP that ensures the POU procures at least 50 percent eligible renewable energy resources by 2030, consistent with PUC Article 16 (commencing with Section 399.11). However, Article 16 was amended by SB 100 (PUC Section

399.30) to require POU's to procure 60 percent of retail sales from RPS-eligible renewable resources by 2030. Because the procurement target changed and the IRP requirements are intended to track these other provisions, the guidelines are being modified to reflect the new legislation.

POUs must report the following data in the EBT and RPT and submit supporting information as part of the IRP Filing. This allows the CEC to assess whether the procurement of renewable resources meets the RPS planning requirements.

a. Forecasted RPS Procurement Targets

POUs must define the minimum procurement needed to meet the requirements for each compliance period defined by PUC Section 399.30(c)(2). These numeric targets define the minimum procurement the POU needs to meet the procurement targets. There are four compliance periods from 2017 to 2030. Calculation of procurement target for each period is based on annual retail sales (as reported in the EBT) and the POU's established RPS annual targets. The forecasted targets may be adjusted to reflect RPS provisions such as voluntary green pricing programs or qualifying hydroelectric generation.

b. Renewable Procurement

POUs must provide a forecast of current procurement the POU assumes available to meet the RPS planning requirement. This forecast may include:

- Historical carryover from pre-2011 procurement.
- Excess procurement from previous compliance periods.
- Utility-owned and contracted resources (as identified in the EBT).
- Undelivered RPS energy: This is bundled RPS-eligible energy that the utility procured, for which the RECs were stripped and the energy sold as *null power* (renewable energy with no RECS attached) through a wholesale transaction or bilateral contract.

POUs must provide a forecast of additional procurement for each compliance period. This forecast may include:

- Utility-owned resources or contracts for energy (as identified in the EBT).
- Purchase of unbundled RECs.

The POU must identify exemptions or optional compliance measures that affect the POU's forecasted procurement requirements.

c. RPS Procurement Plan

PUC Section 399.30(a)(2) requires that filing POU's incorporate their RPS procurement plan into the IRP Filing. The substance of the POU RPS procurement plan and the frequency for updates are at the sole discretion of the POU.

The POU must include its adopted RPS procurement plan as supporting information in its IRP Filing.

d. Recommended RPS Information

The CEC encourages filing POUs to provide additional information that would be useful for the CEC's review of the IRP, including a description of:

- The POU's plan to meet the portfolio balance requirement and long-term contracting requirements.
- Any identified issues that have the potential to prevent the POU from procuring sufficient renewable resources.

e. Recommended Zero-Carbon Resource Information

The CEC encourages filing POUs to provide additional information on the zero-carbon resources it intends to procure to meet the state's zero-carbon and net-neutrality goals that would be useful for the CEC's review of the IRP.

3.3. Energy Efficiency, Fuel Substitution, and Demand-Response Resources

PUC Section 9621 requires IRPs to address procurement for energy efficiency and demand response resources pursuant to PUC Section 9615. In addition, and to the extent that POUs rely on energy efficiency and demand response programs, IRP Filings must include the impacts of these programs. The IRP Filings may refer to, or rely on, filings to the CEC under PUC Section 9505(b) or studies commissioned to estimate future potential savings. Where these filings or studies do not provide savings estimates through 2045, the method by which the estimates are extrapolated should be explained in the IRP Filing.

a. Recommendations for Energy Efficiency and Demand-Response Analysis

SB 350 requires the CEC to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses of retail customers by January 1, 2030.⁷ The CEC encourages POUs to include in the IRP Filing programs and measures that will contribute toward the SB 350 goal of doubling statewide energy efficiency savings.

The CEC set doubling targets for each of the POUs toward the statewide energy efficiency doubling goal that included their portion of Codes and Standards savings, as well as their own program savings.⁸ New programs for electrification, fuel substitution,⁹ and fuel switching¹⁰ have emerged since the adoption of the original POU IRP guidelines. SB 350 allows programs that save energy in end uses by using cleaner fuels to reduce GHG emissions (as measured on

7 These statewide targets are based on a doubling of the mid-case estimate of additional achievable energy efficiency (AAEE) savings, as contained in the *California Energy Demand Updated Forecast, 2015–2025*, extended to 2030.

8 Forecasted POU EE savings are also reported via the CMUA's Potential Study updated every four years, last in 2021. [CMUA 2020 EE Potential Forecast.pdf](#)

9 "Fuel substitution" is defined as the replacement of regulated fuel use (that is, fossil or renewable gas) with electricity.

10 "Fuel switching" is defined as the replacement of nonregulated fuels (that is, wood or propane) with electricity.

a life-cycle basis) to be counted toward the POU's attainment of its SB 350 doubling targets. The CEC developed a new forecasting product, Additional Achievable Fuel Substitution (AAFS), to estimate the contributions of building electrification and fuel substitution by POU.¹¹ Both AAEE and AAFS were used in addition to committed savings to develop the SB 350 tracking and projection update also in the *2021 Integrated Energy Policy Report (IEPR)*.¹²

The CEC encourages POUs to:

- Explicitly report all first year or cumulative POU energy efficiency (EE) program savings or both from 2015 through the current date as well as projections to 2030 and 2045 (GWh of electricity and MM Therms of gas saved). This information should be provided without attributable codes and standards savings as they are accounted separately from direct POU program impacts.¹³
- Explicitly report all first year or cumulative POU building electrification program impacts or both from 2015 through the current date as well as projections to 2030 and 2045 (GWh of electric load added and MM Therms of gas displaced). The goal is to then measure SB 350 energy efficiency doubling target attainment in combined Quadrillion British thermal unit (Qbtu) energy value for both energy efficiency and building electrification program impacts to compare to the original targets set for each POU.
- Identify the relationship between AAEE savings assumed in the IRP Filing, the target established by the POU under PUC Section 9505, and estimates of market, economic, and technically achievable energy efficiency savings from the study or studies POUs used to establish their targets under PUC Section 9505.

The CEC also encourages POUs to include in the IRP Filing the expected quantitative impacts of demand response programs and planned price-sensitive demand response measures (for example, time-of-use rates).

b. Calculating and Reporting Energy Efficiency Impacts

To the extent POUs include energy efficiency in their IRP Filings, the POU must report, using the standardized tables, the quantitative effects of energy efficiency programs on energy demand and peak capacity needs, including "committed energy efficiency" and AAEE, as well as demand-response and interruptible load programs assumed in each scenario. For the standardized tables:

11 Javanbakht, Heidi, Cary Garcia, Ingrid Neumann, Anitha Rednam, Stephanie Bailey, and Quentin Gee. 2022. *Final 2021 Integrated Energy Policy Report, Volume IV: California Energy Demand Forecast*. California Energy Commission. Publication Number: CEC-100- 2021-001-V4.

12 Kenney, Michael, Jacob Wahlgren, Kristina Duloglo, Tiffany Mateo, Danuta Drozdowicz, and Stephanie Bailey. 2022. *Final 2021 Integrated Energy Policy Report, Volume I: Building Decarbonization*. California Energy Commission. Publication Number: CEC-100-2021-001- V1.

13 The latest CMUA Potential Study by GDS and associates provided estimates of future savings with and without codes and standards.

1. *Committed energy efficiency* includes utility and public agency programs, building codes and appliance standards, and legislation and ordinances having final authorization, firm funding, and a design that can be readily translated into characteristics capable of being evaluated and used to estimate future impacts. The effects of committed energy efficiency may be included, as a separate line item, in the reported retail sales to end-use customers discussed in Section A.1.
2. *AAEE* includes energy efficiency savings not yet considered committed but deemed likely to occur, including impacts from future updates of building codes, appliance standards, and utility efficiency programs expected to be implemented. The effects of AAEE on peak demand must be reported in the CRAT. Annual energy savings attributed to AAEE must be reported in the EBT.
3. *Committed building electrification/fuel substitution* includes utility and public agency programs, building standards, and legislation and ordinances having final authorization, firm funding, and a design that can be evaluated and used to estimate future impacts. The effects of committed building electrification may be included, as a separate line item, in the reported retail sales to end-use customers in the standardized table.
4. *AAFS* includes building electrification/fuel substitution impacts not yet considered committed but deemed likely to occur, including impacts from future updates of building codes encouraging electrification and utility fuel substitution programs expected to be implemented. The effects of AAFS on peak demand must be reported in the CRAT. Annual energy impacts attributed to AAFS must be reported in the EBT.

c. Calculating and Reporting Demand-Response Impacts

To the extent POU include demand response in their IRP Filings, the POU must report the effect of demand-response programs on the standardized tables and in supporting information. The IRP Filing must include, as applicable, the effect of demand-response and interruptible load programs in the CRAT as a line item for the peak capacity value (in total) of event-triggered demand-response programs.

4.4. Energy Storage

PUC Section 9621 requires IRPs to address procurement for energy storage requirements pursuant to PUC Chapter 7.7 (commencing with PUC Section 2835).

a. Recommendations for Energy Storage Analysis

The CEC provides the following recommendations for addressing procurement for energy storage in IRP Filings. To the extent possible, describe:

1. The possible role that storage can play to address overgeneration concerns and meet evening ramps while reducing the need for generation from specific gas-fired generation or market sources. POU may consider including a narrative assessment of the suitability of multihour storage as a resource to address reliability (including peak-hour capacity needs) or financial impacts associated with overgeneration or both or meet evening ramping needs.

2. Any quantitative analyses undertaken by the POU or referenced in the IRP Filing that evaluates the cost-effectiveness of multihour storage compared to other resources that meet evening ramping needs.

5.5. Transportation Electrification

The transportation sector accounts for more than 50 percent of statewide GHG emissions, when including upstream emissions (for example, refining).¹⁴ Transportation electrification is an important strategy for meeting the state’s long-term GHG emission reduction and local air quality goals. PUC Section 9621 requires IRPs to address procurement for transportation electrification.

a. Transportation Electrification Rate Design (SB 437)

PUC Section 9621 requires IRPs to address rate design and existing or planned incentives that support transportation electrification consistent with carbon-neutrality goals in Executive Order B-55-18 To Achieve Carbon Neutrality (September 10, 2018). POU updated IRPs shall provide the following information, as applicable:

1. Details of the POU’s electrical service rate design that support transportation electrification, and existing or planned incentives to support transportation electrification, including rebates. The rate design shall include details for all applicable transportation sectors, including, but not limited to, on-road and off-road vehicles in the light-, medium-, and heavy-duty sectors.
 - a. Rate designs supporting transportation electrification could include, but are not limited to, redesigning demand charges, creating electric vehicle (EV)-specific time-of-use rates, developing EV-specific tariffs, or otherwise lowering the cost to recharge EVs.
 - b. Incentives could include, but are not limited to, rebates for EV purchases or leases, or rebates for procuring or installing EV charging equipment.
2. Details of utility customer education and outreach being implemented to inform utility customers of available incentives and decision-making tools, such as cost calculators or cost estimates that can assist customers in predicting the cost of paying for electricity for these vehicles.
 - a. Customer-facing tools that can educate consumers, resulting in better integration of new EV load with the grid. These tools will reduce distribution grid costs and have the potential to reduce electricity rates for all consumers by better using the grid.

b. Recommendations for Transportation Electrification Analysis

In addressing procurement for transportation electrification, POUs are additionally encouraged to include the following information in the IRP Filing:

¹⁴ Updated per the [July 2021 AB 2127 report](https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127), <https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127>.

1. Charging profiles (for example, monthly, daily, or hourly load profiles) assumed for light-duty plug-in electric vehicles (LD PEVs) and medium- and heavy-duty plug-in electric vehicles (MDHD PEVs) forecasted through 2045 and assumed tariffs designed to influence those profiles.
2. Current number of chargers of each type (for example, Level 1, Level 2¹⁵, direct current [DC] fast charger), and locations (for example, single-family dwelling, multifamily dwelling, workplace, public, depot, truck parking facility, and so forth) of charging infrastructure in the POU service territory, and any POU investment plans or other programs to expand charging infrastructure.
3. Any investments that prioritize electrification in the different transportation sectors and complement nonutility initiatives and how those investments are designed.
4. Milestones or actions taken to advance other transportation electrification sectors, including, but not limited to, MDHD vehicle electrification, public transit, rail, port, maritime, other goods movement electrification, and off-road sectors, and the associated GHG emissions for these sectors.
5. Utility system impacts and related costs associated with serving transportation electrification (for example, distribution line and service extension upgrades, distribution system impacts, and mitigative or protective measures for the distribution system).
6. Ways that transportation electrification investments and planning or modeling scenarios are aligned with federal, statewide, or local air pollution reduction and zero-emission vehicle initiatives and laws. These may include laws or mandates, goals, and policies, such as:
 - a. Executive Orders B-16-2012, B-32-15, N-19-19, N-79-20.
 - b. *2018 ZEV Action Plan Priorities Update*¹⁶
 - c. *2016 Mobile Source Strategy*.¹⁷
 - d. *California Sustainable Freight Plan*.¹⁸
 - e. *California Vehicle-Grid Integration Roadmap*.¹⁹
 - f. *Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment*.²⁰

15 Level 1 chargers use alternating current electricity at 120 volts, Level 2 chargers use alternating current electricity at 208 to 250 volts

16 See [2018-ZEV-Action-Plan-Priorities-Update.pdf \(ca.gov\)](https://business.ca.gov/wp-content/uploads/2020/02/2018-ZEV-Action-Plan-Priorities-Update.pdf), <https://business.ca.gov/wp-content/uploads/2020/02/2018-ZEV-Action-Plan-Priorities-Update.pdf>

17 See [2016 Mobile Source Strategy | California Air Resources Board](https://ww2.arb.ca.gov/resources/documents/2016-mobile-source-strategy), <https://ww2.arb.ca.gov/resources/documents/2016-mobile-source-strategy>

18 See [The California Sustainable Freight Action Plan | California Air Resources Board](https://ww2.arb.ca.gov/our-work/programs/california-sustainable-freight-action-plan), <https://ww2.arb.ca.gov/our-work/programs/california-sustainable-freight-action-plan>

19 California ISO. February 2014. [California Vehicle-Grid Integration \(VGI\) Roadmap](https://www.aiso.com/Documents/Vehicle-GridIntegrationRoadmap.pdf), <https://www.aiso.com/Documents/Vehicle-GridIntegrationRoadmap.pdf>.

20 [Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment](https://efiling.energy.ca.gov/getdocument.aspx?tn=238853) <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853>.

- g. Regional transportation plans and sustainable community strategies, or air quality improvement plans that support the 2016 State Strategy for the State Implementation Plan for Federal Ozone and PM2.5 Standards.²¹
7. Current or planned programs to promote transportation electrification in low-income and disadvantaged communities.
8. Coordination of transportation electrification investments and incentives with other distributed energy resource programs or planning.
9. Total drivers' cost savings in POU territory associated with displacing fossil fuel consumption due to increased EV adoption and use (that is, difference between electricity costs and petroleum costs).

c. Calculating and Reporting Transportation Electrification Impacts

To the extent POU include transportation electrification in their IRP Filings, the following must be reported on the standardized tables and in supporting information, as applicable.

1. Accounting of increased electrical load from transportation electrification through 2045, as reported on the CRAT and EBT.
2. Accounting of net GHG emissions impact of transportation electrification based on increased electrical load and decreased transportation emissions through 2045.

H. System and Local Reliability

PUC Section 9621 requires filing POU to adopt an IRP to ensure that each POU meets the goal of ensuring system and local reliability. PUC Section 9621 also requires IRPs to address procurement for the resource adequacy requirements established pursuant to PUC Section 9620.²²

1.1. Reliability Criteria

In the CRAT, the filing POU must include projections of annual peak capacity needs and the contribution of both demand and supply-side resources. Demand-side resources include AAE, demand response, and interruptible load programs. Supply-side resources include generation, electricity storage resources (both utility-owned and under long-term contract), and short-term and spot market purchases. The IRP Filing must report the planning reserve margin and the detailed method used for its determination.

Substantial amounts of either customer-side-of-the-meter (or behind-the-meter), central-station solar generation capacity, and storage capacity are being developed throughout the state. The IRP Filing must demonstrate how each POU plans to meet all applicable reliability

²¹ [2016 State Strategy for the State Implementation Plan for Federal Ozone and PM2.5 Standards](https://ww2.arb.ca.gov/resources/documents/2016-state-strategy-state-implementation-plan-federal-ozone-and-pm25-standards), <https://ww2.arb.ca.gov/resources/documents/2016-state-strategy-state-implementation-plan-federal-ozone-and-pm25-standards>

²² PUC Section 9620 requires each local publicly owned electric utility serving end-use customers to prudently plan for and procure adequate resources to meet its planning reserve margin and peak demand and operating reserves, sufficient to provide reliable electric service to its customers.

standards that are implicated by the need for increased grid flexibility and to meet the net-peak demand.

To the extent possible, the CEC recommends that filing POUs provide an estimate of potential overgeneration and curtailment of renewables under their operational control. In addition, the CEC recommends the IRP Filing contain details of demand and supply conditions (representative daily load profiles and “supply-resource stacks”) for periods of overgeneration, ramping needs, and net-peak demand.

2.2. Local Reliability Area

The IRP Filing must identify any local transmission constrained areas in the POU service territory, where loads can be reliably served only if there is sufficient local dispatchable generation capacity that provides operating reserves and associated energy under high-load conditions. POUs in the California ISO balancing authority area footprint that meet the local reliability needs must provide in the IRP Filing estimates of the requirements and the resources that may be used to meet the POUs’ needs. These needs may include utility-owned generation, long-term contracts for generation and storage, and short-term resource adequacy planned contracts for capacity with resources under local resource adequacy contracts.

POUs in other California balancing authority areas must include in the IRP Filing existing or emerging local capacity needs arising from transmission constraints and how they are expected to be met. Although not required, POUs are encouraged to discuss or refer to transmission solutions for emerging local capacity shortfalls or to reduce local capacity needs.

3.3. Addressing Net Demand in Peak Hours

PUC Section 9621 requires the governing board of a local POU to consider how existing renewable generation, grid operational efficiencies, energy storage, and distributed generation resources, including energy efficiency, will meet energy and reliability needs during the hours of net-peak demand (net of demand met by variable renewable energy resources).

The IRP Filing must include a narrative describing how existing renewable resources, grid operational efficiencies, multihour energy storage, and distributed energy resources, including energy efficiency, were considered for meeting energy and reliability needs during the net-peak hours.

I. Greenhouse Gas Emissions

This section may be updated in a future revision once the 2022 Scoping Plan is adopted by CARB.

PUC Section 9621 requires POUs to adopt an IRP to ensure the utility meets by 2030, the GHG emissions reduction target established by CARB. CARB formally adopted a GHG emissions planning target at its July 26, 2018, board meeting.²³ POUs must report in the GEAT estimated emissions intensities (in metric tons of carbon dioxide equivalent [CO₂e] per/megawatt-hour

²³ California Air Resources Board. July 2018. [Staff Report: Senate Bill 350 Integrated Resource Planning Electricity Sector Greenhouse Gas Planning Targets](https://www.arb.ca.gov/cc/sb350/staffreport_sb350_irp.pdf), https://www.arb.ca.gov/cc/sb350/staffreport_sb350_irp.pdf.

[MT CO₂e/MWh] and total metric tons of carbon dioxide [MT CO₂e] emissions for each supply resource reported in the EBT. In addition, the state has established zero-carbon resource and net-neutrality goals for 2045. The IRP Filing must include supporting information (such as a narrative discussion) to support assumptions on net emissions impacts from existing and planned programs expected to reduce net GHG emissions.

J. Retail Rates

PUC Section 9621 requires POUs to adopt an IRP to ensure the POU achieves the goals of fulfilling its obligation to serve its customers at just and reasonable rates and minimizing impacts on ratepayer bills. To align the statutory references in Section 454.52 to the applicable authority governing POU ratemaking, the IRP Filing must include, as supporting information, a report or study on rate impacts under the IRP scenario, if that report or study was considered by the local governing authority as part of its IRP planning. Filing POUs are also encouraged to identify elements of the IRP or its scenarios that result in large ratepayer impacts.

K. Transmission and Distribution Systems

PUC Section 9621 requires POUs to adopt an IRP to ensure that the POU achieves the goal of strengthening the diversity, sustainability, and resilience of the bulk transmission and distribution systems and local communities.

1.1. Bulk Transmission System

The IRP Filing must include a discussion of any bulk transmission system reliability concerns and measures to address them over the planning horizon, including, as applicable:

- a. Upgrades to transmission systems needed to integrate central station renewable resources
- b. Transmission systems upgrades for strengthening and improving the reliability of the bulk transmission system, including proposed on-line dates for the upgrades.

2. Distribution System

The IRP Filing must include a discussion of any distribution system reliability concerns and measures to address them over the planning horizon, including the following, as applicable:

- a. Upgrades or enhancements to the distribution system, including those intended to reliably integrate distributed generation
- b. Upgrades to communications and information technology intended to integrate demand-side energy management
- c. Information on interconnection requirements, processes, queues, and studies to enable additional distributed energy resources

L. Localized Air Pollutants and Disadvantaged Communities

PUC Section 9621 references PUC 454.52) (H) and originally required the POUs to adopt IRPs to ensure the POU achieves the goal of minimizing localized air pollutants and other GHG emissions, with early priority on disadvantaged communities identified pursuant to Section

39711 of the Health and Safety Code (HSC). A change to the PUC in 2019, however, moved this provision to subdivision (I), which Section 9621 does not reference, thereby inadvertently breaking the link requiring this provision in POU IRPs. However, impacts of resource plans on disadvantaged communities and low-income customers are a critical concern for the state, and staff strongly recommends POU IRPs continue to include this provision. HSC Section 39711 requires the California Environmental Protection Agency (CalEPA) to identify disadvantaged communities based on geographic, socioeconomic, public health, and environmental hazard criteria. CalEPA identifies disadvantaged communities using the California Communities Environmental Health Screening Tool, available on its website.²⁴

2.1. Reporting Requirements

IRP Filings should include a discussion of current programs and policies in place to address local air pollution, new and existing emissions reductions programs focused on disadvantaged communities, and efforts to identify and address the impacts of resource selection on rates and economic and environmental conditions for disadvantaged communities in the POU service territory, if applicable. Reporting on any existing programs may include quantitative estimates of progress toward improved health and economic outcomes, with identification of specific benefits and impacts to disadvantaged communities.

3.2. Other Recommended Topics

The CEC encourages POUs to report how programs assist and prioritize disadvantaged communities in their IRPs. For example, the CEC recommends POUs report any POU program or measure designed to encourage the deployment of distributed energy resources in disadvantaged communities, including any programs for which income-related eligibility requirements have been or will be established.

The CEC also encourages POUs to report plans and progress results in implementing the relevant recommendations included the CEC's 2016 report *Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities* (Barriers Study).²⁵ The Barriers Study includes 12 recommendations aimed at increasing low-income customers' access to energy efficiency and renewable energy and the enabled benefits. Specific recommendations affecting POUs include the following:

- The governing boards of POUs might consider developing community solar offerings for low-income customers within their territories.
- The governing boards of POUs might consider developing or expanding pilot programs that provide solar for low-income customers and disadvantaged communities.

²⁴ [CalEnviroScreen](https://oehha.ca.gov/calenviroscreen), <https://oehha.ca.gov/calenviroscreen>.

²⁵ Scavo, Jordan, Suzanne Korosec, Esteban Guerrero, Bill Pennington, and Pamela Doughman. 2016. *Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities*. California Energy Commission. Publication Number: CEC-300-2016-009-CMF.

POUs are also encouraged to report plans and progress/results in implementing the relevant recommendations included in CARB's *Low-Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents*.²⁶ This study includes four principal recommendations and several specific action items to address the barriers faced by low-income residents to increasing access to zero-emission and near-zero-emissions transportation options.

To support implementation of the Barriers Study recommendations and other goals included in SB 350, the CEC encourages POUs to include the following additional information related to low-income customers and disadvantaged communities in their IRP Filings:

- Indicators used by the POU for tracking impacts and benefits of its programs on low-income customers or disadvantaged communities or both, and associated benchmarks toward achieving local, federal, and state policy goals.
- Specific strategies for maximizing the contribution of energy efficiency savings in disadvantaged communities.
- Transportation electrification investments, the effectiveness of these investments toward improving air quality in disadvantaged communities, and means of coordinating with local municipal authorities and air quality management or pollution control districts.
- Labor, workforce, and training programs designed to provide benefits to low-income customers, including those that live in disadvantaged communities.
- Financing mechanisms offered by the POU to improve access and participation of low-income customers in clean energy programs.
- Efforts by the POU to increase contracting opportunities for small businesses in low-income and disadvantaged communities.
- Any specific strategies used to maximize education and participation in clean energy and transportation programs for low-income customers or disadvantaged communities or both, including engagement with local community-based organizations for outreach activities.

26 California Air Resources Board. [Accessible Clean Transportation Options SB 350](https://ww2.arb.ca.gov/our-work/programs/accessible-clean-transportation-options-sb-350), <https://ww2.arb.ca.gov/our-work/programs/accessible-clean-transportation-options-sb-350>.

CHAPTER 3:

Integrated Resource Plan Filing and Review Procedures

On or before January 1, 2019, the governing board of a filing POU is required to adopt an IRP and a process for updating the plan at least every five years from the date the POU board adopts its IRP. The Filing POU is solely responsible for its planning processes and procurement decisions, including development of an optimum resource mix that meets the requirements of PUC Section 9621.

The following rules govern the submission of IRP Filings to the CEC and CEC review of IRPs pursuant to PUC Section 9622.

A. Integrated Resource Plan Submission

POU IRPs, supporting information, and the four standardized tables must be submitted to the CEC to review IRPs for consistency with PUC Section 9621.

1.1. Schedule

The initial IRP was required to be submitted by the POU or authorized representative to the CEC by April 30, 2019. Updated IRP Filings are required at least once every five years and must include the IRP, supporting information, and the four standardized tables.

Updated IRP Filings must be submitted within 90 days of governing board adoption.

2.2. Requesting Time Extensions

POUs that require additional time to submit the IRP Filing may request an extension of deadlines by submitting a written request to the executive director or delegate if one is designated. The request shall include the basis for the extension and a proposed new deadline for filing. The executive director or delegate shall approve or reject the request within 10 business days.

3.3. Electronic Filing

Filing POUs must submit IRP Filings and updates using the CEC's electronic filing and docket process in current use at the following link: [E-Filing and E-Commenting \(ca.gov\)](https://www.energy.ca.gov/proceedings/e-filing-and-e-commenting), <https://www.energy.ca.gov/proceedings/e-filing-and-e-commenting>.

4.4. Providing Supporting Information

Supporting information described in Chapter 2 must be either submitted directly to the CEC through the electronic filing and docket process or included by reference. Referenced material that is not publicly available must be provided to CEC staff upon request. References can point to a CEC or other government agency proceeding where the material resides.

5.5. Requesting Confidentiality

POUs may request confidential designation for parts of an IRP Filing, according to the instructions in Appendix C. Yellow fill or yellow highlighting should be used to indicate all information and cells within the IRP, standardized tables, and supporting information for which the filing POU is requesting confidentiality.

6.6. Preparation and Submission of IRP Filing

Filing POUs may choose to have a representative entity, such as an association or contractor, prepare and submit the IRP Filings on their behalf. Such filings may be for the entire IRP or for select elements. The POU governing board must adopt the IRP or any mandatory elements to be submitted by the entity before it is filed with the CEC. Information in the IRP Filing must be filed in a manner that allows staff to do a utility-specific review.

B. Review of IRP Filing

PUC Section 9622 requires the CEC to review POU IRPs for consistency with the requirements of PUC Section 9621. The CEC will use a two-step process.

1.1. Step 1: Check for Completeness

Within 30 calendar days of receiving a POU IRP Filing, CEC staff will review the IRP Filing to ensure it includes the IRP, the four standardized tables, and required supporting information.

A POU will be notified by CEC staff if the IRP Filing is incomplete with a request for more information as described in Section (B)(3) of Chapter 3.

2.2. Step 2: Review for Consistency with IRP Requirements

Within 120 calendar days of receiving a POU IRP Filing, CEC staff will review the IRP Filing to determine whether the IRP is consistent with the requirements of PUC Section 9621.

The CEC will post each IRP Filing on its website and accept public comment for 30 calendar days following electronic filing. Public comments related to the consistency of the IRPs pursuant to PUC Section 9621 may be considered by the CEC in reviewing the IRP for consistency with the requirements of PUC Section 9621.

3.3. Request for Information

At any time during its review, CEC staff may request additional information from POUs as needed to support the Commission's review of the IRPs. The CEC requests that POUs submit the additional information through the electronic filing system as described in Section (A)(3) of Chapter 3 within 30 calendar days.

4.4. Determination of Consistency with PUC Section 9621

a. Staff Determination of Consistency

Within 180 days of receiving an IRP Filing, or within 30 days of receiving any additional information requested, the executive director or delegate shall file a proposed determination, finding the IRP consistent or inconsistent with the requirements of PUC Section 9621. If the staff proposed determination finds an IRP inconsistent with the requirements of Section 9621, it shall include recommendations to correct any deficiencies.

The POU or any interested person may respond to or comment on the staff-proposed determination within 45 calendar days of issuance. The staff-proposed determination may be modified in response to POU or public comment received before adoption by the CEC.

b. CEC Consideration and Adoption of Staff Proposed Determination

Within 120 days of the filing of the staff determination, the CEC shall, at a business meeting, adopt a final determination finding the IRP consistent or inconsistent with the requirements of PUC Section 9621. The CEC may adopt the staff determination as the final determination in whole or in part, may adopt modifications to the staff determination, or may adopt an entirely new determination. If the CEC determines the IRP is inconsistent with the requirements of Section 9621, it shall include recommendations to correct any deficiencies.

5. Process for Updating an Integrated Resource Plan

On or before January 1, 2019, POUs are required to adopt a process for updating the IRP at least once every five years. This process must include a schedule for adopting updated IRPs. Updated IRPs must meet all the requirements of PUC Section 9621. Updated IRP Filings must meet the requirements of these guidelines. The updated IRP Filing can refer to previous IRP Filings if the information is still relevant and was relied on in the updated IRP.

CHAPTER 4:

General Provisions

A. Effective Date

Unless specified otherwise by the CEC, the guidelines shall take effect upon adoption by the CEC at a publicly noticed business meeting.

B. Substantive Changes to the Guidelines

The CEC may make substantive changes to the POU IRP Guidelines pursuant to PUC Section 9622(c). Substantive changes will be considered at a CEC business meeting with no less than 10 days' public notice. Public Utilities Code Section 9622 requires the CEC to provide at least 10 days' notice of any substantive changes to these guidelines. However, the CEC will endeavor to seek stakeholder input with respect to any substantive changes to these guidelines at least 30 days before adoption.

C. Deadlines and Submission Dates

Submissions will meet the specified deadlines in the guidelines if they are submitted electronically using the electronic filing system and time-stamped by the online system or email at or by 11:59 p.m. Pacific Time on the due date. Submissions that are not properly submitted using the online system will not be deemed submitted on time. If the due date falls on a weekend or state holiday, the due date becomes the next business day.

D. Use and Disclosure of Information and Records

The CEC or its authorized agents may use any information or records submitted to the CEC or obtained as part of any request for information under the POU IRP Guidelines to determine compliance with PUC Section 9621. The information and records include, but are not limited to, IRPs and any documentation submitted in support of said IRPs; documents submitted responding to requests for information; any other documentation submitted upon request of the CEC; publicly available information and documents; information submitted to other state, federal, or local agencies; and any other documents provided to or obtained by the CEC.

Information and records submitted under the POU IRP Guidelines may be disclosed to other governmental entities and policing authorities for civil and criminal investigations and enforcement. This information and record may also be disclosed to the public under the California Public Records Act (Government Code Section 6250, et seq.). POUUs may request the CEC keep portions of the IRP confidential pursuant to California Code of Regulations, Title 20, Section 2505(b).

ACRONYMS

Acronym	Term
AAEE	Additional achievable energy efficiency
Barriers Study	<i>Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities</i>
CARB	California Air Resources Board
CalEPA	California Environmental Protection Agency
California ISO	California Independent System Operator
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRAT	Capacity Resource Accounting Table
EBT	Energy Balance Table
GEAT	GHG Emissions Accounting Table
GHG	Greenhouse gas
HSC	Health and Safety Code
<i>IEPR</i>	<i>Integrated Energy Policy Report</i>
IRP	Integrated resource plan
LD PEV	Light-duty plug-in electric vehicle
mt	Metric ton
MW	Megawatt
MWh	Megawatt-hour
POU	Publicly owned utility
PRC	Public Resources Code
PUC	Public Utilities Code
RPS	Renewables Portfolio Standard
RPT	RPS Procurement Table
SB 350	Senate Bill 350 (De León, Chapter 547, Statutes of 2015)

APPENDIX A:

Definitions

Additional achievable energy efficiency (AAEE): Energy efficiency savings not yet considered committed but deemed likely to occur, including impacts from future updates of building codes and appliance standards and utility efficiency programs expected to be implemented.

Assumption: A statement made about the future for a given load forecast, or demand-side or supply-side energy resource, that should be used for procurement and transmission modeling.

Bundled renewable energy credit: An electricity product that, when procured by the POU claiming the electricity product to satisfy its RPS procurement requirements, includes both the electricity and the associated renewable energy credits from an eligible renewable energy resource. For example, if the POU claiming an electricity product owns the associated eligible renewable energy resource, then all electricity products, including those associated with electricity consumed onsite, may be considered bundled electricity products.

Committed energy efficiency: Energy efficiency savings estimated to occur from utility and public agency programs, codes, standards, legislation, and ordinances having final authorization, firm funding, and a design that can be readily translated into evaluable characteristics.

Demand forecast: A forecast of electricity demand served by the electric grid, measured by both peak demand and energy consumption. Some factors that determine load forecast include economics, demographics, behind-the-meter resources, and retail rates.

Excess balance: Any number of RPS-eligible RECs that a utility holds at the end of a compliance period that may be used to meet their compliance obligation in the next compliance period. Excess balance can include excess procurement, historic carryover, or purchased RECs that have not been retired.

Filing POU: A local publicly owned electric utility with an annual electrical demand exceeding 700 gigawatt-hours, as determined on a three-year average commencing January 1, 2013.

Integrated resource plan (IRP): A plan adopted by the governing board of a POU pursuant to PUC Section 9621.

IRP Filing: An IRP adopted by the filing POU's governing board that is electronically submitted to the CEC, along with the standardized tables and supporting information, by the Filing POU or authorized representative.

Net-peak demand: The highest hourly electricity demand in the utility area, when excluding demand met by variable renewable generation resources directly connected to a California balancing authority. Net-peak demand is calculated by taking the highest hourly demand (peak demand) and subtracting the electricity produced by variable renewable resources meeting that demand.

Noncoincident peak demand: The noncoincident peak is the largest amount of power a POU must generate or procure in any hour of the year. Compare this to coincident peak demand, which is the amount of power the POU must generate or procure in the hour in which systemwide demand is greatest. Noncoincident peak demand is referred to as “peak demand” throughout these guidelines.

Plug-in electric vehicle (EV): A vehicle that uses one or more electric motors for propulsion. Electric vehicles include, but are not limited to, battery-electric and plug-in hybrid vehicles.

Renewable energy credit (REC): A certificate of proof, as defined in PUC Section 399.12 (h), associated with the generation of electricity from an eligible renewable energy resource. RECs are certificates that represent the environmental attributes or “greenness” of renewable electricity production.

Renewable Portfolio Standard (RPS): The Renewables Portfolio Standard is a regulation that requires a minimum procurement of energy from renewable resources, such as wind, solar, biomass, and geothermal.

Retail sales: Electricity consumption after accounting for behind-the-meter onsite generation including storage charge and discharge. It indicates the net energy delivered through the meter to the end-use customer and, thus, excludes any generation or procurement in satisfaction of firm wholesale commitments (for example, firm and spot market sales).

Scenario: A set of assumptions about future conditions used in power system modeling performed to support generation or transmission planning.

Sensitivity: A technique that determines how scenario analysis changes when an assumption is varied with all other scenario assumptions unchanged.

Standardized tables: The four tables that are required with the IRP Filing submitted to the CEC. These tables include information and data necessary to help staff determine if the IRP is consistent with PUC Section 9621. The four standardized tables are Capacity Resource Accounting Table (CRAT), Energy Balance Table (EBT), Renewable Procurement Table (RPT), and Greenhouse Gas Emissions Accounting Table (GEAT).

Supporting information: Analyses, studies, data, and work papers, or other material (on which inputs, assumptions, or conclusions are based) that the POU used or relied upon in creating the IRP (such as, but not limited to, market conditions current at the time of the analyses, energy infrastructure, state policies and laws, and needs of the filing POU) but are not included in the IRP itself; and additional information required by these guidelines. Supporting information may also include the inputs and assumptions that are based on the analyses, studies, data, work papers, and other material.

Unbundled renewable energy credit: A renewable energy credit from an eligible renewable energy resource that is not procured as part of the same contract or ownership agreement with the underlying energy from that eligible renewable energy resource; this credit includes RECs that were originally procured as a bundled product but were subsequently resold separately from the underlying energy.

APPENDIX B:

Standardized Tables

Introduction

The Capacity Resource Accounting Table (CRAT) is used by the Filing POU to report the IRP scenario capacity in megawatts (MW) to meet expected peak loads. It also provides the types of resources and, where known, the particular resource, such as a solar generation plant. The Energy Balance Table (EBT) is similar to the CRAT table but shows the Filing POU's forecast of total energy demand in gigawatt-hours. Both tables must report all years in the planning horizon (2023 through 2045).

The following sections will outline instructions for completing the four standardized tables that will be required for the planning scenario submitted to the CEC under these guidelines. For that scenario and each additional scenario, assign a name or identification number. The IRP Filing must include a description of the assumptions incorporated into each planning scenario.

Capacity Resource Accounting Table

The Filing POU must use the CRAT to demonstrate annual peak capacity needs and how the POU expects to meet them. Historical values are requested for 2017–2022. Supply resources include utility-owned, contracted-for generation and storage resources. These may be existing or planned (specific, identifiable, and known) resources or “generic,” indicated by planning efforts and analysis, but not identified by name or location. They also include short-term contracted-for resources with unidentified generators or other counterparties to the transaction, whose procurement is anticipated to occur only shortly before they are needed (spot and short-term market purchases).

The table also distinguishes between RPS-eligible and non-RPS-eligible resources. This is done to facilitate completion of the RPS procurement table (RPT) with minimal effort.

Future resources yet to be identified are listed under “Generic Additions” with fuel source “to be determined” (TBD) selected. Use the most appropriate name or description for generic additions. If there is a strong likelihood that a future or planned resource type is known, then provide the best description of this capacity type and the intended fuel use.

Filing POUs must only report resource capacity that can be relied upon to perform. For contractual resources, show how much energy is expected to be available to meet annual peak loads (net qualifying capacity [NQC] or peak dependable capacity).

1.Line 1: Forecast Total Peak Hour 1-in-2 Demand

All filing POUs are required to forecast their total demand during their noncoincident peak²⁷ hour for each year in the forecast period. This number, in MW, includes all power needed to serve end-use loads, along with the power needed to deliver supplies to these loads. The annual peak hour estimates may include allowances for transmission losses, distribution line losses, and unaccounted for energy.

Lines 1 and 2 may include any anticipated pumping and recharging loads during the peak hour. Reductions due to customer-owned generation that reduces the procurement obligations of POUs must be reflected in the values.

The estimated impact of committed energy efficiency savings and price-sensitive demand response programs and measures must be embedded in the value in lines 1 and 2 if they impact peak demand.

Lines 1 and 2 should not have firm sales obligations embedded. Firm sales obligations are listed as a separate line item.

2.Line 2: Forecast Total Peak Hour 1-in-10 Demand

Line 2 is the total forecast demand during the non-coincident peak load hour for a 1-in-10 event.

3.Lines 3 and 3a: Customer-Side Solar: Nameplate Capacity and Peak Hour Output

List the nameplate capacity and peak-hour output of behind-the-meter solar in lines 3 and 3a, respectively. These numbers will not be used in calculations²⁷ but will indicate the amount of customer-side solar assumed by the utility to be deployed over the planning horizon and the related impact on peak capacity needs.

4.Line 4: Peak Load Reduction due to Thermal Energy Storage

Expected peak load reduction due to thermal energy storage (for example, chilling devices, ice bear storage, and so forth²⁸) deployed or encouraged through incentives by the utility, if any. This value, if non-zero, will already be reflected in line 1 and will not enter calculations in the table. Any entries are required only to the extent that the POU is relying on this thermal energy storage to meet the requirements of PUC Section 9621 or the impacts of thermal storage on reliability require quantification. Thermal storage entries in line 3 are designed to provide the POU an opportunity to report expected peak capacity savings from investment in such resources. Line 3 should not include any resources whose capacity value is reported as a line item elsewhere in the table.

²⁷ Row headings in the standardized reporting tables that are contained in brackets indicate that the values provided do not enter into formulas or calculations.

²⁸ For more an example of thermal storage, see [How Thermal Energy Works](http://www.calmac.com/how-energy-storage-works), <http://www.calmac.com/how-energy-storage-works>.

5.Line 5: Light-Duty PEV Consumption in Peak Hour

Report estimated electricity consumption by LD PEVs during the peak hour. This indicates the impact of LD PEV deployment on annual peak capacity needs and does not enter into any calculations in the table.

6.Line 6a: Additional Achievable Energy Efficiency Savings on Peak

Report estimates of feasible and cost-effective achievable energy efficiency savings on the peak from future programs that were assumed in the IRP scenario to be developed but are not yet implemented or funded.

Committed energy efficiency savings must be embedded in the value in line 1.

7.Line 6b: Additional Achievable Fuel Substitution Impacts on Peak

Report estimates of feasible and cost-effective achievable fuel substitution impacts on the peak from future programs that were assumed in the IRP scenario to be developed but are not yet implemented or funded.

Committed fuel substitution impacts must be embedded in the value in line 1.

8.Line 7: Demand Response/Interruptible Programs on Peak

Enter the MW impact on the peak hour of dispatchable, event-triggered demand-response and interruptible load programs.

The estimated impact of price-sensitive demand response programs and measures must be embedded in the value in line 1.

9.Line 8: Peak Demand in 1-in-2 (Accounting for Demand Response and AAEE)

Line 7 is the peak demand after accounting for the impacts of AAEE, demand-response, and interruptible programs. The estimated impact of price-sensitive demand-response programs and measures on the peak must be embedded in the value in line 1.

The numbers entered in lines 6 and 7 will automatically be subtracted from the Forecasted Total Peak Hour 1-in-2 demand to produce the demand in line 8.

10.Line 9 Peak Demand in 1-in-10

Line 9 is the peak demand after accounting for the impacts of AAEE, AAFS, demand response, and interruptible programs. The estimated impact of price sensitive demand response programs and measures on the peak must be embedded in the value in line 2.

The numbers entered in lines 6a and 7 will be subtracted from while those in line 6b will be added to the Forecasted Total Peak Hour 1-in-10 demand to produce the demand in line 9.

11.Line 10: Planning Reserve Margin 1-in-2

Line 10 should indicate the planning reserve margin (in MW) used for resource planning for each year. If a planning reserve margin used is other than a constant percentage, the basis for the value used ("LOLE," "LOLP," or "largest contingency") must be provided in a note to the

table or elsewhere in the IRP Filing. The method for calculating the PRM must be discussed in the IRP (see Ch. 2 Section G, System and Local Reliability)

12.Line 11: Planning Reserve Margin 1-in-10

Line 11 should include the planning reserve margin for a more extreme 1-in-10 weather scenario, as opposed to the “normal” 1-in-2 planning reserve margin described in line 10.

13.Line 12: Firm Sales Obligations

On line 12, list total firm wholesale electricity supply (in MW) that the POU has contracted to deliver to other parties during the peak hour, both within and outside the POU’s balancing area. Include line losses, station load, and any reserves for the sales obligations that are required.

14.Line 13: Total Peak Procurement Requirement in 1-in-2

Line 13 is the sum of lines 8, 10, 12.

15.Line 14: Total Peak Procurement Requirement in 1-in-10

Line 14 is the sum of lines 9, 11, 12.

16.Lines 15a – 15g: Existing and Planned Utility-Owned Generation and Storage (Not RPS-Eligible)

In this section, the POU must report the amount of capacity from each existing or planned utility-owned or -controlled generation source or multi-hour energy storage device that is considered firm and reliable for meeting loads forecasted to occur in the annual peak hour.²⁹ This amount would be measurable at the busbar.³⁰ For variable energy resources without flexible dispatch, such as solar and wind, dependable capacity estimates must reflect the expected availability of energy from the resources at the time of the annual peak and the variable nature of this supply. Capacity values must not be adjusted for expected forced outage rates.

Insert additional rows if needed.

17.Lines 15h – 15n: Existing and Planned Long-Term Contracts (Non-RPS-Eligible)

In this section, the POU must report the amount of firm capacity available during the peak hour from each existing bilateral contract and power purchase agreement that is more than three months. Each bilateral contract must be named and listed on a separate line beginning on line 15h.

²⁹ Planned resources are those resources that the POU has committed to construct or purchase but have yet to come on-line or under utility control.

³⁰ A “busbar” is a metallic strip or bar, typically housed inside switchgear, panel boards, and busway enclosures for local high current power distribution. They are also used to connect high-voltage equipment at electrical switchyards, and low-voltage equipment in battery banks.

Gas-fired generation should be reported as fossil gas, non-RPS eligible renewable gas, and renewable hydrogen. Insert additional rows, if needed.

If a contract does not provide firm capacity during the peak hour but provides energy during the year (and is thus entered in the Energy Balance Table), enter the resource supply name and enter zero for the capacity amounts under the years covered by the contract. Contracts that provide less than 1 MW may be aggregated.

18.Line 15: Total Peak Dependable Capacity of Existing and Planned Supply Resources (Non-RPS-Eligible)

Line 15 will be automatically calculated as the sum of lines 15a–15n.

19.Lines 16a – 16n: Existing and Planned Utility-Owned RPS-Eligible Resources

List each utility-owned or -controlled RPS-eligible generating resource and associated dependable peak capacity values starting on line 16a. For variable energy resources that are non dispatchable, such as solar and wind, dependable capacity estimates must reflect the “planned-for” availability of energy from these resources at the time of the annual peak.³¹

For dual-fuel power plants that can burn natural gas or RPS-eligible biomethane (or biogas), list the same plant in both sections for fossil fuel and renewable resources, with the associated capacity and energy allocated to the two fuel types.

Insert additional rows, if needed.

20.Lines 16o – 16t: Existing and Planned Long-Term Contract (RPS-Eligible Resources)

Use lines 16o – 16t to enter the peak dependable capacity associated with contracts for RPS-eligible renewable energy. Contracts with duration of more than three consecutive months may be entered on separate lines. Contracts that provide less than 1 MW of capacity may be aggregated by fuel type. Contracts that are less than three months in duration need not be reported in the CRAT. (Any shortfalls in capacity, for example, failing to procure enough capacity to meet the Total Peak Procurement Requirement, will be assumed to be met with such contracts.) After the lines 16o – 16t are filled in, lines 15 and 16 will automatically be calculated.

Insert additional rows, if needed.

21.Line 16: Total Peak Dependable Capacity of Existing and Planned RPS-Eligible Resources

Line 16 will be automatically calculated as the sum of lines X – X.

³¹ This may differ from “expected” availability in a statistical sense. A 100-MW wind facility may have an average (mean) output of 30 MW in month/hour pair in which the utility’s peak is assumed to occur, and a median output of 23 MW, but the utility may assume a third value for capacity planning purposes.

22.Line 17: Total Peak Dependable Capacity of Existing and Planned Supply Resources

Line 17 will be automatically calculated as the sum of existing plus planned lines X and X.

23.Lines 18a – 18n: Non-RPS-Eligible Generic Additions

List each generic non-RPS-eligible resource and the related peak dependable capacity value starting on line 18a. Generic additions are nonspecific resources (utility-owned or contracted or both) that have yet to be procured but will be needed to meet future requirements.

Insert additional rows, if needed.

24.Line 18: Total Peak Dependable Capacity of Generic Supply Resources (Non-RPS-Eligible)

Line 18 will be automatically calculated as the sum of lines 18a – 18n.

25.Lines 19a - 19n: RPS-Eligible Generic Additions

Enter each generic RPS-eligible resource and the associated peak dependable capacity value. Generic additions are nonspecific resources (utility-owned or contracted or both) that have yet to be procured but will be needed to meet future requirements.

Insert additional rows if needed.

26.Line 19: Total Peak Dependable Capacity of Generic RPS-Eligible Resources

Line 19 will be automatically calculated as the sum of lines 19a – 19n.

27.Line 20: Total Peak Dependable Capacity of Generic Supply Resources

Line 20 will be automatically calculated as the sum of lines 18 and 19.

28.Line 21: Total Peak Procurement Requirement 1-in-2

Line 21 will be copied from line 13.

29.Line 22: Total Peak Procurement Requirement 1-in-10

Line 22 will be copied from line 14.

30.Line 23: Total Peak Dependable Capacity of Existing and Planned Supply Resources

Line 23 will be copied from line 17.

31.Line 24: Current Capacity Surplus (Shortfall) 1-in-2

Line 24 will be calculated as the difference between lines 21 and 17.

32.Line 25: Current Capacity Surplus (Shortfall) 1-in-10

Line 25 will be calculated as the difference between lines 22 and 17.

33.Line 26: Total Peak Dependable Capacity of Generic Supply Resources

Line 26 will be copied from line 23.

34.Line 27: Planned Capacity Surplus(Shortfall) 1-in-2

Line 27 is the sum of lines 21 and 23. Any shortfall in planned capacity (a negative value on line 21) will be assumed to be addressed with short-term contracted resources (less than three months in duration).

35.Line 28: Planned Capacity Surplus (Shortfall) 1-in-10

Line 28 will be the sum of lines 22 and 23.

Energy Balance Table

In the EBT, POU's are required to provide estimates of annual retail sales and net energy for load (in MWh) through 2045. (Historical values are requested for 2017 and 2018.) The EBT provides a detailed estimate of the POU's annual energy needs through 2045, accounting for the impacts of AAEE and customer generation. The EBT also contains estimates of annual energy from supply resources, including utility-owned generation and multi-hour storage resources, bilateral contracts, and spot market/short-term purchases.

Data submitted in the EBT must correspond with matching data in the CRAT. If a capacity-only resource is listed in the CRAT, this same resource must appear in the EBT with zero values for expected annual energy supply.

1.Line 1: Retail Sales to End-Use Customers

Enter projected annual retail sales, as defined in Title 20, Section 3201. This may include metered city loads and reflect the impact of committed energy efficiency measures and programs (but not AAEE).

Line 1b may include metered city loads and reflect the impact of committed fuel substitution measures and programs (but not AAFS).

Line 1c is the difference between metered city loads minus line 1a (the reduction in load from energy efficiency) and plus 1b (the incremental increase in load with AAFS).

2.Line 2: Other Loads

Enter loads for which there is not an associated RPS obligation, including pumping loads, multi-hour storage loads (incremental net energy for load needed due to multihour storage losses, including energy needed for pumped hydro storage), and other utility loads, for example, unmetered city loads, but excluding firm sales obligations.

If multi-hour storage loads are significant, they must be entered as a separate line item or items.

3.Line 3: Net Energy for Load

This entry must reflect the sum of lines 1 and 2 plus transmission and distribution losses, unaccounted-for energy, and energy needed to serve station loads of utility-controlled resources.

If distributed generation injected on to the distribution system does not affect retail sales estimates but does affect estimated net energy for load requirements, and the amount of this energy is an assumption used in or output of modeling for the IRP, it must be added as a line item in the Net Energy for Load Calculations section of the EBT.

4.Line 4: Retail Sales (Accounting for AAEE & AAFS Impacts)

This entry must reflect the estimated impact of AAEE and AAFS on retail sales. The value entered here will be automatically copied to the RPT.

Line 4a t may include metered city loads and reflect the impact of committed energy efficiency measures and programs (but not AAEE)

Line 4b may include metered city loads and reflect the impact of committed fuel substitution measures and programs (but not AAFS).

Line 4c is the difference between metered city loads minus line 1a (the reduction in load from energy efficiency) and plus 1b (the incremental increase in load with AAFS).

5.Line 5: Net Energy for Load (Accounting for AAEE & AAFS Impacts)

This entry must reflect the estimated impact of AAEE and AAFS on the utility's annual net energy for load requirements.

6.Line 6: Firm Sales Obligations

Enter the net energy for load associated with firm (wholesale) sales obligations under long-term contracts (including generation to cover lines losses and station load). This must not include projected generation for sales into short-term and spot markets.

7.Line 7: Total Net Energy for Load

This will be automatically calculated as the sum of lines 5 and 6.

8.Line 8: Customer-Side Solar Generation

Enter estimated annual customer-side solar generation, both consumed on site and injected into the distribution system.

9.Line 9: Light-Duty PEV Electricity Consumption/Procurement Requirement

Enter estimated annual LD PEV electricity consumption or the incremental net energy for load associated with this consumption. Indicate which one it is by modifying the line header.

10.Line 10: Other Transportation Electricity Consumption/Procurement Requirement

Enter the (incremental) consumption or increase in net energy for load associated with any other major transportation electrification program(s) developed, provided support by or otherwise encouraged by the utility. Indicate which is provided by modifying the line header. Any entries are required only to the extent that the POU is relying on this transportation electrification to meet the requirements of PUC Section 9621 or the impact of this electrification to reliability requires quantification. Details regarding the program(s) may be provided elsewhere in the IRP Filing. This entry will provide quantitative information on the

demand-side impact of major programs that increase net energy for load requirements while reducing GHG emissions.

11.Line 11: Other Electrification Consumption/Procurement Requirement

Enter the (incremental) consumption or increase in net energy for load associated with any other major electrification (fuel substitution) program(s) developed, provided support by, or otherwise encouraged by the utility. Indicate which is provided by modifying the line header. Any entries are required only to the extent that the POU is relying on this electrification/fuel substitution or consumption/procurement to meet the requirements of PUC Section 9621 or the impact of this electrification/fuel substitution to reliability requires quantification. Details regarding the program(s) may be provided elsewhere in the IRP Filing. The purpose of this entry is to provide quantitative information on the demand-side impact of major programs that increase net energy for load requirements while reducing GHG emissions.

12.Lines 12a – 12g: Existing and Planned Utility-Owned Generation Resources (Non- RPS-Eligible)

Enter the projected annual energy from each existing and planned utility-owned or –controlled generation resource in the utility portfolio.

Insert additional rows, if needed.

Values entered here must not include generation to meet firm wholesale obligations or sales into short-term and spot markets. If the utility has firm sales obligations under long-term contracts and elects to include the energy generated for these contracts, insert a note in the table to explain which generation resources and how much energy those resources are generating to meet the firm wholesale obligations.

13.Lines 12h – 12n: Existing and Planned Long-Term Contracts (Non-RPS-Eligible)

Enter the projected annual energy from each existing and planned long-term contract in the utility portfolio.

Insert additional rows, if needed.

14.Line 12: Total Energy From Existing and Planned Supply Resources (Non-RPS-Eligible)

This is automatically calculated as the sum of lines 12a – 12n.

15.Lines 13a – 13n: Existing and Planned Utility-Owned RPS-Eligible Generation Resources

Enter the projected annual energy from each existing and planned utility-owned or –controlled RPS-eligible generation resource.

Insert additional rows, if needed.

16.Lines 13o – 13t: Long-Term Contracts (RPS-Eligible)

Use lines 13o – 13t to list power (yearly MWh) obtained from individual renewable energy contracts. Renewable contracts that provide less than 1 MWh of supply may be aggregated by fuel type. State the fuel type first (for example, geothermal, solar, wind), then the contract name. Also include here any amounts of existing and expected renewable distributed generation (DG) supply that is surplus to customer consumption during the year (in MWh). Do not include DG output that is produced and consumed on the customer's side of the meter. Include only amounts of DG injections that would otherwise be supplied by the POU.

Insert additional rows, if they are needed, to list more supply resources.

17.Line 13: Total Energy from Existing and Planned Supply Resources (RPS-Eligible)

This is automatically calculated as the sum of lines 13a – 13t.

18.Line 13z: Undelivered RPS Energy

Enter the projected amount of RPS-eligible energy that the utility does not use to meet load requirements. This means RPS energy generated or purchased by the utility and then sold as null power into a wholesale market or under a bilateral contract. (Energy and emissions associated with firming and shaping contracts³² must not be included anywhere in the EBT and GEAT tables).

Undelivered RPS energy is a share of the energy reported in lines 13a-13t; it is not in addition to it. For example, if all the energy from three of the resources in 13a-13t is projected to be sold, 13z will be the sum of those three values.

As undelivered RPS energy is included in the total energy from supply resources (line 19), total energy will exceed total net energy for load (lines 7, 23) by this amount. An adjustment is made to reconcile this difference in the Energy Balance Summary (see lines 19-23).

19.Line 14: Total Energy from Existing and Planned Supply Resources

This is automatically calculated as the sum of lines 12 and 13.

20.Lines 15a – 15n: Non-RPS-Eligible Generic Additions

Enter the projected annual energy from each generic non-RPS-Eligible generation resource. Generic additions are nonspecific resources (utility-owned and/or contracted) that have yet to be procured but will be needed to meet future requirements.

Insert additional rows if needed.

21.Line 15: Total Energy from Non-RPS-Eligible Generic Additions

This is automatically calculated as the sum of lines 15a – 15n, plus additional rows, if necessary.

³² For information on firming and shaping contracts please see [Renewables Portfolio Standard](http://www.energy.ca.gov/portfolio/), <http://www.energy.ca.gov/portfolio/>.

22.Lines 16a – 16n: RPS-Eligible Generic Additions

Enter the projected annual energy from each generic RPS-eligible generation resource. Generic additions are nonspecific resources (utility-owned or contracted) that have yet to be procured but will be needed to meet future requirements.

Insert additional rows, if needed.

23.Line 16: Total Energy from RPS-Eligible Generic Additions

This is automatically calculated as the sum of lines 16a – 16n, plus additional rows, if necessary.

24.Line 17: Total Energy from Generic Additions

This is automatically calculated as the sum of lines 15 and 16.

25.Line 17z: Total Energy from RPS-Eligible Short-Term Contracts

Enter the total power (yearly MWh) projected from any short-term renewable energy contracts (in aggregate).

26.Line 18: Short-Term and Spot Market Purchases

Enter projected annual energy from short-term and spot market purchases. This is a gross, not net value; projected short-term and spot market sales must not be included (netted out). Utility portfolio GHG emissions include those from purchased energy; emissions from energy sold are attributable to the buyer of that energy.

Projected purchases of RPS-eligible energy must not be included here but entered on line 17z.

27.Line 18a: Short-Term and Spot Market Sales

Enter projected annual energy sold into short-term and spot markets. Short-term and spot market sales reflect energy sold to other utilities, load-serving entities, or another party.

28.Line 19: Total Energy from Supply Resources

This is automatically calculated as the sum of lines 14, 17, and 17z.

29.Line 19a: Undelivered RPS Energy

This line is copied from line 13z.

30.Line 20: Net Short-Term and Spot Market Purchases

This is automatically calculated as the sum of lines 18 – 18a.

31.Line 21: Total Delivered Energy

This is automatically calculated as the sum of lines 19 and 20 less line 19a.

32.Line 22: Total Net Energy for Load

This line is automatically copied from line 7.

33.Line 23: Energy Surplus/Shortfall

This is automatically calculated as line 21 less line 22.

Greenhouse Gas Emissions Accounting Table

The GHG Emissions Accounting Table (GEAT) will show the POU's projected annual GHG emissions in million metric tons of carbon dioxide equivalent (MMt CO₂e) attributed to each generation resource in the POU's portfolio. In this table, emission intensities expressed in units of metric tons of carbon dioxide equivalent per megawatt-hour (mt CO₂e/MWh) are assigned to each generator in a POU's portfolio. This value is then multiplied by values reported in the EBT to arrive at annual GHG emissions for each resource and total amount of GHG emissions for the utility's portfolio. If this calculation does not represent resource GHG emissions (GHG intensities changing over time, for example), then overwrite the formula and provide actual GHG emissions for each year.

A POU may develop emissions intensities and use them for their utility-owned generation. All energy procured that cannot be tracked back to a specific generation source will be assigned an emission intensity of 0.428 mt CO₂e/MWh, consistent with the value used by CARB for unspecified power imported from out of state. The utility may also develop and use emissions intensities for generic gas-fired generation additions to its portfolio. These values must be consistent with the performance and fuel consumption of new resources designed to be economical for the dispatch profile of the resource.

The table distinguishes between supply resources that provide RPS-eligible energy and those that do not. This has been done to facilitate the joint completion of the EBT, RPT, and GEAT.

1.Line 1a – 1g: Existing and Planned Utility-Owned Generation (Non-RPS-Eligible)

Enter the emissions intensity for each utility-owned (not RPS-eligible) resource starting on line 1a. The emissions from the resource in each year can be estimated by multiplying the corresponding value in the EBT by the emissions intensity if the resource is not used to meet a firm sales obligation. If this calculation does not represent resource GHG emissions (GHG intensities changing over time, for example) then overwrite the formula and provide actual GHG emissions for each year. If a share of the output from the resource is used to meet a firm sales obligation, the values will have to be calculated, with the share of output being deducted from the total. (A note in the table may indicate which resources in the utility's portfolio have contributed to meeting firm sales obligations.)

Insert additional lines as needed.

Resources with an emissions intensity of zero or with zero output may be omitted.

2.Line 1h – 1n: Existing and Planned Long-Term Contracts (Non-RPS-Eligible)

If the contract specifies the generation resource provides energy, enter the emissions intensity for the resource in the appropriate cell, starting on line 1h. If the contract does not specify a resource or resources, use 0.428 mt CO₂e/MWh. For contracts that provide energy from a defined portfolio of generation resources, estimate an emission intensity based on expected amounts from each resource.

As done for lines 1a–1g, multiply the corresponding energy values in the EBT by the emissions intensity, making any adjustments that are necessary if energy delivered under the contract is used to meet firm sales obligations. If this calculation does not represent resource GHG emissions (GHG intensities changing over time, for example), then overwrite the formula and provide actual GHG emissions for each year.

Insert additional lines as needed.

3.Line 1: Total GHG Emissions of Existing and Planned Supply Resources (Non-RPS-Eligible)

This is automatically calculated as the sum of lines 1a – 1n.

4.Lines 2a – 2n: Existing and Planned Utility-Owned Generation (RPS-Eligible) and

5.Lines 2o – 2t: Existing and Planned Long-Term Contracts (RPS-Eligible)

Only resources with non-zero emissions intensity may be listed in this section. For resources that have non-zero emissions intensity, enter the emissions intensity for each of those resources, and multiply the corresponding energy values in the EBT by the emissions intensity. If this calculation does not represent resource GHG emissions (GHG intensities changing over time, for example) then overwrite the formula and provide actual GHG emissions for each year. Insert additional lines as needed.

6.Line 2: Total GHG Emissions of Existing and Planned Supply Resources (RPS-Eligible)

This is automatically calculated as the sum of lines 2a – 2t.

7.Line 3: Total GHG Emissions from Existing and Planned Supply Resources

This is automatically calculated as the sum of lines 1 and 2.

8.Lines 4a – 4n: Non-RPS-Eligible Generic Additions

For each generic non-RPS-eligible resource, enter the emissions intensity, starting on line 4a and multiply the corresponding energy values in the EBT by the emissions intensity. If this calculation does not represent resource GHG emissions (GHG intensities changing over time, for example), then overwrite the formula and provide actual GHG emissions for each year. The utility may develop and use emissions intensities for generic gas-fired generation additions to its portfolio. These values must be consistent with the expected performance and fuel consumption of new resources designed to be economical for the dispatch profile of the resource.

Insert additional lines as necessary.

9.Line 4: Total GHG Emissions from Generic Non-RPS-Eligible Additions

This is automatically calculated as the sum of lines 4a – 4n.

10.Lines 5a – 5n: Total GHG Emissions from Generic RPS-Eligible Additions

Enter an emissions intensity and emissions values for any generic RPS-eligible resource that has a non-zero-emissions value and multiply the corresponding energy values in the EBT by the emissions intensity. If this calculation does not represent resource GHG emissions (GHG intensities changing over time, for example) then overwrite the formula and provide actual GHG emissions for each year.

11.Line 5: Total GHG Emissions from Generic RPS-Eligible Additions

This is automatically calculated as the sum of lines 5a – 5n.

12.Line 6: Total GHG Emissions from Generic Supply Resources

This is automatically calculated as the sum of lines 4 and 5.

13.Line 7: GHG Emissions from Net Short-Term and Spot Market Purchases

An emissions intensity of 0.428 mt CO₂e/MWh is used for net short-term and spot market purchases. Short-term and spot market purchases are defined as contracts less than three months in duration.

14.Line 8: Total GHG Emissions to Meet Net Energy for Load

This is automatically calculated as the sum of lines 3, 6, and 7.

Emissions Adjustments

1.Line 8a: Undelivered RPS-Eligible Energy (in MWh)

This is automatically copied from line 13z in the EBT.

2.Line 8b: Firm Sales Obligation (in MWh)

This is automatically copied from line 6 in the EBT.

3.Line 8c: Total Energy for Emissions Adjustment (in MWh)

This is automatically calculated as the sum of lines 8a and 8b.

4.Line 8d: Emissions Intensity of Resource Portfolio (Including Spot Market Purchases)

Enter the volume-weighted average emissions intensity of gas and short-term and spot market purchases in the utility portfolio. This will be used to calculate the portfolio emissions adjustment.

5.Line 8e: Emissions Adjustment

This is automatically calculated as the product of 8c and 8d.

6.Line 8f: Adjusted Portfolio Emissions

This line is automatically calculated as line 8 less line 8e. This line represents the utility's portfolio emissions after adjusting for undelivered RPS-eligible energy (line 19a in EBT).

GHG Emissions Impact of Transportation Electrification

Lines 9 -12 call for estimates of the GHG emissions impact of transportation electrification. This is being done to gain a better understanding of the impacts of transportation electrification on GHG emissions from the electricity sector. Any entries are required only to the extent that the POU is relying on this transportation electrification to meet the requirements of PUC Section 9621 or the impacts of electrification to reliability require quantification.

1.Line 9: GHG Emissions Reduction due to Gasoline Vehicle Displacement by LD PEVs

Estimate of annual reductions in GHG emissions in the transportation sector due to the displacement of gasoline-powered vehicles by LD PEVs.

2.Line 10: GHG Emissions Increase due to LD PEV Electricity Loads

Estimate of GHG emissions increase due to (incremental) electricity loads associated with LD PEV deployment.

3.Line 11: GHG Emissions Reduction due to Fuel Displacement – Other Transportation Electrification

Estimate of (gross) GHG emissions reductions in the transportation sector due to “other vehicle electrification.” Any entries are required only to the extent that the POU is relying on this transportation electrification to meet the requirements of PUC Section 9621 or the impacts of electrification to reliability require quantification. The POU must indicate (in notes in the table, a spreadsheet, or elsewhere in the IRP Filing) how the entered values were derived. Although not required, the CEC encourages the Filing POU to explain how major projects and utility programs and measures contributed to the total reduction.

4.Line 12: GHG Emissions Increase due to Increased Electricity Loads – Other Transportation Electrification

Estimate of GHG emissions increase due to (incremental) electricity loads associated with “other transportation electrification.” Any entries are required only to the extent that the POU is relying on this transportation electrification to meet the requirements of PUC Section 9621 or the impacts of electrification to reliability require quantification. The POU must indicate (in notes in the table, a spreadsheet, or elsewhere in the IRP Filing) how the entered values were derived.

RPS Procurement Table

The RPS Procurement Table (RPT) is the standardized reporting table that identifies the renewable energy and REC procurement and retirement in each RPS compliance period through the planning horizon. The retail sales may be adjusted due to hydroelectric procurement or green power programs as allowed under PUC Section 399.11 *et. seq.* RECs can be reported in this table and can be used toward satisfying requirements of the RPS. The table also provides for optional use of RECs in the form of historic carryover and excess procurement.

Begin completing the RPT by first indicating the name of the scenario being reported in cell B7.

1.Line 1: Annual Retail Sales (Accounting for AAEE Impacts)

Line 1 will be automatically filled with the annual estimates of retail sales (accounting for AAEE impacts) provided in the EBT.

2.Line 2: Green Pricing Program Exclusion

Enter the projected annual retail sales associated with green pricing programs that may be deducted from the retail sales value (in line 1) used to calculate the RPS procurement obligation.

3.Line 3: Soft Target (Percentages)

Line 3 is the annual soft target for each compliance period, for the RPS.

4.Line 4: Required Procurement for Compliance Period

Line 4 is the required procurement of renewable energy (or required retirement of RECs) over the compliance period based on lines 1 through 3. Should a POU's procurement requirement for the compliance period be affected by other factors (such as hydroelectric generation in the POU portfolio, as described in Section 399.30 of the Public Utilities Code) or involve optional compliance measures, lines 2 through 4 may be edited or augmented to reflect how the procurement requirement is derived.

5.Line 5: Excess Balance at Beginning/End of Compliance Period

If used for planning, enter the sum of the Excess Balance of Category 0, 1, 2, and historical carryover RECs at the beginning of the third compliance period (2017–2020). Subsequent values on line 5 are automatically filled in based on this value and those on line 8.

6.Line 6: RPS-Eligible Energy Procured

The projected annual procurement of RPS-eligible energy (the sum of lines 13, 16, and 17z from the EBT) will automatically be entered here.

7.Line 6A: Amount of Energy Applied to Procurement Obligation

Enter the amount of energy that will be applied to the procurement obligation during the year/compliance period. If the value differs from the corresponding entry in line 6, it will result in a change in the Excess Balance at the end of the compliance period.

8.Line 7: Net Purchases of Category 0, 1, and 2 RECs

Enter the projected annual net purchases of Category 0, 1, and 2 RECs.

9.Line 7a: Excess Balance and REC Purchases Applied to Procurement Obligation

Enter the projected number of Category 0, 1, and 2 RECs that will be applied to the procurement obligation during the year.

10.Line 8: Net Change in Balance/Carryover (RECs and RPS-Eligible Energy)

Line 8 is automatically calculated as sum of lines 6 and 7 less lines 6A and 7A.

11.Line 9: Excess Balance at Beginning/End of Compliance Period

If used for planning, enter the sum of the Excess Balance of Category 3 RECs at the beginning of the third compliance period (2017 to 2020). Subsequent values on line 9 are automatically filled in based on this value and entries on line 12.

12.Line 10: Net Purchases of Category 3 RECs

Enter the projected net purchases of Category 3 RECs during the year.

13.Line 11: Excess Balance and REC Purchases Applied to Procurement Obligation

Enter the projected number of Category 3 RECs (Excess balance and purchases) that will be applied to the procurement obligation during the year. If the value differs from the corresponding entry in line 10, it will result in a change in the Excess Balance (line 9) at the end of the compliance period, and the net change in Excess Balance (line 12).

14.Line 12: Net Change in REC Balance

This line measures the difference between the number of RECs purchased and applied, for each year in each compliance period. This line is automatically calculated as line 10 less line 11.

15.Line 13: Total Generation Plus RECs (All Categories) Applied to Procurement Requirement (for Each Period)

This line is automatically calculated as the sum of lines 6A, 7A, and 11 for each compliance period. This line contains the estimated RECs and RPS-eligible energy that is applied to the procurement obligation in each compliance period.

16.Line 14: Overprocurement/Underprocurement for Compliance Period

Line 14 contains the estimated overprocurement/underprocurement of renewable energy (retirement of RECs) during the compliance period. It is automatically entered as the difference between lines 13 and 4.

APPENDIX C: Confidentiality

How to Request Confidentiality

The CEC's executive director has the responsibility for determining what information submitted with an application for confidentiality will be deemed confidential. Parties who seek such a designation for data must submit a separate written request that identifies the specific information to be kept confidential, why the information should be protected from release, the length of time such protection is sought, and whether the information can be released in aggregated form.

Certain categories of data provided to the CEC, when submitted with a request for confidentiality, will be automatically designated as confidential and do not require an application. The types of data that are eligible and the process for obtaining this confidential designation are specified in California Code of Regulations (CCR), Title 20, section 2505(a)(5). The CEC has its own regulations distinct from those governing the CPUC. The CPUC's determinations on confidentiality are not applicable to data submitted to the CEC.

Parties should be aware that some confidential data may be disclosed after aggregation according to CCR, Title 20, 2507(f)(1)(A). Both historical and forecast energy sales data may be disclosed if reported at the following levels:

- For each POU, data may be aggregated at the statewide level by customer sector.
- For the sum of all POUs for whom electricity is delivered by one or more UDCs (1) data aggregated at the county level by residential and non-residential groups, and (2) data aggregated at the distribution service area, planning area, or statewide level by customer sector.

For the total sales by county: sum accounts, kWh, and revenue reported by all UDCs, aggregated at the county level by the subsector (3-digit) code level identified in the NAICS as defined in subdivision (b)(55) of Section 1302. Data that are not included in these categories, but that the filer believes are entitled to confidential treatment, should be submitted when due along with an application for confidential designation. The executive director will review the information and determine its confidential status. Please carefully read and follow the instructions.

Repeated Applications for Confidentiality

Information submitted to the CEC can be deemed confidential without the need for a new application under CCR, Title 20, Section 2505(a)(4) if you file a certification under penalty of perjury that the new information is substantially similar to the previously granted confidentiality.

In this case, your current application will serve as your certification, and the designation of confidentiality will be under the same terms as the prior designation. The information will remain confidential under the same terms as the prior designation for the same or comparable period identified by the applicant in the application.

1. Requirements for a New or Repeated Confidentiality Application

Applications for confidentiality and the confidential documents must be uploaded directly to Dockets Unit through the e-filing system. Paper copies or CDs do not need to be submitted. Links to the e-filing system are provided on each proceeding webpage (<http://www.energy.ca.gov/sb350/IRPs/index.html>) under the link "Submit e-filing." The docket for this proceeding is 18-IRP-01, project title: Integrated Resource Planning. Registration is necessary the first-time documents are uploaded. Once registration is complete, submit a confidential filing by clicking on "Quick Actions" from the dashboard and select "submit confidential e-filing" from the dropdown tab. The application needs to be uploaded first followed by the confidential materials. The application will then be acted upon by the executive director in consultation with the chief counsel of the CEC.

A signed "penalty of perjury certification" must be included in the application. Suggested standard language is as follows:

I certify under penalty of perjury that the information contained in this application for confidential designation is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to make the application and certification on behalf of (insert the name of your utility here).

For electronic filings containing a signature, including for submissions into electronic databases requiring a signature as an attestation of information, the signature may be in electronic form and represented as a scanned signature graphic, or "Original Signed By," "/S/," or similar notation followed by a typewritten name.

A complete application for confidentiality contains the following information:

- Identification of the information being submitted, including docket number, title, date, and size (for example, pages, sheets, megabytes).
- Description of the data or information for which confidentiality is being requested (for example, particular electricity supply contract categories for particular years).
- On Excel forms submitted with prospectively confidential data, identification of specific cells using yellow fills that are consistent with the confidentiality application.
- A clear description of the period for which confidentiality is being sought for each information category (for example, until December 31, 2017).
- An appropriate justification for each confidential data category request, including applicable provisions of the California Public Records Act (Government Code Section 6250 et seq.) or other laws or both.

- A statement attesting that a) the specific records to be withheld from public disclosure are exempt under provisions of the Government Code, or b) the public interest in nondisclosure of these particular facts clearly outweighs the public interest in disclosure.

2.What Happens if a New or Repeated Application is Incomplete?

Applications that have been docketed will be reviewed by CEC staff within 30 calendar days of receipt for clarity, completeness, content, and context. If the application is incomplete or ambiguous in one or more respects, or if the data are incomplete or questionable, staff will contact the filer to resolve these uncertainties or obtain needed information.

Applications deemed incomplete may not be docketed by CEC staff and may result in delay in processing until the deficiency can be corrected. The filer will be notified by the Office of the Chief Counsel about deficient attributes in the application. The applicant has 14 calendar days to correct defects in the application and return an amended application to the CEC.

After 14 days, all information associated with a still–incomplete application for confidentiality will be deemed publicly disclosable and will be docketed accordingly.

3.Determinations and Additional Information for New Applications

The Executive Director signs confidentiality determination letters in response to new applications for confidentiality. The applicant has 14 calendar days to appeal this decision.

An applicant can request confidentiality at any time, but once information is publicly released, confidentiality cannot be granted. The CEC strongly encourages filers to provide data and any confidentiality requests concurrently.

More specific questions about confidentiality may be directed to Jared Babula at Jared.Babula@energy.ca.gov.

APPENDIX D:

Data and Assumptions

The following tools have been developed to aid in planning decisions and will be made available for optional use by POU's during their planning processes. Additional tools may be developed by CEC staff. Tools and other aids will be posted on the following Web page.

<http://www.energy.ca.gov/sb350/IRPs/>

1. Climate Change Adaptation – Cal-Adapt

The Cal-Adapt tool is an interactive Web-based climate adaptation planning tool used to identify potential climate change impacts. Using data compiled on an ongoing basis from California's scientific and research community, it allows users to see possible effects on temperature change, snowpack, precipitation, fire risk, and sea level rise downscaled to California's geography. The Cal-Adapt tool includes visualization tools and climate data to enable exploration of local risks related to climate change. The Cal-Adapt tool makes climate science readily accessible to those who need to understand local impacts of, and plan for, climate change.

The CEC is rolling out Cal-Adapt 2.0 (publicly available at beta.cal-adapt.org), which offers substantial enhancements to the original version. Enhancements include improved fidelity regarding projected temperature extremes as well as spatial distribution of precipitation, an applications programming interface that supports third-party development of custom tools that leverage data on Cal-Adapt, alignment with the current scenarios and global climate models used by the International Panel on Climate Change, and the capability to visualize and analyze several preloaded shape files (for example, census tracts tagged with CalEnviroScreen scores, watersheds, and counties) or a user-specified shape file.

2. Carbon Allowance Price Projections

CEC staff developed annual GHG allowance price projection scenarios consistent with the scenarios used in the *California Energy Demand Forecasts*. The methodology used to develop the preliminary 2017 IEPR GHG price projections is based on CARB's August 2, 2016, Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation. The methodology is described in the footnotes on the GHG Price Calculations tab of this spreadsheet.

The spreadsheet is here:

http://doCKETpublic.energy.ca.gov/PublicDocuments/17-IEPR-03/TN216271_20170227T161611_Preliminary_GHG_Price_Projections_Energy_Assessment_Division.xlsx

APPENDIX E:

GHG Emissions Reduction Targets

CARB, at their July 26 board meeting, formally adopted GHG planning targets for use in IRPs. CARB adopted targets for the electric sector as well as individual POU's and other utilities in their staff paper *Senate Bill 350 Integrated Resource Planning Electricity Sector Greenhouse Gas Planning Targets*.³³ This report, or any successor reports, identifies the actual GHG targets which must be used in a POU's IRP. Table E.1 duplicates the POU specific targets adopted by CARB at the July 26, 2018, board meeting for reference purposes only.

Table E-1: CARB-Adopted 2030 GHG Emissions Reduction Planning Target Range, 30-53 MMTCO₂e

Publicly Owned Utility	Percentage of 2030 electricity sector emissions	Low (MTCO ₂ e)	High (MTCO ₂ e)
Burbank Water and Power	0.430%	129,000	228,000
City & County of San Francisco	0.041%	12,000	22,000
City of Anaheim	1.015%	305,000	538,000
City of Palo Alto	0.174%	52,000	92,000
City of Pasadena	0.426%	128,000	226,000
City of Riverside	0.918%	275,000	487,000
City of Vernon	0.497%	149,000	263,000
Glendale Water and Power	0.396%	119,000	210,000
Imperial Irrigation District	1.745%	524,000	925,000
LADWP	8.851%	2,655,000	4,691,000
Modesto Irrigation District	1.055%	317,000	559,000
Redding Electric Utility	0.191%	57,000	101,000
Roseville Electric	0.452%	136,000	240,000

³³ California Air Resources Board, [Staff Report: Senate Bill 350 Integrated Resource Planning Electricity Sector Greenhouse Gas Planning Targets](https://www.arb.ca.gov/cc/sb350/staffreport_sb350_irp.pdf), https://www.arb.ca.gov/cc/sb350/staffreport_sb350_irp.pdf.

Publicly Owned Utility	Percentage of 2030 electricity sector emissions	Low (MTCO₂e)	High (MTCO₂e)
Silicon Valley Power	0.915%	275,000	485,000
SMUD	3.621%	1,086,000	1,919,000
Turlock Irrigation District	0.629%	189,000	333,000

Source: CARB and CEC staff analysis

Individual POU GHG targets are rounded to the nearest thousands of metric tons carbon dioxide equivalent (MTCO₂e).

APPENDIX F:

Summary of Prior Guidelines Changes

Explanation of Guideline Updates

These guidelines were first adopted by the CEC on August 9, 2017, and updated as described below. These changes became (or may become) effective when adopted by the Energy Commission on the date listed.

1. Third Edition Draft Update

The changes in the third edition include:

- The forecast horizon for the POU IRPs has been extended from 2030 to 2045 to allow the CEC to review the POU plans to attain GHG reduction goals, as well as renewable procurement requirements and zero-carbon resource targets established in SB 100³⁴ and EO B-55-18.³⁵
- The inclusion of the impacts of fuel substitution, building electrification, and fuel switching towards the SB 350 energy efficiency doubling targets.
- The addition of a section regarding electric vehicle rates required by SB 437.³⁶
- The disaggregation of natural gas generation in the standardized tables by fossil gas, renewable gas, and renewable hydrogen.
- Updating the standardized tables to allow for a POU to reports its planning reserve margin, along with a description of the method for establishing it.

2. August 1, 2018, Update

The changes in the second edition included adding the requirements of Senate Bill 338 (Skinner, Chapter 389, Statutes of 2017). Senate Bill 338 requires POUs to consider existing renewable generation, grid operational efficiencies, energy storage, and distributed energy resources, including energy efficiency, to meet their energy needs during peak-demand hours. These changes will become effective when adopted by the California Energy Commission. Changes include the following:

- POUs are required to include an assessment of how multihour energy storage addresses peak-hour capacity needs (Section F.4: Energy Storage).

34 Senate Bill 100 (De León, Chapter 312, Statutes of 2018).

35 Governor's Executive Order [B-55-18](https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf), <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>.

36 Senate Bill 437 (Wieckowski, Chapter 138, Statutes of 2022).

- POU's are required to include a discussion on how existing preferred resources and grid operational efficiencies are meeting reliability needs during the peak hours (Section G.3: Addressing Net Demand in Peak Hours).
- Added the definition of "net-peak demand" to Appendix A.
- Clarified that POU's are to submit IRPs at least once every five years from the date their governing board adopts their IRP.
- Clarified the use of the term "excess balance" in relation to RPS procurement.
- Nonsubstantive typographical and formatting changes throughout the guidelines document.
- Nonsubstantive changes to the four standardized reporting tables and associated instructions in Appendix B.

3. September 19, 2018, Update

The changes in the revised second edition include adding references to the 2030 greenhouse gas emissions reduction targets adopted by the California Air Resources Board. Staff also made minor revisions to the reporting tables and instructions for the accounting of GHG emissions. These changes will become effective when adopted by the California Energy Commission. Changes include the following:

- Added references to the 2030 GHG emissions reduction targets established by the California Air Resources Board.
- POU's are required to provide spot market sales in the reporting tables so net spot market purchases can be calculated.
- Minor changes to the instructions that clarify how POU's report GHG emissions.