

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

Order Instituting Rulemaking to Develop
an Electricity Integrated Resource
Planning Framework and to Coordinate
and Refine Long-Term Procurement
Planning Requirements.

Rulemaking 16-02-007
(Filed February 11, 2016)

**PENINSULA CLEAN ENERGY AUTHORITY
2018 INTEGRATED RESOURCE PLAN AND ATTACHMENT A,
NOTICE OF AVAILABILITY**

(PUBLIC VERSION)

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August 1, 2018

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Authority

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Pursuant to Decision 18-02-018, Peninsula Clean Energy Authority (“PCE”) submits its 2018 Integrated Resource Plan (“IRP”). The public version of PCE’s 2018 IRP does not provide the confidential version of Appendix C.

Consistent with the emailed instructions from Administrative Law Judge Julie Fitch on July 31, 2018, the confidential versions of this IRP and digital formats of the various appendices were provided to Energy Division via their secure FTP site, and a formal, confidential filing with a Motion to File Under Seal will be made at a later date.

Respectfully submitted,

/s/

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Standard LSE Plan

PENINSULA CLEAN ENERGY AUTHORITY

2018 INTEGRATED RESOURCE PLAN

AUGUST 1, 2018

(PUBLIC VERSION)

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1. Executive Summary

In accordance with the requirements of Senate Bill 350 and the California Public Utilities Commission (CPUC) Decision 18-02-018, Peninsula Clean Energy (PCE) respectfully submits its 2018 Integrated Resource Plan (IRP). The IRP is comprised of this written narrative as well as the following three attachments as provided by the CPUC:

- i. Completed CPUC Baseline Resource Data Template (Appendix C);
- ii. Completed CPUC New Resource Data Template (Appendix D); and
- iii. Completed CPUC GHG Calculator for IRP v1.4.5 (“GHG Calculator”) (Appendix E).

This IRP was approved by PCE’s Board of Directors on July 26, 2018 and the resolution documenting this approval is attached as Appendix B.

PCE is submitting a conforming portfolio which was developed using the GHG Calculator and default assumptions provided by the CPUC. This portfolio produces 2030 emissions estimates (as calculated by the GHG Calculator) below the 2030 benchmark assigned to PCE in Rulemaking 06-02-007 filed on May 25, 2018. In the sections below, we provide further details on the composition of this portfolio and discuss our methodology for developing this portfolio.

As 2018 is the first iteration of this planning exercise, PCE is not submitting any alternative portfolios and has relied on the assumptions used in developing the Reference System Plan and contained in the GHG Calculator. In two years when the next IRP submission is due, we expect that we will have more data on historical load, distributed energy resources, and expected energy storage dispatch profiles which will allow us to potentially provide a more in-depth analysis. If the same IRP process is in place, PCE may at that time choose to submit an alternative portfolio that more closely aligns with PCE’s internal forecasts.

1.1 About Peninsula Clean Energy (PCE)

PCE is a community choice energy (CCE) program and San Mateo County’s official electricity provider. PCE is a joint powers agency, formed in February 2016, consisting of the County of San Mateo and all twenty of its cities. Following a comprehensive feasibility study, consistent with AB 32 voluntary action pathways, elected officials from each member jurisdiction *unanimously* agreed to form PCE to meet their local climate action goals and for the benefit of San Mateo County.

PCE is primarily regulated by its Board of Directors. Each member jurisdiction from San Mateo County has one seat on PCE’s Board of Directors (except for San Mateo County, which has two) for a total of 22 board members. The Board of Directors is responsible for setting the overall strategy for PCE. Board meetings are held on the fourth Thursday of each month at 6:30 PM at PCE’s offices in Redwood City. As prescribed by the Brown Act and the CCA institutional model, all Board meetings are open to the public and all meeting materials are posted online.

In October 2016, PCE began serving its first phase of customers, which included all small and medium commercial customers and 20% of residential customers. The second phase of

customers were enrolled in April 2017, consisting of all other customers, including large commercial and industrial, agricultural, and the remaining residential customers.

1.1.1 Enrolled Customers

PCE serves nearly 300,000 customer accounts representing approximately 765,000 residents. Table 1 shows the breakdown between commercial/industrial customers and residential customers in PCE’s service territory. Customers are automatically enrolled in PCE and have the option to opt-out of PCE and return to PG&E for electric service. Customer participation rates are expressed as the proportion of customer accounts currently served by PCE relative to the total number of electric customer accounts in San Mateo County eligible for PCE service.¹ The difference between such numbers reflects the subset of customer accounts who have voluntarily opted out of the PCE program, retaining bundled service by PG&E. As of publication, the customer participation rate associated with PCE’s membership is greater than 97% (i.e., the opt-out rate is approximately 2.54%).

Table 1: PCE Participation by Customer Type (July 2017 – June 2018)

	Total PCE	Residential	Commercial, Industrial
Number of Customer Accounts	291,161	262,900	28,261
		90.3%	9.7%
Total Retail Sales (kWh)	3,513,150,186	1,366,407,267	2,146,742,919
		38.9%	61.1%

1.1.2 Retail Products

PCE customers can choose between two different product options, ECOplus and ECO100. Each product has a different amount of energy from renewable sources such as solar and wind. Table 2 summarizes customer participation in each product as of mid-2018.

Table 2: Participation Rates by Product (July 2017 – June 2018)

	Total PCE	ECOplus	Eco100
Number of Customer Accounts	291,161	285,823	5338
		98.2%	1.8%
Total Retail Sales (kWh)	3,513,150,186	3,368,558,627	144,591,559
		95.9%	4.1%

1.1.2.1 ECOplus

ECOplus is PCE’s default electric option, in which new customers are automatically enrolled. ECOplus rates are set at 5% below PG&E’s generation rates. Fifty percent of the electricity comes from renewable sources and this product will be 85% GHG-free in 2018.



1.1.2.2 ECO100

Customers can choose to “opt up” to ECO100 and receive 100% of their electricity from renewable energy resources. ECO100



¹ Direct Access customers are not automatically enrolled in a CCE program. The Direct Access (DA) program allows a limited selection of non-residential consumers in California to purchase their electricity from an energy service provider (ESP) rather than from their investor owned utility (IOU) or default electricity supplier.

costs \$0.01 per kWh more than ECOplus. As of mid-2018, over 5,000 accounts opted-up to ECO100. As part of their emission reduction targets and sustainability goals, 16 cities and the County of San Mateo enrolled their accounts in ECO100. The ECO100 option also provides an opportunity for corporate customers to meet their own sustainability goals. For example, Visa and Facebook have both chosen the ECO100 offering for their electricity use in San Mateo County.² As of January 2018, the ECO100 product is certified by the Center for Resource Solutions' (CRS) Green-e certification program.

1.1.3 Strategic IRP

In December 2017, PCE's Board approved a strategic Integrated Resources Plan (Strategic IRP), which provides guidance for serving the electric needs of the residents and businesses in San Mateo County while meeting PCE's policy objectives and regulatory requirements over a 10-year planning period from 2018-2027. The Strategic IRP addresses how PCE will meet the following targets by managing a portfolio of energy and capacity resources to:

- Meet California's Renewable Portfolio Standard (RPS) requirements of 29% of retail electricity sales to come from renewable energy sources in 2018. This percentage increases to 50% by 2030.
- Provide the necessary capacity reserves to meet California's Resource Adequacy (RA) regulatory requirements for load-serving entities.
- Maintain a minimum renewable energy content of 50% for its ECOplus product, and 100% for its ECO100 product, while working towards a goal of increasing PCE's renewable content to 100% renewable energy for all PCE customers by 2025.
- Meet its GHG-free target of 85% for 2018 and increase its GHG-free energy by 5% per year to 100% GHG-free in 2021.

The Strategic IRP documents PCE's current procurement status and outlines PCE's resource planning policies and objectives over a ten-year planning timeframe. Periodically, PCE staff will update the IRP and submit it to PCE's Board for approval. Such approval is made in consideration of applicable regulatory requirements, PCE policy objectives, energy market conditions, anticipated changes in electricity sales, ongoing procurement activities, and any other considerations that may affect how PCE carries out its resource planning.

The Strategic IRP had four primary purposes:

- (1) Document current procurement status following PCE's first year of operations;
- (2) Quantify resource needs over a ten-year planning period;
- (3) Articulate relevant energy procurement policies; and
- (4) Communicate PCE's resource planning policies, objectives and planning framework to the public and to key stakeholder groups.

² Facebook ECO100 Press Release: <https://www.peninsulacleanenergy.com/wp-content/uploads/2016/06/Facebook-is-Largest-ECO100-Customer-092117.pdf>

Visa ECO100 Press Release: <https://www.peninsulacleanenergy.com/wp-content/uploads/2018/05/050218-PCE-Release-v.8-Final.pdf>

In practical terms, the Strategic IRP specifies the energy procurement policies adopted by PCE's Board and serves as a guideline to PCE staff regarding day-to-day energy planning and procurement activities. The Strategic IRP is attached to this document as Appendix A.

2. Study Design

2.1 Objectives

PCE's primary objectives in submitting this IRP are as follows:

- i. To demonstrate that PCE has a plan to meet its CEC 2017 IEPR load forecast through 2030;
- ii. To share with the CPUC PCE's conforming planned portfolio for 2030; and
- iii. To demonstrate that this plan meets the 2030 assigned emissions benchmark of 0.636 MMT as calculated using the GHG Calculator.

Further, we attempt to meet both the requirements set out by the CPUC as well as to continue to meet the objectives set out in PCE's Strategic IRP. In addition to regulatory mandates, PCE has set its own goals and policies that go beyond the RPS requirements.

2.1.1 GHG-Free by 2021

Reducing electric utility-sector GHG emissions is one of PCE's charter objectives. PCE started with a 75% GHG-free supply portfolio in 2016, increased to a target of 80% in 2017 and is on track for 85% for 2018. PCE plans to increase the total GHG-free energy supply by 5% per year, with the goal of achieving a 100% GHG-free supply portfolio by 2021.

2.1.2 100% Renewable by 2025

PCE intends to replace the conventional and non-renewable GHG-free energy resources in its supply portfolio with renewable resources. Actual annual renewable content percentages may differ from projections, if resource availability or market conditions preclude cost-effective procurement, but the primary goal is to achieve a 100% RPS-eligible renewable supply no later than 2025.

Further, in providing customers with 100% renewable energy, PCE intends to match its electricity supply portfolio to its customer electricity demand profile on a time coincident basis. This means that for every hour of the year, we want the amount of energy we are procuring from renewable generators to be equal to the amount of energy that our customers are consuming in that hour.

Finally, the PCE Board has adopted the following three specific policies to guide power procurement:

- i. PCE shall not use unbundled renewable energy credits (RECs) for meeting its renewable energy goals.³
- ii. In sourcing electricity and resource adequacy, PCE will not procure electricity or resource adequacy from coal facilities.⁴
- iii. PCE has published a Sustainable Workforce Policy.⁵ PCE desires to facilitate and accomplish the following objectives through this policy:
 - a. Support for and direct use of local businesses;
 - b. Support for and direct use of union members from multiple trades;
 - c. Support for and use of training and State of California approved apprenticeship programs, and pre-apprenticeship programs from within PCE's service territory; and
 - d. Support for and direct use of green and sustainable businesses.

2.1.3 Designing a Diverse and Balanced Portfolio

PCE's goal is to fulfill its open position with a diverse set of contracts. PCE uses a portfolio risk management approach in its power purchasing program, seeking low cost supply as well as diversity among technologies, production profiles, project sizes, project locations, counterparties, term lengths and timing of market purchases to cost average over time, including remaining cognizant of the value of open market positions.⁶ These factors are taken into consideration when PCE engages the market and PCE has developed specific guidelines for each of these diversification factors. Figure 1 identifies the attributes PCE strives to balance in terms of diversity of its power supply.

Specifically, PCE has set a guideline to target a minimum 50% of the portfolio be procured from new projects by 2025 and procure at least 50% of our portfolio from long-term contracts. Further details are outlined in the Strategic IRP attached as Appendix A starting on page 23. In 2018 and beyond, PCE will strive to procure resources to meet the guidelines outlined in the Strategic IRP. PCE has attempted to follow these guidelines within the confines of the CPUC IRP process in developing its conforming portfolio.

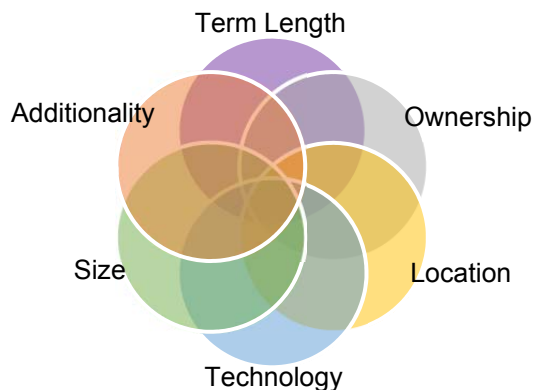
³ PCE policy on unbundled RECs: <https://www.peninsulacleanenergy.com/wp-content/uploads/2017/01/PCE-Policy-11-final.pdf>

⁴ PCE Policy excluding coal for power and resource adequacy: <https://www.peninsulacleanenergy.com/wp-content/uploads/2017/01/Policy-12-Excluding-Coal-for-Power-and-Resource-Adequacy.pdf>

⁵ PCE Sustainable Workforce Policy: <https://www.peninsulacleanenergy.com/wp-content/uploads/2017/01/PCE-Policy-10-final-1.pdf>.

⁶ Discussion of each of these factors is contained in PCE's Strategic IRP starting on page 22 of the Strategic IRP.

Figure 1: Contract Diversity Attributes



2.2 Methodology

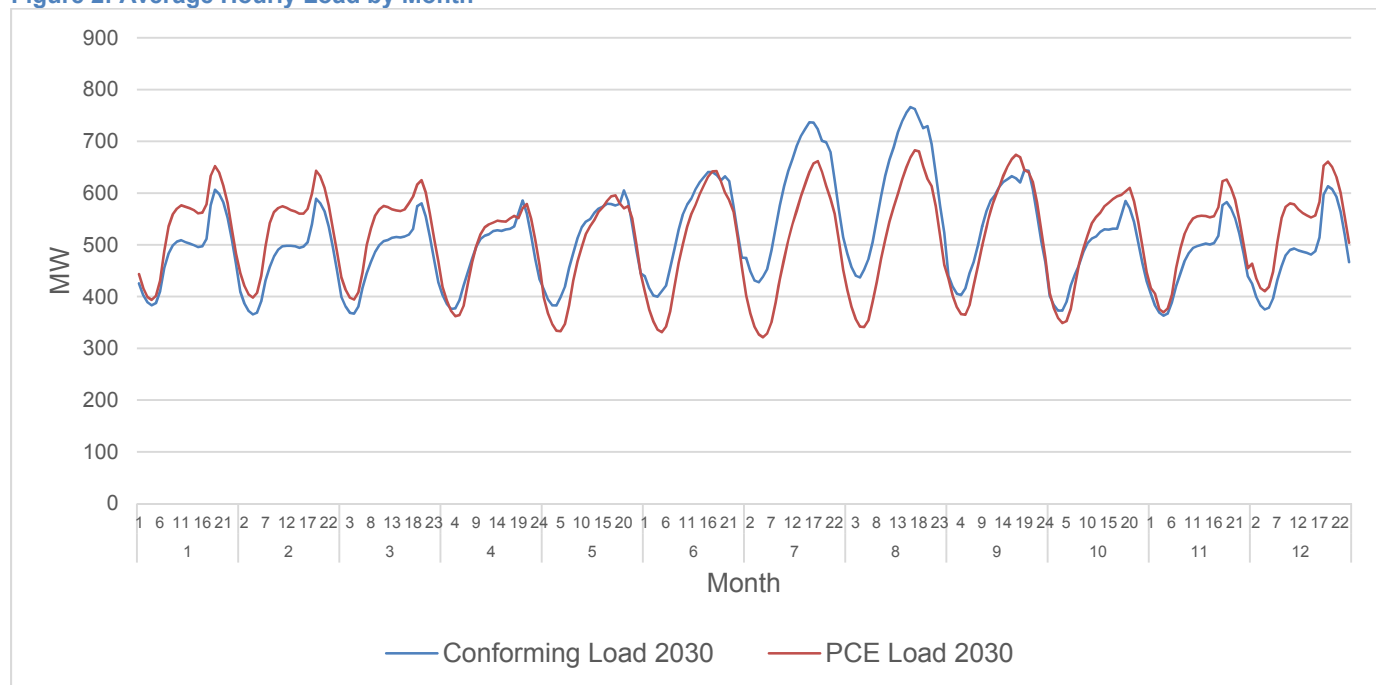
2.2.1 Modeling Tool(s)

PCE used the GHG Calculator provided by the CPUC for calculating resource needs through 2030 and expected GHG emissions in 2030.

2.2.2 Modeling Approach

PCE first evaluated the projected load in the CEC 2017 IEPR forecast and the load profile in the GHG Calculator for IRP v1.4.5. While the total GWh projected in the CEC 2017 IEPR forecast are in line with PCE's internal estimates, the shape of the load profile differed from PCE's internal load forecast. PCE's internal load forecast is based on actual historical usage. As evident in Figure 2, PCE's forecasted load shape is higher in the winter months and lower in the summer months than the conforming load profile. This is due to PCE's territory being located in a more temperate region than the state average, requiring less air conditioning load in the summer. This discrepancy results in a much higher forecast peak load using the load forecast contained in the GHG Calculator than using PCE's internal load profile forecast. In the Lessons Learned section below, we discuss in more detail the potential impacts of this type of discrepancy.

Figure 2: Average Hourly Load by Month



PCE matched its baseline resources with the categories provided in the GHG Calculator. Once the contracted resources were included in the GHG Calculator, PCE evaluated the open position calculated by the GHG Calculator on an hourly basis.

For identifying new resources, PCE balanced the following considerations:

- Requirements of the CPUC IRP's conforming portfolio
 - Using the CEC's 2017 IEPR forecast; and
 - Meeting the GHG Benchmark assigned to PCE of 0.636 MMT.
- Regulatory requirements:
 - RPS targets of 33% by 2020 and 50% by 2030;
 - 65% of RPS procurement under contracts of 10 years or longer by 2021;
 - Energy storage targets under AB 2514; and
 - Resource Adequacy requirements.
- PCE's procurement goals and objectives:
 - 100% GHG Free by 2021;
 - 100% renewable on a time-coincident basis by 2025;
 - 50% of the portfolio from new resources by 2025; and
 - 50% of the portfolio from long-term contracts by 2025.
- Risk exposure:
 - Procuring from a diverse set of resources;
 - Potential for curtailment; and
 - Forecasted locational marginal prices.

Using the GHG Calculator assumptions, PCE identified a portfolio that balanced the considerations outlined above.

2.2.3 Assumptions

PCE used assumptions consistent with the Reference System Plan and the default assumptions in the GHG Calculator in its IRP modeling.

For projecting load across the IRP planning horizon, PCE used the “mid Baseline mid AAEE mid AAPV” version of Form 1.1c of the CEC’s adopted 2017 IEPR forecast as identified in Table 3 below.

Table 3: PCE 2017 IEPR Assigned Load Forecast

	2018	2022	2026	2030
Assigned Load Forecast for IRP (i.e., Managed Retail Sales Forecast) GWh	3,804	3,710	3,641	3,579

PCE is electing to use the LSE-specific GHG Emissions Benchmark assigned to PCE in Rulemaking 06-02-007 filed on May 25, 2018 — rather than the GHG Planning Price — in developing its conforming portfolio as identified in Table 4 below.

Table 4: LSE-Specific GHG Emissions Benchmark

	2030 GHG Emissions (MMT)
GHG Emissions Benchmark	0.636

PCE is in the process of developing customer programs and expect that upon implementation, these programs will impact inputs including electric vehicle charging, building electrification, and energy efficiency among others. In future IRPs, PCE may explore these areas in more detail and may present an alternative portfolio incorporating different assumptions.

3. Study Results

3.1 Portfolio Results

PCE is submitting a conforming portfolio. This portfolio uses the assigned load forecast and the 2030 GHG emissions, as calculated by the GHG Calculator, are below the assigned GHG Benchmark.

Table 5: Conforming Portfolio

Conforming Portfolio	2018	2022	2026	2030
Assigned Load Forecast (GWh)	3,804	3,710	3,641	3,579
Annual Emissions Estimated by GHG Calculator (MMT)	0.244	0.039	(0.123)	0.001

The conforming portfolio’s content is itemized in the completed Baseline Resources Data Template and New Resources Data Template.

PCE’s conforming portfolio is presented on a capacity (MW) basis in Figure 3 below and by generation (GWh) in Figure 4 below.

Figure 3: 2030 Conforming Portfolio by MW Capacity

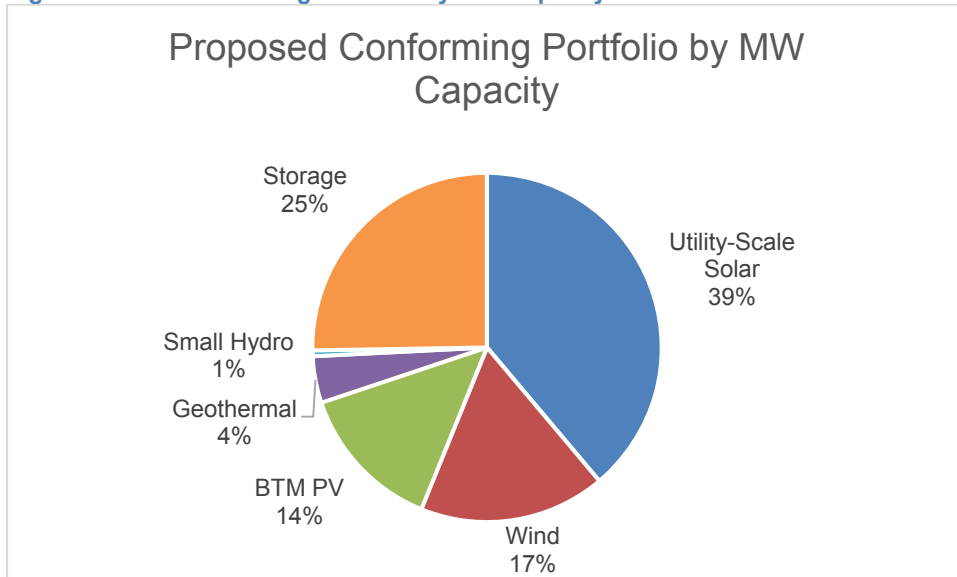
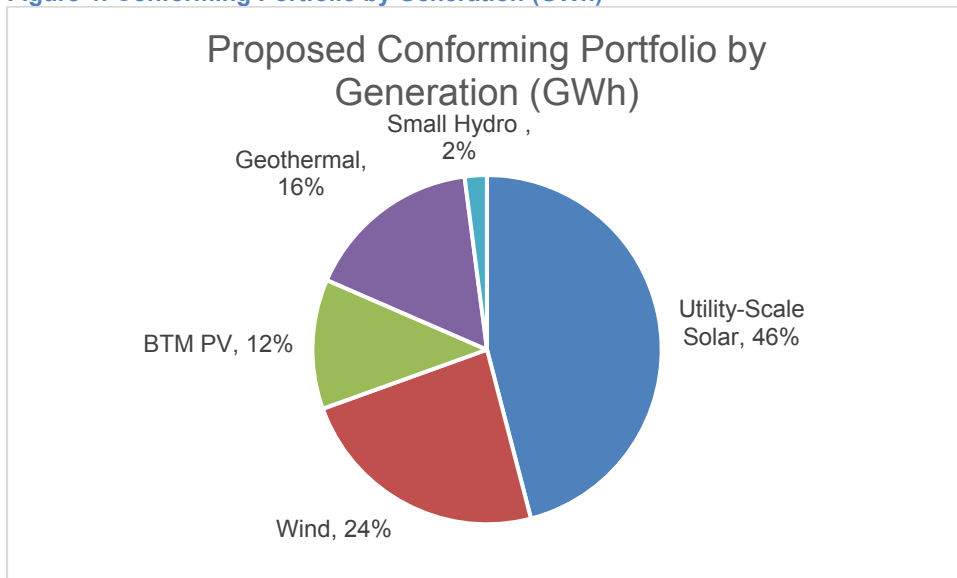
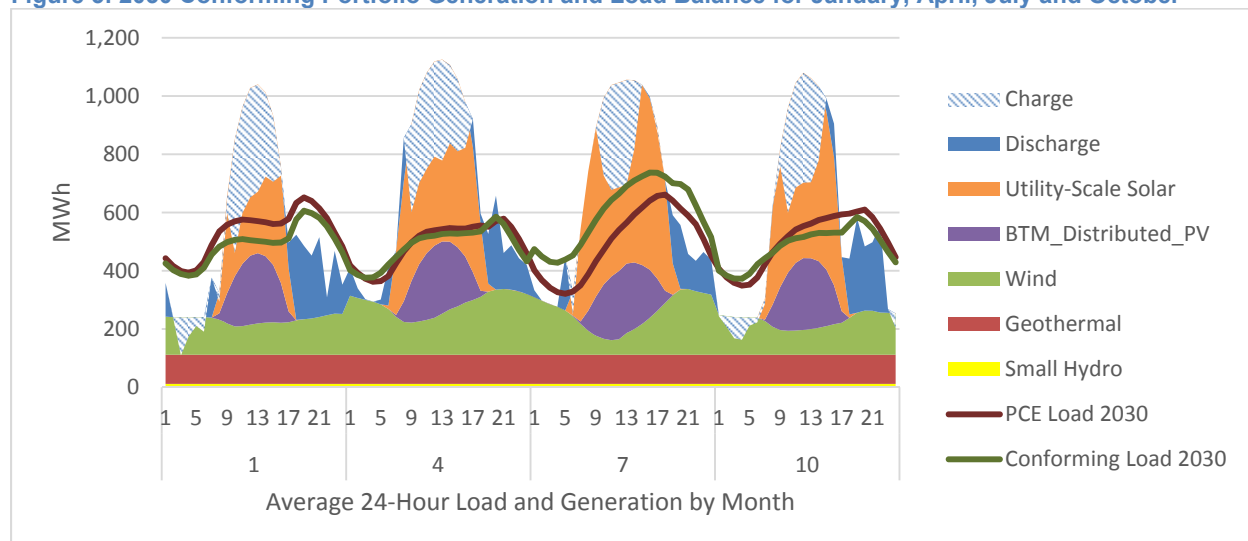


Figure 4: Conforming Portfolio by Generation (GWh)



PCE also evaluated how resource generation would fit the load shape on an hourly basis. Figure 5 below demonstrates how the conforming portfolio matches the assigned load and PCE's internal load forecast for four representative months – January, April July and October.

Figure 5: 2030 Conforming Portfolio Generation and Load Balance for January, April, July and October



PCE’s goal is to be 100% renewable by 2025 and match renewable generation to load on an hourly basis. Actual procurement may differ from these goals if resource availability or market conditions preclude cost-effective procurement.

The conforming portfolio represents our best attempt to achieve this goal using the profiles provided by the GHG Calculator. We recognize that this portfolio does not fully accomplish this goal; we are over-procured in certain hours and under-procured in other hours. PCE expects that we may be able to better match our supply to our load through a variety of means including but not limited to changing the dispatch patterns of storage resources and implementing demand response programs. For this initial year, PCE has chosen to use the assumptions provided by the CPUC in the GHG Calculator for storage dispatch. However, in future years, PCE may choose to present an alternative portfolio that incorporates storage charge and discharge profiles that better match internal assumptions.

3.2 Preferred and Conforming Portfolios

As PCE is only submitting a conforming portfolio, the conforming portfolio is its preferred portfolio. PCE requests that the Commission certify the completeness of PCE’s IRP detailing PCE’s conforming portfolio, as summarized above and detailed in the completed Baseline Resource Data Template and New Resource Data Template. PCE’s conforming portfolio is consistent with each relevant statutory and administrative requirement stated in Public Utilities Code Section 454.52(a)(1):

Beginning in 2017, and to be updated regularly thereafter, the commission shall adopt a process for each load-serving entity, as defined in Section 380, to file an integrated resource plan, and a schedule for periodic updates to the plan, to ensure that load-serving entities do the following:

(A) Meet the greenhouse gas emissions reduction targets established by the State Air Resources Board, in coordination with the commission and the Energy Commission, for the electricity sector and each load-serving entity that reflect the electricity sector’s percentage in achieving the economywide greenhouse gas emissions reductions of 40 percent from 1990 levels by 2030.

PCE's conforming portfolio 2030 GHG emissions of 0.001 MMT are significantly below the assigned benchmark for PCE of 0.636 MMT when calculated using the GHG Calculator.

(B) Procure at least 50 percent eligible renewable energy resources by December 31, 2030, consistent with Article 16 (commencing with Section 399.11) of Chapter 2.3.

PCE's goal is to be 100% renewable by 2025. PCE's conforming portfolio is 100% renewable and demonstrates that PCE will achieve 50% RPS by 2030.

(C) Enable each electrical corporation to fulfill its obligation to serve its customers at just and reasonable rates.

PCE's rates are currently set at 5% below PG&E's rate. As detailed in Section 3(b)(ii) below PCE is committed to serving our customers at reasonable rates.

(D) Minimize impacts on ratepayers' bills.

In addition to setting rates that are competitive with PG&E, PCE works to minimize rate volatility by constructing a balanced and conservatively-hedged power supply portfolio, building significant financial reserves⁷ and minimizing rate changes to once per year when possible.

(E) Ensure system and local reliability.

PCE procures system, local and flexible RA on a long-term, multi-year, year-ahead and month-ahead basis to meet CPUC and CAISO Resource Adequacy (RA) requirements. Further, PCE works to structure its supply portfolio to minimize hourly imbalances between load and supply. PCE's conforming portfolio also contemplates procuring significant storage resources, which will contribute to reliability.

(F) Strengthen the diversity, sustainability, and resilience of the bulk transmission and distribution systems, and local communities.

PCE's conforming portfolio relies on procurement from a variety of resource types as well as significant storage resources. PCE carefully evaluates the long-term generation load-matching and congestion risks of new resources and weighs its options in the context of its existing supply and net demand on an hourly basis for the full duration of any contract period.

(G) Enhance distribution systems and demand-side energy management.

PCE is in the process of developing customer programs to support demand-side energy management.

(H) Minimize localized air pollutants and other greenhouse gas emissions, with early priority on disadvantaged communities identified pursuant to Section 39711 of the Health and Safety Code.

Please refer to the section directly below.

⁷ PCE Financial Reserves Policy: https://www.peninsulacleanenergy.com/wp-content/uploads/2018/06/PCE-Policy-18-Reserves-Policy_Adopted-0628818.pdf

3.2.1 Local Air Pollutant Minimization

3.2.1.1 Introduction

PCE's Preferred Portfolio is a 100% renewable portfolio. PCE's current portfolio is at least 50% renewable and 85% GHG free as that is PCE's default product offering serving 96% of PCE's load. PCE plans to increase the GHG and renewable portions of its default offering so that it is 100% GHG free in 2021 and 100% RPS-eligible renewable in 2025. Further, PCE does not currently procure and does not plan to procure electricity directly from any fossil fueled power plants. PCE's conforming portfolio relies on a variety of renewable resources which will benefit all communities in California including disadvantaged communities (DACs). In the sections below, PCE has provided the requested information on DACs located in PCE's service territory. PCE has also provided information on programs PCE is launching to benefit customers in DACs.

3.2.1.2 Disadvantaged Communities (DACs)

The CPUC's IRP guidelines define "disadvantaged communities" (DACs) as those identified in CalEnviroScreen 3.0 as the top 25% of impacted census tracts on a statewide basis and the top 5% of census tracts without an overall score but with highest pollution burden. PCE identified six census tracts in San Mateo County in the top 25% of impacted census tracts, thereby meeting this definition of disadvantaged communities ("DACs"). There are no census tracts within San Mateo County without an overall score, but with the highest pollution burden. Please refer to Table 6 below for a list of the census tracts and relevant demographic data. Additionally, Figure 6 below provides a map to the location of each census tract in San Mateo County.

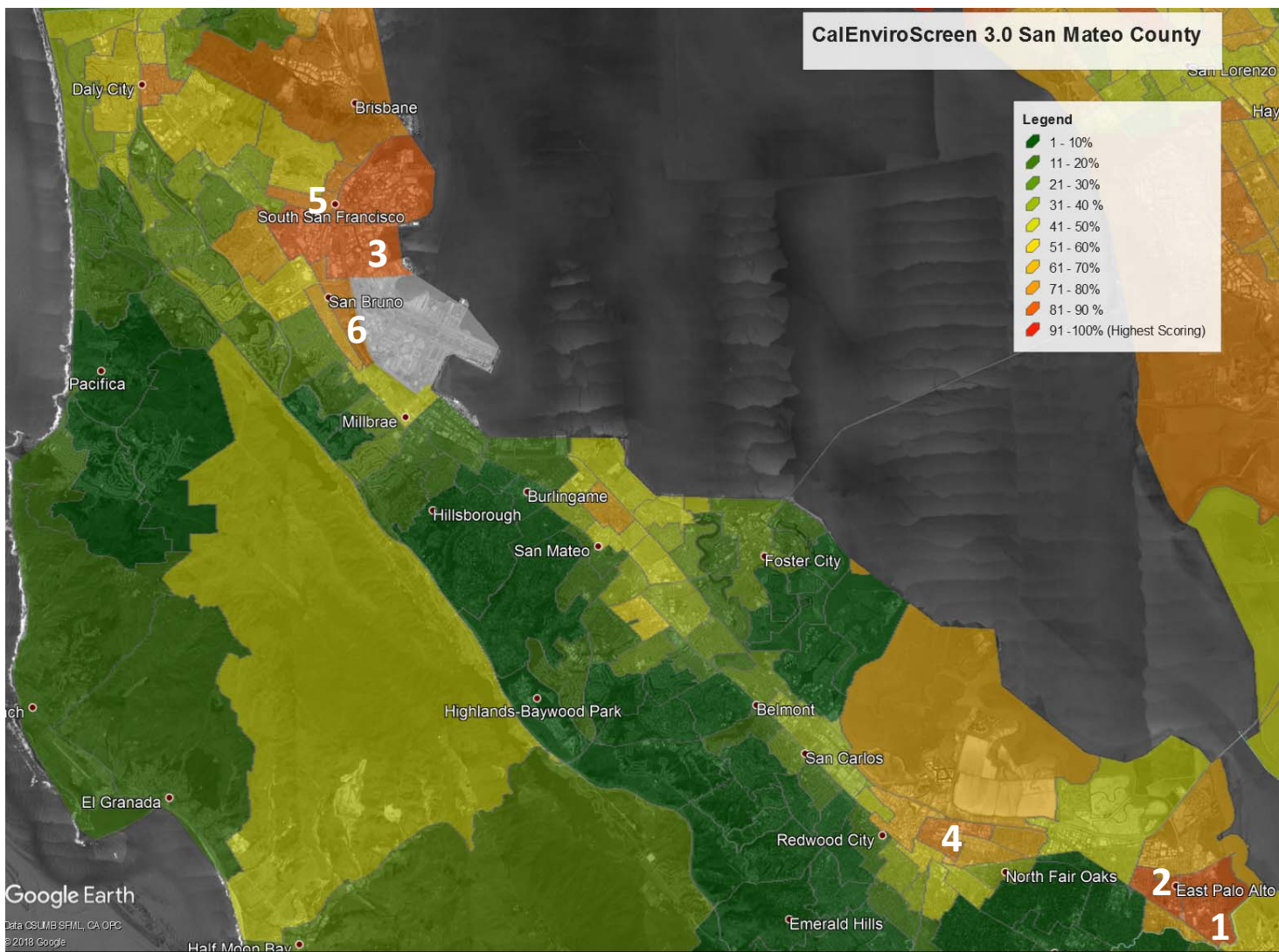
Table 6: San Mateo County's Disadvantaged Communities⁸

CalEnviroScreen 3.0 Results						PCE DACs ⁹	Demographics (%)					
	Census Tract	CES 3.0 %	CES 3.0 % Range	City	Population	Customer Accounts	Hispanic	White	African American	Native American	Asian American	Other
1	6081611900	86.85	86-90%	East Palo Alto	10,325	1,235	56.9	6.8	19.8	0.1	13.3	3.1
2	6081612000	81.70	81-85%	East Palo Alto	7,327	710	72.8	3.2	13	0.1	9.0	2.0
3	6081602300	80.89	81-85%	South San Francisco	3,753	1,160	45.4	19.5	1.5	0.2	30.3	3.2
4	6081610201	80.20	81-85%	Redwood City	5,764	2,125	74.4	12.1	2.5	0.4	8.3	2.2
5	6081602100	77.93	76-80%	South San Francisco	3,615	943	72.4	9.0	1.9	0.4	14.1	2.1
6	6081604200	75.46	76-80%	San Bruno	4,170	888	56.9	14.9	0.9	0.5	23.1	3.7
				Total	34,954	7,061						

⁸ Table 6 includes data from <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>, under CalEnviroScreen 3.0 Data and Additional Materials - ces3results.xlsx (updated June 2018)

⁹ Not included in CalEnviroScreen 3.0 results; figures calculated by PCE.

Figure 6: Map of DACs in San Mateo County (Numbers correlate to census tracts in Table 6)



3.2.1.3 Customers Served in DACs

PCE estimates that it has 7,061 residential accounts in DACs located within San Mateo County, as defined by the CPUC guidance. This represents roughly 2.4% of PCE’s total customer accounts.

The CalEnviroScreen 3.0 identifies disadvantaged communities by census tract, however, PCE doesn’t currently capture customer data in this granularity. To determine an accurate estimate, PCE used the United States Postal Service (USPS) Zip Code Crosswalk files provided online by the Department of Housing and Urban Development (HUD)¹⁰. HUD uses the USPS’s database to reflect the locations of both residential and business addresses to help merge census tracts with zip codes. PCE used this method because it allocates data based on residential addresses rather than by area or population, a more accurate approach to determine the number of accounts in each census tract. Please reference Table 6 for the estimated number of PCE residential accounts in each of the identified census tracts.

¹⁰ https://www.huduser.gov/portal/datasets/usps_crosswalk.html

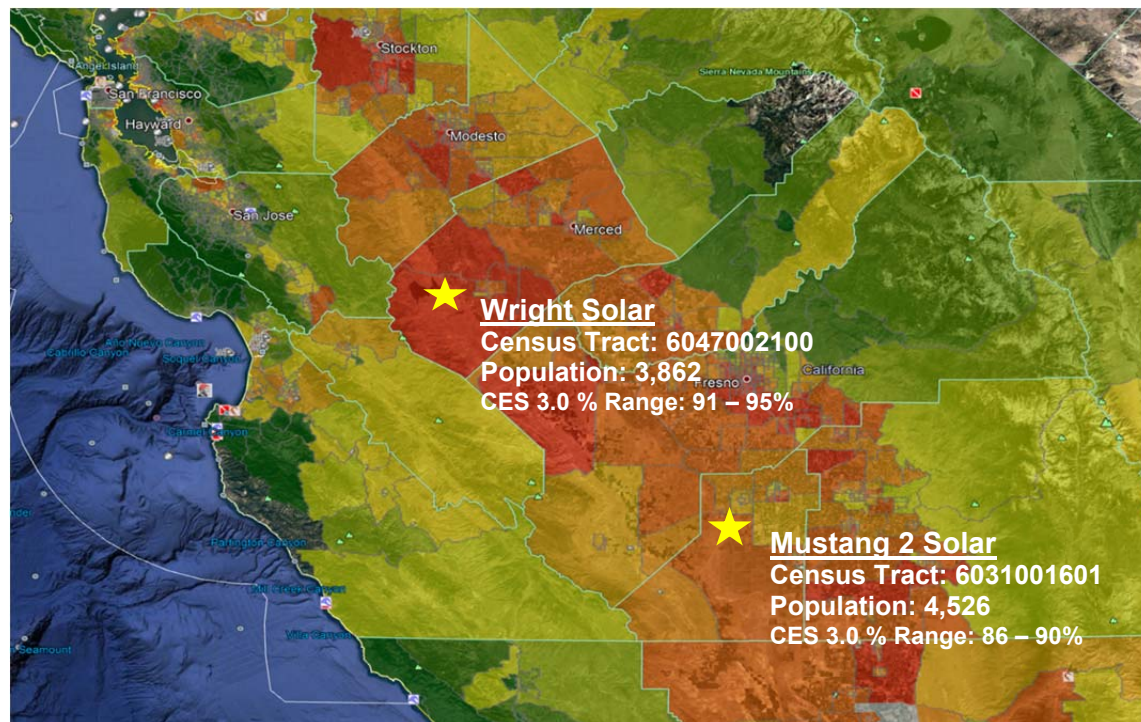
3.2.1.4 Power Procurement in DACs

PCE does not procure power directly from any natural gas or other fossil resource power plants. Further, there are no polluting electricity generation resources located in the DACs in PCE's service territory identified above.

However, PCE has executed long-term power purchase agreements (PPAs) with two solar projects located in DACs in Merced County and in Kings County. PCE's purchase of solar energy generated from these two projects will deliver renewable power to PCE's customers, while improving air quality, providing economic benefits and creating hundreds of jobs to the project's region.

Each of these projects has signed a project labor agreement (PLA) with local unions. A PLA is a pre-hire collective bargaining agreement with one or more labor organizations that establishes the terms and conditions of employment for a specific construction project. Consistent with PCE's Sustainable Workforce policy¹¹, PCE believes support of local businesses, union labor and apprenticeship and pre-apprenticeship programs that create employment opportunities are important components of building and sustaining healthy and sustainable communities. As part of its procurement process, PCE collects information from project owners on expected labor impacts. This information is used to evaluate potential workforce impacts of proposed projects with the goal of promoting fair compensation, fair worker treatment, multi-trade collaboration, and support for the existing wage base in local communities where contracted projects will be located.

Figure 7: Solar Project Locations and DACs



Wright Solar is a 200 MW solar project currently under development in Merced County, less

¹¹ <https://www.peninsulacleanenergy.com/wp-content/uploads/2017/01/PCE-Policy-10-final-1.pdf>

than 100 miles south of San Mateo County. Wright Solar is located in a disadvantaged community that ranks very highly on the CalEnviroScreen 3.0, falling within the 91 – 95% percentile of communities burdened by the highest pollution. Please refer to Figure 7 for the location of the project and CalEnviroScreen 3.0 details. The project owner estimates that construction of the project will provide over 350 regional union jobs in 2018 and 2019, or roughly 650 job-years. Once operating, the plant will produce power equivalent to that used by over 75,000 households.

Mustang Two Solar is a 100 MW solar project under development in Kings County, roughly 200 miles outside San Mateo County. The facility is located in a disadvantaged community that ranks on the CalEnviroScreen 3.0 in the 86 – 90% percentile of communities burdened by the highest pollution. Please refer to Figure 7 for the location of the project and CalEnviroScreen 3.0 details. Mustang Two Solar is expected to start construction in 2019 and create 450 jobs during peak construction. The project owner estimates that approximately \$3.1 million will be spent locally on materials and services, \$3.6 million in tax revenue will go to Kings County and \$8.1 million in tax revenue will go to the state.

3.2.1.5 LSE Activities & Programs Impacting DACs

PCE's ECOplus customers receive a 5% discount from PG&E's electrical service rate, which is an immediate benefit provided to all residents who want to reduce their monthly electrical bill. This saves residential customers \$2.28 on average per month.¹²

PCE promotes programs and activities that contribute to economic development within disadvantaged communities while reducing greenhouse gas emissions by increasing local clean power production, encouraging adoption of electric vehicles, and encouraging energy efficiency. Table 7 provides an overview of the various programs PCE is currently launching to benefit customers located in DACs.

In evaluating the impact of such local programs on disadvantaged communities, PCE also looks at the impact on California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) customers. As of June 30, 2018, PCE has 29,373 CARE accounts and 1,126 FERA accounts.

¹² Based on a typical usage of 423 kWh/month. For details on rates and savings calculation: <https://www.peninsulacleanenergy.com/residential/residential-rates/>

Table 7: Overview of PCE Programs Benefiting DACs

Program	Description	Status
Low-Income PHEV Purchase Program	This program will offer point of sale rebates to low-income residents for purchase of used plug-in hybrid cars. Rebate amount is still to be determined and will be combined with low-income used car financing. This program also includes training on benefits of plug-in vehicles, understanding the fundamentals of the vehicle and how to benefit from them. Outreach to be supported by community groups working with low-income residents. As part of this PCE will hold a “ride and drive” event in close proximity to the largest DACs in PCE’s territory in East Palo Alto and Redwood City.	Program approved by PCE’s board on April 26, 2018. Currently under development, expected launch for 2018 Q4.
Easy Charge Apartments	Provides proactive education and free technical assistance to multi-unit dwelling (MUD) owners and managers to make it easy to become EV-ready for their tenants. This program offers free site electrical assessments, guidance on apartment policies and linkages to existing resources for EV charger installations such as the PG&E EV Charge Network program. PCE hopes to provide technical assistance to 10+ apartment complexes and foster installations using available programs. A special emphasis will be placed on engaging affordable housing providers.	On July 10 th , PCE hosted an informational workshop for apartment complex property owners and manager and 27 people were in attendance. Multiple properties now in discussion for electric assessments and other assistance.
Curbside Charging	\$1 million for a 3-year pilot program to identify and pilot unique technology and business model innovations required for expanded EV infrastructure within MUDs and for curbside charging. The strategy is intended to help address the lack of excess power in a large segment of the County’s MUD buildings (80% are over 50 years old).	Program approved by PCE’s Board on June 28, 2018. Project scoping complete. Consultant engagement expected Sept-Oct to initiate.
School Bus Electrification in DACs	Providing technical assistance to school districts in DACs to assist in preparing materials to apply for CEC electric bus grants (GFO 17-607).	In process. Application due September 20, 2018.

Program	Description	Status
Community Pilots	Call for Proposals to provide funding of up to \$75,000 for pilot projects lasting up to 18 months in duration that support PCE's mission to reduce GHG emissions, deliver clean electricity at low cost and provide tangible benefits to the community.	Launched on June 21, 2018 with proposals due on August 3, 2018. Selection expected by the end of September 2018.
Outreach Small Grants	<p>Small grant pilot program open to community based organizations to support collaborative outreach to vulnerable residents in San Mateo County. These grants were designed to specifically target the following audiences:</p> <ul style="list-style-type: none"> • Low-income residents; • Seniors; • Customers eligible for Medical Baseline discounts; • Customers with low English language proficiency; and • Residents of northern San Mateo County focusing on San Bruno, South San Francisco, Pacifica, and Daly City. <p>The grants helped PCE distribute its message in English, Spanish, Chinese, Tongan and Samoan. The goal of distributing these small grants is to gain further participation from the public and local organizations to collaborate with PCE on efforts to create a sustainable, cleaner environment for San Mateo County.</p>	Applications were received March 9, 2018 and five outreach grants were distributed. Grant period to end October 15, 2018. New grant will be announced Q4 2018.
Resilient Solar on Critical Facilities	Joint project with East Bay Community Energy (EBCE) to complete a scoping study to identify municipal critical facilities and complete a preliminary assessment for solar plus storage resilience.	Project expected to begin in 2018 Q4.

3.1.2.6 Estimates of Annual Emissions of Nitrogen and Particulate Matter

PCE does not own or sign contracts directly with specific power plants that emit nitrogen or particulate matter. PCE's goal is to be 100% GHG free by 2021 and 100% renewable by 2025. For these portfolios, PCE assumes no emissions of nitrogen or particulate matter.

PCE estimates that for 2017, PCE's portfolio was responsible for 566 tons of N₂O emissions. In 2017, 15% of PCE's generation was provided by system power and 6.6% was provided by biomass and biogas. According to the California Air Resources Board (CARB), in 2016, the

electricity sector in California was responsible for 160,000 tons of N₂O emissions.¹³ According to the California Energy Commission (CEC), in 2016, total generation (including in-state generation and imports) from nitrogen emitting fuels¹⁴ was 166,148 GWh.¹⁵ Based on this, we estimate a nitrogen emissions factor of 1.93 lbs / MWh of electricity generated from a nitrogen emitting fuel. In 2017, PCE's portfolio included 587,545 MWh of electricity generated from unspecified system power or biomass/biogas. Using the nitrogen emissions factor of 1.93 lbs / MWh, PCE estimates that its portfolio was responsible for 566 tons of nitrogen emissions in 2017. For 2018, PCE forecasts similar levels of unspecified system power and biomass/biogas and therefore, we expect a similar level of nitrogen emissions.

PCE estimates that for 2017, PCE's portfolio was responsible for 6 tons of PM_{2.5} emissions. In 2017, 15% of PCE's generation was provided by system power and 6.6% was provided by biomass and biogas. According to CARB, in 2012, the electricity sector in California was responsible for 2,121 tons of PM_{2.5} emissions.¹⁶ According to the CEC, in 2012, total generation (including in-state generation and imports) from PM_{2.5} emitting fuels¹⁷ was 209,339 GWh.¹⁸ Based on this, we estimate a PM_{2.5} emissions factor of 0.02 lbs / MWh of electricity generated from a PM_{2.5} emitting fuel. In 2017, PCE's portfolio included 587,545 MWh of electricity generated from unspecified system power or biomass/biogas. Using the PM_{2.5} emissions factor of 0.02 lbs / MWh, PCE estimates that its portfolio was responsible for 6 tons of PM_{2.5} emissions in 2017. For 2018, PCE forecasts similar levels of unspecified system power and biomass/biogas and therefore, we expect a similar level of PM_{2.5} emissions.

3.2.2 Cost and Rate Analysis

PCE's rates are set by its Board of Directors. PCE has a goal to offer rates that are at parity or lower than PG&E rates. Currently, PCE's ECOplus rates are set at 5% below PG&E's rates. To meet this goal, PCE is taking a number of actions to procure the lowest cost portfolio and protect our customers from unexpected price increases.

- Competitive procurement: PCE engages in competitive procurement processes to secure the lowest rates possible for our customers.
- Financial reserves: PCE directs a certain % of its income to a reserve fund, which can help PCE manage risk and remain financially solvent.¹⁹
- Credit rating: PCE is pursuing an investment grade credit rating. However, PCE has demonstrated that it is creditworthy as we have successfully negotiated 300 MW of long-term contracts for solar resources and we continue to have robust participation in our ongoing procurement activities.

¹³ 2016 is the most recent data available:

https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_sector_sum_2000-16n2o.pdf

¹⁴ Coal, natural gas, oil, Other (petroleum coke, Waste heat), Biomass and unspecified.

¹⁵ http://www.energy.ca.gov/almanac/electricity_data/system_power/2016_total_system_power.html

¹⁶ 2012 is the most recent data available:

https://www.arb.ca.gov/app/emsinv/2017/emssumcat_query.php?F_YR=2012&F_DIV=-4&F_SEASON=A&SP=SIP105ADJ&F_AREA=CA#stationary

¹⁷ Coal, natural gas, oil, Other (petroleum coke, Waste heat), Biomass and unspecified.

¹⁸ http://www.energy.ca.gov/almanac/electricity_data/system_power/2016_total_system_power.html

¹⁹ Financial Reserves Policy: https://www.peninsulacleanenergy.com/wp-content/uploads/2018/06/PCE-Policy-18-Reserves-Policy_Adopted-0628818.pdf

In light of these goals, PCE analyzed the anticipated cost of the conforming portfolio based on known contracted costs and forward price assumptions for open positions. PCE notes that numerous market factors could affect these assumptions. These risk factors are identified in the Barrier Analysis section below.

3.3 Deviations from Current Resource Plans

This IRP does not deviate from PCE's existing resource plans. It is consistent with PCE's Strategic IRP attached as Appendix A and RPS Plan. However, there are several key differences in assumptions:

- PCE's Strategic IRP is based on PCE's internal load forecast based on historical electricity usage. In contrast, this IRP is based on the CEC's 2017 IEPR forecast.
- As noted in more detail below and as directed by the CPUC staff, PCE did not include RA-only contracts in its New Resource Data Template. As described above, the CEC IEPR forecast load shape shows a higher expected peak demand in summer and lower expected demand in winter months than PCE's load forecast. Using this load forecast to estimate PCE's RA needs would not be accurate. This load forecast would predict a higher RA need based on the higher summer peak loads.
- PCE's Strategic IRP is based on resource specific generation forecasts. This is in contrast to the GHG Calculator which is based on generic profiles.
- For 2018, PCE's portfolio will include RPS PCC2 resources consistent with the Baseline Resource Data Template. This differs from the GHG Calculator which does not allow PCC2 resources to be entered as GHG-free resources.

3.4 Local Needs Analysis

PCE will continue to fulfill all of its local Resource Adequacy (RA) obligations including any new requirements that result from the current RA proceeding (R.17-09-020). In accordance with CPUC and CAISO requirements, PCE procures system, local and flexible RA on long-term, multi-year, year-ahead and month-ahead timeframes. PCE evaluates all new long-term PPAs for their ability to contribute to PCE's RA obligations.

4. Action Plan

4.1 Proposed Activities

PCE's procurement strategy is outlined in further detail in the Strategic IRP attached as Appendix A. PCE manages its supply commitments with the objective of balancing cost stability and cost minimization, while leaving some flexibility to take advantage of market opportunities or technological improvements that may arise. PCE strives to create a diverse and balanced portfolio and uses a portfolio risk management approach in its power purchasing program. PCE may use a variety of methods to contract for power, including competitive solicitations and bilaterally negotiated agreements. Occasionally, PCE will issue ad hoc competitive solicitations or engage in independent bilateral negotiations to meet specific resource needs. Alternatively, particularly in markets with sufficient transparency to ensure competitive outcomes, PCE may

negotiate short-term transactions via its scheduling coordinator or independent energy brokers or marketers. Such markets may include:

- i. System energy at defined CAISO trading hubs for defined (e.g. peak, off-peak, baseload, shaped, or custom) products;
- ii. Short-term RA capacity.

In January 2018, PCE launched an RFO for renewable and storage resources. PCE is currently in the process of negotiating contracts with short-listed bidders. PCE anticipates completing negotiations by the end of the year. PCE will then evaluate portfolio needs and decide when to procure additional resources.

4.2 Barrier Analysis

PCE identifies the following factors as potential procurement risks:

- Market price (locational marginal prices, RA prices, RPS prices, project-specific power purchase agreement prices);
- Congestion and congestion revenue rights process;
- Counterparty credit;
- Curtailment;
- Generation forecasts for intermittent resources;
- Load forecasts;
- Customer participation / opt-up or opt-out rate;
- Assignment of unplanned resources (CAM, RMR, CPM); and
- Legislative and regulatory changes (i.e. RA, RPS, PCIA, PSD).

4.3 Proposed Commission Direction

This section is not applicable to PCE. PCE's Board of Director's oversees and governs PCE's planning and procurement activities.

5. Data

5.1 Baseline Resource Data Template

PCE has completed the Baseline Resource Data Template. PCE notes the following assumptions:

- As noted in the Filing Requirements Reference Guide published on June 29, 2018 (question 13), PCE has included projects for which we have a signed contract, but which are not yet constructed and operating.
- PCE has included our best estimates for generation for project-specific contracts. This may not match the GHG Calculator which is based on more generic resource portfolios.

- As noted in the Filing Requirement Reference Guide (question 14), for non-unit-specific contracts, PCE broke these out by Resource Type and month using the renewable generation shapes in the GHG Calculator to allocate annual contract quantities to specific months.

5.2 New Resource Data Template

PCE is submitting one New Resource Data Template for its conforming portfolio. PCE notes the following assumptions:

- In accordance with guidance from CPUC staff at a meeting on 5/31/2018, PCE has not provided a list of estimated future RA-only contracts. PCE will continue to fully comply with all RA requirements.

5.3 Other Data Reporting Guidelines

PCE has completed the GHG Calculator. PCE notes the following assumptions:

- To account for GHG-free power associated with large hydro energy contracts, with contract quantities in MWh, PCE used the GHG Calculator to back-calculate the implied capacities for the contracted MWh.

6. Lessons Learned

PCE appreciates the CPUC's time and efforts in preparing for this first round of integrated resource planning. We appreciate staff's responsiveness to questions and efforts to address stakeholder concerns ahead of the filing deadline. In an effort to make future processes simpler, more accurate and more transparent, PCE offers the following suggestions.

Consider possibility of false precision in results. The models used for the system-wide portions of the IRP process require inputs with very high temporal and resource granularity. However, the long-time horizon of this modeling exercise means that many of these inputs are based on hypothetical future procurement decisions that will not be made for years. When these decisions are made, these decisions will be influenced by future market conditions, policy outcomes and other variables that we have little visibility into now, but which would be irresponsible to write off. Thus, while it is possible to make hypothetical decisions now that provide highly granular inputs, doing so runs the risk of producing results that do not accurately reflect the level of uncertainty surrounding future procurement across the electricity sector.

Study implications of applying system model to individual LSEs. PCE noted above that the load profile shape contained in the GHG Calculator differs significantly from PCE's internal forecast, which was created based on historical load. The load profile in the GHG Calculator predicts much higher summer peaks for PCE than our historical load would suggest. Resource adequacy requirements are assigned based on summer peak load. This discrepancy between the GHG Calculator load profile and PCE's internal forecast would result in predicting much higher resource adequacy commitments for PCE in this planning process than PCE is modeling and than would be expected using a more accurate load profile.

Improve harmonization between model input structure and actual contract structure.

One of the challenges PCE faced in developing this IRP submission was translating information from specific contracts into the CPUC-provided IRP templates and GHG Calculator. These documents seem to have been designed specifically for long-term PPAs with a single generation facility where the offtaker is buying both energy and capacity. Contracts for energy may take several different forms; in addition to single resource PPAs, PCE has also entered contracts that are non-resource specific and denominated in MWh as well as resource-specific contracts denominated in MWh. In this cycle, LSEs were instructed to do calculations and estimations to match the format required by these templates. This can result in inaccuracies as different LSEs may have interpreted the directions differently. In future IRP cycles, the process could be improved by modifying the templates to allow direct inputs under different contract structures. This will allow the CPUC staff to collect more accurate industry information to inform planning processes.

Allow for transition periods and ensure consistency in GHG accounting. PCE supports the CPUC's goal to evaluate GHG emissions on an hourly basis and in December 2017, PCE made a similar commitment in our Strategic IRP. However, we believe it is important to make this transition in a way that acknowledges the structure of contracts that are already in place. The brief timeline between when the decision to move to a clean net short methodology in a ruling published on May 25, 2018 and the due date for this filing, has not provided LSEs with time to react to this decision. PCE executed contracts over the last several years that extend several years in the future for PCC2 resources, which are not counted as GHG free under the clean net short methodology and/or that are non-resource specific and do not provide any mechanism to account for GHG emissions at the hourly level that the CPUC has proposed. Further, PCE encourages consistency between the CPUC, CEC and CARB in its treatment of renewables and calculation of GHG emissions. We are concerned that a lack of consistency can create different emissions estimates for the same time period and create confusion for customers.

Provide transparency in decision making. PCE appreciates that a planning process of this scale is difficult to implement and difficult to predict the outcome of aggregating the LSEs' plans in this first cycle. In future iterations of the planning process and as the process becomes more routinized, PCE recommends an increased level of transparency about how the plans will be used and what metrics will be assessed to evaluate conformance.

PCE was founded to create opportunities to decrease GHG emissions in San Mateo County and provide the residents and businesses in San Mateo County with the ability to choose cleaner energy sources. In this sense, PCE supports the goal of electricity-sector wide decarbonization and the planning that goes into setting long-term goals. To the extent that it does not harm our ability to serve and be accountable to our member communities, PCE is excited to participate in the planning process and to provide as much planning detail and information as possible. PCE looks forward to assisting staff in the future with developing the next iteration of this planning process in a way that may address some of the suggestions we've identified above.

Appendix A: Peninsula Clean Energy's Strategic IRP



2018 Integrated Resource Plan

Approved by Board
December 14, 2017

Peninsula Clean Energy is San Mateo County's locally-controlled electricity provider. We are reducing greenhouse gas emissions and offering customer choice at competitive rates.



PCE 2018 Integrated Resource Plan

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I. Executive Summary

The Peninsula Clean Energy (PCE) Integrated Resource Plan (IRP) provides guidance for serving the electric needs of the residents and businesses in San Mateo County while meeting PCE's policy objectives and regulatory requirements over a 10-year planning period from 2018-2027.¹ PCE's existing and planned supply commitments will enable PCE to fulfill regulatory mandates and voluntary procurement targets related to renewable, greenhouse gas-free (GHG-free) and conventional (non-renewable) energy.

This IRP addresses how PCE will meet the following targets by managing a portfolio of energy and capacity resources to:

- Meet California's Renewable Portfolio Standard (RPS) requirements of 29% of retail electricity sales to come from renewable energy sources in 2018. This percentage increases to 50% by 2030.
- Provide the necessary capacity reserves to meet California's Resource Adequacy (RA) regulatory requirements for load-serving entities.
- Maintain a minimum renewable energy content of 50% for its ECOplus product, and 100% for its ECO100 product, while working towards a goal of increasing PCE's renewable content to 100% renewable energy for all PCE customers by 2025.
- Meet its GHG-free target of 85% for 2018, and increase its GHG-free energy by 5% per year to 100% GHG-free in 2021.

PCE has taken steps to ensure delivery of a reliable, environmentally responsible power supply by:

- Contracting with Direct Energy (Energy America, LLC) and Constellation (Exelon Generation Company, LLC) to supply the majority of PCE's energy needs on a short-to medium-term basis.
- Contracting for significant volumes of bundled renewable energy through medium-and long-term project-specific power purchase agreements (PPAs).
- Contracting to meet PCE's RA obligations.

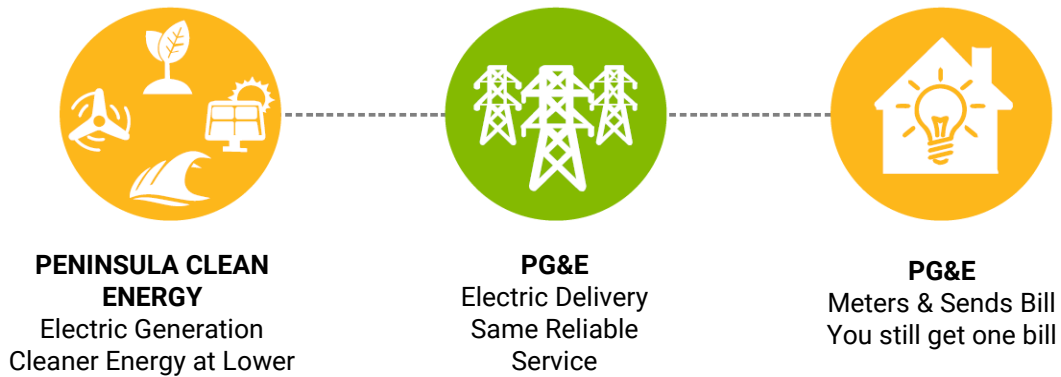
II. Introduction

Peninsula Clean Energy (PCE), a community choice energy (CCE) program, is San Mateo County's official electricity provider. Community choice energy programs (also known as community choice aggregators, or CCAs) are locally controlled organizations that enable residents and businesses a choice regarding the energy sources for their electricity. PCE is a joint powers agency, formed in February 2016, consisting of the County of San Mateo and all twenty of its cities. Following a comprehensive feasibility study, elected officials from each member jurisdiction unanimously agreed to form PCE to meet their local climate action goals and for the benefit of San Mateo County.

¹ The California Public Utilities Commission (CPUC) is in the process of developing the requirements for the IRP that will be submitted to them for certification. This IRP is for PCE's internal planning purposes and is not what will be submitted to the CPUC for certification.

PCE is the default electric generation provider for all the county’s residents and businesses, and for any new or relocated customers. As demonstrated in Figure 1, PCE provides electricity to residents and businesses in San Mateo County, while PG&E continues to maintain the electrical wires and other infrastructure, and PG&E meters customers’ electricity usage and sends customers’ bills. PCE’s customers receive one bill from PG&E which includes the charges from PCE as well as the charges for PG&E’s delivery costs as well as their natural gas usage.

Figure 1: How Community Choice Energy Works



PCE began serving the first phase of customers in October 2016, which were all of the small and medium commercial customers and 20% of residential customers. The second phase of customers were enrolled in April 2017, consisting of all other customers, including large commercial and industrial, agricultural, and the remaining residential customers.

PCE provides cleaner and greener electricity, at lower rates than the incumbent investor-owned utility (IOU), Pacific Gas & Electric Company (PG&E). PCE plans for and secures commitments from a diverse portfolio of energy generating resources to reliably serve the electric energy requirements of its customers over the near-, mid-, and long-term planning horizons.

This IRP documents PCE’s current procurement status and outlines PCE’s resource planning policies and objectives over the ten-year planning timeframe. Periodically, PCE staff will update the IRP and submit it to PCE’s Board for approval. Such approval is made in consideration of applicable regulatory requirements, PCE policy objectives, energy market conditions, anticipated changes in electricity sales, ongoing procurement activities, and any other considerations that may affect how PCE carries out its resource planning.

The IRP has four primary purposes:

- (1) Document current procurement status following our first year of operations;
- (2) Quantify resource needs over a ten-year planning period;
- (3) Articulate relevant energy procurement² policies;

² Within this IRP, energy procurement means purchases of energy products, including electricity, capacity, energy efficiency, distributed generation, demand response, and energy storage.

- (4) Communicate PCE’s resource planning policies, objectives and planning framework to the public and key stakeholder groups.

In practical terms, the IRP specifies the energy procurement policies adopted by PCE’s Board and serves as a guideline to PCE staff regarding day-to-day energy planning and procurement activities.

III. Regulatory Mandates

CCEs are primarily regulated by their local governing authority. In the case of PCE, this is the Board of Directors. Each member jurisdiction from San Mateo County has one seat on the Peninsula Clean Energy Board of Directors (except for San Mateo County, which has two) for a total of 22 board members.

Additionally, as a load serving entity³ (LSE) in California, PCE is required to meet certain regulatory requirements. There are several regulatory bodies that provide oversight of LSEs as outlined in Figure 2 below. The primary requirements are the renewable portfolio standard (RPS) and resource adequacy (RA), but PCE is also subject to requirements related to disclosing power sources, energy storage and contract term length among others. In future versions of this IRP, PCE will add any new or changed regulatory requirements as appropriate.

Figure 2: Regulatory Agencies and Roles



California Air Resources Board (CARB)

The California Air Resources Board (CARB) is charged with protecting the public from the harmful effects of air pollution and developing programs and actions to fight climate change. Reducing air pollution and protecting public health guide CARB’s actions. CCEs are required to report retail sales to CARB as part of the Power Source Disclosure Reporting requirements.



California Energy Commission (CEC)

The CEC is the state's primary energy policy and planning agency. It is committed to reducing energy costs and environmental impacts of energy use - such as greenhouse gas emissions - while ensuring a safe, resilient, and reliable supply of energy. CCEs report to the CEC regarding RA, RPS compliance, and Power Source Disclosure Reporting.

³ Load Serving Entities (LSEs) are entities responsible for securing electric energy, transmission service and other related services to meet the electrical demand of its end-use customers. LSEs include investor owned utilities (IOUs), publicly owned or municipally-owned utilities (POUs or MOUs), rural electric cooperatives, Native American utilities, community choice energy programs (CCEs), direct access providers (DA providers), and other electric service providers (ESPs).



California Independent System Operator (CAISO)

CAISO is responsible for managing and operating the bulk of the wholesale electricity grid in CA. The ISO grants equal access to transmission lines and coordinates competing and diverse energy resources into the grid where it is distributed to consumers. It also operates a competitive wholesale power market designed to promote a broad range of resources at lower prices. CCEs work with CAISO to report RA compliance, as well as to participate in the buying and selling of electricity in the CAISO market.



California Public Utilities Commission (CPUC)

The CPUC regulates privately owned electric, natural gas, telecommunications, water, and transportation companies. The CPUC's role in relation to CCEs is to assure that the CCE's program elements are consistent with utility tariffs and with CPUC rules designed to protect consumers. The CPUC certifies CCA implementation plans, but it does not have authority to approve or reject a CCA's implementation plan, to decertify a CCA, or to regulate the CCA's program except to the extent that its program elements may affect utility operations and the rates and services to other customers. Although the CPUC's regulatory jurisdiction over CCAs is more limited than over IOUs, CCAs still must comply with certain requirements including RA and the RPS.

Renewable Portfolio Standard

PCE's current RPS requirements are mandated by Senate Bill 2 (1X) passed in 2011. This bill mandated RPS procurement requirements within multi-year compliance periods. For the current compliance period (2017-2020), PCE is required to procure renewables in the quantities identified in Table 1 below.

Table 1: RPS Renewable Procurement Targets

Year	Procurement Requirement (% of retail sales)
2017	27%
2018	29%
2019	31%
2020	33%

Further, this legislation established portfolio content categories (PCC) for RPS procurement. The PCCs (these are also sometimes referred to as buckets) are defined as follows:

- PCC 1: Bundled electricity and renewable energy certificates (RECs)⁴ from a resource located within California or delivering directly to California without substituting electricity from another source;
- PCC 2: Electricity and RECs that cannot be delivered to California without substituting electricity from another, non-renewable source;⁵ and
- PCC 3: Unbundled RECs from RPS-eligible facilities that are sold separately from the power generated by the facility and therefore do not meet the conditions of category 1 or category 2.⁶

The legislation set minimum and maximum limits on certain procurement that can be used for compliance with the RPS program. During the current RPS Compliance Period, a minimum of 75% of required RPS procurement must be sourced from PCC 1 resources and a maximum of 10% can be sourced from PCC 3 resources. The difference can be sourced from PCC 2.

SB 350

In October 2015, Senate Bill 350 (SB 350) was signed into law establishing new clean energy, clean air and greenhouse gas reduction goals for 2030 and beyond. SB 350 established California's 2030 GHG reduction target of 40% below 1990 levels. To accomplish this, SB 350 set ambitious targets for renewable energy and energy efficiency. In particular, SB 350 increases California's RPS goal from 33% by 2020 to 50% by 2030. The corresponding CPUC regulations require that transitions from the previous mandate will be implemented gradually with straight line increases during each year of the compliance regime.

Additionally, SB 350 established the following requirements which specifically apply to CCEs.

- CCEs must have at least 65% of their RPS procurement under contracts of 10 years or longer beginning in 2021;
- CCEs may offer energy efficiency programs which will be eligible to count toward statewide energy efficiency targets;⁷
- While maintaining independent governing authority, CCEs will submit IRPs to the CPUC for certification. The California Public Utilities Commission (CPUC) is in the process of

⁴ RECs, also known as renewable energy credits, green certificates, green tags, or tradable renewable certificates, represent the environmental attributes of the power produced from renewable energy projects and are sold separately from commodity electricity. They are tradable certificates that represent proof that one megawatt-hour of electricity was produced by a renewable energy source and delivered into the electric grid and are used to track the characteristics of a renewable energy generating facility.

⁵ This is due to the intermittency of renewable energy sources. Various requirements are in place to assure that the substitution of non-renewable sources is relatively contemporaneous with the generation by the renewable source, and that the substitute electricity represents a purchase of new energy (it is "incremental" to the load-serving entity's existing energy supply).

⁶ If the RECs are unbundled and sold separately, then the purchaser of the RECs has bought the legal right to the renewable attributes they represent. This means that the energy originally associated with the RECs can no longer be considered renewable or to originate from a renewable source.

⁷ CCE programs are not required to provide energy efficiency programs under SB 350. If a CCE program does not offer its own energy efficiency program, CCE customers continue to be eligible for energy efficiency programs offered by the local Investor Owned Utility (which is PG&E in the case of PCE).

developing the requirements for the IRP that will be submitted to them for certification. This IRP is for PCE's internal planning purposes and is not what will be submitted to the CPUC for certification.

Resource Adequacy (RA)

LSEs including CCEs are required to comply with the CPUC RA program. The purpose of the RA program is to:

- Ensure the availability of sufficient generating capacity to maintain grid reliability;
- Provide for "reserve" capacity to promote resource sufficiency during periods of extreme demand and infrastructure outages;
- Incentivize the construction of new generation in areas that are resource constrained (to reduce reliability risks); and
- Ensure the availability of "flexible" or "fast response" generators that will be needed to address resource intermittency (to promote grid reliability in a system that relies heavily on renewable generating resources).

There are three types of RA products that PCE must procure to meet its compliance requirements. The first two products are defined by locational characteristics and the third is defined by ability to quickly ramp up generation and respond to CAISO orders.

- System RA (defined by location):
 - Sourced within the CAISO Balancing Area
 - Generators must be located in Northern California for CCEs operating within the PG&E footprint (a small amount can come from Southern California)
 - System requirements are determined based on each LSE's CEC-adjusted peak load forecast plus a 15% planning reserve margin
- Local RA (defined by location):
 - Local requirements are determined based on an annual CAISO study
 - Local RA procurement obligations require PCE to purchase a certain amount of RA capacity from generators located within the following regions
 - Greater Bay area
 - PG&E Other (consists of the Humboldt, North Coast/North Bay, Sierra, Stockton, Greater Fresno, and Kern regions)
- Flexible RA (defined by generating characteristics):
 - Qualifying generating resources must be able to respond to CAISO dispatch instructions and manage variations in load/resource output
 - No location requirements
 - Flexible Requirements are based on an annual CAISO study

RA from a particular resource will be characterized as either Local or System depending on location and either Flex or not Flex depending on its ability to respond to CAISO instructions.

RA is not actual energy or even the right to purchase energy. Instead, it is a mechanism to ensure that there is enough generation on the grid to ensure reliability. All LSEs must procure RA based on the amount of load they serve.

Power Source Disclosure Program

The Power Source Disclosure Program requires retail suppliers of electricity (i.e., companies that sell electricity directly to end users) to provide consumers with periodic updates regarding the types of generating resources (and related fuel sources) that are used to produce the electricity that they use. Information is communicated to such customers in the form of a power content label. PCE as a Community Choice Aggregator must complete these reporting requirements for the power content label.

AB 1110

Assembly Bill 1110 (AB 1110) was signed into law on September 26, 2016 to inform consumers of the GHG emissions intensity of their electricity and improve the transparency of the Power Content Label. As part of this bill, regulators will adopt a methodology for calculating GHG emissions intensities for electricity sources, calculate California's overall GHG emissions intensity, and adopt guidelines for reporting GHG emissions intensities.

PCE will apply pertinent emissions calculation methodologies, once finalized, when performing future emissions calculations related to its electric supply portfolio.


AB 2514

The California Energy Storage Bill, AB 2514, was signed into law in September 2010 and established energy storage targets for IOUs, CCEs, and other LSEs in September 2013. The applicable CPUC decision established an energy storage procurement target for CCEs and other LSEs equal to 1 percent of their forecasted 2020 peak load. The decision requires that contracts be in place by 2020 and projects be installed by 2024. Beginning on January 1, 2018, and every two years thereafter, LSEs must file an advice letter demonstrating progress toward meeting this target and a description of the methodologies for insuring projects are cost-effective.

IV. PCE Procurement Goals and Policies

In addition to the regulatory mandates reviewed above, PCE has set its own set of goals and policies that go beyond the RPS requirements. PCE policy is directed on an ongoing basis by PCE's Board and guides development of this IRP and related procurement activities. PCE's strategic goals, shown in Figure 3, were adopted in October 2016 and address procurement principles and targets.

Figure 3: PCE Strategic Goals

 <p>PCE Strategic Goals <i>Adopted by PCE's Board of Directors in October 2016</i></p>	
Design a diverse power portfolio that is greenhouse gas free	
<ul style="list-style-type: none"> • 100% GHG free by 2021 • 100% CA RPS-eligible renewable energy⁸ by 2025 • Minimum of 20 MWs of new local power by 2025 	
Continually strive to offer ECOplus at rates that are at parity or lower than PG&E rates	
Stimulate development of new renewable energy projects and clean-tech innovation in San Mateo County and California through PCE's procurement activities	
Demonstrate quantifiable economic benefits to the County/region and place a priority on local hiring and workforce development practices and environmental justice	
Implement programs to further reduce greenhouse gas emissions by investing in programs such as local clean power production, electric vehicles, energy efficiency, and demand response, and partnering effectively with local business, schools, and nonprofit organizations	
Maximize and maintain customer participation in PCE	
<ul style="list-style-type: none"> • Provide a superior customer experience • Develop PCE brand awareness and loyalty throughout the County • Actively encourage voluntary participation in its ECO100 renewable energy product • Actively encourage participation in other programs PCE develops • Achieve recognition from the EPA's Green Power Partnership for Green Power Communities for all cities with municipal accounts enrolled in ECO100 by 2018 	
Build a financially sustainable organization	
<ul style="list-style-type: none"> • Build sufficient reserves in a rate stabilization fund • Achieve an investment grade credit rating by 2021 	
Foster a work environment that espouses sustainable business practices and cultivates a culture of innovation, diversity, transparency, integrity, and commitment to the organization's mission and the communities it serves	

⁸ California RPS-eligible resources are defined by the California Energy Commission and designated as "Eligible Renewable Resources" (ERR). An ERR is a generating facility that meets all of the criteria set forth in Public Utilities Code Section 399.12, Public Resources Code Section 25741, and the California Energy Commission's "Renewables Portfolio Standard (RPS) Eligibility Guidebook," available at: <http://www.energy.ca.gov/portfolio/index.html>.

Further, PCE has developed the following three specific policies to guide power procurement:

1. PCE shall not use unbundled renewable energy credits (RECs) for meeting its renewable energy goals.
2. In sourcing electricity and resource adequacy, PCE will not procure electricity or resource adequacy from coal facilities.
3. PCE has published a Sustainable Workforce Policy. PCE desires to facilitate and accomplish all of the following objectives: (1) Support for and direct use of local businesses; (2) Support for and direct use of union members from multiple trades; (3) Support for and use of training and State of California approved apprenticeship programs, and pre-apprenticeship programs from within PCE’s service territory; and (4) Support for and direct use of green and sustainable businesses. For specific details on this policy, please refer to <https://www.peninsulacleanenergy.com/wp-content/uploads/2017/01/PCE-Policy-10-final-1.pdf>.

In meeting our renewable energy requirements, PCE’s initial goal is to have a mix of up to 25% of our renewable portfolio sourced from PCC2 and to fulfill the remaining renewable energy portion with PCC1. This mix is required for the state’s RPS needs, and has been carried over to fulfill PCE’s renewable needs beyond the RPS requirements. However, depending on availability and price, PCE may modify the 75%/25% split for renewable purchases to meet PCE’s renewable targets that exceed the RPS requirements.

Table 2 below outlines PCE’s targets by resource type to meet these regulatory requirements and goals.⁹

Table 2: PCE Procurement Targets by Resource Type

10 Year Portfolio Mix	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
PCC 1 Renewables	37.5% - 42.5%	37.5% - 42.25%	37.5% - 41.25%	37.5% - 41.25%	37.5% - 41.0%	37.5% - 40.5%	37.5% - 40.0%	75.0% - 89.5%	75.0% - 89.0%	75.0% - 88.75%
PCC 2 Renewables	7.25% - 12.5%	7.75% - 12.5%	8.25% - 12.5%	8.75% - 12.5%	9.0% - 12.5%	9.5% - 12.5%	10% - 12.5%	10.5% - 25.0%	11% - 25.0%	11.25% - 25.0%
PCC 3 Renewables	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
GHG-Free Energy	35%	40%	45%	50%	50%	50%	50%	0%	0%	0%
System Energy	15%	10%	5%	0%	0%	0%	0%	0%	0%	0%

GHG-Free by 2021

Reducing electric utility-sector GHG emissions is one of PCE’s charter objectives. PCE started with a 75% GHG-free supply portfolio in 2016 and increased to a target of 80% in 2017. The total GHG-free energy supply will increase by 5% per year, with the goal of achieving a 100% GHG-free supply portfolio by 2021. Early in the planning period, the GHG-free proportion of PCE’s resource mix will consist of both RPS-eligible renewable energy and additional GHG-free electricity, mostly sourced from large hydro facilities. In subsequent years, PCE will increase its

⁹ Actual annual percentages may differ from projections if resource availability or market conditions preclude cost-effective procurement.

supply of renewable energy as we move toward our goal of a 100% renewable energy supply portfolio by 2025.

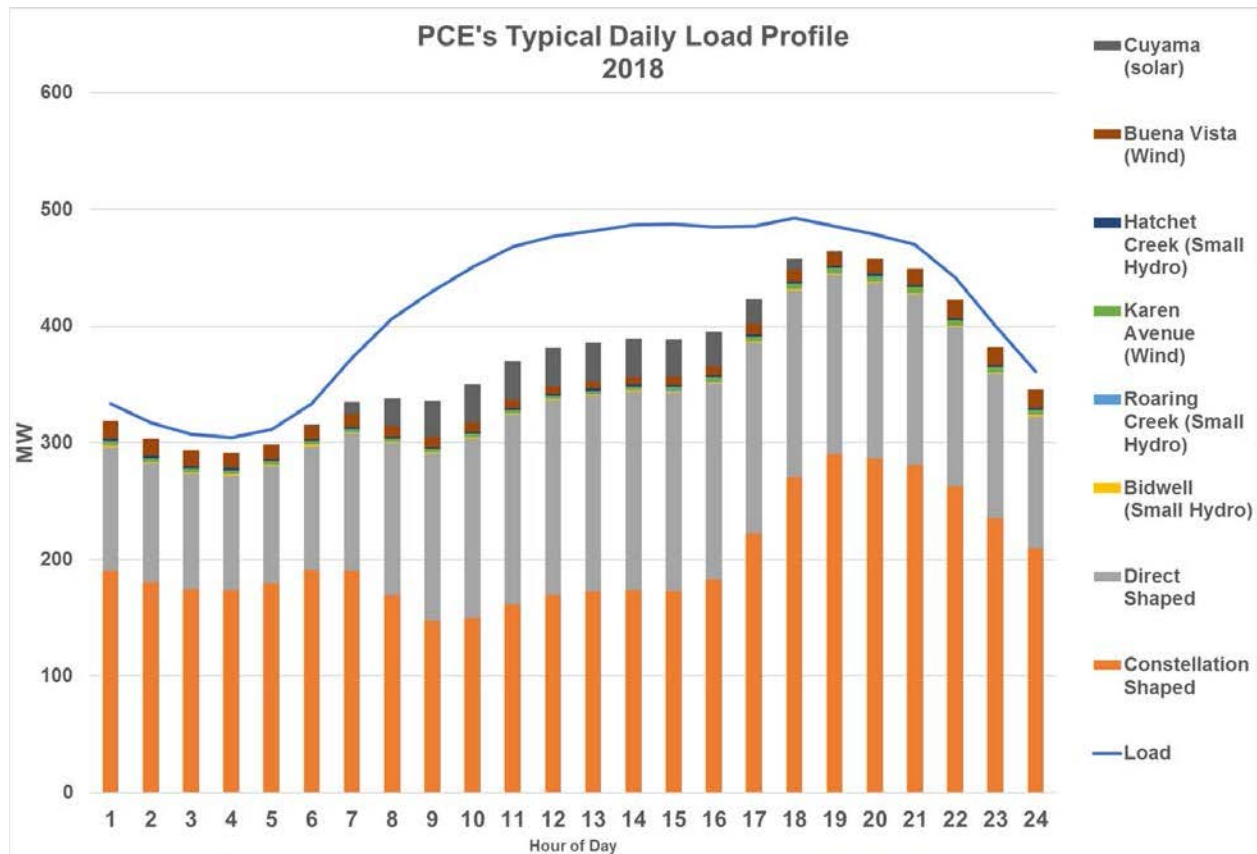
100% Renewable by 2025

PCE intends to replace the conventional and non-renewable GHG-free energy resources in its supply portfolio with renewable resources. Actual annual renewable content percentages may differ from projections, if resource availability or market conditions preclude cost-effective procurement, but the primary goal is to achieve a 100% renewable supply no later than 2025.

Further, in providing customers with 100% renewable energy, PCE intends to match its electricity supply portfolio to its customer electricity demand profile on a time coincident basis. This means that for every hour of the year, we want the amount we are procuring from generators to be equal to the amount that our customers are consuming in that hour.

Figure 4 below shows PCE’s average load profile and contracted supply by hour for 2018. The blue line is the customer load or how much electricity we expect PCE’s customers to use in a particular hour and the bars represent the electricity that we have contracted for in that hour. To meet our goal in 2025, each of these bars would represent contracts for renewable energy and would reach up to the blue bar for every hour of the year.

Figure 4: PCE's Typical Daily Load Profile, 2018



No Use of Unbundled Renewable Energy Certificates

The RPS allows load-serving entities to meet a portion of their RPS requirements with unbundled RECs. These are otherwise known as PCC 3, or Bucket 3. PCE has made a commitment not to procure unbundled RECs to meet either its RPS requirements or its additional requirements to provide customers with 50% or 100% renewable energy. Members of PCE’s Board, Executive Committee, and Citizens Advisory Committee expressed concerns about how unbundled RECs have been used and misused to give the impression that polluters are more “green” and “clean” than they actually are. Although each unbundled REC is created because 1 MWh of renewable energy has been generated to create that REC, the use of unbundled RECs has created confusion in the market. There was general consensus that PCE should set an example in the industry and among CCEs to adopt a policy to not use Unbundled RECs. To maintain progress toward its 100% renewable energy target, PCE is focused on procurement of bundled renewable energy supply throughout the planning period.

V. Customers and Consumption Forecast

Enrolled Customers

PCE’s service territory covers the 20 cities located in San Mateo County plus the unincorporated areas of the county. Within this service area, PCE serves approximately 300,000 customer accounts representing approximately 765,000 residents. Table 3 shows the breakdown between commercial/industrial customers and residential customers in PCE’s service territory. Customers are automatically enrolled in PCE and have the option to opt-out of PCE and return to PG&E for electric service. Customer participation rates are expressed as the proportion of customers currently served by PCE relative to the total number of electric customers in San Mateo County eligible for PCE service.¹⁰ The difference between such numbers reflects the subset of customers who have voluntarily opted out of the PCE program, retaining bundled service by PG&E. As of publication, the customer participation rate associated with PCE’s membership is approximately 98% (i.e., the opt-out rate is approximately 2%).

Table 3: PCE Participation by Customer Type

	Total PCE	Residential	Commercial & Industrial
Number of Customers	286,692	258,677	28,015
		90.2%	9.8%
Total Retail Sales (kWh)¹¹	2,332,308,507	803,274,560	1,529,033,946
		34.4%	65.6%

¹⁰ Direct Access customers are not automatically enrolled in a CCE program. The Direct Access (DA) Program allows a limited selection of non-residential consumers in California to purchase their electricity from an ESP rather than from their IOU or default electricity supplier.

¹¹ Retail kilowatt-hour (kWh) sales in Table 3 do not represent a full calendar year of electricity sales. Data shown covers sales from January 1, 2017 through November 22, 2017; retail service from January to March 2017 was for Phase 1 customers only; retail service for all customers was complete in May 2017.

PCE Rollout – Phases 1 and 2

PCE rolled out its program in two phases –Phase 1 launched on October 1, 2016 and enrolled approximately one-third of the customer base, and Phase 2 launched on April 1, 2017 enrolling the remainder of the customer base. In both phases, most customer opt-outs occurred within a 120-day period beginning 60 days prior to each customer’s scheduled service commencement and continuing for 60 days thereafter. This period of time is generally referred to as the “enrollment period”. During PCE’s enrollment periods, prospective and enrolled customers received at least four mailed notices, which explained PCE’s service options and the opt-out process as well as other terms and conditions of service.

Load Forecast

PCE’s electricity load forecast is based on a historical count of customers by end-use classification (i.e. residential, commercial, industrial) and class-typical monthly energy consumption estimates, derived from historical data, to yield a monthly energy forecast by customer class. Hourly class-specific load profiles are then used to break down the monthly energy forecast into more granular time-of-use and peak demand values to create a forecast of the amount of electricity consumed by PCE customers for every hour of the year.

PCE’s long term load forecast is primarily influenced by the number of customers that PCE serves, as well as customer end-use classifications, energy usage, and expected customer participation rates. Typical variables that drive the load forecast are weather, economic cycles, population growth, and changes in customer consumption patterns such as increased use of electric vehicles.

PCE’s load in 2016 was 277 gigawatt hours (GWh)¹² and in 2017, we are projecting 3,026 GWh. The projected load for 2018 and going forward is approximately 3,700 GWh. PCE’s 2016 load represented only the first phase of enrollments for 25% of the year. For 2017, PCE did not start serving our full retail load until April resulting in forecasted load that is slightly lower than when PCE is serving its full load for the entire year, which will occur in 2018.

Retail Products

PCE customers can choose between two different product options, ECOplus and ECO100. Each product has a different amount of energy from renewable sources such as solar and wind. Table 4 summarizes customer participation in each product as of mid-2017.

Table 4: Participation Rates by Product in 2017

	Total PCE	ECOplus	Eco100
Number of Customers	286,692	281,916	4,776
		98.3%	1.7%
Total Retail Sales (kWh)¹³	2,332,308,506	2,272,145,380	60,163,126
		97.4%	2.6%

¹² 1 gigawatt hour (GWh) = 1000 megawatt hours (MWh) = 1,000,000 kilowatt hours (kWh)

¹³ Retail kilowatt-hour (kWh) sales in Table 4 do not represent a full calendar year of electricity sales. Data shown covers sales from January 1, 2017 through November 22, 2017; retail service from January to March 2017 was for Phase 1 customers only; retail service for all customers was complete in May 2017.

ECOplus

ECOplus is PCE’s default electric option, in which new customers are automatically enrolled. ECOplus rates are set at 5% below PG&E’s generation rates. Fifty percent of the electricity comes from renewable sources and this product will be 85% GHG-free in 2018. Renewable sources may include such sources as wind, solar, and small hydro. GHG-free includes both renewable sources and sources that do not count for the RPS and do not emit GHG emissions. This is generally comprised of large hydro.



ECO100

Customers can choose to “opt up” to ECO100 and receive 100% of their electricity from renewable energy resources and is 100% GHG-Free. ECO100 costs \$0.01 per kWh more than ECOplus.

Customer participation in ECO100 directly impacts the quantity of incremental renewable energy volumes that PCE must procure to ensure that its broader supply portfolio includes sufficient renewable energy volume to support both ECOplus and ECO100 participation. As of mid-2017, over 4,000 accounts opted-up to ECO100. As part of their emission reduction targets and sustainability goals, 14 cities and the County enrolled all of their accounts in ECO100 in 2017.



Starting in January 2018, the ECO100 product will be certified by the Center for Resource Solutions’ (CRS) Green-e certification program. For 20 years, CRS has developed and implemented consumer-protection standards for the voluntary renewable energy and carbon offset markets through the Green-e programs. These standards mandate a rigorous accountability for retail products sold to consumers, bringing a level of transparency that can bolster consumer confidence in the industry. Green-e Energy is North America’s leading voluntary certification program for renewable energy. Since 1997, Green-e Energy has certified renewable energy that meets environmental and consumer protection standards developed in conjunction with leading environmental, energy, and policy organizations. Green-e Energy requires that sellers of certified renewable energy disclose clear and useful information to potential customers, allowing consumers to make informed choices.

Power Content Label

PCE’s Power Content Label (PCL) is a key customer communication tool that provides information regarding PCE’s actual mix of various energy sources during the previous year of operation. This is a requirement of the Power Source Disclosure program discussed in Section III. The 2016 PCL (Figure 5) quantifies PCE’s aggregate renewable energy supply during the three months that PCE provided service, during PCE’s initial rollout. Projections for calendar years 2017 and 2018 for ECOplus and ECO100 are illustrated in Figures 6, 7, and 8 below. The Product Content Label is not necessarily representative of the expected resource mix beyond 2016 and 2017, as PCE will be building its portfolio going forward and relying less on the power mix provided by its early contracts with Direct Energy and Constellation.

Figure 5: PCE 2016 Power Content Label

2016 POWER CONTENT LABEL			
Peninsula Clean Energy			
ENERGY RESOURCES	ECOplus	ECO100	2016 CA Power Mix**
Eligible Renewable	58%	100%	25%
Biomass & waste	0%		2%
Geothermal	0%		4%
Small hydroelectric	18%		2%
Solar	0%		8%
Wind	40%	100%	9%
Coal	0%		4%
Large Hydroelectric	27%		10%
Natural Gas	0%		37%
Nuclear	0%		9%
Other	0%		0%
Unspecified sources of power*	15%		15%
TOTAL	100%	100%	100%
<p>* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.</p> <p>** Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the identified year.</p>			
For specific information about this electricity product, contact:		Peninsula Clean Energy	
		1-866-966-0110	
For general information about the Power Content Label, contact the California Energy Commission at:		California Energy Commission 844-421-6229 http://www.energy.ca.gov/pcl/	

Figure 6: PCE 2017 Projected ECOplus Resource Mix¹⁴

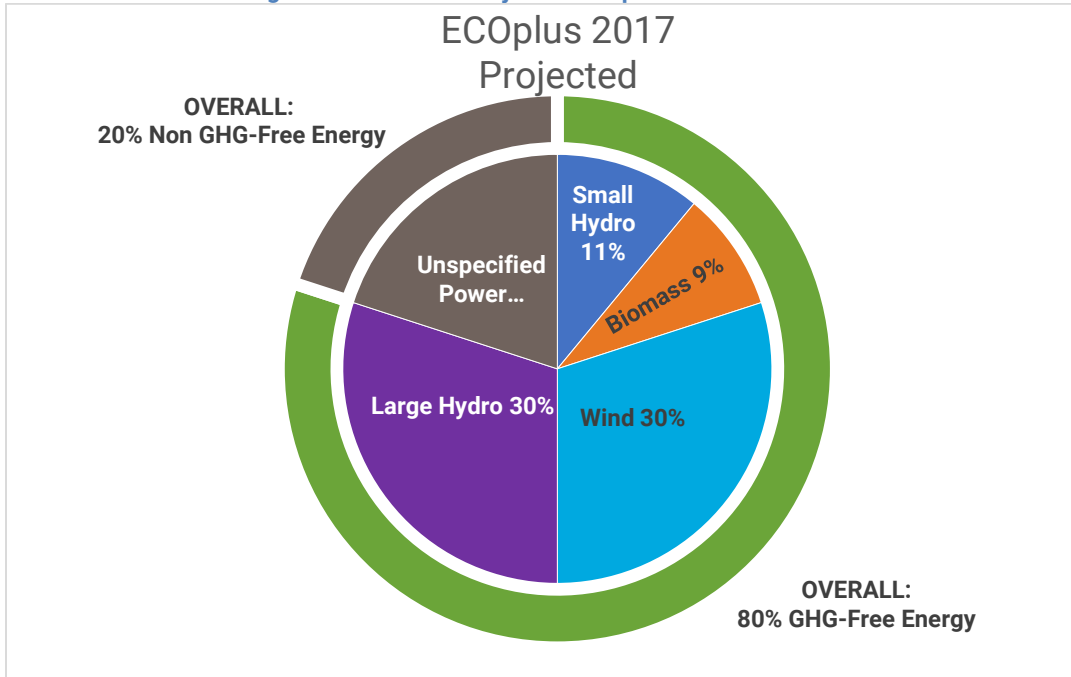
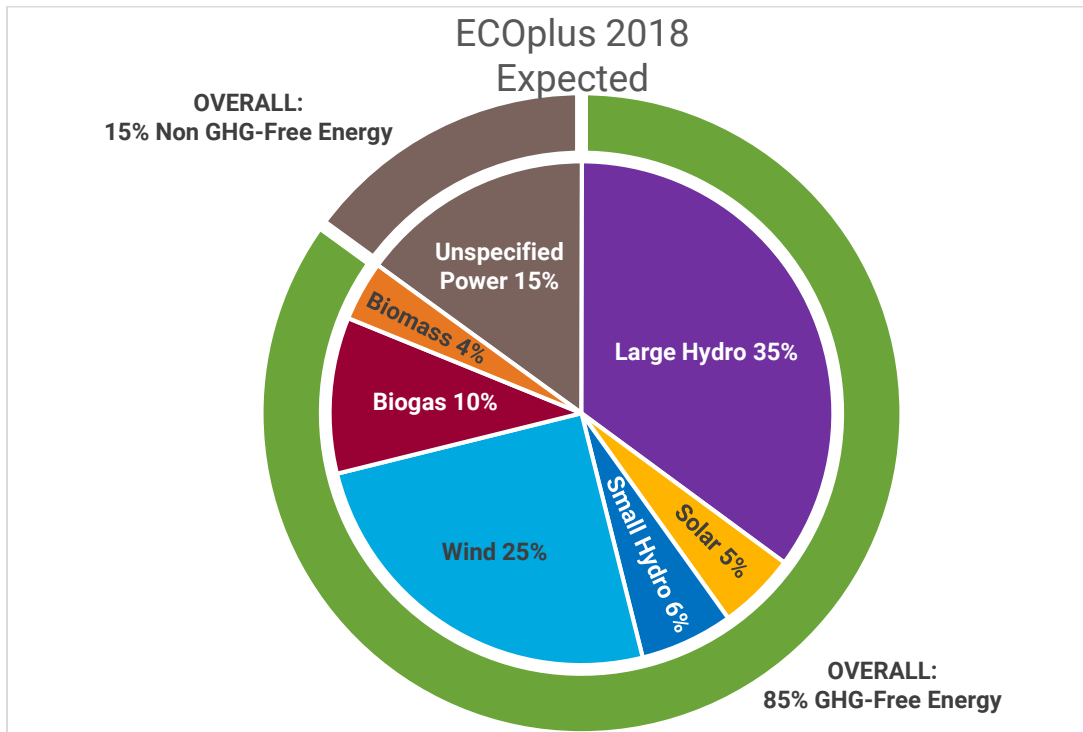
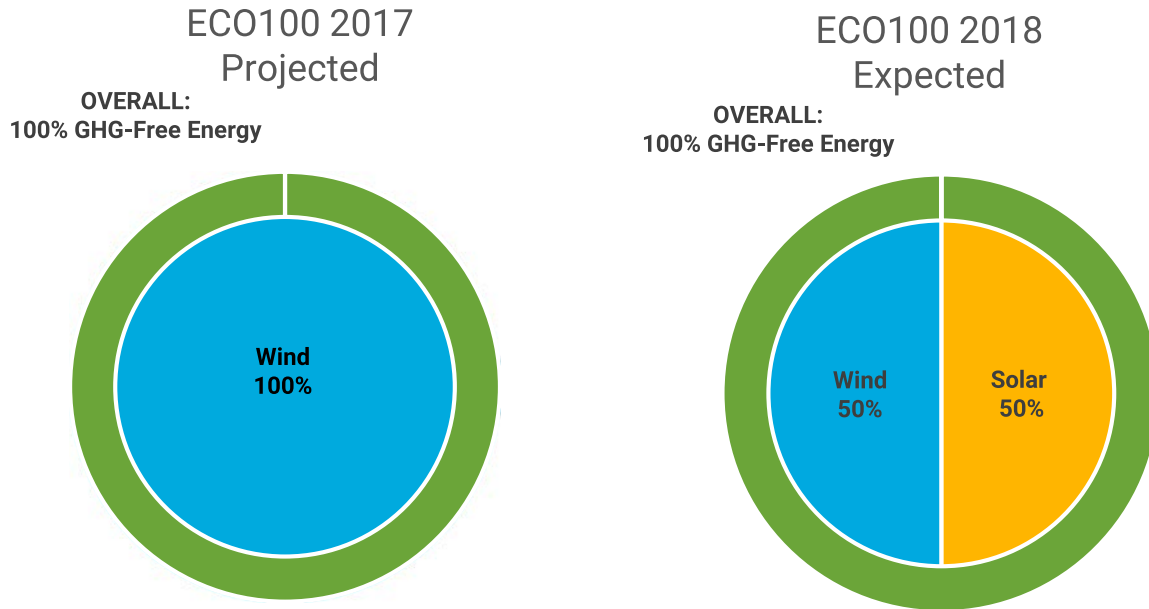


Figure 7: PCE 2018 Expected ECOplus Resource Mix



¹⁴ Unspecified power refers to energy bought through the CAISO market, but not traceable to a specific source. Due to the energy mix in CA, this is primarily energy generated from the combustion of natural gas. PCE has received a small amount of power from biomass generation due to non-project specific contracts to procure RPS eligible renewable energy. PCE has not contracted specifically for energy generation from biomass sources.

Figure 8: PCE 2017 Projected and 2018 Expected ECO100 Resource Mix



VI. Current Procurement Status

Since PCE began procuring energy in mid-2016, we have executed 18 contracts for a variety of energy products to meet PCE’s needs throughout 2017 and going forward. PCE’s contract portfolio includes a variety of suppliers, term lengths, product types, quantities, generation technologies and resource locations among other considerations. This emphasis on building a diversified portfolio of power supply sources will continue to be a cornerstone of PCE’s procurement strategy.

These contracts are summarized in Table 5 and Table 6 below and in Appendix A: Description of PCE’s Mid-2017 Resources. PCE is 100% contracted for 2017 and 87% contracted through 2018, with generally increasing open positions in later years, which will be filled gradually according to the policies and goals outlined in this plan.

Table 5: Summary of PCE Executed Power Purchase Agreements (PPAs)

Project	Counterparty	Technology	Capacity (MW)	Term	Term Length (Months)	Location
BUNDLED RENEWABLE PPAs						
Wright	Frontier	Solar	200	11/19-11/44	300	Merced County, CA
Mustang Two	Recurrent Energy	Solar	100	12/19-12/34	180	Kings County, CA
Hatchet	Hydrodynamics	Hydro	7.5	3/17-3/22	60	Shasta County, CA
Buena Vista	Leeward	Wind	38	4/17-4/22	60	Contra Costa County, CA
Shiloh	Avangrid	Wind	150	1/19-12/23	60	Solano County, CA
Karen Avenue	EDCC	Wind	11.7	7/17-6/20	36	Riverside County, CA
Roaring Creek	Hydrodynamics	Hydro	2	3/17-3/19	24	Shasta County, CA
Bidwell	Hydrodynamics	Hydro	2	3/17-3/19	24	Shasta County, CA
Cuyama	First Solar	Solar	40	1/18-12/18	12	Sant Barbara County, CA

Table 6: Summary of PCE Executed Energy Contracts

Counterparty	Term	Term Length (Months)
BUNDLED RENEWABLE		
Direct Energy	10/16-12/26	120
Constellation	4/17-12/18	21
Powerex	6/17-12/18	19
PG&E	5/17-12/17	8
CARBON FREE		
Direct Energy	10/16-12/20	51
Powerex	7/17-6/18	12
Morgan Stanley	4/17-5/18	8.5
UNSPECIFIED / SYSTEM		
Direct Energy	10/16-12/20	51
Constellation	4/17-12/18	21

To serve customer needs during the initial rollout periods, PCE signed a full-service contract with Direct Energy to provide the renewable energy, GHG-free energy and unspecified system power as well as capacity (resource adequacy) to meet PCE’s needs during the initial rollout period. This structure was instrumental in minimizing administrative and operational complexities at the time of PCE’s Phase 1 launch in October 2016. PCE also signed a very small 10-year contract with Direct Energy in 2016 to meet a regulatory requirement for long-term contracts based on PCE’s initial Phase 1 load.

For PCE’s Phase 2 expansion in April 2017, PCE signed a series of contracts to provide resources to PCE’s expanded customer base. These included a contract with Constellation Energy to provide a hedge for PCE’s system power, as well as contracts for GHG-free energy and renewable energy purchases.

As part of the Phase 2 expansion, PCE signed contracts to purchase all or a portion of the generation from a specific energy project in the form of a power purchase agreement (PPA). PCE also purchases renewable and GHG-free energy to meet state RPS requirements as well as internal renewable and GHG-free targets. To the extent that PCE’s energy needs are not fulfilled through the use of renewable energy or other GHG-free generating resources, it should be assumed that such supply will be sourced from system energy (consisting primarily of natural gas generating technologies) – i.e., “generic” energy purchases from the wholesale market that are not directly associated with specific generators.

Project-Specific Power Purchase Agreements

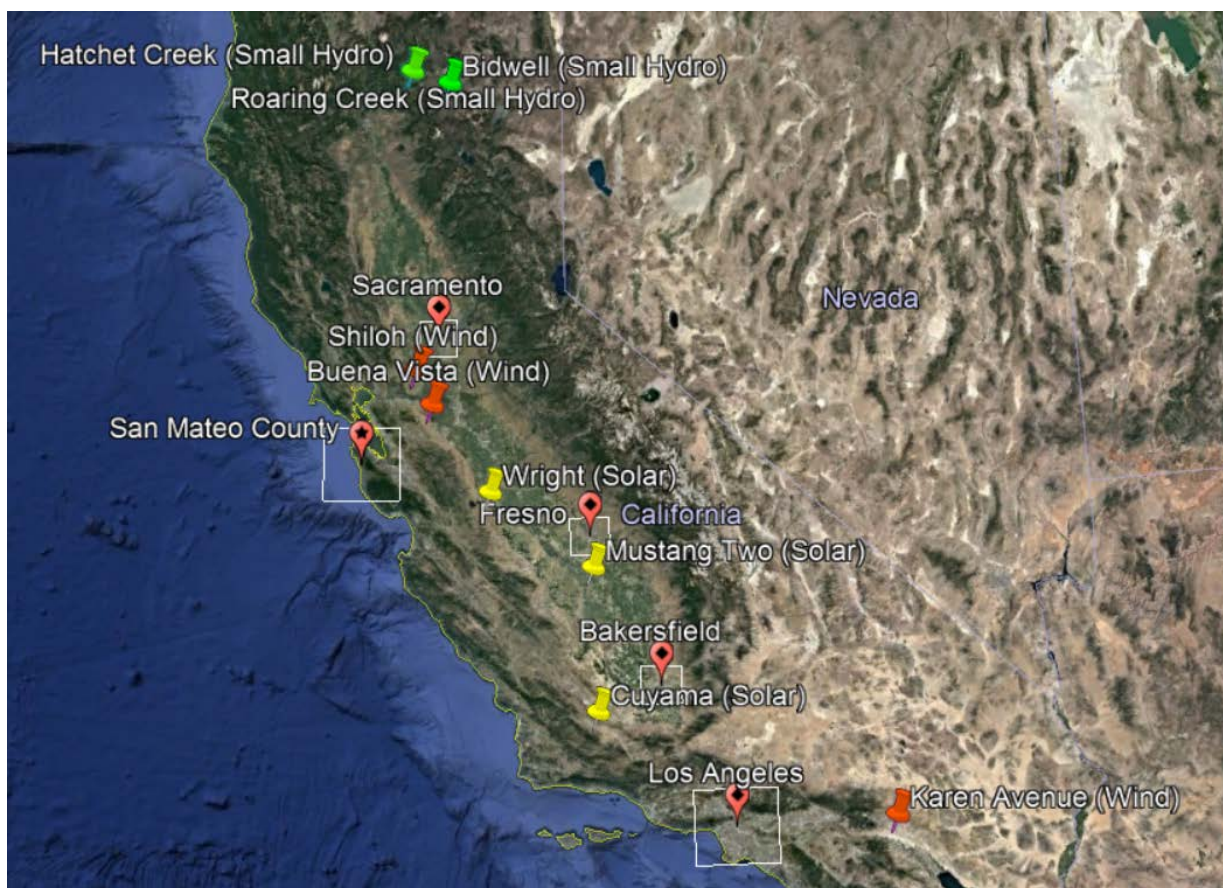
In October 2016, PCE launched a Renewables Request for Proposals (RFP) and received numerous, competitive offers from developers. The early contracts signed from this RFP emphasized near-term deliveries and relatively short tenors, primarily from existing resources. In addition, PCE has signed two long-term, renewable PPAs from this solicitation. In general, these resources will begin deliveries in the 2019-2021 timeframe and will continue delivering to PCE for 15 to 25 years.

Since inception, PCE has executed nine project-specific PPAs with RPS eligible generating sources including the following

- 3 small hydroelectric projects;
- 3 utility scale solar projects; and
- 3 wind energy projects.

We are currently receiving power from the three hydro projects and two of the wind projects. The pushpins in Figure 9 identify the locations of these nine projects throughout California.

Figure 9: Map of PCE's Project Locations



Renewable Energy and GHG-Free Contracts

PCE has executed three contracts to provide PCC1 renewable energy to help PCE meet its RPS and voluntary renewable energy obligations in 2017 and 2018 and three GHG-free contracts to help PCE meet its GHG-free goals for 2017 and 2018. PCE has a sufficient supply of RPS-eligible renewable resources in excess of the 27% RPS requirement in 2017 and the 29% requirement in 2018. Further, PCE has procured enough renewable energy to meet its 50% voluntary target during the 2017 calendar year.

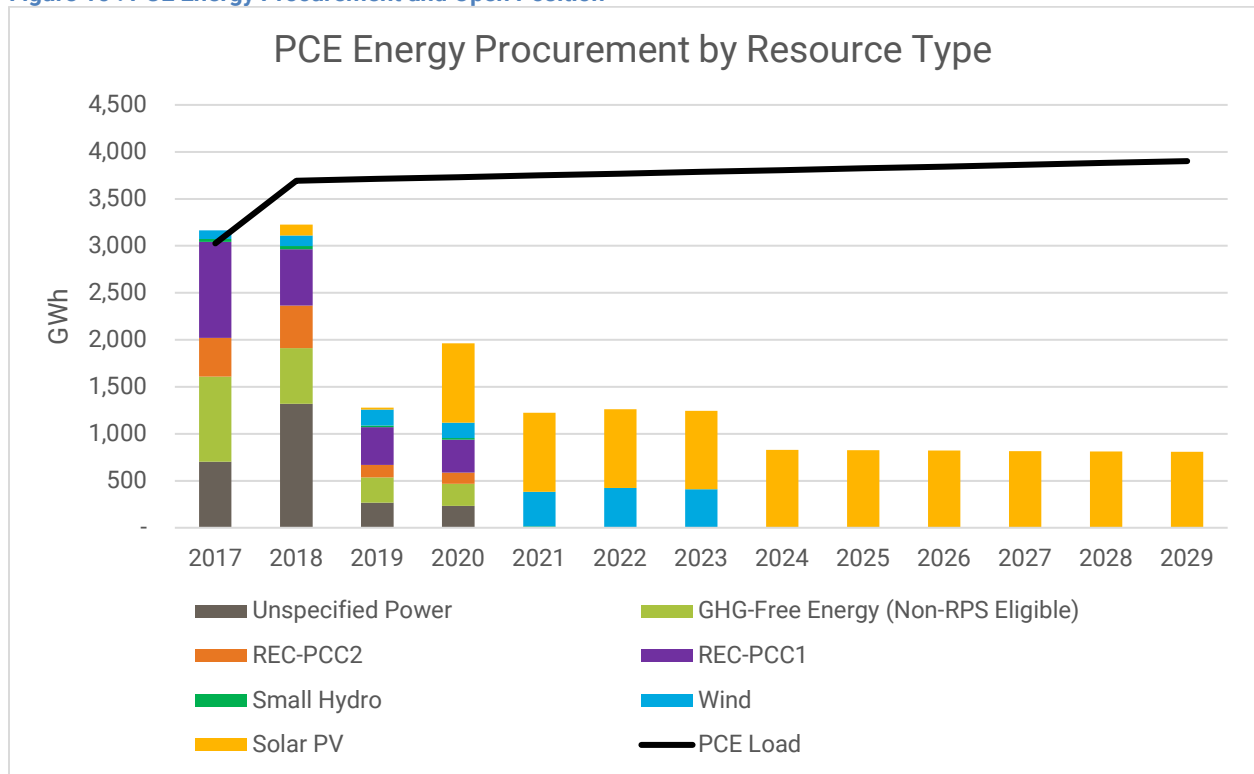
System Energy

After accounting for renewable and GHG-free energy, the remaining energy supply is comprised of unspecified system energy purchases. This refers to energy bought through the CAISO market, but not traceable to a specific source. Within California, conventional generation generally refers to power sources that rely on the combustion of natural gas.¹⁵ In the Direct Energy and Constellation contracts, PCE uses fixed prices for system energy to hedge residual market price exposure in its supply portfolio. Any remaining energy balancing will be conducted through the CAISO market via purchases and sales during the operating horizon.

VII. Resource Needs

Beyond its current contractual commitments, PCE will procure additional energy products to ensure that the future energy needs of its customers are met in a reliable, cost-effective manner. This section sets forth PCE’s planned resource volumes and quantifies the net resource need or “open position” that remains after accounting for energy from PCE’s existing resource portfolio. Figure 10 below shows PCE’s procurement to date and open position.

Figure 10 : PCE Energy Procurement and Open Position



Open Position

PCE manages its supply commitments with the objective of balancing cost stability and cost minimization, while leaving some flexibility to take advantage of market opportunities or

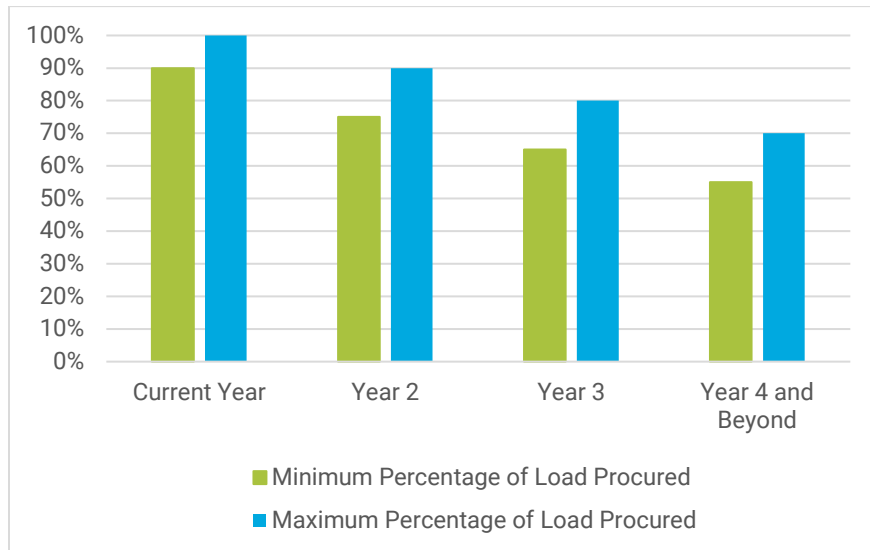
¹⁵ PCE policy prohibits unit-specific purchases from coal facilities for energy or resource adequacy.

technological improvements that may arise. PCE monitors its open position separately for each RPS category, GHG-free resources, conventional resources, and on a total portfolio basis. PCE is targeting the guidelines in Table 7 and Figure 11 below to manage its open position. This will also allow us to maintain a regular procurement cycle as short and mid-term contracts end.

Table 7: PCE Open Position Guidelines

	Percentage of Load Procured	
	Min	Max
Current Year	90%	100%
Year 2	75%	90%
Year 3	65%	80%
Year 4	55%	70%

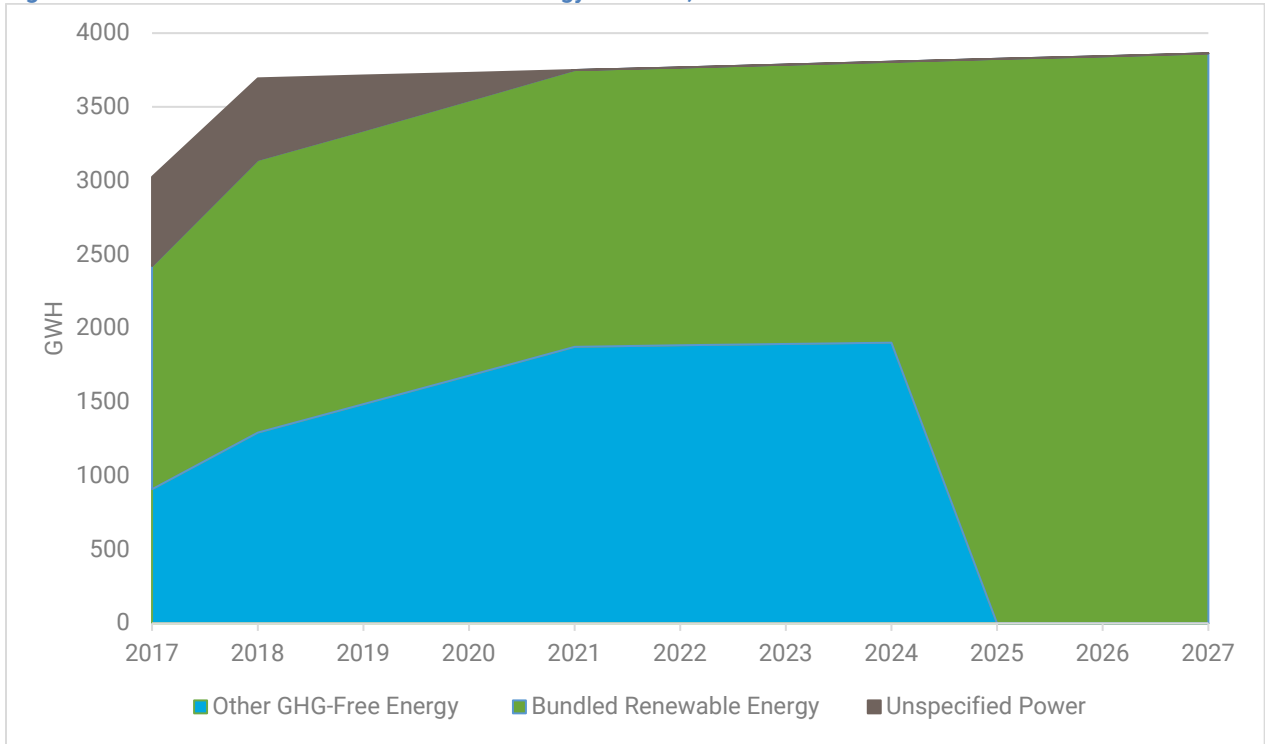
Figure 11: PCE Open Position Guidelines



Meeting and Exceeding California’s Renewable Portfolio Standard (RPS)

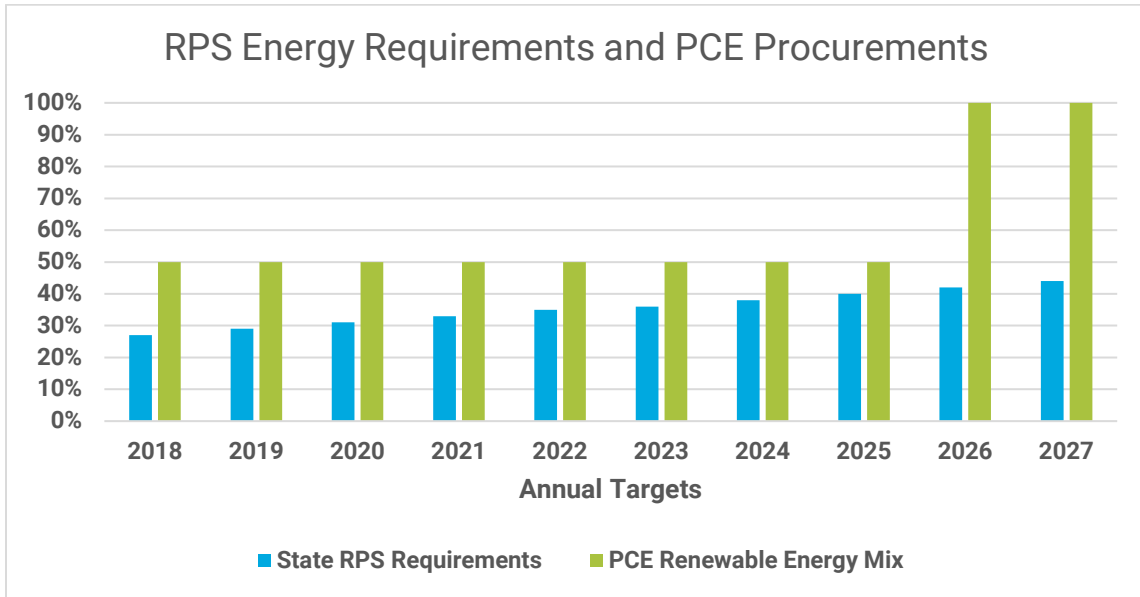
PCE meets its renewable energy requirements with a combination of RPS-eligible energy products. As Figure 12 illustrates, the proportion of PCE’s resource mix that is sourced from bundled renewable energy products will significantly increase as PCE transitions toward 100% renewable energy content in 2025.

Figure 12: PCE Renewable and Non-renewable Energy Volumes, 2018-2027



Based on targeted renewable energy percentages, PCE intends to significantly outpace California’s annual RPS procurement mandates throughout the planning period. Figure 13 illustrates how PCE’s procurement targets for renewable energy compare to California’s RPS requirements, and demonstrate how PCE is procuring significantly more than required by the RPS, and greatly exceeding the state’s goals.

Figure 13: RPS Energy Requirements and PCE Procurement Targets, 2018-2027

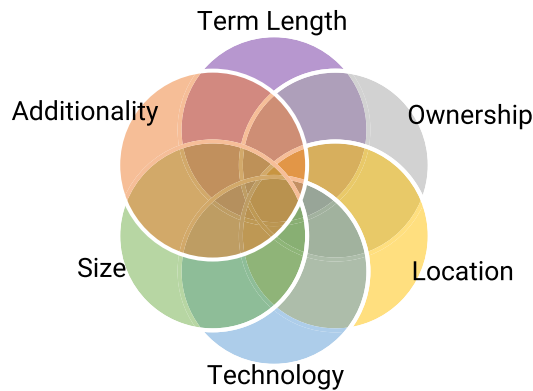


VIII. Designing a Diverse and Balanced Portfolio

PCE’s goal is to fulfill its open position with a diverse set of contracts. PCE uses a portfolio risk management approach in its power purchasing program, seeking low cost supply as well as diversity among technologies, production profiles, project sizes, project locations, counterparties, term lengths and timing of market purchases to cost average over time, including remaining cognizant of the value of open market positions. These factors are taken into consideration when PCE engages the market and PCE has developed specific guidelines for each of these diversification factors. Figure 14 identifies the attributes PCE strives to balance in terms of diversity of its power supply. In 2018 and beyond, PCE will strive to procure resources to meet the guidelines outlined in this section. Actual procurement may differ from these guidelines, if resource availability or market conditions preclude cost-effective procurement. As this document is updated and as the market changes, these guidelines may also be updated. The primary goal is to strive to achieve a diverse portfolio that will allow us to achieve our renewable goals while managing risk.

The guidelines outlined in this section are important to help PCE meet its goals and to provide a well-balanced portfolio. PCE is focused on providing a green product to customers at rates that are at parity or lower than PG&E’s. To stay competitive and create a sustainable business, PCE is very focused on meeting the guidelines at competitive prices and will carefully evaluate any procurement decisions to ensure PCE can maintain its low rates to customers.

Figure 14: Contract Diversity Attributes



Additionality

Additionality means that a project or activity would not have happened without the buyer. PCE is setting a guideline that we target a minimum 50% of the portfolio be procured from new projects by 2025. New means projects that PCE causes to be built or repowered. Repowered projects are typically wind energy projects where older turbines are replaced by new state-of-

the-art turbines. For a repowered facility to count towards the definition of “additionality”, it would require a significant investment for the repowering of the facility.

Term Length

PCE intends to fulfill the renewable portion of the portfolio with a combination of short, mid-term and longer-term contracts, which provides cost stability for the supply portfolio.

In order to effectively plan and manage its portfolio, PCE differentiates contracts by their term length as follows:

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

As discussed above, SB 350 requires that PCE procure 65% of its RPS requirement from long-term contracts starting in 2021. Table 8 below identifies PCE’s RPS requirement during this compliance timeline and the minimum long-term contract requirement according to SB 350.

Table 8: PCE Contract Term Length – Statutory Requirements

	2021	2022	2023	2024	2025	2026	2027
RPS Requirement	35%	36%	38%	40%	42%	43%	45%
Long Term Required per SB350 (%)¹⁶	23%	24%	25%	26%	27%	28%	29%
Retail Sales (GWh)	3,768	3,787	3,806	3,825	3,844	3,863	3,882
Long Term Required (GWh)¹⁷	850	896	942	989	1,037	1,085	1,133

PCE is setting a guideline to go beyond this minimum requirement and procure at least 50% of our portfolio from long-term contracts. This will help to meet our additionality guideline above as most new projects require long-term contracts to secure financing. The remainder of our portfolio will be comprised of contracts with short, medium and intermediate term lengths. Table 9 identifies guidelines around the percentage of the PCE portfolio from contracts in each term length category by year.

¹⁶ This is calculated as 65% of our RPS requirement (a statutory requirement) as identified in the row above.

¹⁷ This is the GWh equivalent to 65% of our RPS requirement identified in the rows above.

Table 9: PCE Contract Term Length Guidelines

	2021	2022	2023	2024	2025	2026	2027
Long Term Req'd per SB350 (%)	23%	24%	25%	26%	27%	28%	29%
Long Term Additional	27%	26%	25%	24%	23%	22%	21%
Total Long Term (>10 years)	50%	50%	50%	50%	50%	50%	50%
Short (<1 year)	15%	15%	15%	15%	15%	15%	15%
Medium (1-5 years)	17.5%	17.5%	17.5%	17.5%	17.5%	17.5%	17.5%
Intermediate (6-10 years)	17.5%	17.5%	17.5%	17.5%	17.5%	17.5%	17.5%

PCE is targeting 15% of its procurement in short-term contracting to allow us to react to changes in the market price of power and provide flexibility with PCE’s load.¹⁸ This also allows PCE to respond to disruptive technologies that might change the energy industry landscape.

Project Size

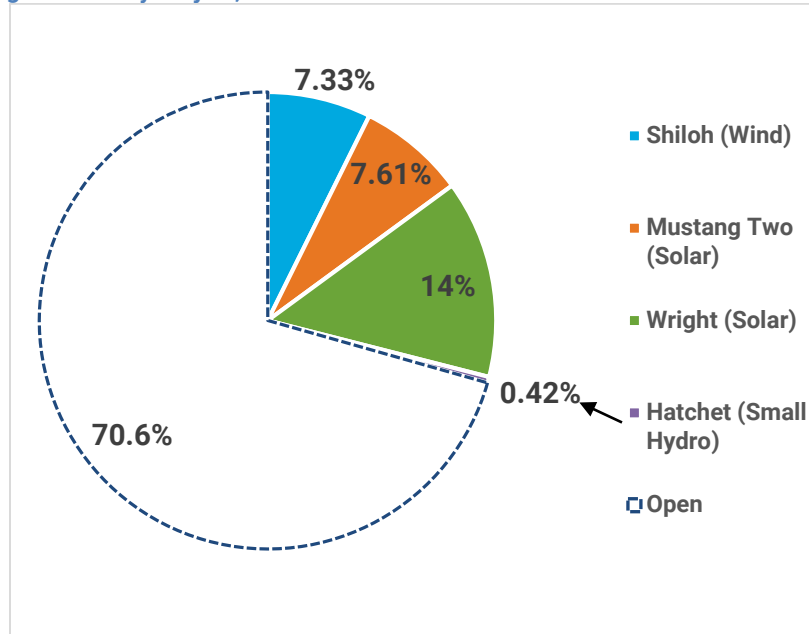
In building a diverse portfolio, PCE is focused on contracting with projects of varying sizes. We have also set a guideline to target that no one project make up more than 15% of our portfolio by GWh production at the time of contract execution as identified in Table 10 below. For reference, Figure 15 shows the percentage of our load by project in 2021. Our largest project, Wright is equal to 14% of our load.

Table 10: PCE Project Size Guidelines

Guideline
Pursue diversity of project sizes
No one project output makes up more than 15% of GWh load

¹⁸ The recent fires in northern California resulted in Sonoma Clean Power losing close to 5% of its customer base. Although PCE hopes that a natural disaster does not occur here, keeping a portion of PCE’s portfolio extremely flexible mitigates this risk.

Figure 15: PCE Percentage of Load by Project, 2021



Ownership

Diversity in ownership limits PCE’s exposure to any one company and the risk of that company going bankrupt or otherwise going out of business. PCE also wants to ensure that the counterparties we work with have sufficient experience to develop or operate the project. As indicated in Table 11 below, PCE is targeting that no more than 15% of our load is contracted with any one owner at the time of contract execution and that the counterparties PCE works with have experience developing and operating projects of similar type and size.

Table 11: PCE Project Ownership Guidelines

Guideline
No more than 15% of GWh load from any one owner
Experience developing & operating similar size projects
Financing plan and successful track record with finance organizations
Project owner is not an organization that opposes CCAs
Financially stable organization

Resource and Technology Mix

PCE has no explicit preference for specific renewable energy technologies. However, PCE is targeting a diverse set of technologies in our portfolio as shown in Table 12 below. This will limit our exposure to any one manufacturer and will help to meet our goal of matching our supply portfolio to our load profile. To support this, PCE is targeting to procure no more than 20-25% of our load from any one manufacturer. This will help mitigate risk that one manufacturer has a problem with their solar modules or wind turbines, or goes out of business.

Table 12: PCE Resource and Technology Mix Guidelines

Guideline
Procure from diverse set of technologies to match supply to load
No more than 20-25% of load from any one manufacturer

Location

PCE considers a number of factors to manage risk with regard to a project’s location. First, PCE considers the cost to transmit the energy from the project location to the PCE service territory. This transmission cost evaluation, which uses historical prices of energy as well as future price projections, is known as congestion analysis.

We also want to identify projects that help to meet our goal of 100% renewable energy by 2025 and to match our generation portfolio to our load on a time coincident basis. For some renewable energy resources, the type of resource and location can affect the projected generation profile. We will evaluate this generation profile alongside our other guidelines to determine whether a project could help to fill a hole in our generation profile.

In consideration of these goals, PCE is setting the guidelines identified in Table 13 with regard to project location.

Table 13: PCE’s Project Location Guidelines

Guideline
Prioritize projects / locations to minimize congestion pricing
No more than 15% of load from one LMP ¹⁹ / interconnection point
Supports PCE’s Sustainable Workforce Policy
Evaluate environmental impacts
Prioritize projects that help to match supply to load

Procurement Methods

PCE may use a variety of methods to contract for power, including competitive solicitations and bilaterally negotiated agreements. Through a competitive solicitation, PCE issues an RFP and evaluates multiple proposals in the context of market conditions before entering negotiations with those respondents that provide the most compelling offers. Occasionally, PCE will issue ad hoc competitive solicitations or engage in independent bilateral negotiations to meet specific resource needs. Alternatively, particularly in markets with sufficient transparency to

¹⁹ LMP refers to “Locational Marginal Price”, a term used by the California Independent System Operator (CAISO) to price electricity deliveries into the California grid based on the location of that project.

ensure competitive outcomes, PCE may negotiate short-term transactions via its scheduling coordinator or independent energy brokers or marketers. Such markets may include:

- i. System energy at defined CAISO trading hubs for defined (e.g. peak, off-peak, baseload, shaped, or custom) products;
- ii. Short-term RA capacity.

RA Purchases

PCE primarily procures RA in two ways:

- Bilateral contracts with counterparties, after sending out a request for competitive proposals to companies that may have RA products to offer.
- PCE receives the resource adequacy value/benefit from several of its renewable energy contracts. For example, PCE receives a small amount of RA from the Karen Avenue Wind and the Buena Vista Wind projects.

IX. Developing Local Resources

The PCE Board has set a target to develop 20 MW of new power projects in San Mateo County by 2025. PCE has an ongoing net energy metering program, as described below. Additionally, PCE staff is currently working to establish criteria and specific program parameters to guide further local development.

Net Energy Metering (“NEM”)

PCE solar customers can enroll in the Net Energy Metering (NEM) program. NEM is a special billing arrangement that allows customers with solar PV systems to get the full retail value of the electricity their system generates. A special meter tracks the difference between the amount of electricity a customer’s solar panels produce and the amount of electricity the customer uses during each billing cycle. When the panels produce more electricity than is being used, customers receive a credit on their bill.

In PCE’s NEM program (as contrasted with PG&E’s NEM program):

- Energy consumption is reconciled monthly vs. annually;
- Surplus electricity produced monthly is credited at \$0.01/kWh above the retail value (equivalent to the ECO100 generation rate);
- Excess generation credits are never discounted; customers are always compensated at the full retail generation rate;
- Credits roll over each month helping to offset any generation charges throughout the year; and
- PCE issues customers a check yearly after the April billing cycle for any unused credits over \$100 (if less than \$100, credits roll over).

PCE currently has approximately 11,000 customer accounts representing 70 MW enrolled in its NEM program. PCE is dedicated to encouraging customers to generate their own renewable energy via rooftop solar. Through its NEM program, PCE offers a compelling incentive to promote customer-sited distributed generation within its service area. From PCE’s launch

through June 2017, for example, PCE NEM customers were offered over \$300,000 in NEM credits.

New Program Development

During the next several years, PCE plans to evaluate and develop local renewable energy projects and complementary programs to serve PCE's customers. PCE is following a structured approach to identify worthy projects to pursue, including weighing them against a standard set of criteria. Selection criteria may include:

1. Projected GHG emissions reductions
2. Cost effectiveness
3. Number of customers served
4. Geographic diversity in San Mateo County communities served
5. Supports PCE's workforce policy
6. Helps PCE match supply to load
7. Implementation cost to PCE (staff and \$)
8. Contributes toward procurements goals of:
 - a. Creating 20 MW of new local power by 2025
 - b. 100% GHG-free power for 2021
 - c. 100% renewable energy by 2025
9. Benefits disadvantaged communities
10. Innovative, scalable, and replicable
11. Supports community resilience
12. Fills a gap in current utility offerings

PCE will be evaluating local programs during FY17-18 and possibly launching some pilot programs during that time. Full rollout of programs will occur in future years. Possible programs might include energy storage, electric vehicle programs, or demand response. Currently the San Mateo County Office of Sustainability administers some energy efficiency programs in PCE territory. PCE plans to work closely with the Office of Sustainability before considering any additional energy efficiency programs.

Appendix A: Description of PCE’s Mid-2017 Resources

The following generation resources are listed in the same order as in Table 5 and Table 6, in descending order of contract term length, ranging from 25 years to six months. Table 14 below summarizes how each of these projects contributes towards our aforementioned diversity goals.

Table 14: PCE’s Executed Contracts and their Diversity Metrics

Generation Resource	Term Length	Ownership	Location	Technology	Size	Additionality	Legend
Wright							Meets all Guidelines
Mustang							Meets all Guidelines
Direct Energy							Meets Some Guidelines
Hatchet Creek							Meets Some Guidelines
Buena Vista							Not Applicable
Shiloh							Not Applicable
Karen Avenue							Not Applicable
Roaring Creek							Not Applicable
Bidwell Ditch							Not Applicable
Constellation							Not Applicable
Cuyama							Not Applicable
PG&E							Not Applicable
Powerex							Not Applicable
Morgan Stanley							Not Applicable

Wright Solar Park is a new 200 MW solar photovoltaic facility located in Merced County, CA less than 100 miles from San Mateo County. Under this PPA, the project will deliver over 500,000 MWh annually to PCE for 25 years beginning in 2019. The energy produced by the facility will count towards PCE’s PCC1 targets. The project is expected to create over 350 regional union jobs (about 650 job-years) during the construction period in 2018-2019.

RE Mustang Two is a new 100 MW solar photovoltaic facility located in Kings County, CA. Under this PPA, the project will deliver approximately 300,000 MWh annually to PCE for 15 years beginning in 2020. The energy produced by the facility will count towards PCE’s PCC1 targets.

Direct Energy provides load scheduling coordinator services as well as system energy, GHG-free energy, renewable energy and capacity through 2020. Following PCE’s launch in October 2016, the Direct Energy agreement provided for all of PCE’s resource requirements. The proportion of energy deliveries from this Direct Energy contract will diminish as PCE incrementally augments its resource portfolio with a diverse mix of other power suppliers.

Hatchet Creek is a 7.5 MW small hydro facility located in Shasta County, CA. The project began deliveries to PCE in March 2017, and will continue deliveries through March 2022. Annual

deliveries are about 16,500 MWh per year. The energy produced by the facility counts towards PCE's PCC1 targets.

Buena Vista is a 38 MW wind facility located in Contra Costa County, CA, in the Altamont Pass. The project began delivering renewable wind energy to PCE in April 2017, and will continue for 5 years through April 2022. Deliveries to PCE are about 90,000 MWh per year. The energy produced by the facility counts towards PCE's PCC1 targets. The project was repowered in December 2006 by replacing the original turbines with new and bigger turbines.

Shiloh is a 150 MW wind facility located in Solano County, CA. The project will start delivering energy to PCE on January 1, 2019, and will continue for five years through December 2023. Peninsula Clean Energy has contracted for an increasing capacity of Shiloh over the term, receiving a total of about 400,000 MWh over the five years. The energy produced by the facility will count towards PCE's PCC1 targets. The project started operating in 2006.

Karen Avenue is an 11.7 MW wind facility located in Riverside County, CA. PCE started receiving energy from this project on July 1, 2017 and will receive an average of 17,300 MWh in annual energy deliveries for three years through June 2020. The energy produced by the facility counts towards PCE's PCC1 targets. The project started operating in 1985.

Roaring Creek is a 2 MW small hydro facility located in Shasta County, CA. The project began delivering renewable energy to PCE in March 2017, and will continue for two years through March 2019. Annual deliveries are about 5,600 MWh per year. The energy produced by the facility counts towards PCE's PCC1 targets.

Bidwell Ditch is a 2 MW small hydro facility located in Shasta County, CA. The project began delivering renewable energy to PCE in March 2017, and will continue for two years through March 2019. Annual deliveries are about 11,000 MWh per year. The energy produced by the facility counts towards PCE's PCC1 targets.

Constellation has a two-year contract with PCE that delivers both conventional energy and PCC 2, bundled renewable energy to PCE. Constellation started delivering energy to PCE in 2017 during which PCE was transitioning from serving a portion of San Mateo County to all of San Mateo County. Over the course of the contract, Constellation will deliver around 550,000 MWh of bundled renewable energy.

Cuyama is a 40 MW solar photovoltaic facility located in Santa Barbara County, CA. PCE has entered into a one-year contract starting on January 1, 2018, during which the Cuyama facility will deliver around 115,000 MWh. The energy produced by the facility will count towards PCE's PCC1 targets.

PG&E has a one-year contract with PCE that started delivery in mid-2017. This contract counts towards PCE's PCC1 targets.

Powerex has a two-year contract with PCE that delivers both PCC 1 bundled renewable energy and GHG-free energy. Powerex started delivery to PCE in 2017

Morgan Stanley has a one year contract to deliver GHG-free energy in 2017 and 2018.

Appendix B: List of Acronyms

AB	Assembly Bill
CAISO	California Independent System Operator. A non-profit organization that operates the California electric grid.
CCA	Community Choice Aggregation or Aggregator
CCE	Community Choice Energy
CdTe	Cadmium Telluride. A specific type of solar panel technology.
CEC	California Energy Commission. California's primary energy policy and planning agency.
CPUC	California Public Utilities Commission. A government agency that regulates services and utilities.
FY	Fiscal Year
GHG	Greenhouse Gas. An atmospheric gas produced by combustion of fossil fuels that is known driver of climate change.
GWh	Gigawatt-Hour. A unit of measurement for energy equal to 1000 Megawatt-hours.
IOU	Investor Owned Utility. A utility with shareholders such as Pacific Gas and Electric Company.
IRP	Integrated Resource Plan
kWh	Kilowatt-Hour. A unit of measurement for energy.
LMP	Locational Marginal Price. A location-specific price for a Megawatt-hour of energy
LSE	Load Serving Entity. An entity whose responsibility is supplying energy to a group of customers.
MW	Megawatt. A unit of measurement for power.
MWh	Megawatt-hour. A unit of measurement for energy equal to 1000 kilowatt-hours.
NEM	Net Energy Metering. A program in which self-generators of electricity can sell energy back to the grid.
PCC	Portfolio Content Category. A classification mechanism used under the Renewable Portfolio Standards to distinguish between different types of renewable energy.
PCE	Peninsula Clean Energy. Community Choice Energy Program for San Mateo County and the default electricity provider for San Mateo County.
PCL	Power Content Label. A state-mandated customer communication tool that informs customers about the energy mix supplied to them by their electricity provider.
PG&E	Pacific Gas and Electric Company. The investor owned utility that was previously San Mateo County's Official electricity provider.
PPA	Power Purchase Agreement. A legally binding agreement between a buyer and a seller of electricity for energy.
RA	Resource Adequacy. A CPUC mandated program designed to provide sufficient resources for the California grid and to provide incentives for the construction of new resources.
REC	Renewable Energy Certificate. A tradable certificate that represents proof that one megawatt-hour of electricity was produced by a renewable energy source and fed into the electric grid.
RFP	Request for Proposal
RPS	Renewable Portfolio Standard. A state mandated program that sets rules for renewable energy targets and goals.

SB	Senate Bill
SMC	San Mateo County
WECC	Western Electricity Coordinating Council. A non-profit organization whose mission is to ensure a reliable electric grid in the geographic area known as the Western Interconnection.

**Appendix B: Resolution Approving Peninsula Clean Energy's CPUC IRP
Filing**

RESOLUTION NO. _____

**PENINSULA CLEAN ENERGY AUTHORITY, COUNTY OF SAN MATEO, STATE OF
CALIFORNIA**

* * * * *

**RESOLUTION APPROVING THE INTEGRATED RESOURCE PLAN (IRP) TO BE
SUBMITTED TO THE CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) BY
AUGUST 1, 2018**

RESOLVED, by the Peninsula Clean Energy Authority of the County of San Mateo, State of California, that

WHEREAS, all Load Serving Entities (LSEs) in California are required to produce and submit to the California Public Utilities Commission (CPUC) an Integrated Resource Plan (IRP) by August 1, 2018; and

WHEREAS, PCE is a Load Serving Entity (LSE) in California and therefore is required to submit an IRP to the CPUC; and

WHEREAS, the CPUC has directed CCAs to seek Board approval for the IRP prior to submission.

NOW, THEREFORE, IT IS HEREBY DETERMINED AND ORDERED that the Board approves PCE's California Public Utilities Commission (CPUC) Integrated Resource Plan (IRP) in a form similar to that provided and delegates authority to the CEO to file the IRP with the CPUC on or before the deadline.

Approved by Board of Directors: July 26, 2018
Motion Passed by Unanimous Vote: 17-0

* * * * *

**Appendix C: PCE Base Resource Data Template 2018
(Non-Confidential Version)**

See Excel File

Appendix D: PCE New Resource Data Template 2018

See Excel File

Appendix E: PCE GHG Calculator 2018


See Excel File

VERIFICATION

I am an officer of Peninsula Clean Energy Authority and am authorized to make this verification on its behalf. The statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters I believe them to be true.

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

Executed on August 1, 2018, at Redwood City, California.



Jan Pepper

Chief Executive Officer, Peninsula Clean Energy Authority

ATTACHMENT A
NOTICE OF AVAILABILITY

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

Order Instituting Rulemaking to Develop
an Electricity Integrated Resource
Planning Framework and to Coordinate
and Refine Long-Term Procurement
Planning Requirements.

Rulemaking 16-02-007
(Filed February 11, 2016)

**PENINSULA CLEAN ENERGY AUTHORITY
NOTICE OF AVAILABILITY OF INTEGRATED RESOURCE PLAN**

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August 1, 2018

Attorneys for Peninsula Clean Energy
Authority

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

Order Instituting Rulemaking to Develop
an Electricity Integrated Resource
Planning Framework and to Coordinate
and Refine Long-Term Procurement
Planning Requirements.

Rulemaking 16-02-007
(Filed February 11, 2016)

**PENINSULA CLEAN ENERGY AUTHORITY
NOTICE OF AVAILABILITY OF INTEGRATED RESOURCE PLAN**

Pursuant to California Public Utilities Commission (“Commission”) Rules of Practice and Procedure, Rule 1.9(d) , Peninsula Clean Energy Authority (“PCE”) respectfully provides this Notice of Availability of its 2018 Integrated Resource Plan (“IRP”) compliance filing.

If printed, the IRP would exceed 50 pages in length. (Rule 1.9(d)(1)). The file size of the IRP exceeds the 3.5 megabytes size limit for e-mail service (Rule 1.9(d)(2) and 1.10(c)).

PCE has posted a link to the excel version of its IRP attachments on its website at www.peninsulacleanenergy.com/regulatoryfilings. (Rule 1.9(d)(3)). The IRP has been available on PCE’s website at the URL stated above since August 1, 2018. (Rule 1.9(d)).

Respectfully submitted,

/s/

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August 1, 2018

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