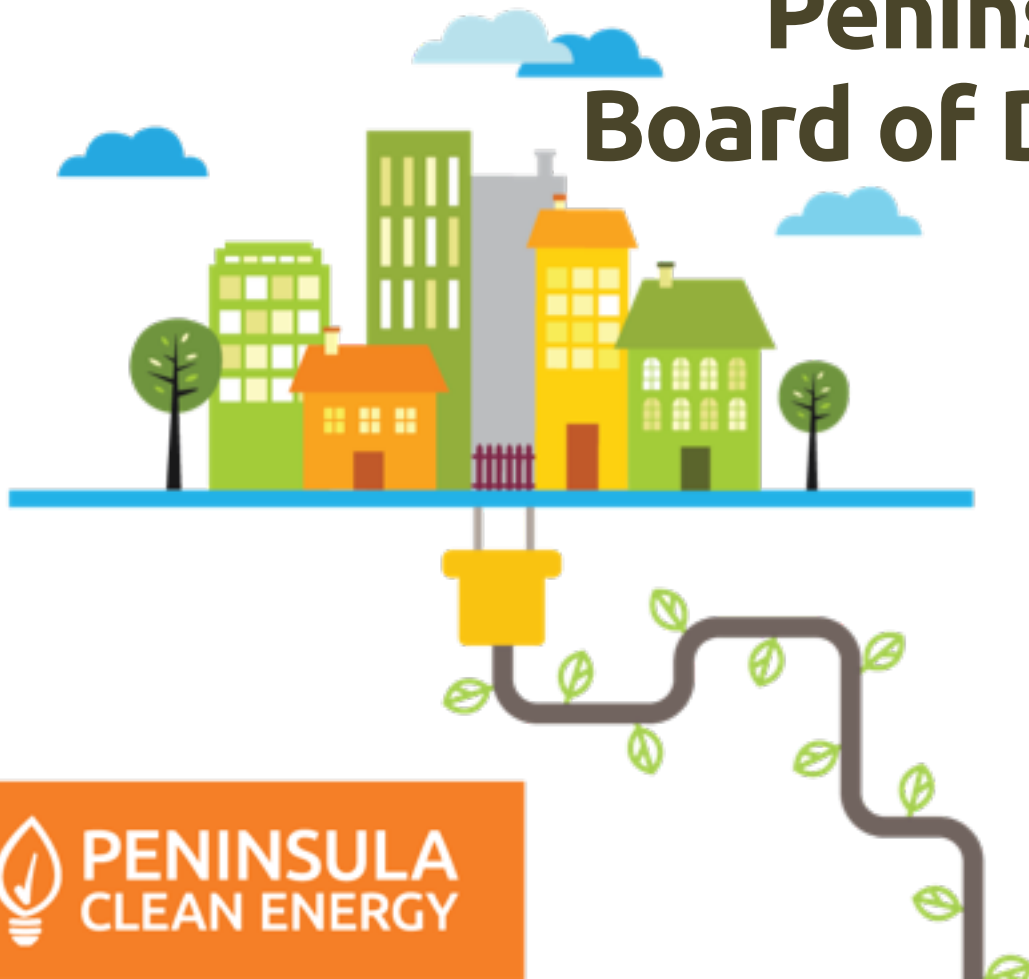


# Peninsula Clean Energy Board of Directors Meeting

June 28, 2018



**PENINSULA  
CLEAN ENERGY**

# **Agenda**

**Call to order / Roll call**

**Public Comment**

**Action to set the agenda and approve  
consent items**

# Closed Session

## **1. PUBLIC EMPLOYEE PERFORMANCE EVALUATION Title: Chief Executive Officer**

## **2. CONFERENCE WITH LABOR NEGOTIATORS**

**Agency Designated Representatives:  
Jeff Aalfs and David Silberman**

**Unrepresented Employee:  
Chief Executive Officer**



# Closed Session

## **3. RECONVENE OPEN SESSION AND REPORT OUT OF CLOSED SESSION**

# Regular Agenda

## **4. Approval of Employment Contract Amendment and Compensation Adjustment for Chief Executive Officer (Action)**

# Regular Agenda

## **5. Chair Report (Discussion)**

# Regular Agenda

## **6. CEO Report (Discussion)**

# Personnel Update

- Internal promotions:
  - Alejandra Posada → Energy Programs Associate
  - Charlsie Chang → Public Affairs Associate
- Interim CFO:
  - Tina Caratan on board
- Summer Intern:
  - Andre Tan, Ignite Summer Teacher Fellowship



# We continue to grow

- Current recruitments:
  - Clean Energy Programs Manager
  - Regulatory Analyst
  - CFO (through search firm)
- New recruitments soon:
  - Distributed Energy Procurement
  - Community Outreach Associate



# Recent Events

- Business of Local Energy Symposium in Sacramento
- Silicon Valley Energy Summit at Stanford
- En Banc Hearing on CA Customer Choice Project at CPUC

# Upcoming Events

- CalCCA Annual Summit – Sept 5-6, Asilomar (Monterey)
- PCE Board Retreat – **Sept 29**
- Groundbreaking for Wright Solar project – **October 11**
- CAISO Stakeholder Conference – Oct 17-18, Sacramento





# Regular Agenda

## **7. Citizens Advisory Committee Report (Discussion)**

# Regular Agenda

## **8. Audit and Finance Committee Report (Discussion)**

# Regular Agenda

## **9. Regulatory and Legislative Report (Discussion)**

# Regulatory and Legislative Report

June 28, 2018

Joseph Wiedman  
Director of Regulatory and Legislative Affairs



# May/June Regulatory Activities



- CalCCA Opening and Reply Briefs – PCIA docket
- Coalition comments on Comm. Guzman-Aceves revised alternate proposed decision regarding programs for disadvantaged communities
- CalCCA response to CPUC draft staff white paper on customer choice
- Coalition comments and reply comments on Resource Adequacy proposed decision

# May/June Regulatory Outreach



- Meetings with California Energy Commission Commissioner David Hochschild and Ken Rider, energy advisor to Comm. Hochschild re implementation of AB 1110 – Power Source Disclosure
- Meeting with IBEW 1245 regarding PCE's transportation electrification programs and future activities
- Ex Parte with David Gamson, energy advisor to CPUC Commissioner Guzman-Aceves regarding programs to serve disadvantaged communities

# May/June Legislative Activities

- CalCCA activity:
  - SB 100 (De Leon) – Support
  - SB 237 (Hertzberg) – In discussions with stakeholders
  - SB 1088 (Dodd) – Oppose unless amended
  - SB 1347 (Stern) – Oppose unless amended



# Regular Agenda

**10. Approve Department of Energy EV Infrastructure Grant Match and/or Funding for Innovative Electric Vehicle Infrastructure Pilots (Action)**



# Programs Update & EV Infrastructure DOE Match

June 28, 2018



**PENINSULA  
CLEAN ENERGY**

# Programs Update


- **Recap:** Phase 1 approved by BOD in April
  - \$745k for EV measures: EV ride & drive campaign, new car and low income incentives, and apartment technical assistance
  - \$450k for community pilots (up to \$75k per project)
- **Community Pilots**
  - Community Pilots solicitation was opened June 21<sup>st</sup>
- **EV Programs update**
  - Ride & Drive events are under discussion with multiple sites with the first event likely end of July/early Aug.
  - The Easy Charge: Apartments workshop will be held July 10<sup>th</sup>. We have 25 RSVPs.
  - Refinement of the new car and low-income elements are in progress for launch later this year.

A close-up photograph of a white electric vehicle's charging port. A black charging cable with a blue connector is plugged into the port. The port is open, revealing the internal components. In the background, a blue car is parked in a similar spot, and the setting appears to be an underground parking garage with concrete pillars and a yellow safety barrier.

## Barriers to EV Adoption

- Awareness
- Up-Front Cost
- Access to Charging





## Phase 1: Apt Technical Assistance & Study

- Half residents, no access (garage-less)
- Complicated issues
- Groundwork

# Charging Scenarios & Solutions

Driver Scenario	Charging Required	Est. Population Served
Garage & Adequate Electrical	Charge at home	50%
No Garage (Multi-unit dwelling or other)	Charging in MUD parking	10-15%
	Curbside & public “residential serving” charging	10-15%
	Workplace	20%
	Fast Charging	50%

*80% of San Mateo County apartment stock is over 50 years old – poor electrical capacity*



# Curbside Examples – Palo Alto, UK



# Dept of Energy Grant

- 2018 Advanced Vehicle Technologies Research
- Area of Interest 3e: Multi-Unit Dwelling and Curbside Residential Charging Infrastructure Innovations
- Grant: \$1-1.5M
- Proposal due: 7/13
- Term: 3 yrs
- Cost–Share : 50 pct of total project (\$1M)

# PCE Partners & Roles under DOE Grant

- PCE Tariff, match and admin
- NREL Technology assessment
- EV Charging Pros MUD analysis, technology
- LightMoves Curbside tech, policy
- ARUP Region-wide siting
- PG&E Capacity analysis, tariff
- Local Govs (next page)



# Consultant: Jim Helmer (LightMoves)

- Former Director of Transportation for the City of San Jose 2002 - 2009
- Co-wrote EV planning and technical guides for Hawaii, Pennsylvania, Washington and California
- Installed the first public ChargePoint station in the country as a curbside unit
- Led City streetlight LED and smart lighting pilots and upgrades
- Planned, implemented and managed lighting, traffic, new technology and parking teams for over 35 years



# Action

## **Board**

- Approve \$1M allocation over 3 years for project

## **Local Governments**

1. Share data for regional assessment
2. Dialogue on needs and policy development
3. Opportunity to pilot technology curbside and/or residential serving public facility

# Regular Agenda

## **11. Approve Data Management Contract (Action)**

# Data Management and Call Center RFP

- RFP Released end of March 2018
- Five responses were received
- Three were invited to present their proposals to PCE Staff
  - GridX, SMUD, and Calpine
- Calpine was selected to renew for a two year term

# New Contract Highlights

- Extended Live Agent Call Center Hours
  - 7AM to 7PM M-F (previously 8 AM to 5 PM)
- Lower account management fees
  - \$1.05 per active meter per month vs \$1.15
  - Annual savings of ~\$350K
- New Business Intelligence tools and improved Data Analytics

# Regular Agenda

## **12. Approve Fiscal Year 2018-2019 Budget and 5-year Projections (Action)**



# FY 2018-2019 Budget

# Updates from May version

- Added forecasted FY 2017-2018 results
- Updated Revenue forecast for FY 2018-2019
- Added Assumptions / Notes
- Added Days Cash on Hand ratios
- Added 5-Year Projections (FY 2019-2023)



# FY 2018-2019 Budget

Category	FY 2017-18	FY 2017-18	FY 2018-19	Change in \$\$\$	Change in %
	Approved Budget	Actual (10 mo) + Forecast (2 mo)	Proposed Budget	Approved vs Proposed Budget	Approved vs Proposed Budget
<b>OPERATING REVENUES</b>					
Electricity Sales	\$ 247,213,713	\$ 238,857,454	\$ 254,916,736	\$ 7,703,023	3%
ECO100 Premium	737,000	1,421,404	1,627,364	890,364	121%
Revenues	247,950,713	240,278,858	256,544,100	8,593,387	3%
<b>OPERATING EXPENSES</b>					
Cost of energy	181,715,000	171,749,055	176,147,894	(5,567,106)	-3%
Data Manager	3,970,000	4,068,203	3,758,400	(211,600)	-5%
Service Fees - PG&E	1,636,000	1,432,372	1,260,000	(376,000)	-23%
Bad Debt expense	865,248	836,001	897,904	32,656	4%
Communications and Outreach	1,049,000	494,437	1,010,600	(38,400)	-4%
General and Administrative	795,207	897,848	1,227,200	431,993	54%
Professional Services	1,017,000	460,653	1,432,511	415,511	41%
Energy Programs	250,000	20,000	3,200,000	2,950,000	1180%
Legal	1,030,000	1,227,273	1,146,600	116,600	11%
Personnel	3,319,605	2,145,510	4,492,745	1,173,140	35%
<b>Total Operating Expenses</b>	<b>195,647,060</b>	<b>183,331,352</b>	<b>194,573,855</b>	<b>(1,073,206)</b>	<b>-1%</b>
<b>Operating Income (Loss)</b>	<b>52,303,653</b>	<b>56,947,506</b>	<b>61,970,246</b>	<b>9,666,593</b>	<b>18%</b>
<b>NON-OPERATING REVENUES (EXP.)</b>					
Interest Income	-	113,060	440,000	440,000	0%
Interest and related expense	-	(262,373)	(168,000)	(168,000)	0%
Nonoperating Revenues (Exp.)	-	(149,313)	272,000	272,000	0%
<b>OTHER USES.</b>					
Capital Outlay	484,000	311,280	42,000	(442,000)	-91%
Debt Service Principal	7,997,000	-	-	(7,997,000)	-100%
<b>Other Uses</b>	<b>8,481,000</b>	<b>311,280</b>	<b>42,000</b>	<b>(8,439,000)</b>	<b>-100%</b>
<b>CHANGE IN NET POSITION</b>					
Net Position at the beginning of period	21,710,529	21,710,529	78,197,442	56,486,913	260%
Increase in Net Position	43,822,653	56,486,913	62,200,246	18,377,593	42%
Net Position at the end of period	65,533,182	78,197,442	140,397,688	74,864,506	114%
Approx. Cash & Cash Equivalents	\$ 58,979,863	\$ 70,377,698	\$ 130,397,688		
Approx. Other Assets	\$ 6,553,318	\$ 7,819,744	\$ 10,000,000		
Target Operating Reserves (Days cash on hand)	120	120	120		
Days Cash on Hand (before LC)	110	140	245		
Target Operating Reserves	\$ 64,322,321	\$ 60,273,321	\$ 63,969,486		
Line of Credit	\$ 12,000,000	\$ 12,000,000	\$ 12,000,000		
Cash, Cash Equivalents & LC	\$ 70,979,863	\$ 82,377,698	\$ 142,397,688		
Days Cash on Hand (after LC)	132	164	267		

# FY 2019-2023 Projections

FY 2018-2019 Budget & Projections	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
	Proposed Budget	Projection	Projection	Projection	Projection
<b>OPERATING REVENUES</b>					
Electricity Sales	\$ 254,916,736	\$ 257,602,223	\$ 260,322,438	\$ 263,077,877	\$ 265,869,040
ECO100 Premium	1,627,364	1,806,500	2,005,403	2,226,261	2,471,501
<b>Total Operating Revenues</b>	<b>256,544,100</b>	<b>259,408,723</b>	<b>262,327,841</b>	<b>265,304,137</b>	<b>268,340,541</b>
<b>OPERATING EXPENSES</b>					
Cost of energy	176,147,894	176,898,984	169,786,727	173,799,409	181,015,339
Data Manager	3,758,400	3,871,152	3,987,287	4,106,905	4,230,112
Service Fees - PG&E	1,260,000	1,297,800	1,336,734	1,376,836	1,418,141
Bad Debt expense	897,904	907,931	918,147	928,564	939,192
Communications and Outreach	1,010,600	1,040,918	1,072,146	1,104,310	1,137,439
General and Administrative	1,227,200	1,262,330	1,341,184	1,404,701	1,467,437
Professional Services	1,432,511	1,863,554	2,296,287	2,758,913	3,201,756
Energy Programs	3,200,000	4,800,000	6,400,000	8,000,000	9,600,000
Legal	1,146,600	1,197,864	1,251,449	1,307,460	1,366,010
Personnel	4,492,745	4,879,674	5,316,865	5,796,690	6,323,194
<b>Total Operating Expenses</b>	<b>194,573,855</b>	<b>198,020,207</b>	<b>193,706,824</b>	<b>200,583,788</b>	<b>210,698,621</b>
<b>Operating Income (Loss)</b>	<b>61,970,246</b>	<b>61,388,516</b>	<b>68,621,017</b>	<b>64,720,349</b>	<b>57,641,920</b>
<b>NON-OPERATING REVENUES (EXP.)</b>					
Interest Income	440,000	880,000	1,320,000	1,760,000	2,200,000
Interest and related expense	(168,000)	-	-	-	-
<b>Total Nonoperating Revenues (Exp.)</b>	<b>272,000</b>	<b>880,000</b>	<b>1,320,000</b>	<b>1,760,000</b>	<b>2,200,000</b>
<b>OTHER USES</b>					
Capital Outlay	42,000	46,200	50,820	55,902	61,492
Debt Service Principal	-	-	-	-	-
<b>Total Other Uses</b>	<b>42,000</b>	<b>46,200</b>	<b>50,820</b>	<b>55,902</b>	<b>61,492</b>
<b>CHANGE IN NET POSITION</b>					
Net Position at the beginning of period	78,197,442	140,397,688	202,620,003	272,510,200	338,934,647
Increase in Net Position	62,200,246	62,222,316	69,890,197	66,424,447	59,780,428
Net Position at the end of period	140,397,688	202,620,003	272,510,200	338,934,647	398,715,075
<b>Approx. Cash &amp; Cash Equivalents</b>					
Approx. Cash & Cash Equivalents	\$ 130,397,688	\$ 192,620,003	\$ 262,510,200	\$ 328,934,647	\$ 388,715,075
Approx. Other Assets	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000
Target Operating Reserves (Days cash on hand)	120	\$ 150	180	180	180
Days Cash on Hand (before LC)	245	355	495	599	673
Target Operating Reserves	\$ 63,969,486	\$ 81,378,167	\$ 95,526,653	\$ 98,918,033	\$ 103,906,169
Line of Credit	\$ 12,000,000	\$ 12,000,000	\$ 12,000,000	\$ 12,000,000	\$ 12,000,000
Cash, Cash Equivalents & LC	\$ 142,397,688	\$ 204,620,003	\$ 274,510,200	\$ 340,934,647	\$ 400,715,075
Days Cash on Hand (after LC)	267	377	517	620	694

# Action

- Approve Fiscal Year 2018-2019 Budget and 5-Year Projections

# Regular Agenda

## **13. Approve Financial Reserves Policy (Action)**



# Financial Reserves Policy

# Agenda

- The proposed policy
- Purpose and Advantages
- Comparison with other CCAs
- Moody's Credit Rating Criteria

# The proposed policy

- Operating / Working Capital Reserve equal to 120 days of operating expenses
  - ~\$64 million for FY 2018-2019
  - Operating Reserve incorporates the Rate Stabilization/Contingency Reserve, which is equal to 15% of the projected revenues
    - ~\$38 million for FY 2018-2019
  - If the Rate Stabilization Reserve calculation exceeds the Operating Reserve, the Operating Reserve will be increased accordingly

# Purpose and Advantages

- Plan for contingencies
- Achieve investment grade credit rating
- Reduce collateral requirements
- Reduce interest and commitment fees



# Action

- Approve Financial Reserves Policy

# Regular Agenda

## **14. CPUC IRP Preview (Discussion)**

# CPUC IRP Overview & Portfolios

June 28, 2018



# Agenda

- IRP Background
- IRP Requirements
- Disadvantaged Communities Analysis
- CPUC Modeling Framework
- CPUC Modeling Constraints
- PCE's proposed portfolios

# Integrated Resource Plan (IRP) Background

- This is a different kind of document from the voluntary IRP that PCE produced and the Board approved in December 2017.
- This CPUC IRP was mandated by SB350 and over the past two years, the CPUC has had an ongoing proceeding to develop the requirements for the IRP.
- The IRP is targeting 42 MMT GHG from the electric sector in 2030.
- The main purpose of the CPUC IRP is to provide CPUC staff with the inputs from each LSE to forecast industry-wide procurement and determine whether LSEs in CA are meeting GHG and reliability needs for 2030.

# Biannual IRP Process

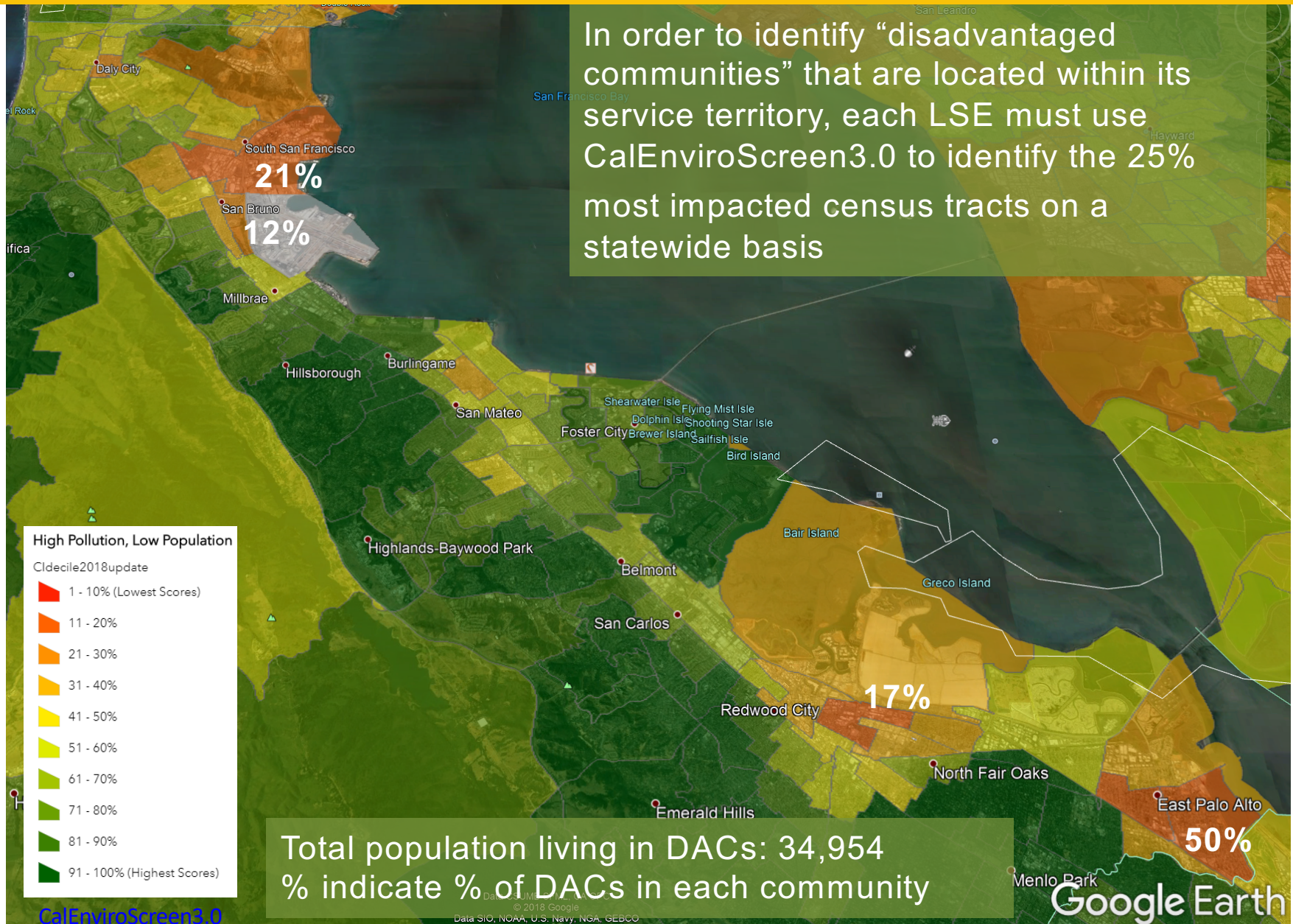
- The CPUC is planning for a two-year IRP process.
- In odd-numbered years, CPUC will conduct modeling to recommend a GHG emissions target for the electricity sector and identify optimal portfolio.
- During even-numbered years, LSEs will submit IRP to the commission.
- CPUC will aggregate individual IRPs and conduct production cost modeling and a reliability assessment.

# Submission Requirements

- As part of the IRP filing, PCE will submit the following 4 files:
  1. Attachment A Standard LSE Plan – written description of IRP, including:
    - A discussion of impacts on disadvantaged communities (DACs)
    - Description of modeling process and assumptions
  2. CPUC Provided GHG Calculator
  3. Base Resource Template – Identifies projects under contract
  4. New Resource Template – Identifies what we expect to contract for over the next 12 years (2018-2030)

# CalEnviroScreen3.0 DACs in San Mateo County








In order to identify “disadvantaged communities” that are located within its service territory, each LSE must use CalEnviroScreen3.0 to identify the 25% most impacted census tracts on a statewide basis





# CalEnviroScreen3.0 Score Indicator






## Exposure Indicators

			
Air Quality: Ozone	Air Quality: PM2.5	Diesel Particulate Matter	Drinking Water Contaminants
			
Pesticide Use	Toxic Releases from Facilities	Traffic Density	




## Socioeconomic Factor Indicators

			
Educational Attainment	Housing Burden	Linguistic Isolation	Poverty
			
Unemployment			

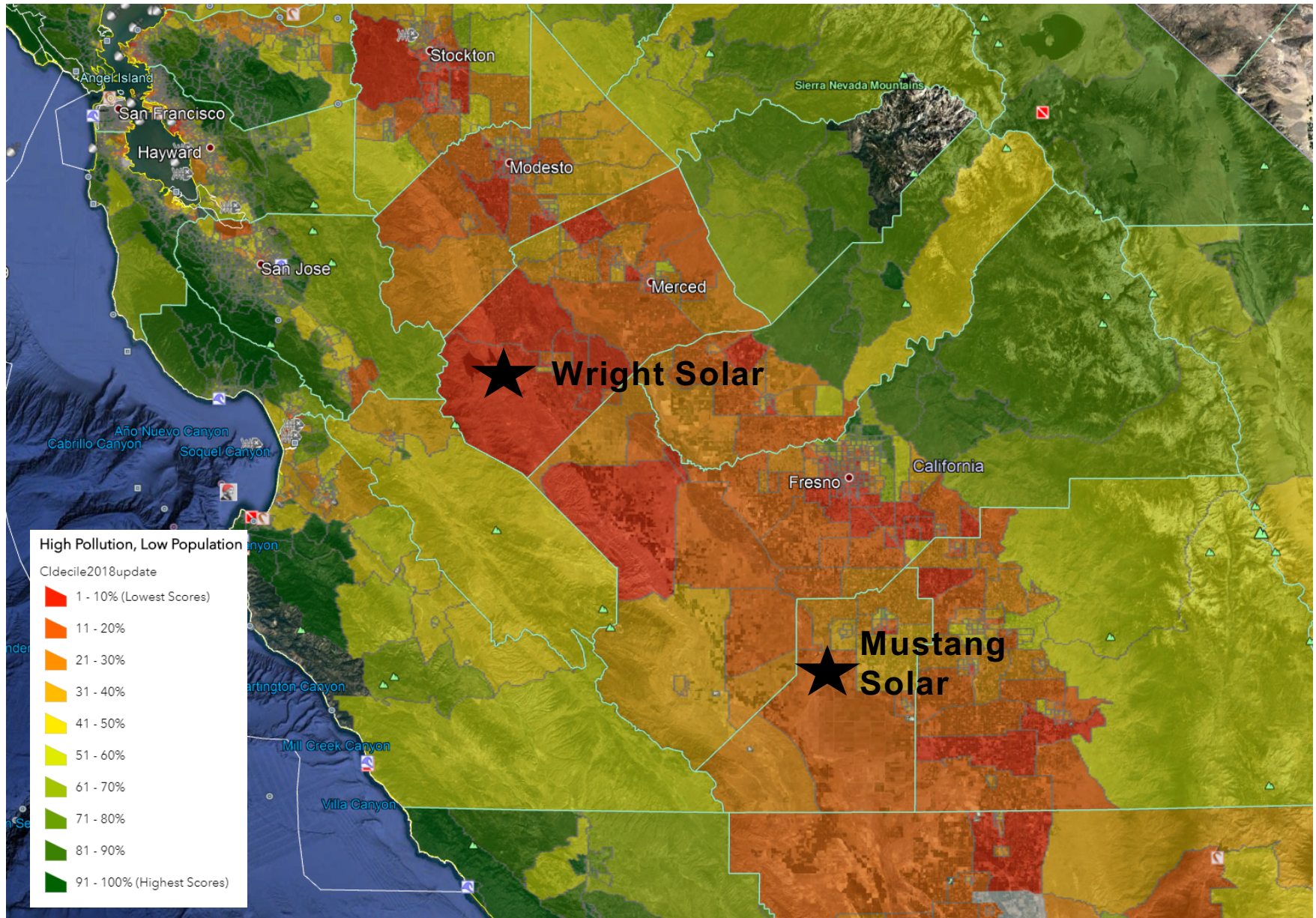
## Environmental Effect Indicators

			
Cleanup Sites	Groundwater Threats	Hazardous Waste Generators and Facilities	Impaired Water Bodies
			
Solid Waste Sites and Facilities			

## Sensitive Population Indicators

		
Asthma	Cardiovascular Disease	Low Birth Weight Infants

# Impact Outside San Mateo County



# Modeling Requirements

- As part of the IRP filing, PCE must submit a conforming portfolio as described below. PCE may also submit an alternative portfolio.
- Conforming portfolio must
  - Make explicit use of the CPUC-approved GHG-planning price;  
OR
  - Be at or below the assigned 2030 GHG emission benchmark for the LSE, as calculated by the CPUC-provided GHG Calculator;  
AND
  - Use a specific load projection<sup>1</sup> from the CEC's 2017 Integrated Energy Policy Report (IEPR).
- PCE has chosen to submit a portfolio that is below our assigned GHG emission benchmark.
- PCE's assigned emissions benchmark is **0.636** MMTCO<sub>2</sub> in 2030.

1. The mid-AAEE version of Form 1.1c of the 2017 IEPR Mid-demand case



# How the Clean Net Short Calculator Works

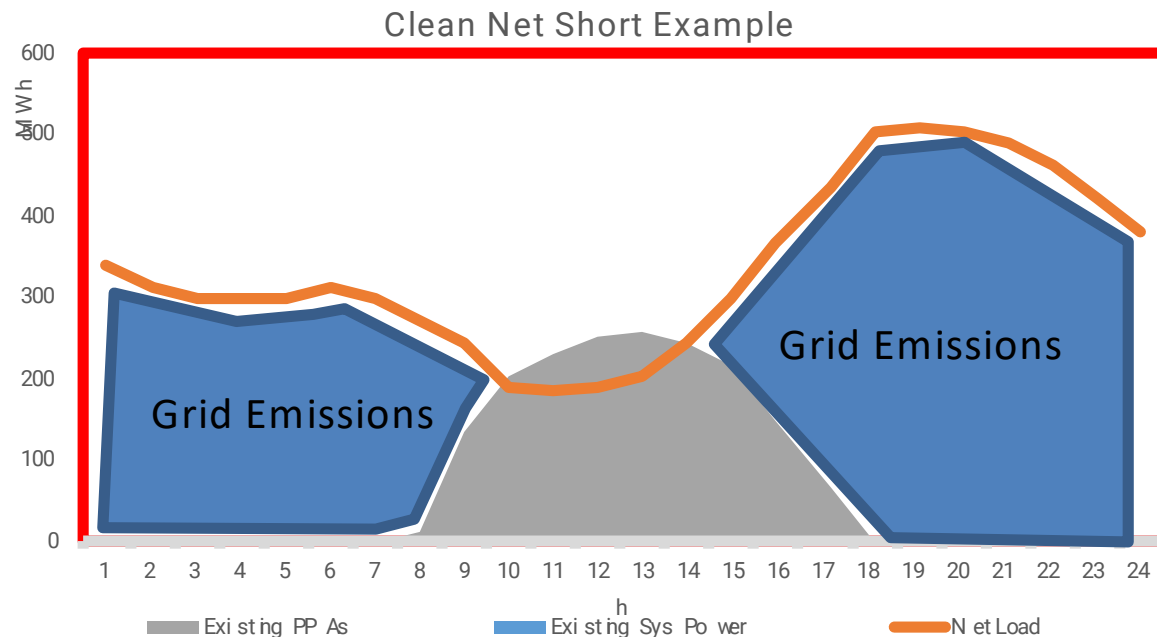
- The Clean Net Short Calculator aims to calculate expected GHG emissions based on hourly load and procurement.
- PCE subtracts its contracted (either current or planned) GHG-free generation (like renewables) from the projected hourly electricity demand (our load).
- PCE will subtract the discharging pattern (and add the charging pattern) of any storage resources contracted to PCE from the hourly profile derived in the previous step. The result is the “clean net short” (CNS) in each hour.
- The CNS will then be multiplied by the system GHG emissions intensity on an hourly basis.
  - This yields PCE’s total emissions associated with using unspecified system power for every hour of 2030.

# How the Clean Net Short Calculator Works

For every hour, the following calculation happens:

$$\text{Assigned Emissions} = \text{Grid Emissions Factor} \times (\text{Load} - \text{Renewable Generation})$$

It is then summed to give a total annual emissions factor



# Portfolio Modeling Objectives

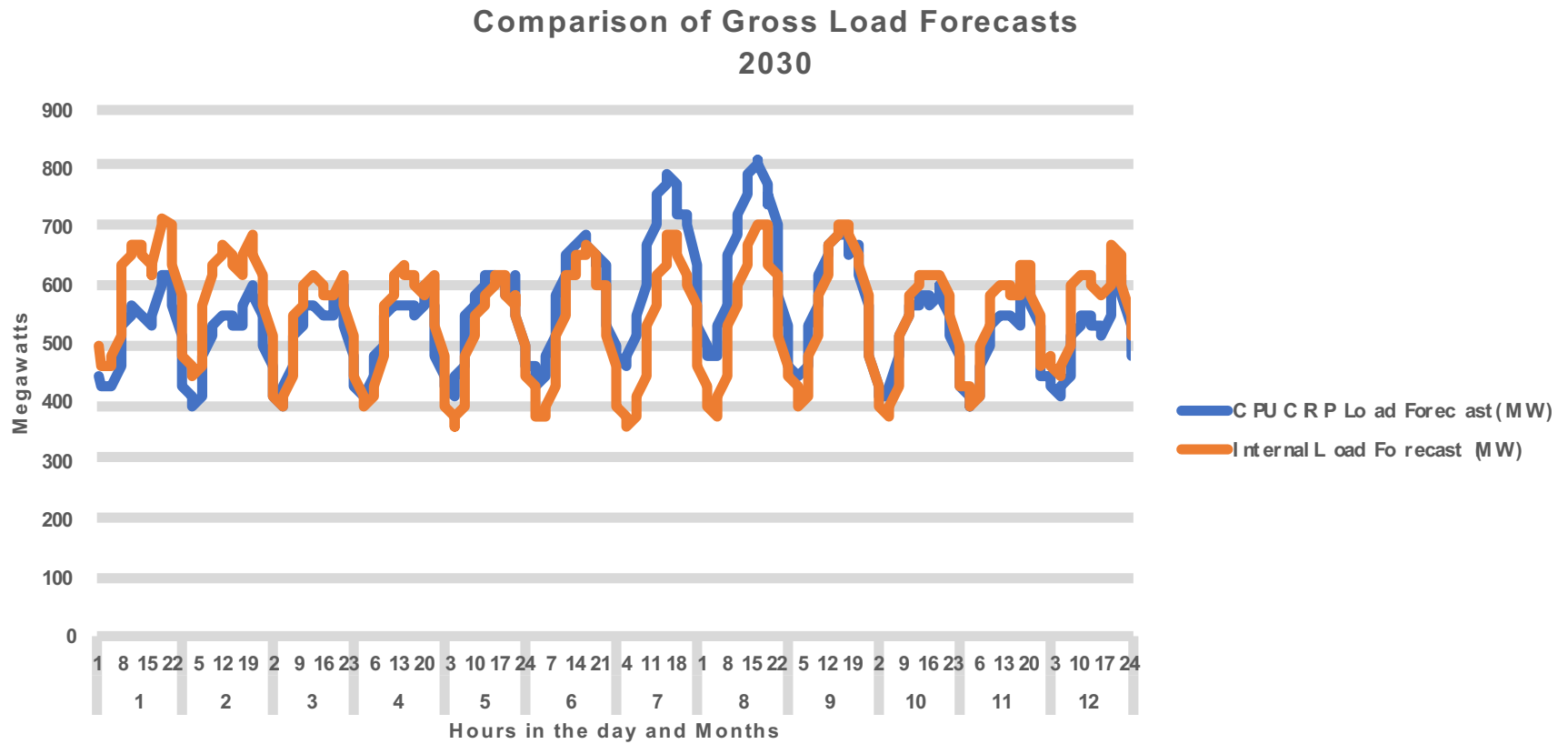
- In addition to meeting the requirements of the CPUC filing, PCE is targeting internal objectives and IRP-strategies:
  - 100% renewable by 2025
  - Matching generation to load on an hourly basis
  - 50% new resources
  - 50% long-term contracts

# Modeling Constraints

- The CPUC requires that LSEs use certain specific assumptions in their Conforming Portfolio, including the following:
  - Load shape;
  - Energy production profiles;
  - BTM PV, EE, and EV charging profiles;
  - Battery storage dispatch profiles; and
  - Biomass/Geothermal/Hydro dispatch profiles.
- Due to these fixed constraints, arriving at a 0 MMTCO<sub>2</sub> emissions portfolio (load-following generation) for the IRP filing is not possible.
- We have created a conforming portfolio meeting the CPUC requirements and PCE's requirements as closely as possible while minimizing the 2030 GHG benchmark.
- We have also created an alternative portfolio which more closely follows PCE's expected load shape.

# Modeling Constraints: Load

The default load shape projections in the CPUC GHG calculator is an average for all of California. PCE's internal forecast differs, especially in summer months.





# PCE's Resources Under Contract in 2030

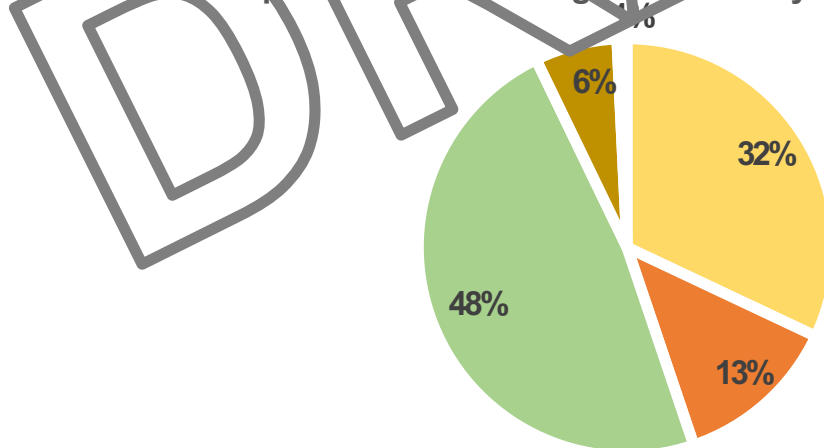
- Wright Solar – 200 MW
- Mustang Two Solar – 100 MW
- Small Hydro:
  - Hatchet – 7.5 MW
  - Bidwell – 2 MW
  - Roaring – 2 MW
  - Clover – 1 MW

Resource	MW	% of Capacity Under Contract	% of 2030 Load
Solar	300	96%	24%
Small Hydro	12.5	4%	3%

# Proposed Conforming Portfolio – Preliminary Draft

	Resource	Total MW	% of Total Capacity	MWh	% of Total MWh
New Contracts	Solar	200	13%	542,358	12%
	Storage	200	13%	(79,526)	-2%
	Wind	750	48%	2,178,744	49%
	Geothermal	100	6%	876,000	20%
Existing Contracts	Solar	300	19%	800,278	18%
	Small Hydro	12.5	1%	105,120	2%
	<b>TOTAL</b>	<b>1,562</b>		<b>4,422,966</b>	

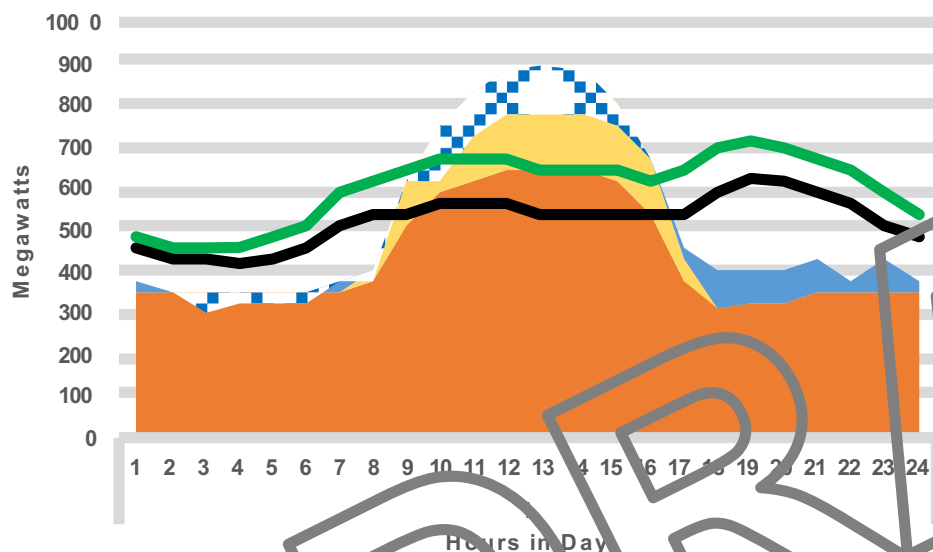
Proposed Conforming Portfolio by MW Capacity



# Proposed Conforming Portfolio – Preliminary Draft

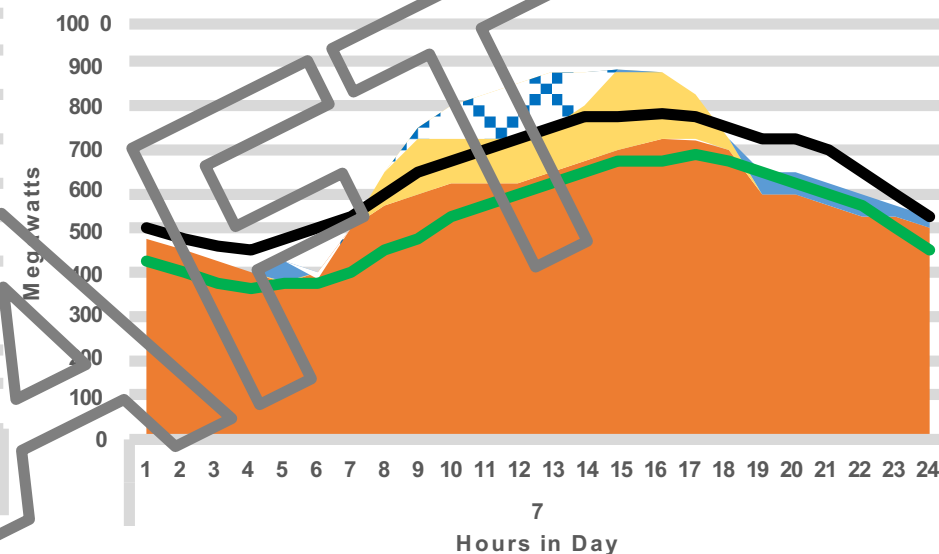
Preliminary Draft January 2030

Average Daily Generation



Preliminary Draft July 2030

Average Daily Generation



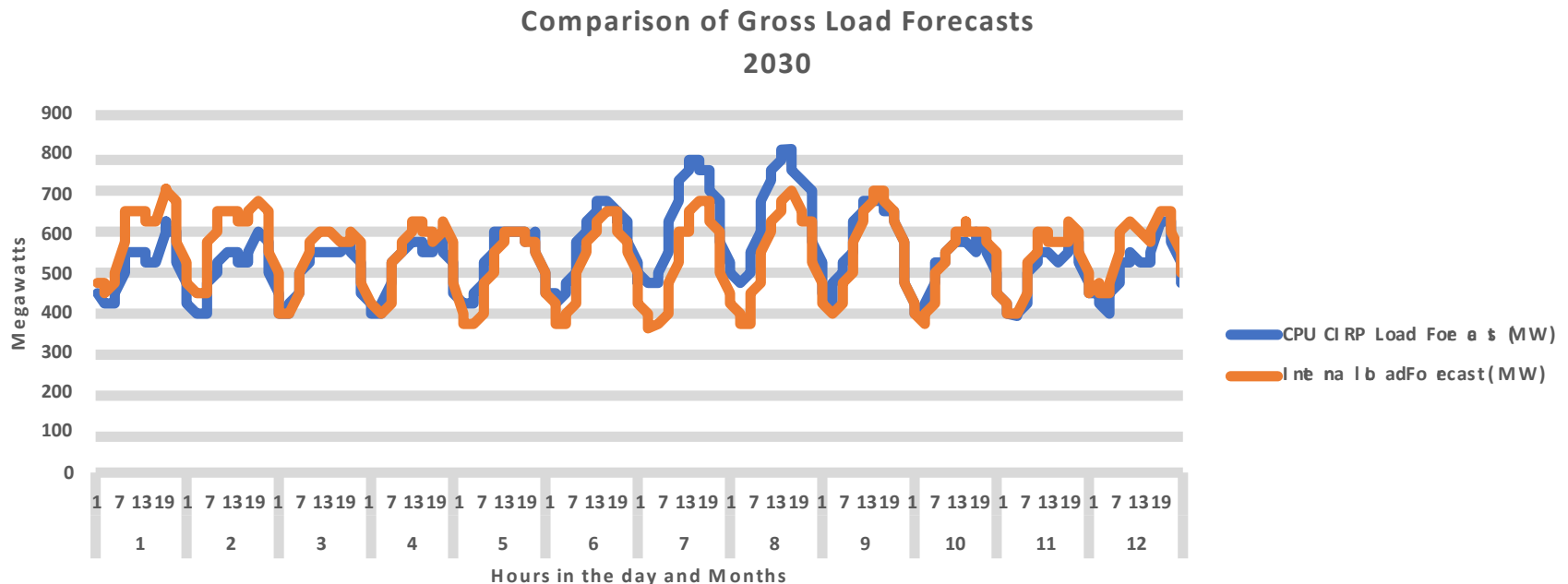
Renewable Generation
Behind the Meter PV
Battery Discharging
Battery Charging
CPUC 2030 Load Forecast
Internal 2030 Load Forecast

Total Generation MWh	Total Load MWh	GHG Factor MMT CO2	Assigned PCE Target MMT CO2
4,422,966	4,499,297	-0.060	0.636

\*Note: the addition of BTM PV makes PCE a net exporter to the grid, therefore calculating a negative emissions factor

# Alternative Portfolio

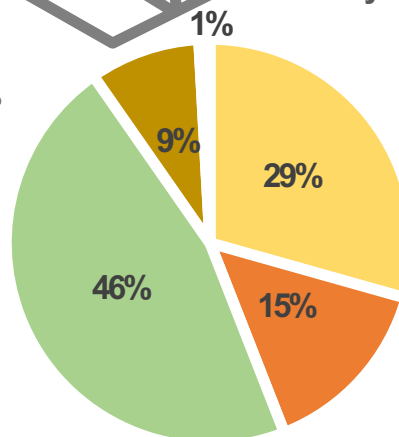
- In addition to submitting a conforming portfolio (a portfolio using CEC load forecast and other required assumptions), PCE can submit an alternative portfolio.
- PCE is planning to submit an alternative portfolio due to differences in our internal load forecast and the CPUC load forecast.



# Proposed Alternative Portfolio – Preliminary Draft

	Resource	Total MW	% of Total Capacity	MWh	% of Total MWh
New Contracts	Solar	100	7%	271,175	7%
	Storage	200	15%	(79,526)	-2%
	Wind	630	46%	1,865,726	46%
	Geothermal	120	9%	1,051,200	26%
Existing Contracts	Solar	300	22%	800,278	20%
	Small Hydro	12.5	1%	105,120	3%
	<b>TOTAL</b>	<b>1,362</b>		<b>4,013,973</b>	

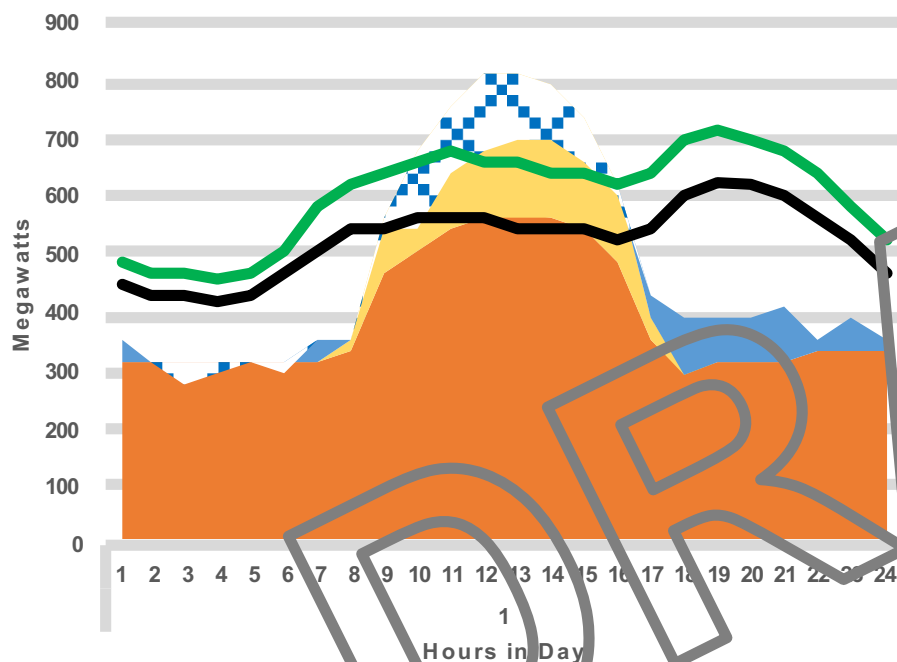
Proposed Alternative Portfolio by MW Capacity



# Proposed Alternative Portfolio – Preliminary Draft

Preliminary Draft January 2030

Average Daily Generation



Renewable Generation  
Battery Charging

Behind the Meter PV

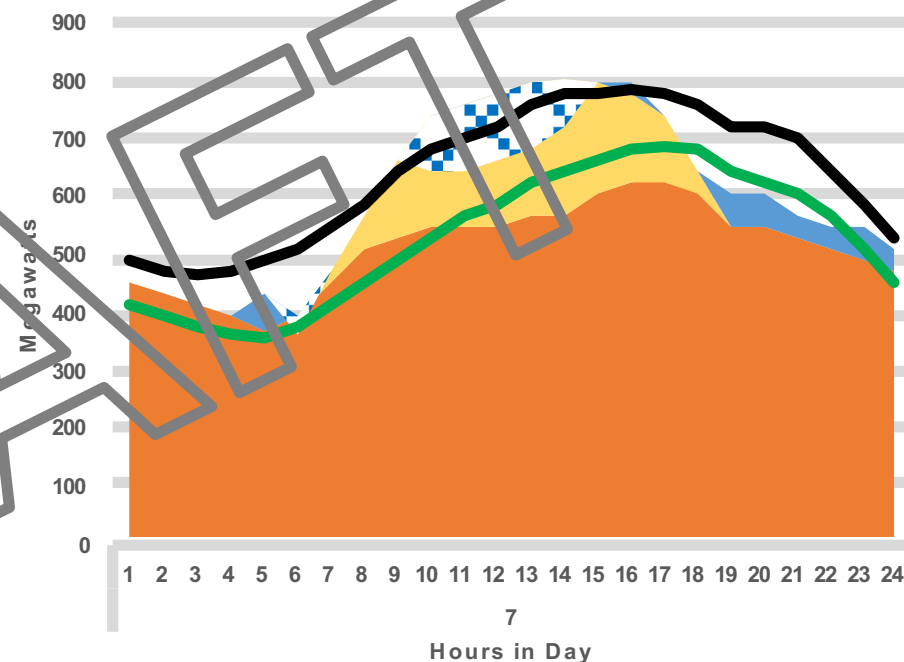
CPUC 2030 Load Forecast

Battery Discharging

Internal 2030 Load Forecast

Preliminary Draft July 2030

Average Daily Generation



Total Generation MWh	Total Load MWh	GHG Factor MMT CO2	Assigned PCE Target MMT CO2
4,013,973	4,499,297	0.015	0.636

# Compare Conforming & Alternative Portfolios

## Preliminary Draft

Preliminary Draft Conforming

Resource	MW	% MW	MWh	% MWh
Solar	500	32%	1,342,627	30%
Battery	200	13%	(79,526)	-2%
Wind	750	48%	2,178,744	49%
Geothermal	100	6%	876,000	20%
Sm Hydro	12.5	1%	105,120	2%
<b>TOTAL</b>	<b>1,562</b>		<b>4,422,865</b>	

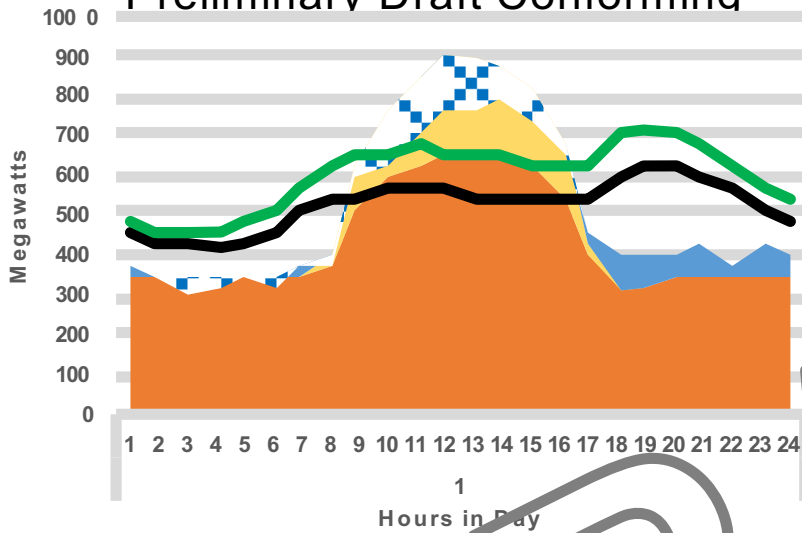
Preliminary Draft Alternative

Resource	MW	% MW	MWh	% MWh
Solar	400	29%	1,071,453	27%
Battery	200	15%	(79,526)	-2%
Wind	630	46%	1,865,726	46%
Geothermal	120	9%	1,051,200	27%
Sm Hydro	12.5	1%	105,120	3%
<b>TOTAL</b>	<b>1,362</b>		<b>4,013,973</b>	

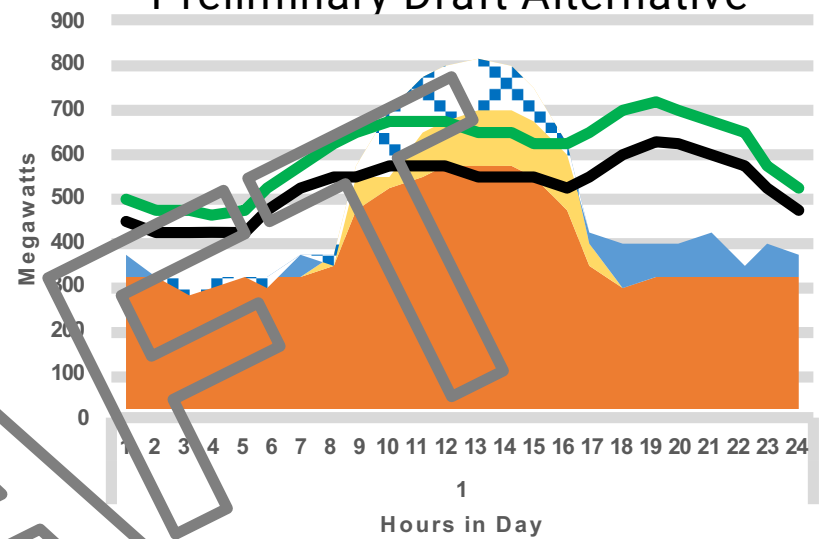
# Generation Shape Comparison- 2030

## Preliminary Draft

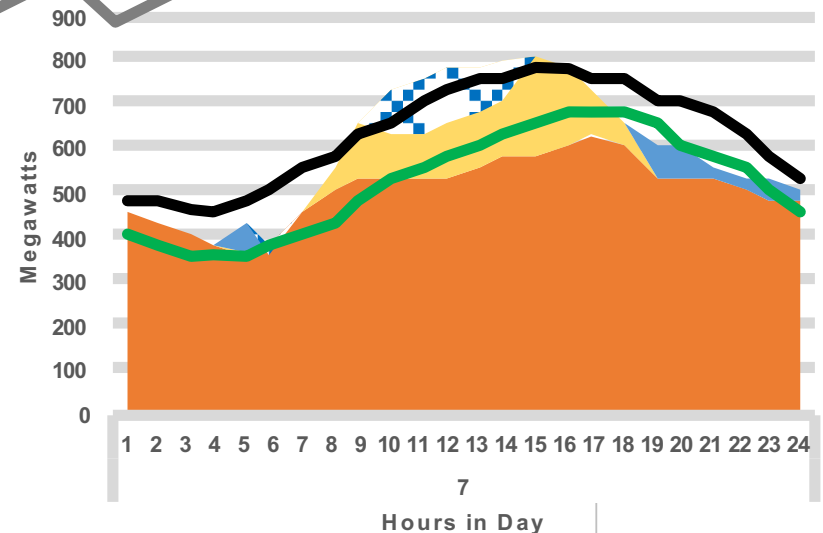
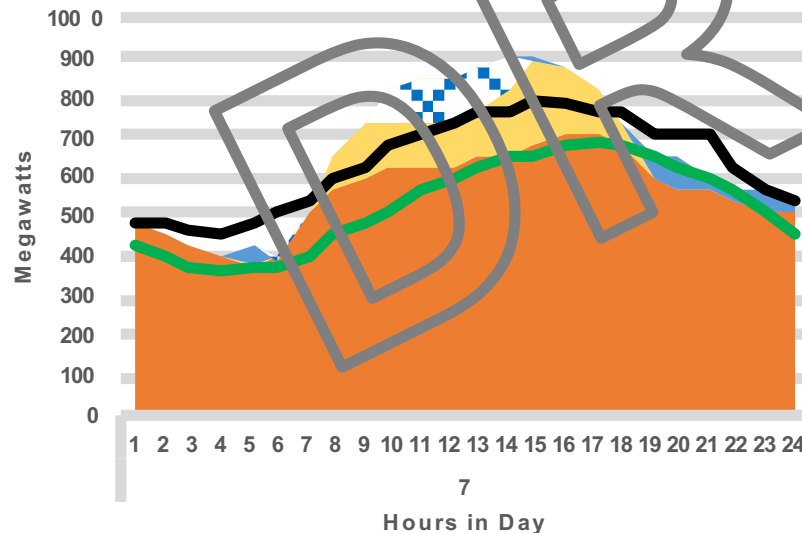
Preliminary Draft Conforming



Preliminary Draft Alternative



July



Renewable Generation

Behind the Meter PV

Battery Discharging

Battery Charging

CPUC 2030 Load Forecast

Internal 2030 Load Forecast



# Comparison – 2030 - Preliminary Draft

	Conforming	Alternative
Total Gen (MWh)	4,422,966	4,013,973
BTM PV	641,000	641,000
Total Load (MWh)	4,499,297	4,499,297
Over / (Under)	564,669	155,676
Total Emissions (MMT)	-0.060	0.015

For reference, our assigned target is 0.636 MMT, the alternative portfolio is well under that number.

# Next Steps

- IRPs are due to the CPUC on August 1st.
- Over the next month, PCE will continue to refine modeling and assumptions and finalize written draft.
- Board will be asked to approve the IRP submission at the July Board meeting.

# Regular Agenda

## **15. Board Members' Reports (Discussion)**

# Regular Agenda

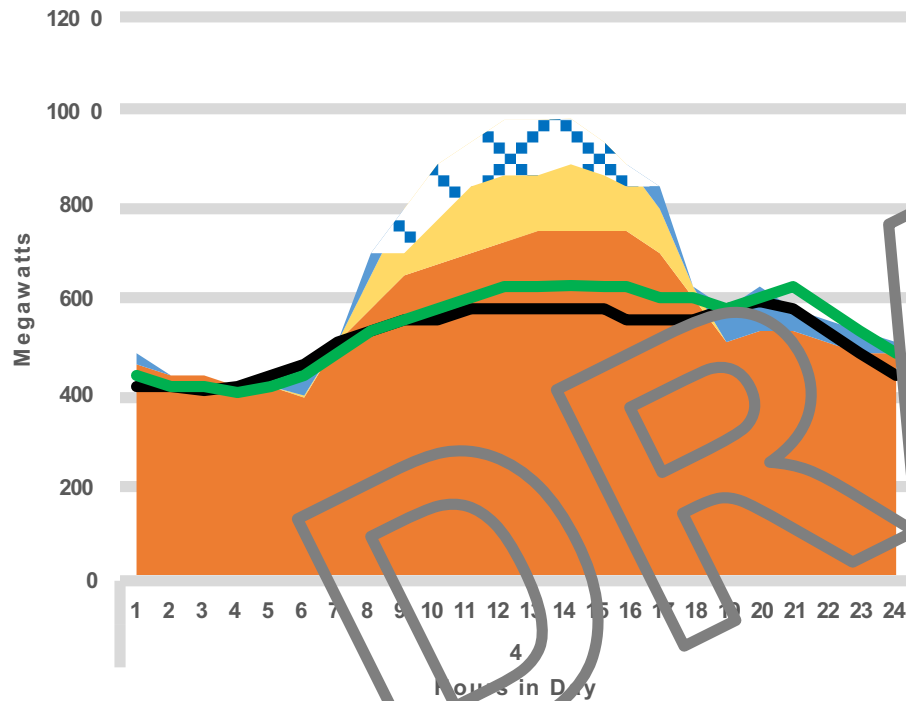
**Adjourn**

# Appendix

# Appendix: April Conforming and Alternative Portfolio – Preliminary Draft

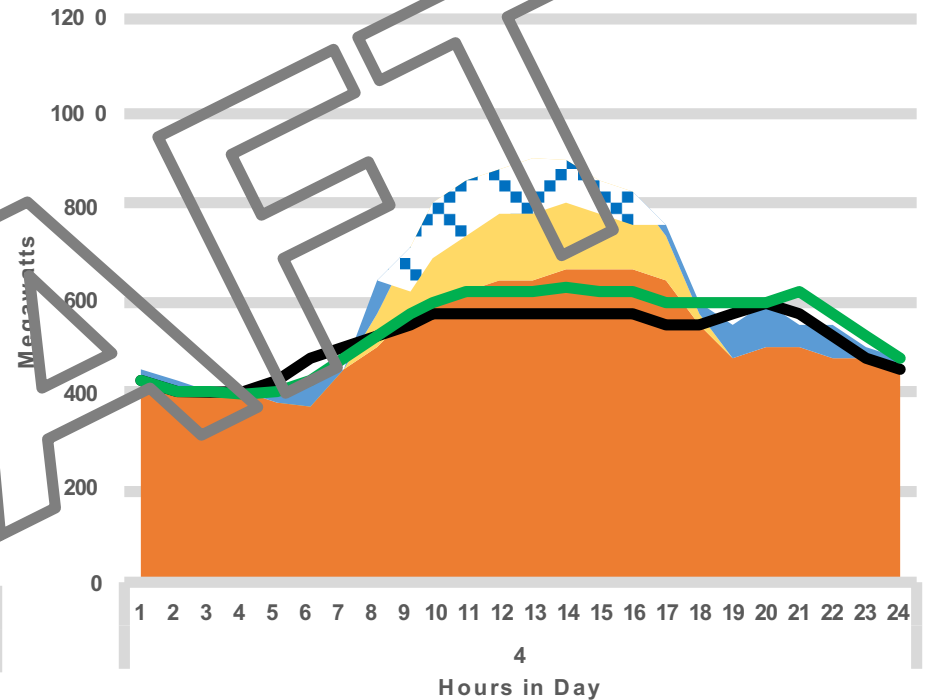
## Preliminary Draft Conforming

### Average Daily Generation



## Preliminary Draft Alternative

### Average Daily Generation



Renewable Generation  
Battery Charging

Behind the Meter PV  
CPUC 2030 Load Forecast

Battery Discharging  
Internal 2030 Load Forecast

# Appendix: CPUC EV Charging, Energy Efficiency, Building Electrification

- CNS calculator includes other factors that affect PCE's GHG emissions
  - EV Charging
  - Energy Efficiency
  - Building Electrification
- These are fixed constraints within the calculator that are the same for all LSE's, including PCE
- Forecasts for EV penetration, advancement in energy efficiency, and building electrification are also fixed

# Modeling Constraints: Storage Dispatch in 2030

Months

Hours in Day

2030	1	2	3	4	5	6	7	8	9	10	11	12
1	19%	-3%	3%	16%	18%	10%	4%	19%	9%	-1%	5%	1%
2	-1%	-5%	-2%	6%	1%	5%	0%	0%	1%	-6%	-2%	0%
3	-22%	-8%	-1%	0%	6%	3%	0%	-1%	-4%	-12%	1%	11%
4	-11%	-14%	-1%	0%	4%	4%	0%	1%	0%	-13%	0%	-7%
5	-5%	-12%	-3%	3%	-9%	8%	31%	-12%	-18%	-5%	14%	0%
6	-8%	0%	22%	22%	-9%	4%	-13%	-15%	-20%	-3%	-10%	-16%
7	23%	21%	9%	-1%	0%	3%	0%	-1%	-3%	-3%	20%	42%
8	-5%	0%	11%	25%	-2%	44%	0%	7%	-3%	1%	-6%	-20%
9	-9%	53%	-21%	-50%	-17%	-57%	-1%	-42%	-30%	-11%	-11%	18%
10	-65%	-72%	-45%	-53%	-54%	-49%	-44%	-60%	-61%	-60%	-28%	-71%
11	-61%	-61%	-47%	-55%	-58%	-51%	-60%	-60%	-60%	-60%	-34%	-60%
12	-63%	-66%	-57%	-54%	-59%	-53%	-60%	-61%	-56%	-63%	-61%	-60%
13	-61%	-61%	-61%	-58%	-54%	-57%	-60%	-42%	-52%	-60%	-64%	-62%
14	-48%	-60%	-39%	-45%	-31%	-41%	-39%	-16%	-10%	-42%	-55%	-60%
15	-38%	-48%	-24%	-42%	-13%	-41%	0%	-6%	-5%	7%	-48%	-52%
16	-5%	8%	-3%	-26%	-7%	-25%	1%	1%	0%	19%	4%	9%
17	15%	6%	2%	16%	-5%	20%	-3%	3%	-1%	0%	2%	55%
18	49%	28%	16%	6%	3%	-4%	0%	0%	0%	32%	11%	34%
19	42%	55%	35%	28%	34%	16%	28%	13%	51%	54%	69%	75%
20	36%	74%	24%	54%	22%	28%	37%	61%	45%	37%	17%	20%
21	46%	20%	40%	21%	43%	19%	20%	50%	35%	39%	48%	20%
22	10%	20%	17%	25%	14%	23%	17%	24%	53%	50%	17%	7%
23	36%	8%	17%	19%	49%	16%	23%	17%	21%	2%	9%	0%
24	17%	4%	5%	17%	11%	54%	20%	17%	8%	-8%	0%	0%

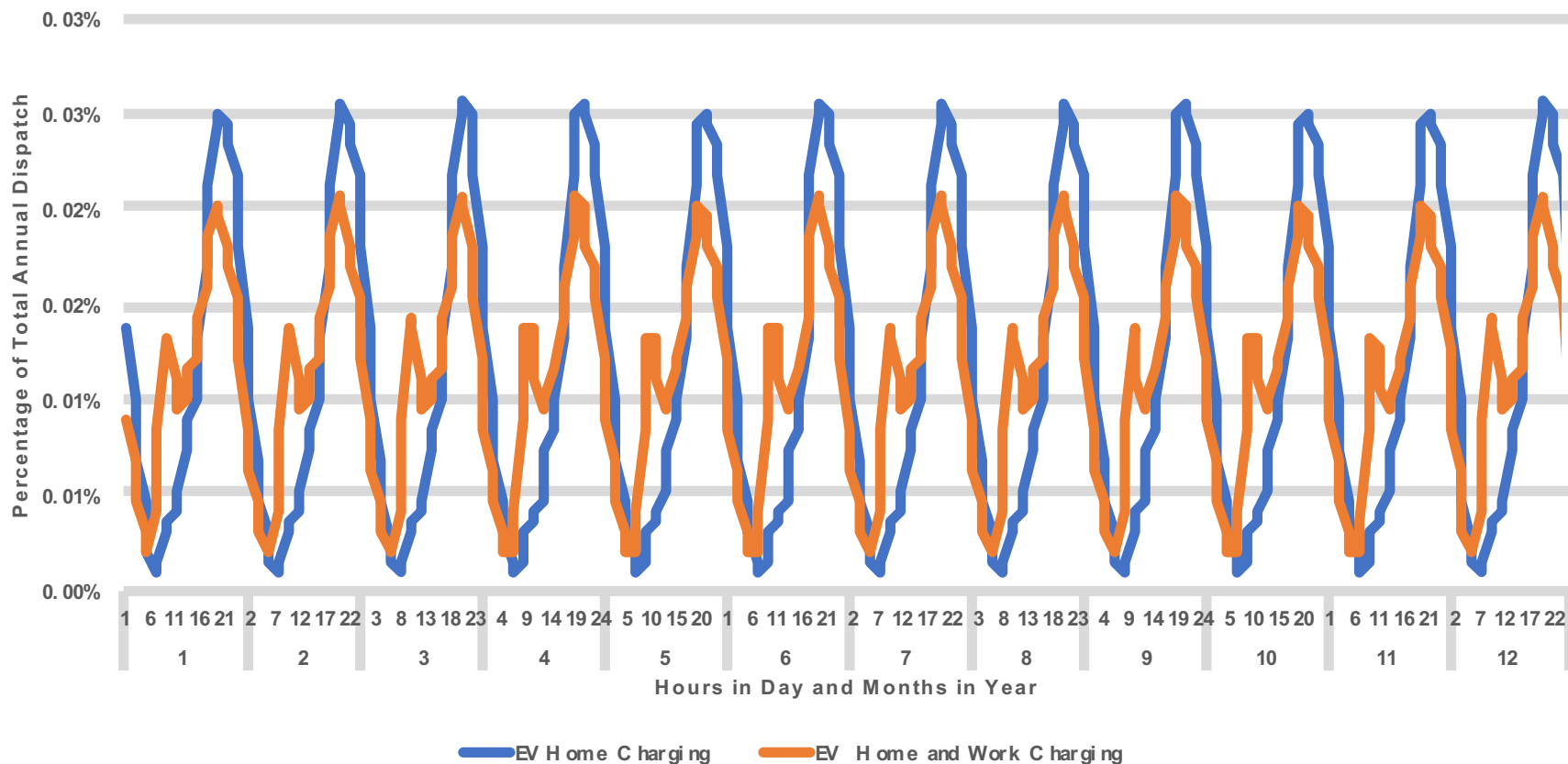
Charging from Grid

Discharging to Grid



# Appendix: EV

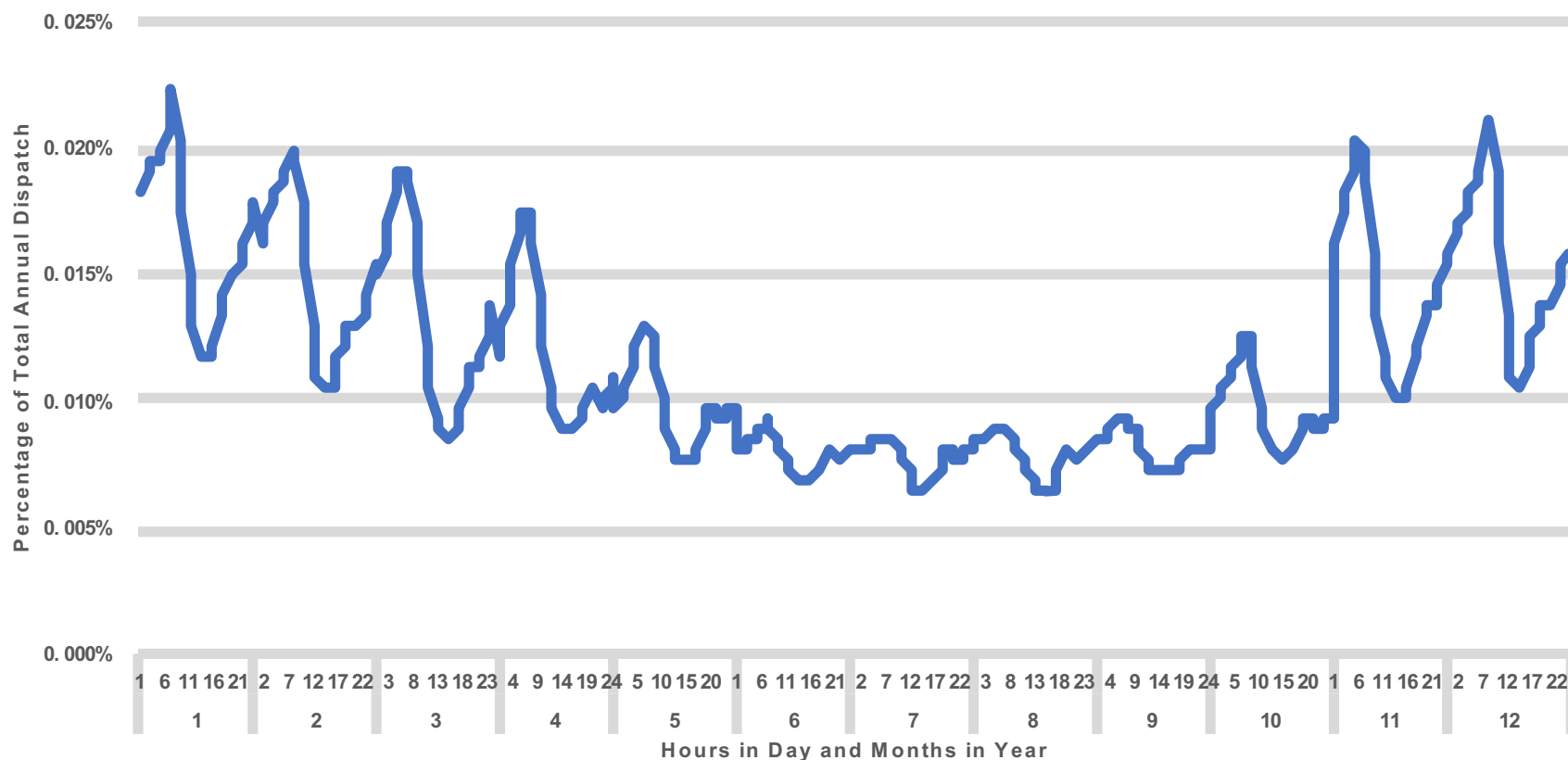
CPUC Electric Vehicle Charging Profile



This profile was provided by the CPUC GHG calculator. The primary source for the inputs is the CEC's 2017 Integrated Energy Policy Report.

# Appendix: Building Electrification

CPUC Building Electrification Profile



This profile was provided by the CPUC GHG calculator. The primary source for the inputs is the CEC's 2017 Integrated Energy Policy Report.