VCE Community Advisory Committee Meeting – November 18, 2021 via video/teleconference

Item 8 – Introduction to community resiliency

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Climate Resilience for Communities and Cities

Lorenzo Kristov, PhD
Electric System Policy, Structure, Market Design

VCE Community Advisory Committee
October 28, 2021

What is Resilience?

The ability to maintain essential quality of life functions and perform emergency services when a severe stress or disruption occurs

- Be prepared to provide for water supply, shelter, food, medical care, rescue, safety and security, wastewater, communications, mobility, moral support, …
  - *Most essential functions require energy* ... At times when the electricity grid may fail

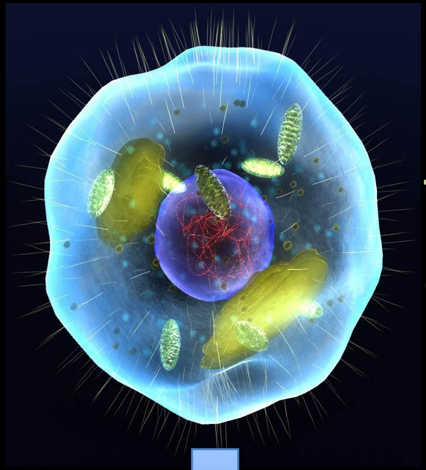
Disruptive events always have local and often fatal impacts

- Even widespread events have a local dimension: people, homes, neighborhoods

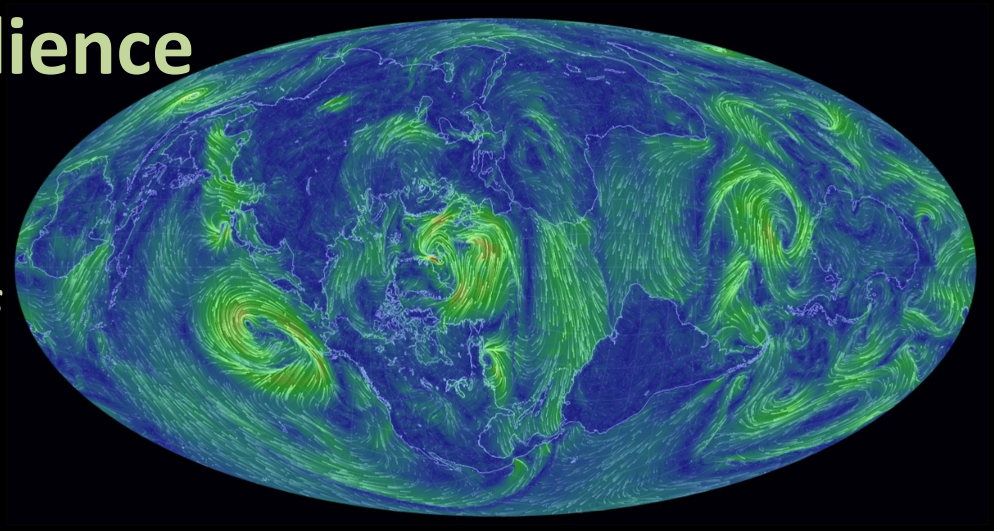
Resilience and Sustainability

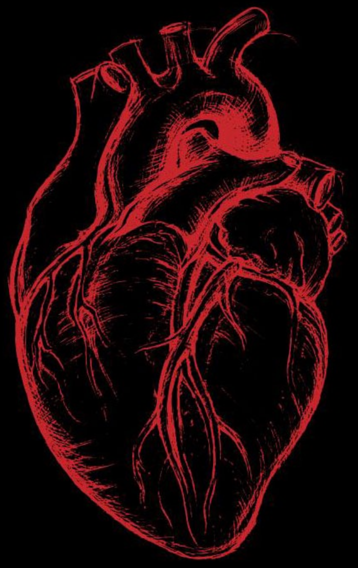
- **Sustainability => stop making things worse.** Transition to alternatives that replace practices that disrupt climate cycles and degrade ecosystems.
  - Future-oriented, longer-term efforts; e.g., transition away from fossil fuels.
- **Resilience => prepare for the impacts of damage already done.**
  - Preparation for near-term, immediate threats; adaptation & preparedness

Nature's Layered Architecture of Resilience



Learning from Nature:
the layered structures of
complex living systems





The Layered Architecture of Community Resilience

Household
* Physical/mental health
* Energy efficiency
* Smart EV charging
* Minimal waste
* Grey water recycling
* Low-water landscaping
* Micro-habitats
* Social connections
* Consume less stuff

Neighborhood
* Food production
* Car shares
* Tool libraries
* Places to meet, gather & celebrate
* Community energy
* Free-cycle
* Rainwater capture
* Tree canopy & solar PV in healthy balance

Image courtesy of World Business Academy
Santa Barbara, CA

State
* Policy, funding & structure for community resilience & local capacity building
* No community is left behind
* Remedy past inequities

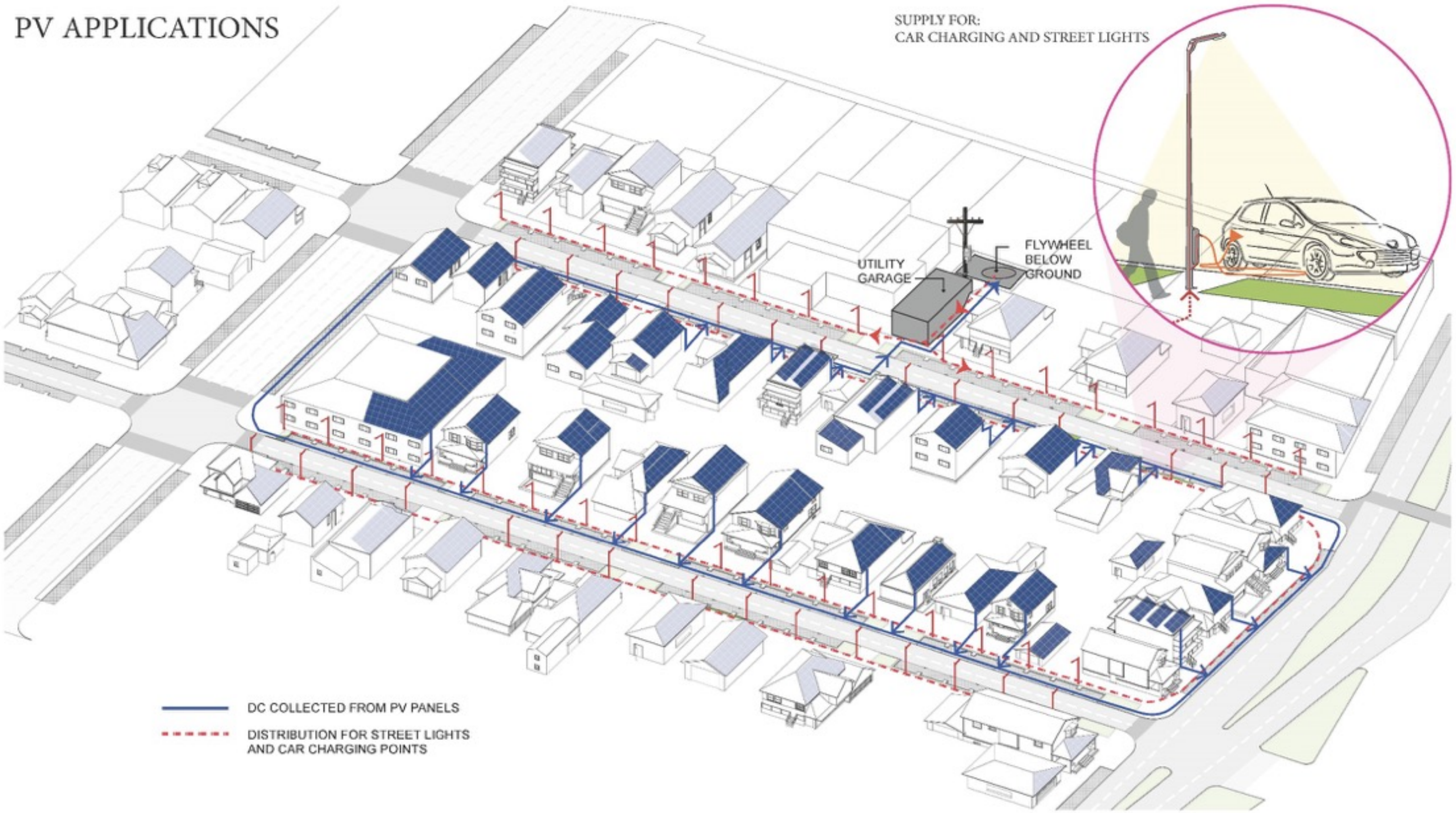
Bioregion
* Local food
* Waste mgmt
* Water mgmt
* Ecosystem protection
* Frontline communities

Municipality
* Systemic integration of critical services
* Public spaces
* Local businesses
* Repair & repurpose
* Transparency and public participation

Oakland EcoBlock: a retrofit model for resilient neighborhoods

Resilient electricity service for all customers on the block, integrated with water supply, stormwater capture, transportation, broadband telcoms, food production, …

- Communal rooftop solar PV
- Communal energy storage system (flywheel + battery)
- Intelligent loads and responsive electricity demand
- Shared EVs & coordinated charging
- Smart controls in a DC microgrid infrastructure (islanding capability)
- Single interconnection point to the utility grid



Revising the economy for resilience, sustainability and equity

Conventional economics emphasizes more of everything: more consumption, more profits, more waste …

Based on the premise that consuming more makes us better off …

The ‘more’ economy artificially lowers prices by externalizing & hiding severe cost impacts on marginalized communities & life-sustaining ecosystems.

Doughnut Economics:
Redefine the goal of the economy to move into and stay in the green zones

“In order to change an existing paradigm you do not struggle to try and change the problematic model. You create a new model and make the old one obsolete.”
- R. Buckminster Fuller

* Kate Raworth: Doughnut Economics

https://doughnuteconomics.org

VCE Community Advisory Committee Meeting – November 18, 2021 via video/teleconference

Item 9 – Quarterly Power Content Update

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Item 9 - Quarterly Power Content Update: 2021 Target vs. Current Estimate

	Original Plan		Current Plan	
Standard Green Load	**690,334**		**734,090**	
UltraGreen Load	**2,876**		**3,051**	
RPS Need (UG + 10% of SG)	71,910		76,460	
Carbon Free Need	138,067		146,818	
RPS Supply	**77,458**	**11%**	**84,459**	**12%**
Aquamarine Solar	23,028		23,283	
Indian Valley	1,500		1,176	
Putah Creek	930		-	
Short Term RECs	52,000		60,000	
Large Hydro Supply	**79,427**	**12%**	**73,089**	**10%**
PG&E Allocation	50,000		28,662	
Hydro Contracts	29,427		44,427	
System Power	**536,325**	**78%**	**579,849**	**79%**

- Percentages apply to Standard Green load only. UltraGreen is 100% renewable.
- Remaining uncertainties: Oct-Dec Aquamarine generation, Aug-Dec load, July-Dec PG&E allocation.

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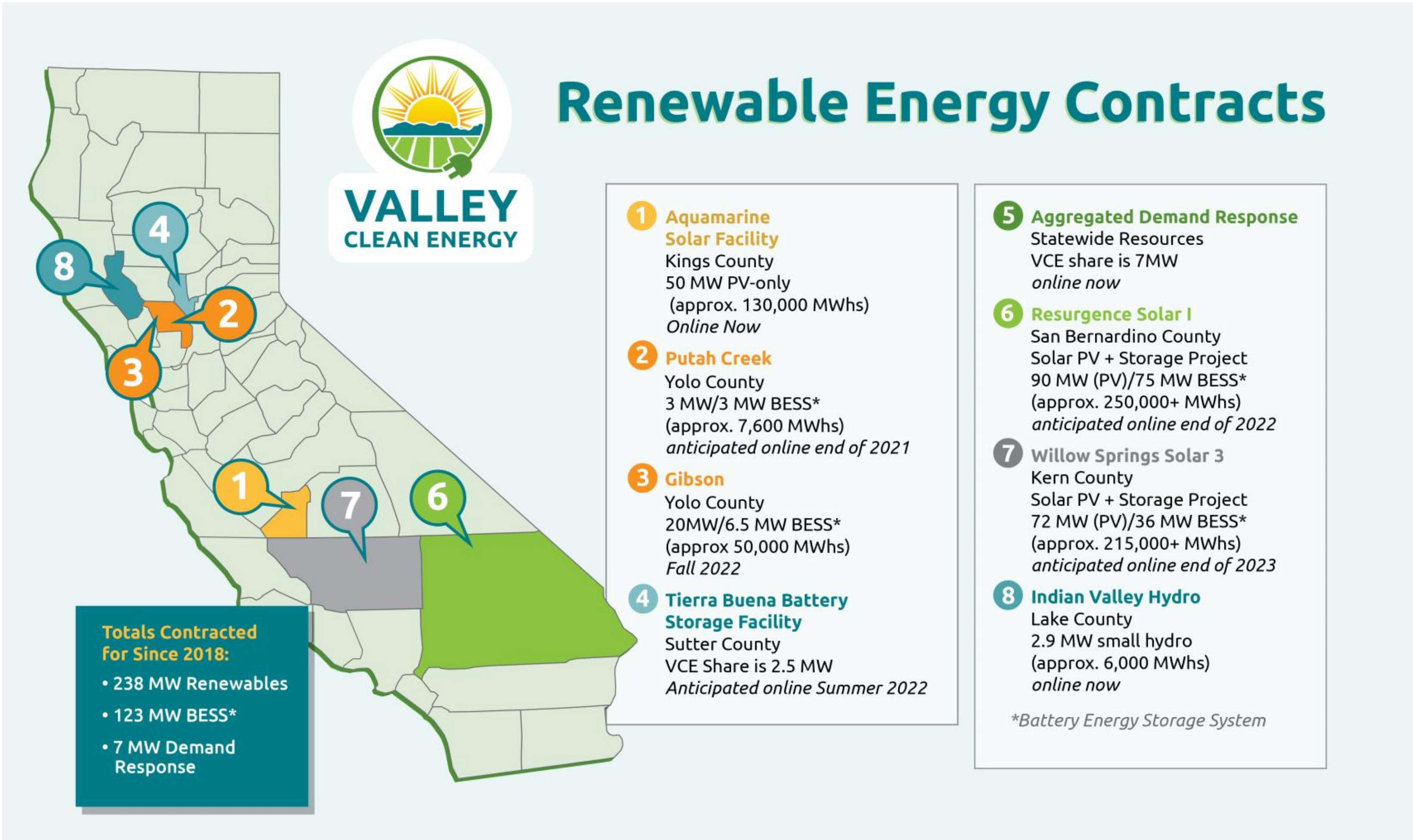
Item 9 - Quarterly Power Content Update: Project Updates



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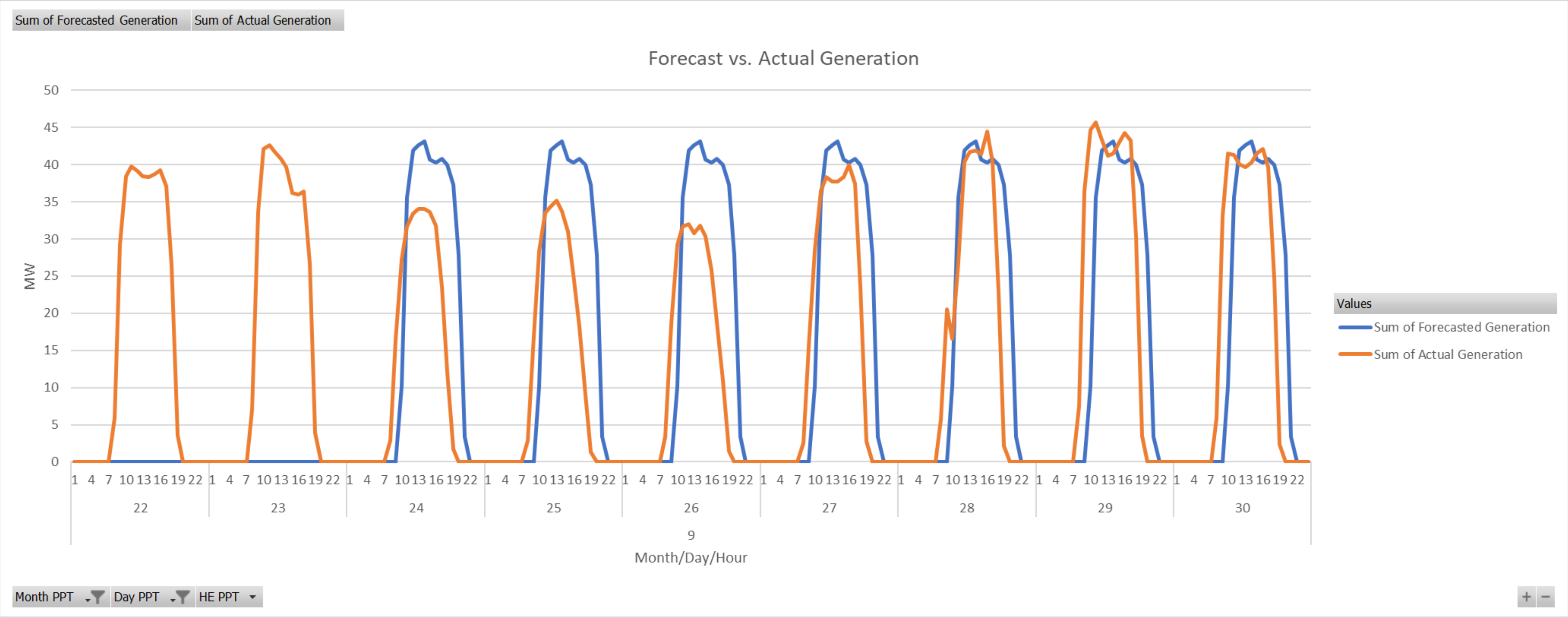
Item 9 - Quarterly Power Content Update: Aquamarine Update



- COD on 9/22/21, vs. 9/24/21 GCOD
- Generally performing as expected, producing ~300 MWh/day
- 3,078 MWh actual generation in Sept, vs. 2,823 MWh planned
- Working with Seller on test energy REC accounting, may increase Sept production slightly

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Item 9 - Quarterly Power Content Update: Putah Creek Energy Farm

- Project is approx. 3 mo's. behind schedule due to supply chain challenges
- 3 MW PV + 3 MW BESS
- BESS = Battery Energy Storage System

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Item 9 - Quarterly Power Content Update: Tierra Buena BESS

- Currently project is ahead of schedule
- 5 MW BESS (VCE share = 2.5 MW)
- BESS = Battery Energy Storage System

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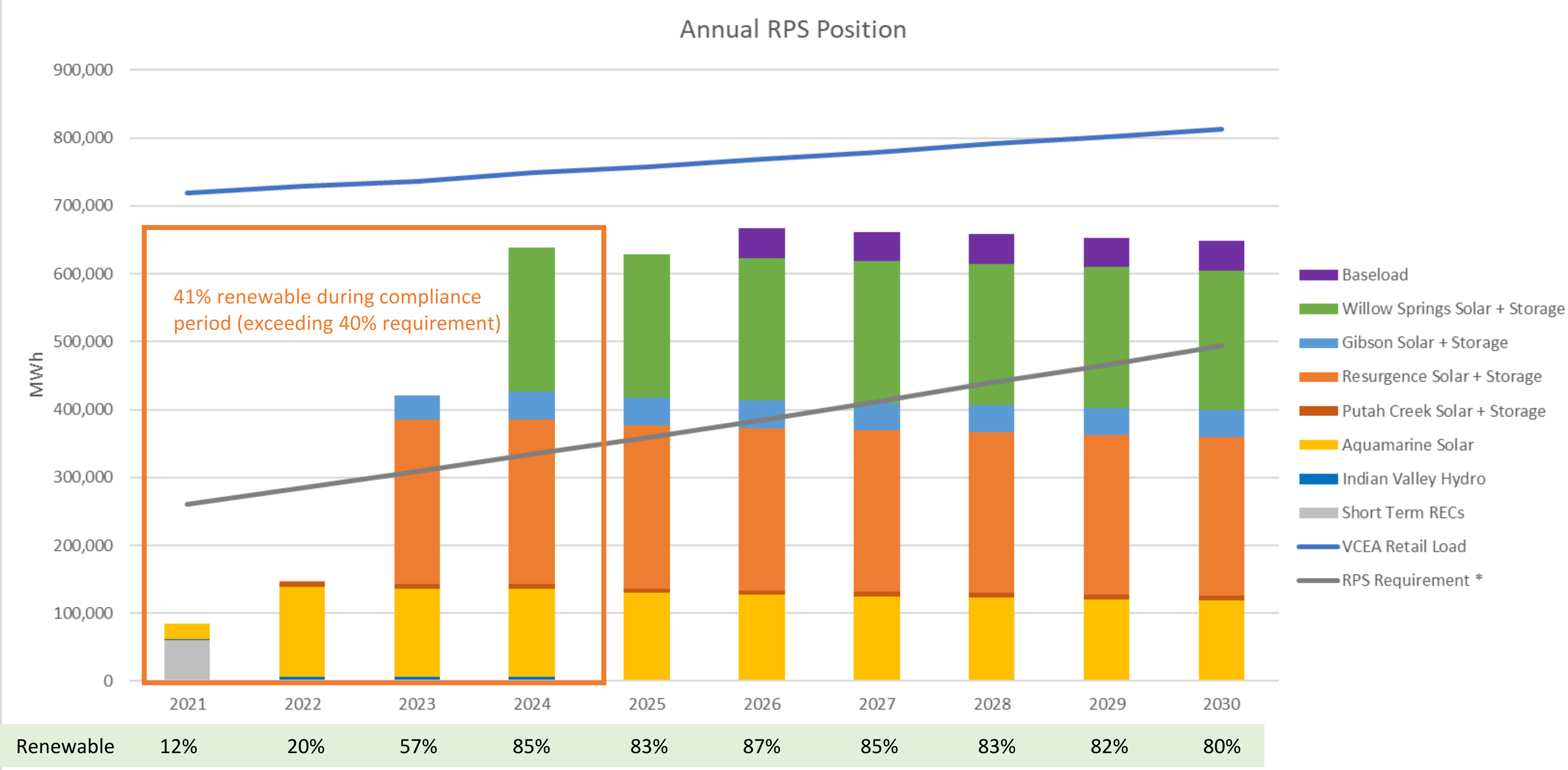
Item 9 - Quarterly Power Content Update: RPS Outlook



VCE Community Advisory Committee Meeting – November 18, 2021 via video/teleconference
Item 10- 2022 PG&E allocation of Greenhouse Gas (GHG)-free (Large Hydro and Nuclear) resources

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Item 10 - 2022 GHG Free Allocation: Background

- PG&E owns or contracts for a number of GHG-free resources (including large hydro and nuclear from Diablo Canyon Power Plant).
- PG&E has been able to count these resources on its power content label (PCL) to meet its GHG-free targets.
- Load serving entities (LSEs), including VCE, have been paying for those same assets through Power Charge Indifference Adjustment (PCIA), yet do not receive any of the GHG-free benefits.
- In mid 2020, PG&E offered LSEs these resources for 2020. VCE Board elected to receive the large hydro only attributes in 2020 and 2021.

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Item 10 - 2022 GHG Free Allocation: Background (con't)

- VCE can choose to accept neither resource pool, one or the other, or both.
- If VCE were to accept the hydro attributes for 2022, this would amount to approximately 10% of clean resources on the PCL[1].
- The monetary benefits for either of these allocations is very low.
  - Difficult to market as the volume and timing is uncertain.
  - At a minimum, most LSEs are accepting the large hydro which creates an over-supply and little demand.
- Generally nuclear is not considered a clean fuel source due to risks associated with spent fuel and long-term disposal options.

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Note: 1) the % can vary as the amount varies due to the hydro conditions in any given year.

Item 10 - 2022 GHG Free Allocation: Timeline

2022 Carbon Free Sales Tentative Timeline	
November 1, 2021	• Notice Issued
Up to Week of November 15, 2021	• PG&E will provide Eligible LSEs with 2022 Sales Agreement for review
Wednesday, November 24, 2021 (ACTION REQUIRED)	• Feedback on form Sales Agreement due to PG&E
Up to Week of December 13, 2021 (ACTION REQUIRED)	• PG&E will provide Eligible LSEs Offers and a final version of 2022 Sales Agreement • PG&E and Eligible LSEs will execute 2022 Sales Agreement
January 1, 2022 (pending execution of Sales Agreement)	• Expected start of Delivery Period under 2022 Sales Agreement
Week of June 14, 2022 (approximation)	• First Quarterly Report for 2022 with estimated Allocation Amount will be distributed
On or about April 15, 2023	• Final Report for 2022 will be distributed to participating LSEs

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Item 10 - 2022 GHG Free Allocation: Next Steps

- Staff's position has not changed and recommends accepting only the Large Hydro allocations unless the CAC has a different view.
  - Attempts to balance the perceived benefits of increased GHG free on the PCL and avoids reputational risk associated with the nuclear allocations.
  - Taking the allocations will reduce PG&E's unfairly represented power content.
- Unless some material changes in the market, Staff recommends continuing with only the Large Hydro attributes for future years and does not plan to bring this topic back to the CAC.
- Ask the VCE Board to approve the Large Hydro only allocation at the December meeting.

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VCE Community Advisory Committee Meeting – November 18, 2021 via video/teleconference
Item 11 – Near-term Power Procurement Directives & Delegations for 2022 Activities

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Item 11 – Near-term Power Procurement Directives & Delegations for 2022 Activities: Background

Background

- Each year VCE staff seeks approval from the VCE Board of power procurement actions that SMUD conducts on VCE's behalf.
  - The power products procured are necessary to meet compliance obligations and maintain a balanced power portfolio while meeting power supply portfolio targets set by the VCE Board.
- 2022 Plan is an update to the delegations of authority and a reflection of the power purchase agreements which were executed and are under development.

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Item 11 – Near-term Power Procurement Directives & Delegations for 2022 Activities: Purpose

Main Purposes of Procurement Plan

- Meet VCE's compliance, regulatory, and business practice requirements under the California Public Utilities Commission (CPUC), California Independent System Operator (CAISO), and other relevant regulatory agencies.
- Satisfy the power supply portfolio targets set by the VCE Board.
- Minimize the potential risk exposure of the portfolio, according to practices defined in VCE's Wholesale Energy Risk Manual.

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Item 11 – Near-term Power Procurement Directives & Delegations for 2022 Activities: Categories

Procurement Plan – Product Categories

- Resource Adequacy
- Renewable Energy
- Carbon-free Energy
- Price Hedging Energy
- CAISO Market Energy & Congestion Revenue Rights

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Item 11 – Near-term Power Procurement Directives & Delegations for 2022 Activities: Approach

Portfolio Approach

- Early procurement actions focused primarily on firm volume deliveries from existing generation assets.
- In the future, VCE will be the off-taker of variable output resources under the long-term agreements.
- Uncertainty during the transition to new resources complicates the achievement of internal portfolio targets.
- VCE will meet or exceed the RPS compliance obligation for the period ‘21-’24

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Item 11 – Near-term Power Procurement Directives & Delegations for 2022 Activities: Next Steps

Next Steps

- Continue to monitor the construction of the projects VCE entered into.
- Seek Board approval of Directives & Delegations of Authority at the December 2021 Board meeting

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VCE Community Advisory Committee Meeting – November 18, 2021 via video/teleconference

Item 12 – Cost-Based Rates - 2022

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Item 12 – 2022 Customer Rates

Overview

- Background
- 2022 Financial Forecast Update and Reserves Target
- 2022 Customer Rate Recommendation
- Next Steps

Item 12 – 2022 Customer Rates

Background

- November 8th PG&E filed a November update for its 2022 Power Charge Indifference Adjustment (PCIA) and Generation Rates

- According to the PG&E filing
  - 2022 PCIA set to decrease 75%
  - 2022 PG&E's average generation rates set to increase by 36%

- November 10th VCE Board adopted cost-based rate policy and deferred consideration of an expanded customer rate structure
  - The cost-based rate setting approach is designed to meet VCE's annual expenditures and build long-term fiscal stability through the establishment and maintenance of reserves.

- VCE rates for 2022 to be considered by the Board at their December meeting

Item 12 – 2022 Customer Rates

2022 Financial Forecast Update and Reserves Target

- Using the information from the PG&E November filing, staff conducted a financial analysis that included three rate scenarios:

    1. Most likely – PG&E 2022 rates are consistent with its November filings (36% higher than 2021 rates). Staff recommendation based on this scenario.
    2. Less likely – PG&E 2022 rates 4% lower than its November filings (32% higher).
    3. Less likely – PG&E 2022 rates 8% lower than its November filings. (28% higher).

- Each scenario holds the PCIA reduction at the November filing level (75% reduction), as it is formula based and not likely to differ from the filing.

Item 12 – 2022 Customer Rates

PG&E 2022 Rates Scenarios

- Staff recommendation based on Scenario 1 (most likely outcome)

		RATES		
	PCIA	Scenario 1	Scenario 2	Scenario 3
CY2022	-75%	36%	32%	28%
CY2023	45%	-7%	-7%	-7%
CY2024	-2%	2%	2%	2%
CY2025	2%	1%	1%	1%

*Future PG&E filings will impact generation and PCIA rates.

Item 12 – 2022 Customer Rates

Budget Scenario Comparison

- Staff recommendation based on Scenario 1 (most likely outcome)

	Actuals			Actual YTD Sept. 30 (3 MO) + Forecast (3 MO)	Budget Scenarios	Preliminary Forecast*		
Scenario 1	FY2019	FY2020	FY2021	FY2022	CY2022	CY2023	CY2024	CY2025
Revenue	51,035	55,249	54,657	28,606	104,683	93,833	97,175	98,992
Power Cost	38,540	41,538	54,234	29,616	66,990	52,400	47,100	48,400
Other Expenses	3,850	4,346	4,267	2,469	4,940	5,140	5,269	5,400
Net Income	8,646	9,365	(3,844)	(3,478)	32,753	36,293	44,807	45,191
Scenario 2	FY2019	FY2020	FY2021	FY2022	CY2022	CY2023	CY2024	CY2025
Revenue	51,035	55,249	54,657	28,606	101,367	90,725	93,973	95,725
Power Cost	38,540	41,538	54,234	29,616	66,990	52,400	47,100	48,400
Other Expenses	3,850	4,346	4,267	2,469	4,940	5,140	5,269	5,400
Net Income	8,646	9,365	(3,844)	(3,478)	29,437	33,185	41,604	41,925
Scenario 3	FY2019	FY2020	FY2021	FY2022	CY2022	CY2023	CY2024	CY2025
Revenue	51,035	55,249	54,657	28,606	98,051	87,617	90,770	92,458
Power Cost	38,540	41,538	54,234	29,616	66,990	52,400	47,100	48,400
Other Expenses	3,850	4,346	4,267	2,469	4,940	5,140	5,269	5,400
Net Income	8,646	9,365	(3,844)	(3,478)	26,121	30,077	38,402	38,658

*Revenues are highly subject to PG&E filings that impact generation rates and PCIA.

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Item 12 – 2022 Customer Rates

2022 Reserves Target

- Staff recommending that VCE set rates for 2022 at a level that will fully fund the 2022 budget and build back reserves that have been used over the past 18 months to stabilize customer rates
- Staff is recommending that VCE establish a target of 150 days cash reserve by the end of 2022 which would provide two key benefits:
  (1) increased financial stability while taking a significant step toward establishing an investment grade credit rating
  (2) preparing for future PCIA and power market volatility
- Staff is also recommending that VCE take an approach that builds reserves aggressively in the first two quarters of 2022 to minimize the draw on its existing reserves and to avoid cash flow risk in early 2022
- If PG&E's 2022 rates and/or PCIA do not conform to its November CPUC filings, staff believes a reduction to a 120-days cash reserve target for 2022 is reasonable but-sub optimal

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Item 12 – 2022 Customer Rates

2022 Rate Recommendation

- Staff is recommending adoption of customer rates for 2022 to match PG&E 2022 generation rates for all customer classes except CARE and FERA
- VCE CARE and FERA customers to receive a 5% VCE rate discount in 2022 (CARE and FERA customers represent approximately 27% of VCE's load)
- Recommended rates will allow VCE to cover its projected FY 2022 budget expenditures while establishing 150 days cash reserves by the end of 2022.
- This approach for 2022 satisfies the following key objectives:
  - Rates set to meet costs
  - Rate support for low-income customers
  - Establishment of healthy reserves to help buffer future rate/PCIA volatility, build toward an investment grade credit rating, fund customer programs, and meet financial covenants contained in VCE's long-term power purchase agreements
  - Moves VCE one-year closer to on-line dates for its fixed-price long-term renewable PPA's (2022: Aquamarine + Putah Creek /2023: Resurgence + Gibson /2024: Willow Springs)

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Item 12 – 2022 Customer Rates

2022 Rate Recommendation (cont.)

- If PG&E's 2022 rates and PCIA conform to its November CPUC filings the financial analysis indicates additional revenue may be available in 2022
- Using VCE's existing guidelines for treatment of surplus revenue (Customer Dividend Program – adopted 2019), and past input from the Board and CAC, staff identified three general categories for potential funding with any surplus revenues in 2022:
  - Reserves
  - customer rate discounts/dividends
  - programs/clean power content increases
- Staff believes it is prudent to consider these potential actions following implementation of PG&E's 2022 rates and PCIA scheduled for January so that an assessment of actual financial performance can be made and is therefore also recommending a mid-year rates review as part of its recommendation on the 2022 rates Implementing Procedure

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Item 12 – 2022 Customer Rates

2022 Rates Implementing Procedure

Conduct a mid-year rates review in Q2 2022 to assess VCE's rates forecast and determine feasibility of:

a. Providing a 5% rate discount for all customer classes during peak summer months in 2022 (June – September.);
b. Providing an additional 5% rate discount for CARE and FERA customers during peak summer months (June – September.);
c. Allocating additional funds for program implementation.
d. Allocating additional funds for clean energy content procurement;

- The recommended Implementing Procedure provides a framework for 2022. It is specifically limited to one year due to the level of volatility represented in PG&E's 2022 rates/PCIA and uncertainty associated with these factors going into 2023

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Item 12 – 2022 Customer Rates

Recommendation

Recommend that the VCE Board of Directors approve the following:

1. Adopt customer rates for 2022 to match PG&E 2022 generation rates for all customer classes except CARE and FERA customers to cover VCE's FY 2022 budget expenditures and to achieve 150 days cash reserves by the end of 2022;

2. Adopt a 2022 rates implementing procedure including the following:
   a. Provide a 5% rate discount for CARE and FERA customers in 2022;
   b. Conduct a mid-year rates review in Q2 2022 to assess rates forecast and determine the feasibility of:
      i. Providing a 5% rate discount for all customer classes during peak summer months in 2022 (June – September.);
      ii. Providing an additional 5% rate discount for CARE and FERA customers during peak summer months (June – September.);
      iii. Allocating additional funds for clean energy content procurement;
      iv. Allocating additional funds for community program implementation.

Next Steps

Dec – Board adoption of VCE 2022 rates

Q2 2022 Mid-year rates review

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