Valley Clean Energy Special CAC Meeting – May 28, 2020 Via Teleconference

Item 4 – Integrated Resource Plan (IRP) Workshop

Public Comments

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Item 4 - IRP Portfolio Review Objective

- IRP requirements
- Provide information on electric demand and resource needs
- Present draft alternative IRP resource portfolios
- Seek inputs/guidance on resource preferences
- Seek inputs/guidance on 3 year action plan and studies to be undertaken

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Item 4 - IRP Basic Requirements

Outlook Period	2020-2030
Renewable Portfolio Standard (RPS)	60% by 2030
Long term contracts for renewables	65% of RPS obligation supported by long term contracts from 2021
Resource Procurement	12.6 MW of new capacity online by August 2023
GHG Benchmark (for planning)	156,000 metric tons (MT)/year for 2030 (Based on 46MMT CPUC scenario)
GHG Alternative Benchmark	129,000 metric tons/year for 2030 (Based on 38MMT CPUC scenario)
Load Forecast	Use California Energy Commission's 2019 IEPR
Demonstrate compliance with PUC 454.52(a)(1),	
Select at least one Preferred Portfolio for each GHG Benchmark scenario	
File IRP with CPUC by September 1, 2020	

Energy Storage mandate of 1% of load, to be online by 1/1/2024 (~3MW) has been covered by PG&E procured resources and is therefore no longer a mandatory requirement for VCE

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Item 4 - Additional IRP Requirements

Additional IRP Requirements in PUC 454.52(a)	Proposed approach
Meet state GHG goals	Base plan on CPUC Reference Portfolio
Just and reasonable rates	Competitive w PG&E
Minimize impacts on rate payer bills	Keep rates competitive with PG&E and build reserves for programs
Ensure system and local reliability	Procure reserves per CAISO and CPUC requirements

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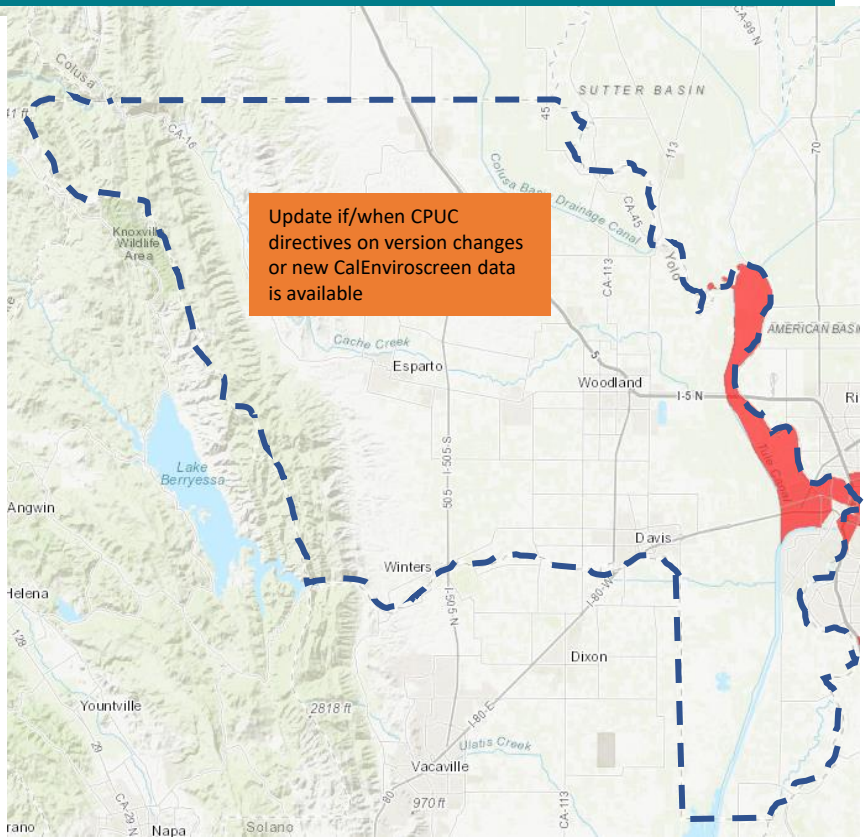
Item 4 - Disadvantaged Communities

- VCEA is required to demonstrate how its preferred portfolio minimizes "localized air pollutants and other GHG emissions with early priority on disadvantaged communities
- Top 25% of CalEnviroScreen 3.0 impacted census tracts – Only four census tracts are impacted – all in West Sacramento or just north thereof
- Similar to other Yolo county residents, residents in disadvantaged communities are expected to experience a (slight) reduction of GHG emissions as a result of CCA activities
- Impacts on communities outside VCEA's service territory are harder to measure but are expected to be positive or neutral



Source: CalEnviroScreen 3.0 (https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30)

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Load Forecast and Resource Needs

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Item 4 - IRP Resource Gap

(Based on CPUC IRP rules and statutory mandates)

	2020	2021	2022	2023	2024	2026	2030
Wholesale Electricity Demand (GWh)	772	834	830	828	832	831	832
Short-term Contracted Energy (GWh)	534	689					
Contracted Carbon Free (GWh)	233	29					
Long-term PPA (GWh)	7	34	327	327	327	327	327
Energy Needed (GWh)	**0**	**82**	**503**	**501**	**505**	**504**	**505**
Capacity Need (MW)	187	200	200	199	200	200	202
Contracted Capacity (MW)	193	125	221	117	55	55	55
Capacity Needed (MW)	**0**	**75**	**0**	**82**	**145**	**145**	**147**
Statutory RPS Mandate	33%	36%	39%	41%	44%	49%	60%
Contracted/Procured RPS	44%	5%	43%	43%	43%	43%	43%
RPS Need		31%			1%	6%	17%

Includes only supply with existing contracts. Excludes projects currently under negotiation and projects expected to result from currently open RFPs

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Resource Options, Costs and Market Prices

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Item 4 - Availability of local* renewable resources in VCEA

	Potential (MW)	Existing (MW)
Biomass / biogas	171	97
Small Hydro	0	36
Wind	749	1,092
Solar PV	6,000+	252
Battery Storage	Not limited	2.4
Geothermal	135	1,662

Sources: California Energy Commission Tracking Progress, December 2018; California Public Utilities Commission RPS Calculator, version 6.2

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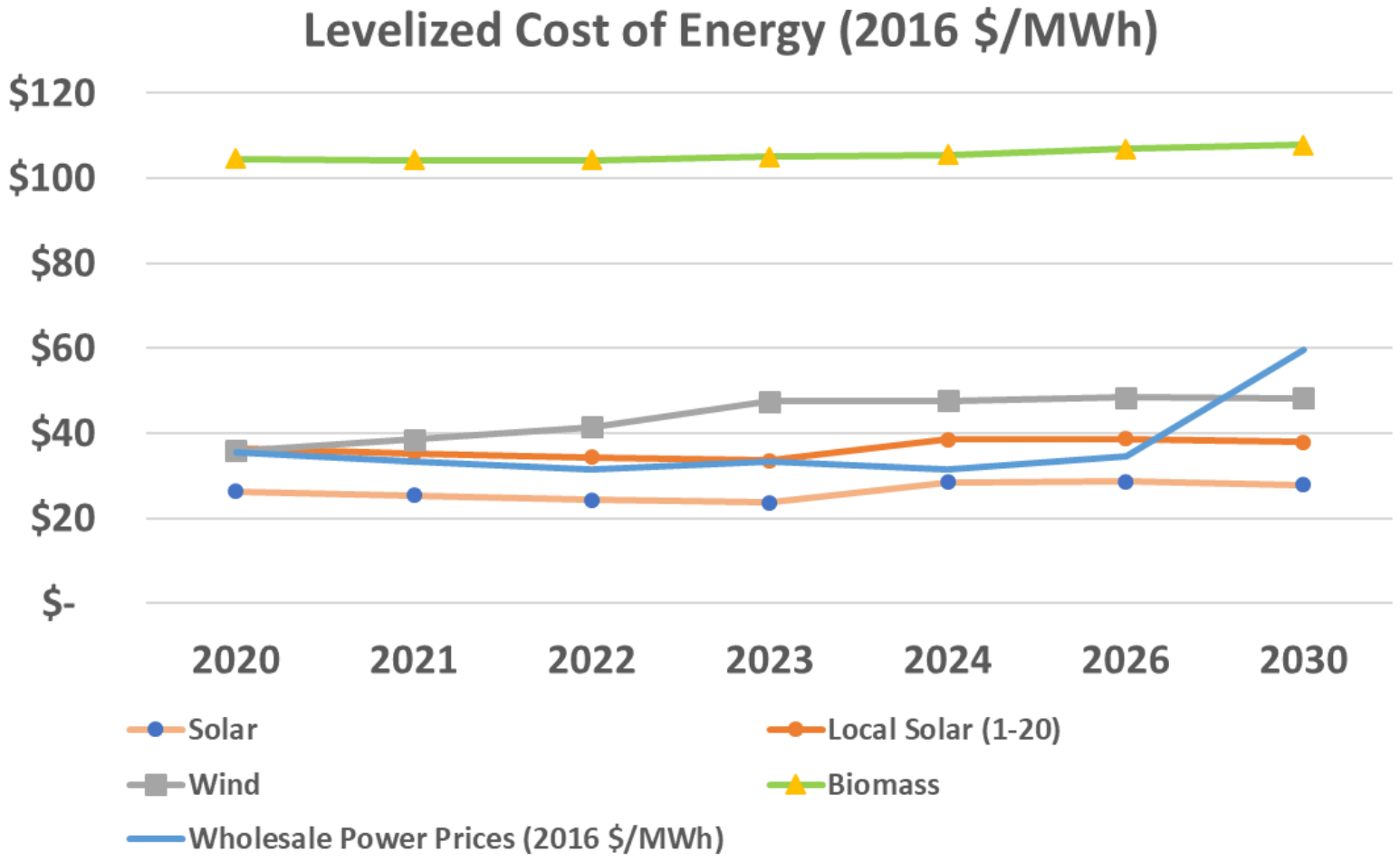
* Includes Yolo, Lake, Colusa, Yuba, Sacramento, Solano, Napa and Sonoma counties

Item 4 - Cost of New Resources (Energy)



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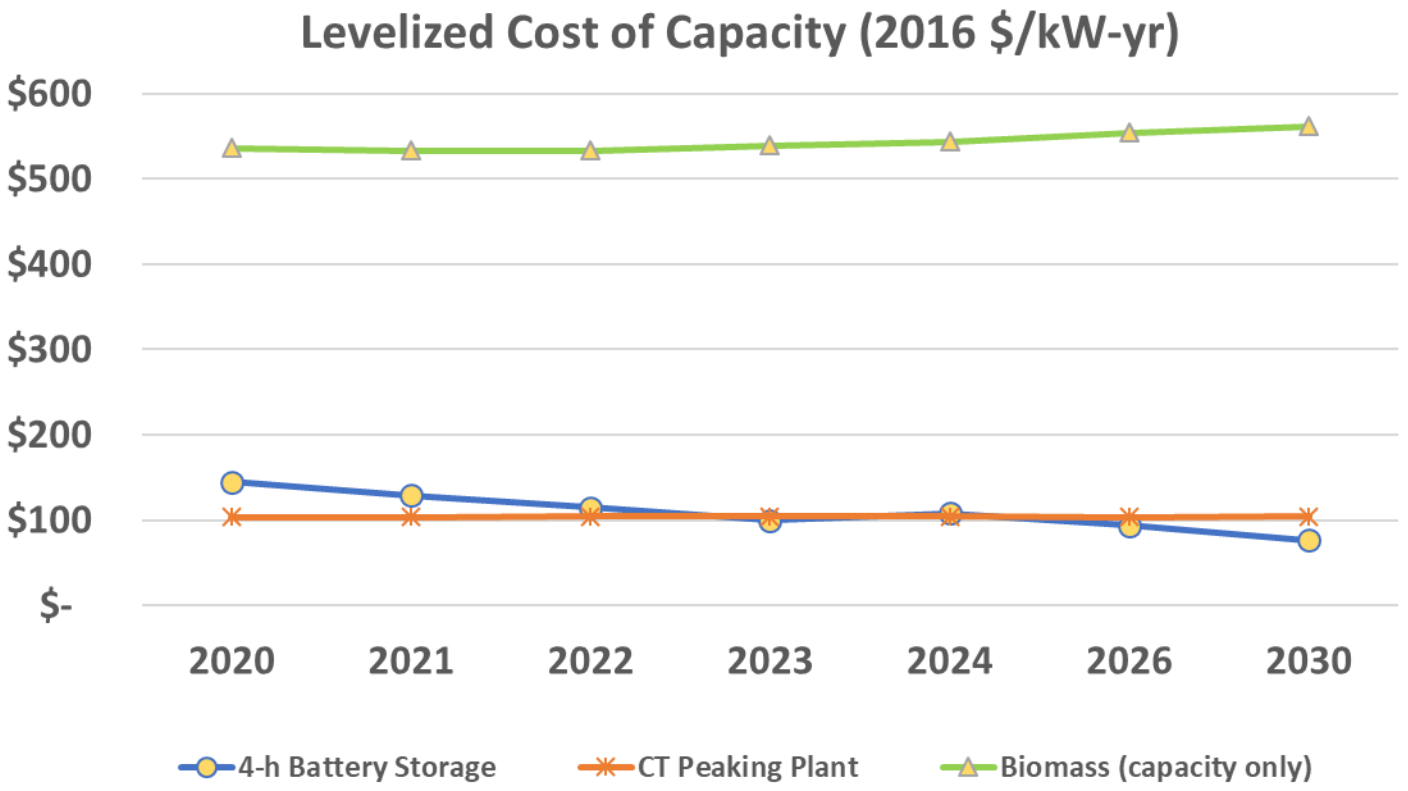
Sources: CPUC; Intercontinental Exchange (ICE)

Item 4 - Cost of New Resources (Capacity)



Sources: CPUC; Intercontinental Exchange (ICE)

Item 4 - IRP Portfolio Alternatives Considered

Portfolio	Key Features
ALL	• Meet CPUC and statutory requirements • Add storage in 2021 to meet CPUC procurement mandate • Add capacity from RFO for local resources
Wind+	• Seek balanced wind + solar + storage portfolio • Meet CPUC target of 156,000 metric tons of CO2 emissions in 2030
Solar&Battery+	• Execute current solar options up to 190 MW • Expand storage to 70 MW by 2030 to improve solar utilization • Eliminate reliance on large scale hydro for carbon goals • Meet CPUC target of 156,000 metric tons of CO2 emissions in 2030
Biomass+	• Expand a baseload renewable resources to stabilize GHG reductions across all hours • Meet CPUC target of 156,000 metric tons of CO2 emissions in 2030
38 MMT	• Address CPUC request for additional scenario that limits VCE emissions to 129,000 metric tons of CO2 emissions in 2030

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Item 4 - Potential IRP portfolios
(MW of Rated Capacity)

Scenario	Resource Type	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Behind the meter solar PV (common to all cases)		48	61	69	75	80	85	90	95	100	105	110
Wind+	Local Wind							20	20	20	20	25
	CAISO Solar	0	50	122	122	122	122	122	122	122	122	122
	Local Solar			0	0	20	20	20	20	20	20	20
	Biomass											
	Storage (4h)		7	7	7	7	15	15	15	24	32	40
Carbon Free Resources* (Large Scale Hydro)												31
38 MMT	SAME RESOURCE PORTFOLIO AS Solar&Battery+ EXCEPT FOR LARGE SCALE HYDRO/ CARBON FREE											
Carbon Free Resources* (Large Scale Hydro)												24
Biomass+	Solano Wind											
	CAISO Solar		50	122	122	122	122	122	122	122	122	122
	Local Solar											
	Biomass						25	25	25	25	27	27
	Storage (4h)		7	7	7	7	15	15	15	15	15	15
Carbon Free Resources* (Large Scale Hydro)												
Solar&Battery+	Solano Wind											
	CAISO Solar	0	50	122	122	172	172	172	172	172	190	190
	Local Solar			0	0	25	25	25	25	25	25	25
	Biomass											
	Storage (4h)		7	7	7	7	15	15	15	30	45	70
Carbon Free Resources* (Large Scale Hydro)												

* Carbon free resources expected to continue as short term market purchases. Added to resource portfolios to illustrate tradeoffs

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Item 4 - Four 2030 Resource Portfolios

	Wind+	Solar&Battery+	Biomass+	38 MMT
2030 RPS (%)	67%	71%	99%	75%
Carbon Free (%)*	78%	71%	99%	82%
GHG Emissions (Metric Tons)*	156,000	156,000	156,000	128,000
Percent of load served by contracted resources	58%	62%	54%	62%
Percentage of load served by CAISO purchases	42%	38%	46%	38%
Percent of contracted generation sold in CAISO	25%	15%	17%	15%
Market RECs (% of load)	None	None	None	None

* Using CPUC's Clean Power Calculator and adding hydro resources to ensure that regulatory GHG goal is met

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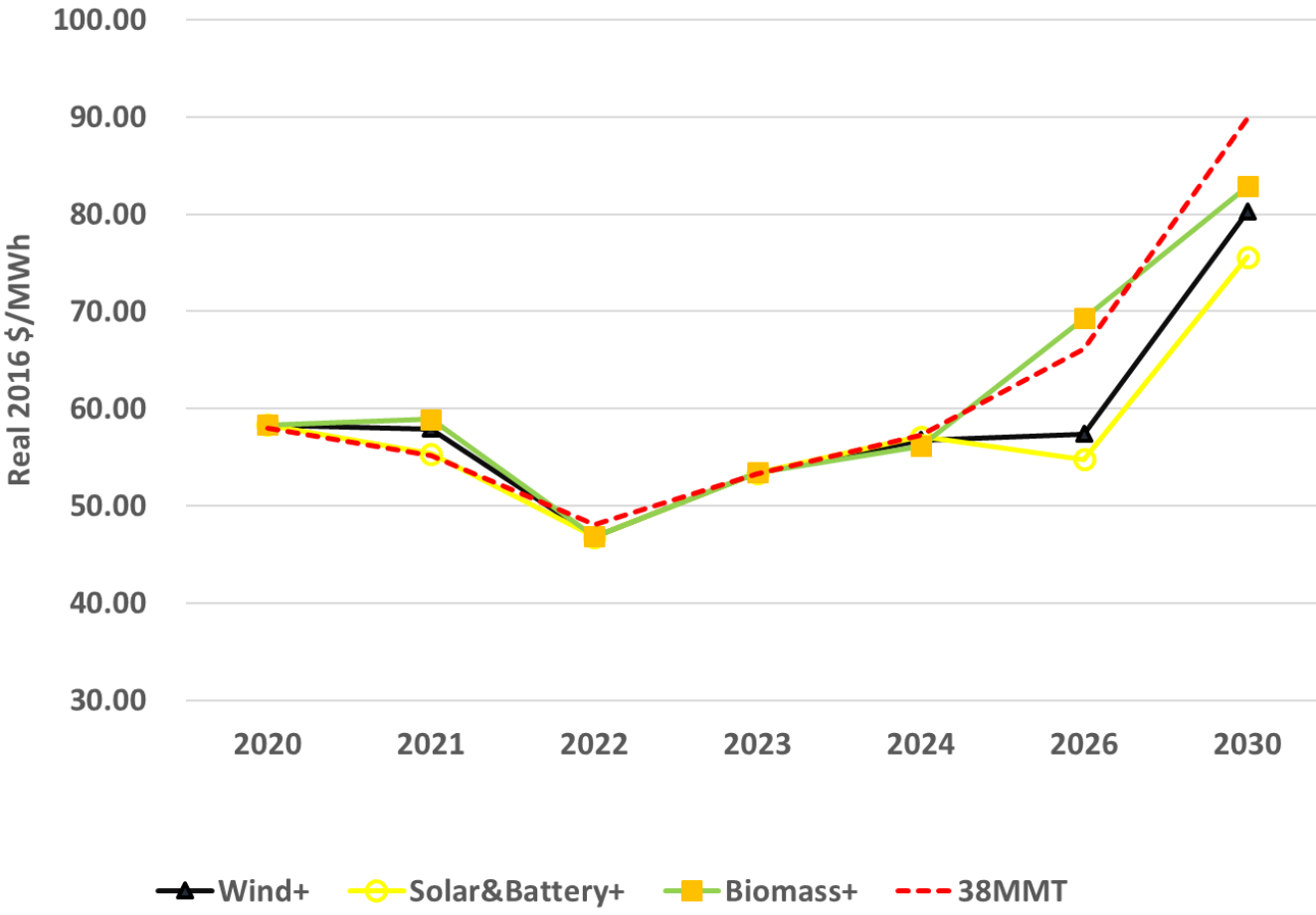
Item 4 - Portfolio All-in cost for electricity ($/MWh)

- Portfolios identical until 2024.
- **Biomass+** portfolio emphasizes baseload renewables
- **Wind+** adds wind, local solar and storage
- **Solar&Battery+** has lowest cost for power but also highest amount of long term contracts
- **38 MMT** portfolio is distinguished from Solar&Battery+ portfolio only by amount of carbon-free (hydro) resources used
- Differences in amount of capacity under LT contracts leads to different portfolio risk profiles



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Item 4 - Portfolio Observations

- All portfolios conform to all statutory and regulatory requirements
- All portfolios result in relatively similar cost trajectories – this is a result of solar PV contracts expected to be completed in 2020 covering more than 100MW of capacity. Changes in portfolio choices only occur from 2024 onwards
- More aggressive solar and/or wind portfolio could lead to lower GHG emissions AND lower cost
- Wind and biomass/geothermal resources are likely harder to find in the market and takes longer to develop with higher risks of delay compared to solar PV
- Wind resources in 2026-2027 may be challenging to secure due to resource limitations but the proposed 20MW is consistent with VCE's share of CAISO-wide load
- Solar PV is the lowest cost resource but can only cover part of VCE's load, resulting in exporting surplus generation to CAISO. For a large solar portfolio this can lead to price risks for power sold as well as curtailment risk
- Solar&Battery+ portfolio eliminates potential RPS shortage in 2021-2024 compliance period
- VCE must have new capacity coming online by August 2021 and must also consider replacement alternative resources to cover its proportional share of Diablo Canyon nuclear plant which is slated for retirement in 2024-2025
- Changes in relative resource costs could make biomass and/or geothermal resources attractive additions towards 2030

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Item 4 - Action Plan Considerations

- Complete 2020 Contracting for 122 MW solar (likely completed by time of filing)
- Complete resource selection by end of 2020 for local capacity resulting from 2020 RFO (issued in Q2), with expected online dates in 2021-2023 time period
- Select storage vendor to meet August 1, 2021 capacity procurement mandate based on 2020 RFO (with RCEA)
- Consider additional RFO for wind, solar and storage in 2022-2023
- Secure mid to long term contracts for large scale hydro to balance portfolio emissions and meet 2030 targets
- Closely monitor progress on projects under construction with COD in 2021
- Explore DR and/or load management programs as supplement to RA
- Out-of-state wind and hydro?
- Consider offshore wind?

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Questions?

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Item 4 - IRP Resource Gap

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Item 9 - Policy Adjustments

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Item 9 - Policy Strategies - Background

OVERVIEW:

- VCE and other CCA's face mounting fiscal challenges in the coming years
- Need to efficiently incorporate long-term renewable power into VCE's portfolio
- The potential policy strategies are designed to help align incorporation of long-term PPA's and offset anticipated reduced net income
- Strategies bridge gap until lower cost long-term renewable energy contracts come on-line in late 2021/ early 2022
- The Community Advisory Committee (CAC) and considered and provided initial feed-back on the policy strategies at their respective April 23rd and May 14th meetings
- The Board provided feedback favoring adjustments to the power procurement planning strategy (Option C) , approved acceptance of Large Hydro GHG Free allocations (Option D), and study of additional rate choice for customers (Option B) - other Options not feasible/not favored
- Staff is seeking recommendation from the CAC in advance of final Board action at their June 11th meeting

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Item 9 - Policy Strategies - Background

COVID/Recession Scenario Comparison, Impact on Power Costs & Revenue v. Base Case

		Best Case	Most Likely	Worst Case
2020	Retail Load	-3.8%	-3.8%	-8.0%
	Power Costs	-1.9%	-1.9%	-4.0%
	Revenue	-4.2%	-4.2%	-8.3%
2021	Retail Load	-2.3%	-3.6%	-8.7%
	Power Costs	-1.6%	-2.7%	-6.0%
	Revenue	-2.3%	-3.7%	-8.5%

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Item 9 - Policy Strategies - Background

FY 2020/21 Budget Overview (Revisions from April to May Preliminary Budget Forecasts).
Factors in PCIA, RA, Revised Load Information, COVID

- $5.7 M: Net Income – April Budget Update
- $2.2 M: Load Forecast Revenue Impact (pre-COVID/Recession)
- $2.5 M: COVID/Recession impact
+ $4.2 M: Generation Rate increase
+ $1.0 M: Reduced Power Cost due to COVID/Recession
- **$5.2 M: Net Income – May Budget Update**

General fiscal objective – reduce FY budget shortfall by 50%

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Item 9 - Policy Strategies – Rate Choices

OPTION B – IMPLEMENT A THIRD CUSTOMER RATE CHOICE:

- Add a third choice for customer rates that could be set near the minimum State standards for renewable energy content to allow customers the option to choose a more cost-effective rate, while maintaining VCE's other two current rate options that deliver higher renewable and GHG free attributes at a "cost plus" rate

Staff Recommendation – Study

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Item 9 - Policy Strategies – Power Resource Planning Adjustments

OPTION C - POWER RESOURCE PLANNING ADJUSTMENTS:

- Staff is analyzing the timing of PPA power deliveries in 2021 and when to dial back the existing short-term contracts. Possible to forego short-term contracts where renewable and GHG levels in VCE's portfolio are lower in a single year but averaged out to meet VCE's goals over a 2 or 3 year period. This tactic could lead to:
  - Net cost savings of several million dollars over a 2-3 year period while still meeting VCE's regulatory compliance requirements

Staff Recommendation – approval to plan for incorporation of long-term renewable contracts into VCE's portfolio and address fiscal year 2020/21 PCIA and Resource Adequacy cost impacts.

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Item 9 - Policy Strategies – Option C Alternatives

Policy Option C – Power Planning Resource Adjustments	2021 RPS Levels	2021 Large Hydro	2021 Carbon-Free	FY20/21 Financial Savings
Base Case	42%	33%	75%	$0
Alt 1 (Low RPS/Large-hydro)	6%	5%	11%	$2.50 - $3.00 million
Alt 2 (Moderate – Approx 25% Base Case) - Recommended	10%	10%	20%	$2.00 - $2.50 million
Alt 3 (Moderate – Approx 50% Base Case)	24%	14%	38%	$1.25 - $1.75 million
Alt 4 (Large Hydro Emphasis)	6%	44%	50%	$1.50 - $2.00 million

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Item 9 - Policy Strategies – Additional Options

OPTION D – ACCEPT THE GHG-FREE LARGE HYDRO ALLOCATIONS:

- Accept the GHG-free large hydro and nuclear allocations from PG&E, at a potential benefit of $0.25 million and $0.4 million respectively. These savings are speculative and would only be realized if a market exists in which to sell these characteristics

Board Approval at May 14, 2020 meeting

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Item 9 - Policy Strategies Reference – Original Master List

Policy	Potential Savings	Ease of Implementation	Timing	Notes/Other Considerations	Relative Priority
A. Rate Change – Rate Increase	$800,000 to $2.4 million	Medium-high difficulty due to outreach efforts and opt-out risk	Could start shortly after BOD approval and start seeing immediate revenue impact	Revenue increase is $800K per 1% change – assume 1-3% target for Potential Savings	CAC – Infeasible Staff - Lowest
B. Rate Change – Additional Rate Class	$0.25 to $1.5 million	Medium to high difficulty due to complexity of the roll-out and communication efforts	Could start shortly after BOD approval and start seeing immediate revenue impact	One example scenario could assume ag rates slightly below PG&E gen rate; commercial at PG&E rate; and residential slightly above PG&E rate. Other scenarios possible	CAC – Low/ Moderate Staff - Moderate
C. Power Resource Planning Adjustment	$0 to $3.1 million	Low end of the range less difficult	Throughout fiscal year ’21 –‘22	Power Content Label impacts;	CAC – Highest Staff - Highest
D. GHG Free – Large Hydro	$0 to $240,000	Low end of the range less difficult	Q3-Q4 2020	Volume is unknown; market interest/ability to resell may be low	CAC – Highest Staff - Highest
E. GHG Free – Nuclear	$0 to $420,000	Low end of the range less difficult	Q3-Q4 2020	Volume is unknown; market interest/ability to resell may be low; reputational risk	CAC – Lowest Staff - Lowest
F. Operations Reductions	$25,000 to $100,000	Low end of range less difficult; high end of range difficult	Impact spread throughout FY 2021 budget	Significant strategic trade-offs between program effectiveness and marginal cost savings	CAC – Lowest Staff – N/A