VCEA Citizen's Advisory Committee SMUD Update

November 6, 2017

Overview

- Review VCEA Load Forecast
- Review Wholesale Power Procurement & Risk Management Policy Highlights
- Review Procurement Process
- Review CAC Requested Alternative Resource Mix

Load Forecast – Background & Purpose

- Purpose:
  - Guide Power Procurement
  - Produce Accurate Revenue Forecasts
- Methodology:
  - Normalize historical data for weather, population, and economy to get base case.
  - Forecast growth in load per customer and customer count
  - Adjust for known developments, Energy Efficiency, DER, etc.
  - Forecast potential variability due to weather
- Data used:
  - Load and customer count data from PG&E (2014-2017)
  - Weather data from UC Davis Experimental Farm/NOAA (1998-2017)
  - SACOG Growth forecasts (2016 Estimates)

Load Forecast – Customer Count

2016 Billing Statistics for PG&E Customer Accounts (at Meter) for Yolo County				
Full Service	Davis	Woodland	Unincorporated	**Total**
Residential	26,871	20,640	8,863	**56,374**
Small Commercial	1,794	2,068	1,355	**5,217**
Medium Commercial	182	211	73	**466**
Large Commercial	93	100	58	**251**
E20S	-	2	5	**7**
E20P	-	1	1	**2**
Agricultural	3	28	2,201	**2,232**
Street	140	223	322	**685**
Standby	-	1	5	**6**
Total	**29,083**	**23,274**	**12,883**	**65,240**

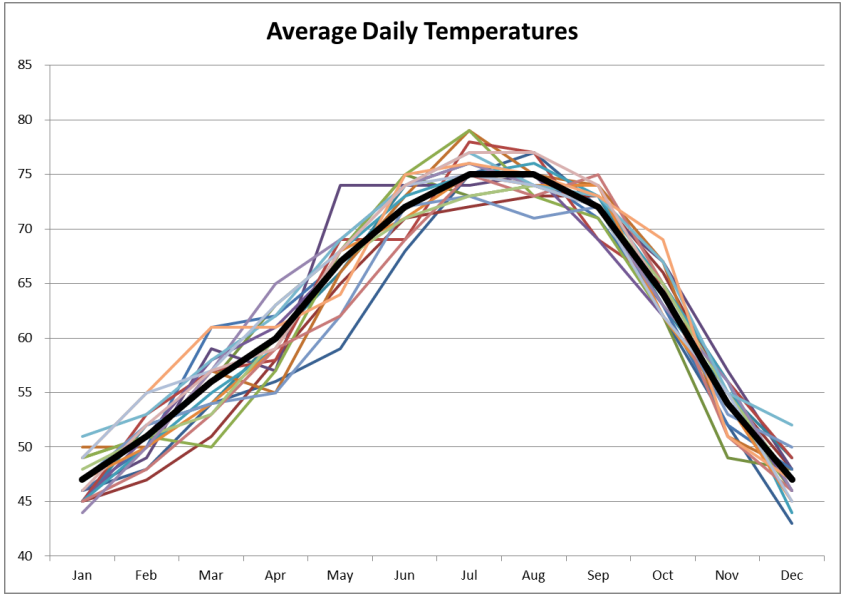
Load Forecast – Economic Inputs

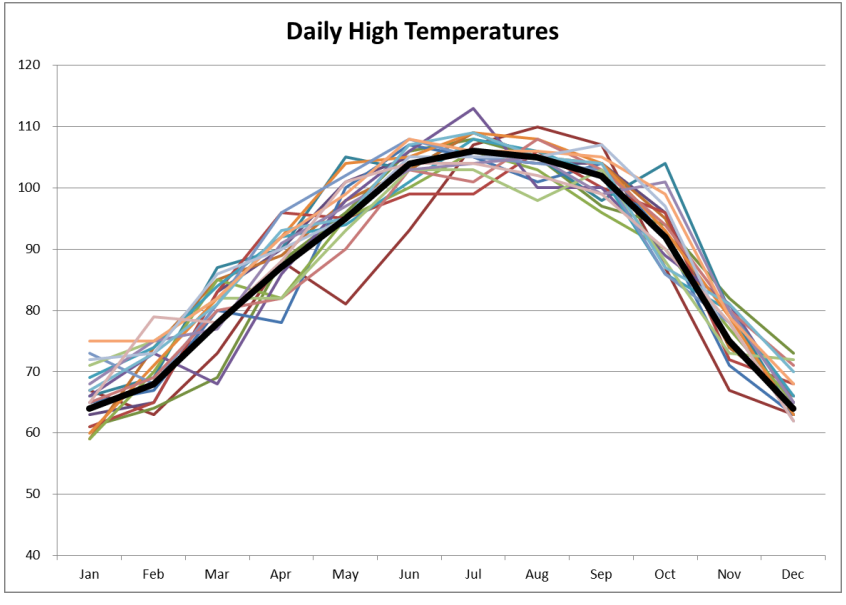
February 2016 SACOG Forecast:

	Population	Housing Units	Employment
2012	134,875	52,309	42,874
2020	143,964	53,675	48,945
2036	160,348	59,200	61,990
Growth Rates 2012-2020	0.8%	0.3%	1.7%
Growth Rates 2020-2036	0.7%	0.6%	1.5%

Class	Annual Growth Rate	Comments
Residential	0.6%	Based on SACOG Population and Housing Unit Growth
Small Commercial	0.3%	Based on SACOG Employment Growth
Medium Commercial	0.3%	Based on SACOG Employment Growth
Large Commercial	0.4%	Based on historical Growth
E20S	0.0%	No Growth Assumed
E20P	0.0%	No Growth Assumed
Agricultural	0.0%	No Growth Assumed
Street	0.0%	Based on historical Growth
Standby	0.0%	No Growth Assumed
Total VCEA	**0.5%**	

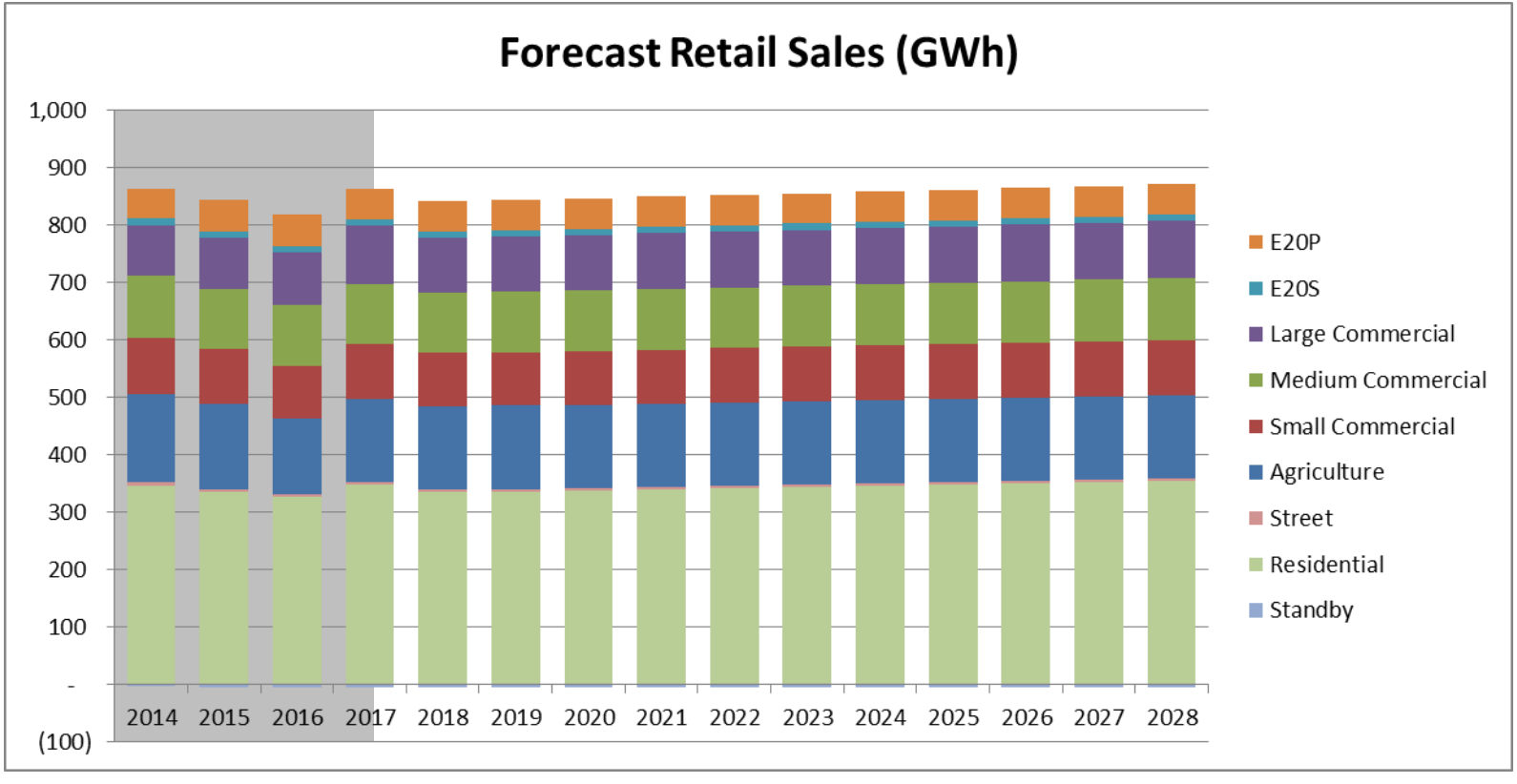
Load Forecast – Weather Inputs



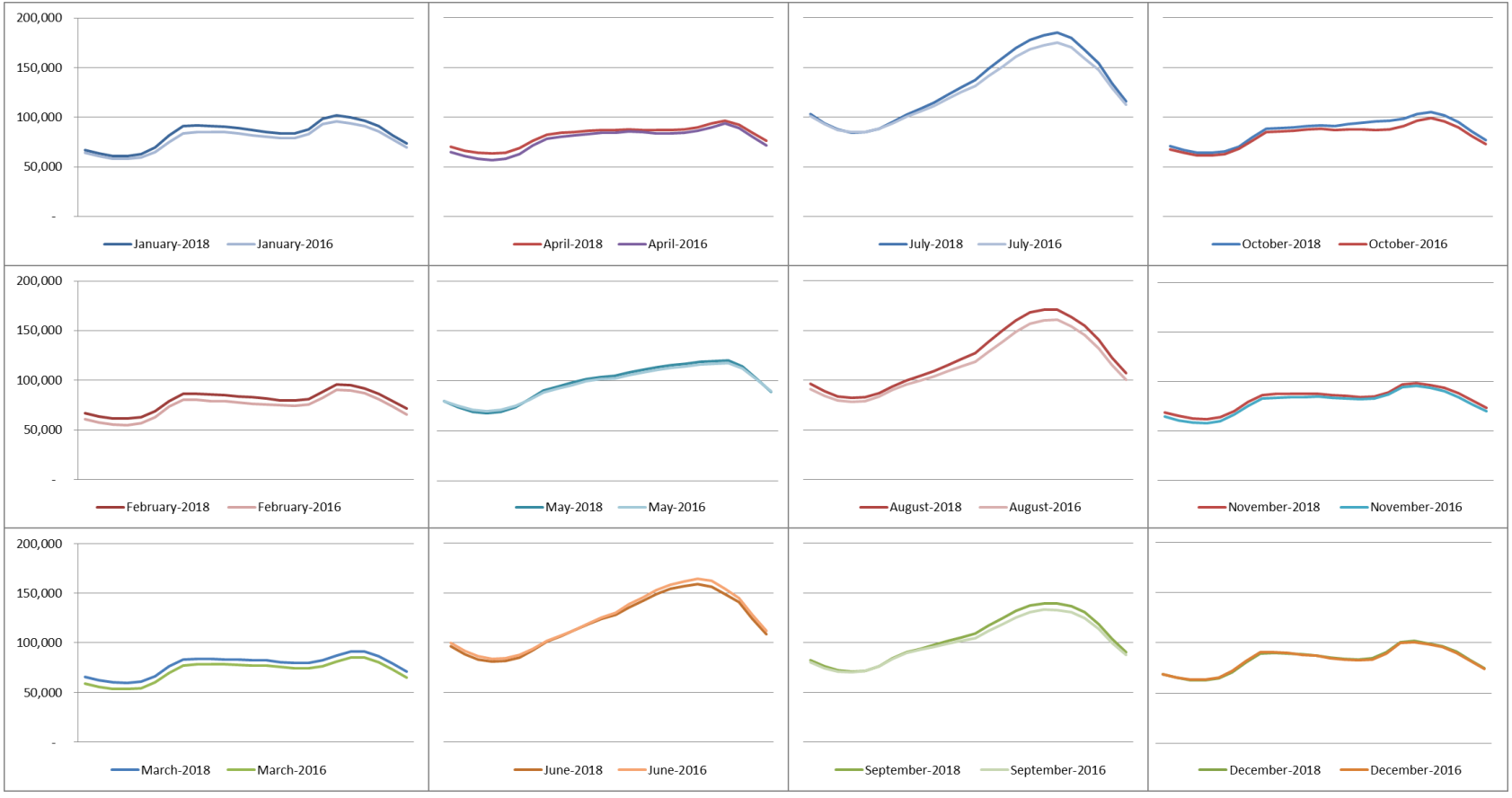


Source DAVIS EXPERIMENTAL FARM, CA US
Station ID USC00042294

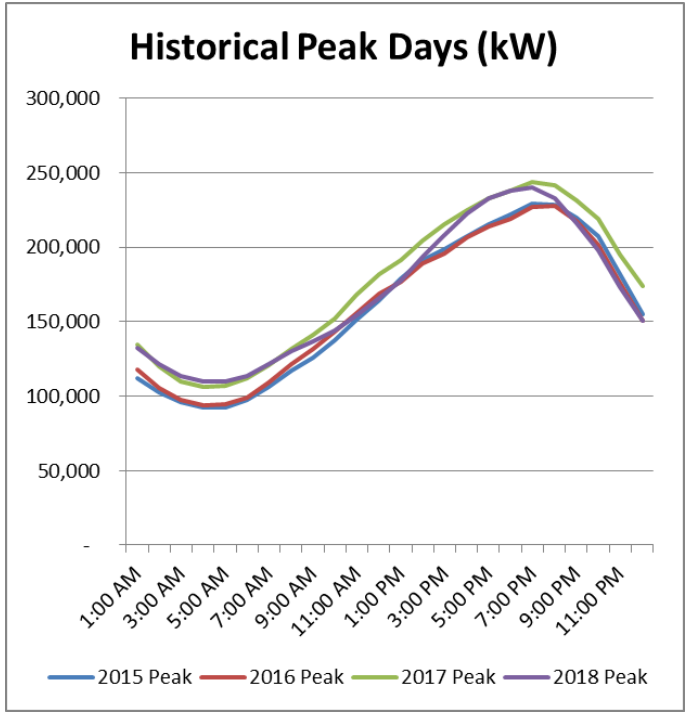
Load Forecast – By Year and Customer Class

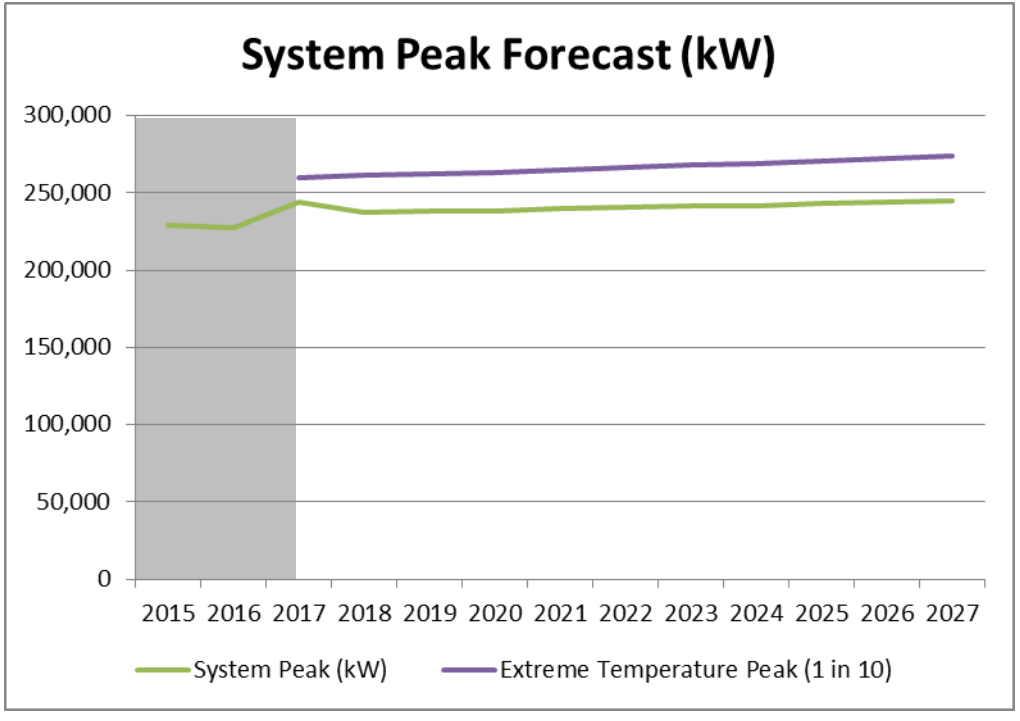


Load Forecast - Typical Daily System Load Shapes



Load Forecast - Peak Load Forecast





Wholesale Procurement & Risk Policy - Background and Purpose

- Establishes Risk Management Program – with focus on commodity risk
- Identifies specific Risk Management functions and procedures to manage risks associated with power procurement activities
- Specifies roles and responsibilities
- Establishes Risk Management Standards

Wholesale Procurement & Risk Policy - Key Elements

- Enterprise Risk Oversight Committee
- Business practices
  - General Conduct requirements
  - Notification of conflicts
  - Counterparty suitability
  - Transaction records
  - Transaction valuation
  - Stress testing

Wholesale Procurement & Risk Policy - Key Elements

- Establishes criteria for Wholesale Energy Service Provider Front, Middle and Back Offices
  - Front Office – Execute trades
  - Middle Office – Risk and Credit
  - Back Office – Settlements
- Delegations of Authority
- Risk and Credit Monitoring and Reporting

Power Procurement Process - Timeline

- December 2018: Finalize preferred portfolio mix/plan and requirements
- January 2018: Obtain approvals and delegations to trade for portfolio products
- January 2018: Implementation Plan Certification
- January 2018 – April 2018: Procurement Window.

Power Procurement Process - Products

- The Portfolio Will Include:
- Power
  - PCC1
  - PCC2
  - ACS/SS
- Resource Adequacy
  - System
  - Local Area
  - Flexible
- Price Hedging Products

Power Procurement Process - Potential Channels for Product Procurement

- Direct Solicitation to Counterparties for Bilateral Agreements
- Electronic Platforms (e.g. ICE)
- Auction Platform (EnerNoc)
- Brokers
- Respond to Solicitations From Other Counterparties for Bilateral Agreements

Power Procurement Process
Steps of Procurement

- Obtain Directive/Delegation and Approval to Transact
- Go to Market
- Transact
- Route confirms(Internal to SMUD)
- Finalize and Sign Contracts (Internal to SMUD)

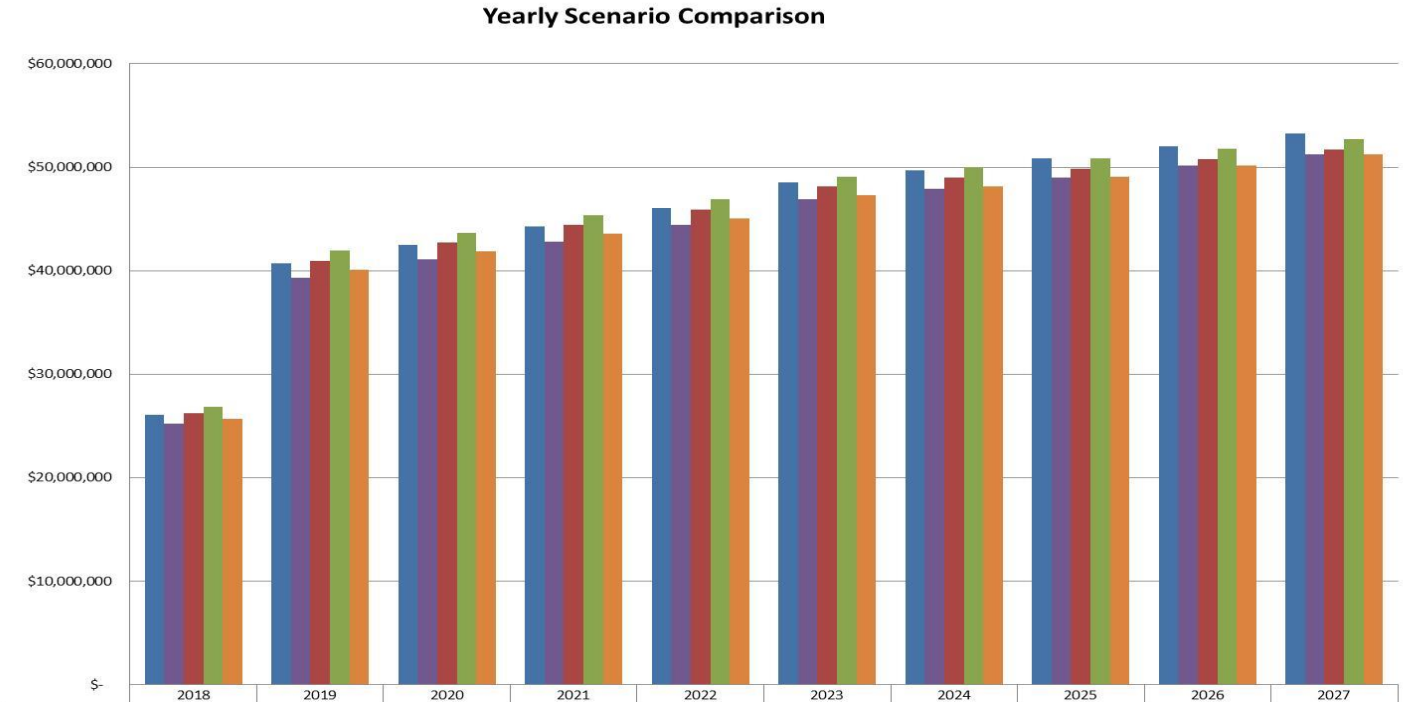
Resource Portfolio Alternative - Scenarios Evaluated

Scenario	Renewable	Carbon Free	Total Clean
A	35% Renewable - 100% PCC1	65%	100%
A Alt	35% Renewable - 75% PCC1 - 25% PCC2	45%	75%
B	50% Renewable - 75% PCC1 - 25% PCC2	25%	75%
C	50% Renewable - 100% PCC1	25%	75%
E	42% Renewable -75% PCC1 - 25% PCC2	33%	75%

Resource Portfolio Alternative - Alternative E Detail

Scenario D - 42% Renawable and Additional Non Renewable Carbon Free (75% Clean)											
Total Renewable Content			**42.0%**	**42.0%**	**42.0%**	**42.0%**	**42.0%**	**42.0%**	**42.0%**	**42.0%**	**43.3%**	**45.0%**
	PCC 1	Calculated	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
	PCC 2	Calculated	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
	PCC 3	Calculated	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	RPS Required Minimums		**29.0%**	**31.0%**	**33.0%**	**34.8%**	**36.5%**	**38.3%**	**40.0%**	**41.7%**	**43.3%**	**45.0%**
		PCC 1	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
		PCC 2	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
		PCC 3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Incremental Renewables		**13.00%**	**11.00%**	**9.00%**	**7.20%**	**5.50%**	**3.70%**	**2.00%**	**0.30%**	**0.00%**	**0.00%**
		PCC 1	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
		PCC 2	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
		PCC 3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Non Renewable Carbon Free		**33.0%**	**33.0%**	**33.0%**	**33.0%**	**33.0%**	**33.0%**	**33.0%**	**33.0%**	**31.7%**	**30.0%**
	Total Carbon Free		**75.0%**	**75.0%**	**75.0%**	**75.0%**	**75.0%**	**75.0%**	**75.0%**	**75.0%**	**75.0%**	**75.0%**

Resource Portfolio Alternative - Resource Cost Comparison



	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Scenario A	$26,062,272	$40,726,158	$42,527,284	$44,288,043	$46,026,746	$48,536,759	$49,687,562	$50,858,571	$52,038,132	$53,248,763
Scenarion A Alt	$25,250,818	$39,321,962	$41,081,265	$42,798,071	$44,460,954	$46,886,596	$47,952,239	$49,035,189	$50,125,655	$51,241,998
Sceanrio B	$26,238,036	$40,967,921	$42,712,083	$44,412,510	$45,898,032	$48,117,194	$48,990,353	$49,884,619	$50,800,763	$51,737,347
Scenario C	$26,815,966	$41,943,549	$43,691,614	$45,395,959	$46,885,415	$49,108,527	$49,985,651	$50,883,899	$51,804,040	$52,744,636
Scenario E	$25,711,520	$40,090,076	$41,842,313	$43,551,476	$45,046,430	$47,275,759	$48,159,861	$49,065,891	$50,125,655	$51,241,998