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Attachment C

SUMMARY OF RESOLVE INPUTS AND OUTPUTS

CPUC IRP 2017-18 - Proposed Reference System Plan Results
Last Updated: 09/17/2017

This workbook contains a summary of the key inputs and outputs for the CPUC IRP RESOLVE modeling results released in conjunction with the Proposed Reference System Plan in September 2017. The purpose of this workbook is to provide a convenient overview of key inputs and outputs of the RESOLVE cases in one file. All the data presented in this workbook are also available in other tools published as part of the RESOLVE model package. For more detailed information on inputs and outputs, please refer to those tools as well as the RESOLVE documentation files. The entire RESOLVE package, including documentation files, are available at: http://cpuc.ca.gov/irp/proposedrsp/.

Tab	Description
inputs	*This tab contains key input assumptions used in each of the cases. It is derived from the Scenario_Settings tab of the RESOLVE_User_Interface tool. All assumptions that differ from those in the default 50% RPS case are highlighted in yellow.*
outputs	*This tab contains key output metrics results from each of the cases. It is derived from the Scenario Comparison tab of the RESOLVE_Results_Viewer tool (after loading all of the cases).*

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	99mmt_Ref_20170831	99mmt_Ref_2x_aaee_20170831	99mmt_Ref_mid_aaee_20170831	99mmt_Ref_high_btmpv_20170831	99mmt_Ref_low_btmpv_20170831	99mmt_Ref_flexev_20170831
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_Reference	Default 50% RPS_High EE	Default 50% RPS_Low EE	Default 50% RPS_High BTM PV	Default 50% RPS_Low BTM PV	Default 50% RPS_Flexible EVs
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	High
EV Charging Flexibility	Low	Low	Low	Low	Low	High
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	99mmt_Ref_high_pvcost_20170831	99mmt_Ref_low_pvcost_20170831	99mmt_Ref_high_storagecost_20170831	99mmt_Ref_low_storagecost_20170831	99mmt_Ref_no_taxcredits_20170831	99mmt_Ref_25yr_gasretirement_20170831
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_High PV Cost	Default 50% RPS_Low PV Cost	Default 50% RPS_High Battery Cost	Default 50% RPS_Low Battery Cost	Default 50% RPS_No Tax Credits	Default 50% RPS_Gas Retirements
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	High	Mid	Low	Mid	Mid
Lithium Ion Batteries	Mid	Mid	High	Mid	Low	Mid
Flow Batteries	Mid	Mid	High	Mid	Low	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 25 years
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	99mmt_Ref_chp_retirement_20170831	99mmt_Ref_flex_challenged_20170831	99mmt_Ref_high_load_20170831	99mmt_Ref_high_localneed_20170831	99mmt_Ref_low_convdr_20170831	99mmt_Ref_low_tou_20170831
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_CHP Retirement	Default 50% RPS_Flex Challenged	Default 50% RPS_High Load	Default 50% RPS_High Local Need	Default 50% RPS_Low DR	Default 50% RPS_Low TOU
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - Alt1	CARB Scoping Plan - Alt1	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Low	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	1	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	0	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Low	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	2500	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 10 years
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	99mmt_Ref_mid_tou_20170831	99mmt_Ref_ratemix1_20170831	99mmt_Ref_no_curtail_20170831	99mmt_Ref_high_der_20170831	99mmt_Ref_high_buildelect_20170831	99mmt_Ref_hydrogen_20170831
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_Mid TOU	Default 50% RPS_Rate Mix 1	Default 50% RPS_Zero Curtailment	Default 50% RPS_High DER	Default 50% RPS_High BE	Default 50% RPS_Hydrogen
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	CARB Scoping Plan - Alt1	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	Mid (MRW S4)	Low (Christensen S3)	Rate Mix 1	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	0
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	High	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	99mmt_Ref_low_exports_20170831	42mmt_Ref_20170831	42mmt_Ref_2x_aaee_20170831	42mmt_Ref_mid_aaee_20170831	42mmt_Ref_high_btmpv_20170831	42mmt_Ref_low_btmpv_20170831
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_Hydrogen	42 MMT_Reference	42 MMT_High EE	42 MMT_Low EE	42 MMT_High BTM PV	42 MMT_Low BTM PV
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx & WY/NM Wind
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	High	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Low	High	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	6	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind					
Quantity (MW)	1500					
Year	2018					
Resource 2						
Resource ID	Wyoming_Wind					
Quantity (MW)	1500					
Year	2018					
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	42mmt_Ref_flexev_20170831	42mmt_Ref_high_pvcost_20170831	42mmt_Ref_low_pvcost_20170831	42mmt_Ref_high_storagecost_20170831	42mmt_Ref_low_storagecost_20170831	42mmt_Ref_no_taxcredits_20170831
How referenced in Proposed Reference System Plan slides:	42 MMT_Flexible EVs	42 MMT_High PV Cost	42 MMT_Low PV Cost	42 MMT_High Battery Cost	42 MMT_Low Battery Cost	42 MMT_No Tax Credits
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	High
EV Charging Flexibility	Low	Low	Low	Low	Low	High
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	i2mmt_Ref_25yr_gasretirement_2017083	42mmt_Ref_chp_retirement_20170831	42mmt_Ref_flex_challenged_20170831	42mmt_Ref_high_load_20170831	42mmt_Ref_high_localneed_20170831	42mmt_Ref_low_convdr_20170831
How referenced in Proposed Reference System Plan slides:	42 MMT_Gas Retirements	42 MMT_CHP Retirement	42 MMT_Flex Challenged	42 MMT_High Load	42 MMT_High Local Need	42 MMT_Low DR
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	High	Mid	Low	Mid	Mid
Lithium Ion Batteries	Mid	Mid	High	Mid	Low	Mid
Flow Batteries	Mid	Mid	High	Mid	Low	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 25 years
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	42mmt_Ref_low_tou_20170831	42mmt_Ref_mid_tou_20170831	42mmt_Ref_ratemix1_20170831	42mmt_Ref_no_curtail_20170831	42mmt_Ref_high_der_20170831	42mmt_Ref_high_buildelect_20170831
How referenced in Proposed Reference System Plan slides:	42 MMT_Low TOU	42 MMT_Mid TOU	42 MMT_Rate Mix 1	42 MMT_Zero Curtailment	42 MMT_High DER	42 MMT_High BE
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - Alt1	CARB Scoping Plan - Alt1	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Low	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	1	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	0	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Low	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	2500	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 10 years
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	42mmt_Ref_hydrogen_20170831	42mmt_Ref_low_exports_20170831	30mmt_Ref_20170831	30mmt_Ref_2x_aaee_20170831	30mmt_Ref_mid_aaee_20170831	30mmt_Ref_high_btmpv_20170831
How referenced in Proposed Reference System Plan slides:	42 MMT_Hydrogen	42 MMT_Hydrogen	30 MMT_Reference	30 MMT_High EE	30 MMT_Low EE	30 MMT_High BTM PV
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	CARB Scoping Plan - Alt1	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	Mid (MRW S4)	Low (Christensen S3)	Rate Mix 1	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	0
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	High	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Ref_low_btmpv_20170831	30mmt_Ref_flexev_20170831	30mmt_Ref_high_pvcost_20170831	30mmt_Ref_low_pvcost_20170831	30mmt_Ref_high_storagecost_20170831	30mmt_Ref_low_storagecost_20170831
How referenced in Proposed Reference System Plan slides:	30 MMT_Low BTM PV	30 MMT_Flexible EVs	30 MMT_High PV Cost	30 MMT_Low PV Cost	30 MMT_High Battery Cost	30 MMT_Low Battery Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx & WY/NM Wind
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	High	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Low	High	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	6	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind					
Quantity (MW)	1500					
Year	2018					
Resource 2						
Resource ID	Wyoming_Wind					
Quantity (MW)	1500					
Year	2018					
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Ref_no_taxcredits_20170831	30mmt_Ref_25yr_gasretirement_20170831	30mmt_Ref_chp_retirement_20170831	30mmt_Ref_flex_challenged_20170831	30mmt_Ref_high_load_20170831	30mmt_Ref_high_localneed_20170831
How referenced in Proposed Reference System Plan slides:	30 MMT_No Tax Credits	30 MMT_Gas Retirements	30 MMT_CHP Retirement	30 MMT_Flex Challenged	30 MMT_High Load	30 MMT_High Local Need
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	High
EV Charging Flexibility	Low	Low	Low	Low	Low	High
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs						
Case name in RESOLVE User Interface and Results Viewer:	**30mmt_Ref_low_convdr_20170831**	**30mmt_Ref_low_tou_20170831**	**30mmt_Ref_mid_tou_20170831**	**30mmt_Ref_ratemix1_20170831**	**30mmt_Ref_no_curtail_20170831**	**30mmt_Ref_high_der_20170831**
How referenced in Proposed Reference System Plan slides:	30 MMT_Low DR	30 MMT_Low TOU	30 MMT_Mid TOU	30 MMT_Rate Mix 1	30 MMT_Zero Curtailment	30 MMT_High DER
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	High	Mid	Low	Mid	Mid
Lithium Ion Batteries	Mid	Mid	High	Mid	Low	Mid
Flow Batteries	Mid	Mid	High	Mid	Low	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 25 years
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Ref_high_buildelect_20170831	30mmt_Ref_hydrogen_20170831	30mmt_Ref_low_exports_20170831	30mmt_Ref_early_ooswind_20170831	42mmt_Ref_early_ooswind_20170831	99mmt_Ref_early_ooswind_20170831
How referenced in Proposed Reference System Plan slides:	30 MMT_High BE	30 MMT_Hydrogen	30 MMT_Hydrogen	Resource Study_OOS Wind_Default 50% RPS_Earlier Wind	Resource Study_OOS Wind_42 MMT_Earlier Wind	Resource Study_OOS Wind_30 MMT_Earlier Wind
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - Alt1	CARB Scoping Plan - Alt1	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Low	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	1	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	0	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Low	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	2500	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 10 years
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_20170831	42mmt_OOSWind_20170831	99mmt_OOSWind_20170831	30mmt_OOSWind_2x_aaee_20170831	42mmt_OOSWind_2x_aaee_20170831	99mmt_OOSWind_2x_aaee_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Reference	Resource Study_OOS Wind_42 MMT_Reference	Resource Study_OOS Wind_30 MMT_Reference	Resource Study_OOS Wind_Default 50% RPS_High EE	Resource Study_OOS Wind_42 MMT_High EE	Resource Study_OOS Wind_30 MMT_High EE
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	CARB Scoping Plan - Alt1	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	Mid (MRW S4)	Low (Christensen S3)	Rate Mix 1	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	0
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	High	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_mid_aaee_20170831	42mmt_OOSWind_mid_aaee_20170831	99mmt_OOSWind_mid_aaee_20170831	30mmt_OOSWind_high_btmpv_20170831	42mmt_OOSWind_high_btmpv_20170831	99mmt_OOSWind_high_btmpv_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Low EE	Resource Study_OOS Wind_42 MMT_Low EE	Resource Study_OOS Wind_30 MMT_Low EE	Resource Study_OOS Wind_Default 50% RPS_High BTM PV	Resource Study_OOS Wind_42 MMT_High BTM PV	Resource Study_OOS Wind_30 MMT_High BTM PV
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx & WY/NM Wind
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	High	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Low	High	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	6	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind					
Quantity (MW)	1500					
Year	2018					
Resource 2						
Resource ID	Wyoming_Wind					
Quantity (MW)	1500					
Year	2018					
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_low_btmpv_20170831	42mmt_OOSWind_low_btmpv_20170831	99mmt_OOSWind_low_btmpv_20170831	30mmt_OOSWind_flexev_20170831	42mmt_OOSWind_flexev_20170831	99mmt_OOSWind_flexev_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Low BTM PV	Resource Study_OOS Wind_42 MMT_Low BTM PV	Resource Study_OOS Wind_30 MMT_Low BTM PV	Resource Study_OOS Wind_Default 50% RPS_Flexible EVs	Resource Study_OOS Wind_42 MMT_Flexible EVs	Resource Study_OOS Wind_30 MMT_Flexible EVs
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	High
EV Charging Flexibility	Low	Low	Low	Low	Low	High
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 2						
Resource ID	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs						
Case name in RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_high_pvcost_20170831	42mmt_OOSWind_high_pvcost_20170831	99mmt_OOSWind_high_pvcost_20170831	30mmt_OOSWind_low_pvcost_20170831	42mmt_OOSWind_low_pvcost_20170831	99mmt_OOSWind_low_pvcost_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_High PV Cost	Resource Study_OOS Wind_42 MMT_High PV Cost	Resource Study_OOS Wind_30 MMT_High PV Cost	Resource Study_OOS Wind_Default 50% RPS_Low PV Cost	Resource Study_OOS Wind_42 MMT_Low PV Cost	Resource Study_OOS Wind_30 MMT_Low PV Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	High	Mid	Low	Mid	Mid
Lithium Ion Batteries	Mid	Mid	High	Mid	Low	Mid
Flow Batteries	Mid	Mid	High	Mid	Low	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 25 years
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 2						
Resource ID	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	mmt_OOSWind_high_storagecost_201708	mmt_OOSWind_high_storagecost_201708	mmt_OOSWind_high_storagecost_201708	mmt_OOSWind_low_storagecost_201708	mmt_OOSWind_low_storagecost_201708	mmt_OOSWind_low_storagecost_201708
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_High Battery Cost	Resource Study_OOS Wind_42 MMT_High Battery Cost	Resource Study_OOS Wind_30 MMT_High Battery Cost	Resource Study_OOS Wind_Default 50% RPS_Low Battery Cost	Resource Study_OOS Wind_42 MMT_Low Battery Cost	Resource Study_OOS Wind_30 MMT_Low Battery Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	0	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 2						
Resource ID	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	0mmt_OOSWind_no_taxcredits_2017083	2mmt_OOSWind_no_taxcredits_2017083	9mmt_OOSWind_no_taxcredits_2017083	mt_OOSWind_25yr_gasretirement_2017(	mt_OOSWind_25yr_gasretirement_2017(	mt_OOSWind_25yr_gasretirement_2017(
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_No Tax Credits	Resource Study_OOS Wind_42 MMT_No Tax Credits	Resource Study_OOS Wind_30 MMT_No Tax Credits	Resource Study_OOS Wind_Default 50% RPS_Gas Retirements	Resource Study_OOS Wind_42 MMT_Gas Retirements	Resource Study_OOS Wind_30 MMT_Gas Retirements
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	High	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	High	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	High	Mid	Low	Mid
Lithium Ion Batteries	Mid	Mid	Mid	High	Mid	Low
Flow Batteries	Mid	Mid	Mid	High	Mid	Low
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 2						
Resource ID	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_high_buildelect_201708	42mmt_OOSWind_high_buildelect_201708	30mmt_OOSWind_high_buildelect_201708	30mmt_PS_20170831	42mmt_PS_20170831	99mmt_PS_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_High BE	Resource Study_OOS Wind_42 MMT_High BE	Resource Study_OOS Wind_30 MMT_High BE	Resource Study_Pumped Storage_Default 50% RPS_Reference	Resource Study_Pumped Storage_42 MMT_Reference	Resource Study_Pumped Storage_30 MMT_Reference
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	0	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	Retirement after 25 years	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 2						
Resource ID	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_PS_2x_aaee_20170831	42mmt_PS_2x_aaee_20170831	99mmt_PS_2x_aaee_20170831	30mmt_PS_mid_aaee_20170831	42mmt_PS_mid_aaee_20170831	99mmt_PS_mid_aaee_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_High EE	Resource Study_Pumped Storage_42 MMT_High EE	Resource Study_Pumped Storage_30 MMT_High EE	Resource Study_Pumped Storage_Default 50% RPS_Low EE	Resource Study_Pumped Storage_42 MMT_Low EE	Resource Study_Pumped Storage_30 MMT_Low EE
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	High	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	High	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	High	Mid	Low
Lithium Ion Batteries	Mid	Mid	Mid	Mid	High	Mid
Flow Batteries	Mid	Mid	Mid	Mid	High	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 2						
Resource ID	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind
Quantity (MW)	1500	1500	1500	1500	1500	1500
Year	2026	2026	2026	2026	2026	2026
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_PS_high_btmpv_20170831	42mmt_PS_high_btmpv_20170831	99mmt_PS_high_btmpv_20170831	30mmt_PS_low_btmpv_20170831	42mmt_PS_low_btmpv_20170831	99mmt_PS_low_btmpv_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_High BTM PV	Resource Study_Pumped Storage_42 MMT_High BTM PV	Resource Study_Pumped Storage_30 MMT_High BTM PV	Resource Study_Pumped Storage_Default 50% RPS_Low BTM PV	Resource Study_Pumped Storage_42 MMT_Low BTM PV	Resource Study_Pumped Storage_30 MMT_Low BTM PV
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Low	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Low	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	0	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	Retirement after 25 years	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	New_Mexico_Wind	New_Mexico_Wind	New_Mexico_Wind	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage
Quantity (MW)	1500	1500	1500	1000	1000	1000
Year	2026	2026	2026	2022	2022	2022
Resource 2						
Resource ID	Wyoming_Wind	Wyoming_Wind	Wyoming_Wind			
Quantity (MW)	1500	1500	1500			
Year	2026	2026	2026			
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_PS_flexev_20170831	42mmt_PS_flexev_20170831	99mmt_PS_flexev_20170831	30mmt_PS_high_pvcost_20170831	42mmt_PS_high_pvcost_20170831	99mmt_PS_high_pvcost_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_Flexible EVs	Resource Study_Pumped Storage_42 MMT_Flexible EVs	Resource Study_Pumped Storage_30 MMT_Flexible EVs	Resource Study_Pumped Storage_Default 50% RPS_High PV Cost	Resource Study_Pumped Storage_42 MMT_High PV Cost	Resource Study_Pumped Storage_30 MMT_High PV Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	High	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	High	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	High	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	High
Flow Batteries	Mid	Mid	Mid	Mid	Mid	High
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs						
Case name in RESOLVE User Interface and Results Viewer:	**30mmt_PS_low_pvcost_20170831**	**42mmt_PS_low_pvcost_20170831**	**99mmt_PS_low_pvcost_20170831**	**30mmt_PS_high_storagecost_20170831**	**42mmt_PS_high_storagecost_20170831**	**99mmt_PS_high_storagecost_20170831**
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_Low PV Cost	Resource Study_Pumped Storage_42 MMT_Low PV Cost	Resource Study_Pumped Storage_30 MMT_Low PV Cost	Resource Study_Pumped Storage_Default 50% RPS_High Battery Cost	Resource Study_Pumped Storage_42 MMT_High Battery Cost	Resource Study_Pumped Storage_30 MMT_High Battery Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Low	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Low	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Low	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	0	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	Retirement after 25 years	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_PS_low_storagecost_20170831	42mmt_PS_low_storagecost_20170831	99mmt_PS_low_storagecost_20170831	30mmt_PS_no_taxcredits_20170831	42mmt_PS_no_taxcredits_20170831	99mmt_PS_no_taxcredits_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_Low Battery Cost	Resource Study_Pumped Storage_42 MMT_Low Battery Cost	Resource Study_Pumped Storage_30 MMT_Low Battery Cost	Resource Study_Pumped Storage_Default 50% RPS_No Tax Credits	Resource Study_Pumped Storage_42 MMT_No Tax Credits	Resource Study_Pumped Storage_30 MMT_No Tax Credits
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	High	Mid	Mid
EV Charging Flexibility	Low	Low	Low	High	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	High
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_PS_25yr_gasretirement_20170831	42mmt_PS_25yr_gasretirement_20170831	99mmt_PS_25yr_gasretirement_20170831	30mmt_PS_high_buildelect_20170831	42mmt_PS_high_buildelect_20170831	99mmt_PS_high_buildelect_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_Gas Retirements	Resource Study_Pumped Storage_42 MMT_Gas Retirements	Resource Study_Pumped Storage_30 MMT_Gas Retirements	Resource Study_Pumped Storage_Default 50% RPS_High BE	Resource Study_Pumped Storage_42 MMT_High BE	Resource Study_Pumped Storage_30 MMT_High BE
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Low	Mid	Mid	Mid	Mid
Lithium Ion Batteries	High	Mid	Low	Mid	Mid	Mid
Flow Batteries	High	Mid	Low	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	0	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	Retirement after 25 years	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Geo_20170831	42mmt_Geo_20170831	99mmt_Geo_20170831	30mmt_Geo_2x_aaee_20170831	42mmt_Geo_2x_aaee_20170831	99mmt_Geo_2x_aaee_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_Reference	Resource Study_Geothermal_42 MMT_Reference	Resource Study_Geothermal_30 MMT_Reference	Resource Study_Geothermal_Default 50% RPS_High EE	Resource Study_Geothermal_42 MMT_High EE	Resource Study_Geothermal_30 MMT_High EE
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	High	Mid
EV Charging Flexibility	Low	Low	Low	Low	High	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Geo_mid_aaee_20170831	42mmt_Geo_mid_aaee_20170831	99mmt_Geo_mid_aaee_20170831	30mmt_Geo_high_btmpv_20170831	42mmt_Geo_high_btmpv_20170831	99mmt_Geo_high_btmpv_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_Low EE	Resource Study_Geothermal_42 MMT_Low EE	Resource Study_Geothermal_30 MMT_Low EE	Resource Study_Geothermal_Default 50% RPS_High BTM PV	Resource Study_Geothermal_42 MMT_High BTM PV	Resource Study_Geothermal_30 MMT_High BTM PV
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	High	Mid	Low	Mid	Mid	Mid
Lithium Ion Batteries	Mid	High	Mid	Low	Mid	Mid
Flow Batteries	Mid	High	Mid	Low	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	0
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 25 years	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage	CAISO_New_Pumped_Storage
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Geo_low_btmpv_20170831	42mmt_Geo_low_btmpv_20170831	99mmt_Geo_low_btmpv_20170831	30mmt_Geo_flexev_20170831	42mmt_Geo_flexev_20170831	99mmt_Geo_flexev_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_Low BTM PV	Resource Study_Geothermal_42 MMT_Low BTM PV	Resource Study_Geothermal_30 MMT_Low BTM PV	Resource Study_Geothermal_Default 50% RPS_Flexible EVs	Resource Study_Geothermal_42 MMT_Flexible EVs	Resource Study_Geothermal_30 MMT_Flexible EVs
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	High
EV Charging Flexibility	Low	Low	Low	Low	Low	High
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs						
Case name in RESOLVE User Interface and Results Viewer:	**30mmt_Geo_high_pvcost_20170831**	**42mmt_Geo_high_pvcost_20170831**	**99mmt_Geo_high_pvcost_20170831**	**30mmt_Geo_low_pvcost_20170831**	**42mmt_Geo_low_pvcost_20170831**	**99mmt_Geo_low_pvcost_20170831**
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_High PV Cost	Resource Study_Geothermal_42 MMT_High PV Cost	Resource Study_Geothermal_30 MMT_High PV Cost	Resource Study_Geothermal_Default 50% RPS_Low PV Cost	Resource Study_Geothermal_42 MMT_Low PV Cost	Resource Study_Geothermal_30 MMT_Low PV Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	High	Mid	Low	Mid	Mid
Lithium Ion Batteries	Mid	Mid	High	Mid	Low	Mid
Flow Batteries	Mid	Mid	High	Mid	Low	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 25 years
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Geo_high_storagecost_20170831	42mmt_Geo_high_storagecost_20170831	99mmt_Geo_high_storagecost_20170831	30mmt_Geo_low_storagecost_20170831	42mmt_Geo_low_storagecost_20170831	99mmt_Geo_low_storagecost_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_High Battery Cost	Resource Study_Geothermal_42 MMT_High Battery Cost	Resource Study_Geothermal_30 MMT_High Battery Cost	Resource Study_Geothermal_Default 50% RPS_Low Battery Cost	Resource Study_Geothermal_42 MMT_Low Battery Cost	Resource Study_Geothermal_30 MMT_Low Battery Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	0	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Geo_no_taxcredits_20170831	42mmt_Geo_no_taxcredits_20170831	99mmt_Geo_no_taxcredits_20170831	0mmt_Geo_25yr_gasretirement_2017083	2mmt_Geo_25yr_gasretirement_2017083	9mmt_Geo_25yr_gasretirement_2017083
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_No Tax Credits	Resource Study_Geothermal_42 MMT_No Tax Credits	Resource Study_Geothermal_30 MMT_No Tax Credits	Resource Study_Geothermal_Default 50% RPS_Gas Retirements	Resource Study_Geothermal_42 MMT_Gas Retirements	Resource Study_Geothermal_30 MMT_Gas Retirements
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	High	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	High	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	High	Mid	Low	Mid
Lithium Ion Batteries	Mid	Mid	Mid	High	Mid	Low
Flow Batteries	Mid	Mid	Mid	High	Mid	Low
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Geo_high_buildelect_20170831	42mmt_Geo_high_buildelect_20170831	99mmt_Geo_high_buildelect_20170831	60rps_Ref_20170831	70rps_Ref_20170831	80rps_Ref_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_High BE	Resource Study_Geothermal_42 MMT_High BE	Resource Study_Geothermal_30 MMT_High BE	Other Study_60% RPS_Reference	Other Study_70% RPS_Reference	Other Study_80% RPS_Reference
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	0	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	Retirement after 25 years	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Ref_high_exports_20170831	42mmt_Ref_high_exports_20170831	99mmt_Ref_high_exports_20170831	30mmt_Ref_high_carbonprice_20170831	42mmt_Ref_high_carbonprice_20170831	99mmt_Ref_high_carbonprice_20170831
How referenced in Proposed Reference System Plan slides:	Other Study_Default 50% RPS_High Export Limit	Other Study_42 MMT_High Export Limit	Other Study_30 MMT_High Export Limit	Other Study_Default 50% RPS_High Carbon Price	Other Study_42 MMT_High Carbon Price	Other Study_30 MMT_High Carbon Price
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	High	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	High	Low	Low	Low	Low
Allow Shift DR?	0	0	0	0	0	0
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	High	Mid	Low
Lithium Ion Batteries	Mid	Mid	Mid	Mid	High	Mid
Flow Batteries	Mid	Mid	Mid	Mid	High	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal
Quantity (MW)	1000	1000	1000	1000	1000	1000
Year	2022	2022	2022	2022	2022	2022
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_Ref_6h_ps_20170831	42mmt_Ref_6h_ps_20170831	99mmt_Ref_6h_ps_20170831	nmt_Ref_unconstrained_ooswind_20170	nmt_Ref_unconstrained_ooswind_20170	nmt_Ref_unconstrained_ooswind_20170
How referenced in Proposed Reference System Plan slides:	Other Study_Default 50% RPS_Short Dur Pmpd St	Other Study_42 MMT_Short Dur Pmpd St	Other Study_30 MMT_Short Dur Pmpd St	Other Study_Default 50% RPS_Unconstrained OOS W	Other Study_42 MMT_Unconstrained OOS W	Other Study_30 MMT_Unconstrained OOS W
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	0	0	0	1	1	1
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Low	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Low	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	0	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	Retirement after 25 years	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal	Greater_Imperial_Geothermal			
Quantity (MW)	1000	1000	1000			
Year	2022	2022	2022			
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_ShiftDR_20170831	42mmt_ShiftDR_20170831	99mmt_ShiftDR_20170831	30mmt_ShiftDR_2x_aaee_20170831	42mmt_ShiftDR_2x_aaee_20170831	99mmt_ShiftDR_2x_aaee_20170831
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_Reference	Other Study_Shift DR_42 MMT_Reference	Other Study_Shift DR_30 MMT_Reference	Other Study_Shift DR_Default 50% RPS_High EE	Other Study_Shift DR_42 MMT_High EE	Other Study_Shift DR_30 MMT_High EE
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	High	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	High	Low	Low	Low
Allow Shift DR?	1	1	1	1	1	1
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Very Large	Very Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	High	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	High
Flow Batteries	Mid	Mid	Mid	Mid	Mid	High
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_ShiftDR_mid_aaee_20170831	42mmt_ShiftDR_mid_aaee_20170831	99mmt_ShiftDR_mid_aaee_20170831	30mmt_ShiftDR_high_btmpv_20170831	42mmt_ShiftDR_high_btmpv_20170831	99mmt_ShiftDR_high_btmpv_20170831
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_Low EE	Other Study_Shift DR_42 MMT_Low EE	Other Study_Shift DR_30 MMT_Low EE	Other Study_Shift DR_Default 50% RPS_High BTM PV	Other Study_Shift DR_42 MMT_High BTM PV	Other Study_Shift DR_30 MMT_High BTM PV
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE (x2)
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	1	1	1	1	1	1
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Very Large	Very Large	Very Large	Very Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Low	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Low	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Low	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	0	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	Retirement after 25 years	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_ShiftDR_low_btmpv_20170831	42mmt_ShiftDR_low_btmpv_20170831	99mmt_ShiftDR_low_btmpv_20170831	30mmt_ShiftDR_flexev_20170831	42mmt_ShiftDR_flexev_20170831	99mmt_ShiftDR_flexev_20170831
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_Low BTM PV	Other Study_Shift DR_42 MMT_Low BTM PV	Other Study_Shift DR_30 MMT_Low BTM PV	Other Study_Shift DR_Default 50% RPS_Flexible EVs	Other Study_Shift DR_42 MMT_Flexible EVs	Other Study_Shift DR_30 MMT_Flexible EVs
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	High	Mid	Mid
EV Charging Flexibility	Low	Low	Low	High	Low	Low
Allow Shift DR?	1	1	1	1	1	1
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	Large
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	High
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_ShiftDR_high_pvcost_20170831	42mmt_ShiftDR_high_pvcost_20170831	99mmt_ShiftDR_high_pvcost_20170831	30mmt_ShiftDR_low_pvcost_20170831	42mmt_ShiftDR_low_pvcost_20170831	99mmt_ShiftDR_low_pvcost_20170831
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_High PV Cost	Other Study_Shift DR_42 MMT_High PV Cost	Other Study_Shift DR_30 MMT_High PV Cost	Other Study_Shift DR_Default 50% RPS_Low PV Cost	Other Study_Shift DR_42 MMT_Low PV Cost	Other Study_Shift DR_30 MMT_Low PV Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	1	1	1	1	1	1
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	Large	Large	Large	Large	Large	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Low	Mid	Mid	Mid	Mid
Lithium Ion Batteries	High	Mid	Low	Mid	Mid	Mid
Flow Batteries	High	Mid	Low	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	0	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	Retirement after 25 years	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	0mmt_ShiftDR_high_storagecost_2017083	2mmt_ShiftDR_high_storagecost_2017083	3mmt_ShiftDR_high_storagecost_2017083	0mmt_ShiftDR_low_storagecost_2017083	2mmt_ShiftDR_low_storagecost_2017083	9mmt_ShiftDR_low_storagecost_2017083
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_High Battery Cost	Other Study_Shift DR_42 MMT_High Battery Cost	Other Study_Shift DR_30 MMT_High Battery Cost	Other Study_Shift DR_Default 50% RPS_Low Battery Cost	Other Study_Shift DR_42 MMT_Low Battery Cost	Other Study_Shift DR_30 MMT_Low Battery Cost
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CARB Scoping Plan - Alt1
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - High PV	CEC 2016 IEPR - Low PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE (x2)	CEC 2016 IEPR - Mid AAEE	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	High	Mid
EV Charging Flexibility	Low	Low	Low	Low	High	Low
Allow Shift DR?	1	1	1	1	1	1
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	Mid	Mid	Mid	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	1
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs

Case name in RESOLVE User Interface and Results Viewer:	30mmt_ShiftDR_no_taxcredits_20170831	42mmt_ShiftDR_no_taxcredits_20170831	99mmt_ShiftDR_no_taxcredits_20170831	nmt_ShiftDR_25yr_gasretirement_20170	mmt_ShiftDR_25yr_gasretirement_20170	mmt_ShiftDR_25yr_gasretirement_20170
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_No Tax Credits	Other Study_Shift DR_42 MMT_No Tax Credits	Other Study_Shift DR_30 MMT_No Tax Credits	Other Study_Shift DR_Default 50% RPS_Gas Retirements	Other Study_Shift DR_42 MMT_Gas Retirements	Other Study_Shift DR_30 MMT_Gas Retirements
Load Assumptions						
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low	Low	Low	Low
Allow Shift DR?	1	1	1	1	1	1
Renewables						
RPS Target	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030	50% by 2030
GHG Target	None	None	None	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs						
Fuel Prices	Mid	Mid	Mid	Mid	Mid	Mid
Carbon Prices	Low	Low	Low	Low	Low	Low
Solar	High	Mid	Low	Mid	Mid	Mid
Lithium Ion Batteries	Mid	High	Mid	Low	Mid	Mid
Flow Batteries	Mid	High	Mid	Low	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1	1	1	0
Discount Rate	5%	5%	5%	5%	5%	5%
Financing Years Post Final Year	20	20	20	20	20	20
Operations						
Simultaneous Flow Limits	Mid	Mid	Mid	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%	100%	100%	100%
Min Gen Commitment (MW)	0	0	0	0	0	0
Other Sensitivities						
Local Capacity Needs	Low	Low	Low	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12	12	12	12
Allow Pumped Storage Build	1	1	1	1	1	1
Allow Battery Storage Build	1	1	1	1	1	1
Allow New Gas Build	1	1	1	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement	No early retirement	Retirement after 25 years	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement	No early retirement
Specified Resources						
Resource 1						
Resource ID						
Quantity (MW)						
Year						
Resource 2						
Resource ID						
Quantity (MW)						
Year						
Resource 3						
Resource ID						
Quantity (MW)						
Year						

RESOLVE User Interface Dashboard Inputs			
Case name in RESOLVE User Interface and Results Viewer:	0mmt_ShiftDR_high_buildelect_2017083	2mmt_ShiftDR_high_buildelect_2017083	9mmt_ShiftDR_high_buildelect_2017083
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_High BE	Other Study_Shift DR_42 MMT_High BE	Other Study_Shift DR_30 MMT_High BE
Load Assumptions			
Electric Vehicle Adoption	CARB Scoping Plan - SP	CARB Scoping Plan - SP	CARB Scoping Plan - SP
Building Electrification	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand	CEC 2016 IEPR - Mid Demand
Hydrogen	No Hydrogen	No Hydrogen	No Hydrogen
Behind-the-meter PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV	CEC 2016 IEPR - Mid PV
Energy Efficiency	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802	CEC 2016 IEPR - Mid AAEE + AB802
Existing Shed DR	Mid	Mid	Mid
TOU Adjustment	High (MRW S4 x1.5)	High (MRW S4 x1.5)	High (MRW S4 x1.5)
Workplace Charger Availability	Mid	Mid	Mid
EV Charging Flexibility	Low	Low	Low
Allow Shift DR?	0	0	0
Renewables			
RPS Target	60% by 2030	70% by 2030	80% by 2030
GHG Target	None	None	None
Environmental Screen for Resource Potential	DRECP/SJV	DRECP/SJV	DRECP/SJV
Banking	Specified Bank Redemption	Specified Bank Redemption	Specified Bank Redemption
Allow Curtailment	1	1	1
Out-Of-State Resource Screen	Existing Tx Only	Existing Tx Only	Existing Tx Only
Costs			
Fuel Prices	Mid	Mid	Mid
Carbon Prices	Low	Low	Low
Solar	Mid	Mid	Mid
Lithium Ion Batteries	Mid	Mid	Mid
Flow Batteries	Mid	Mid	Mid
Enable ITC/PTC (if not enabled, will expire early)	1	1	1
Discount Rate	5%	5%	5%
Financing Years Post Final Year	20	20	20
Operations			
Simultaneous Flow Limits	Mid	Mid	Mid
2030 Load Following Reserves	50% High Solar	50% High Solar	50% High Solar
Max. Fraction of Load Following Down met by Renewables	100%	100%	100%
Min Gen Commitment (MW)	0	0	0
Other Sensitivities			
Local Capacity Needs	Low	Low	Low
Coal Flexibility	Dispatchable	Dispatchable	Dispatchable
Storage Mandate Case	1325 MW by 2024	1325 MW by 2024	1325 MW by 2024
Minimum Pumped Storage Duration	12	12	12
Allow Pumped Storage Build	1	1	1
Allow Battery Storage Build	1	1	1
Allow New Gas Build	1	1	1
Retirement Date Diablo Unit 1	12/31/2024	12/31/2024	12/31/2024
Retirement Date Diablo Unit 2	12/31/2025	12/31/2025	12/31/2025
Gas Retirement (excl. CHP)	No early retirement	No early retirement	No early retirement
CHP Retirement	No early retirement	No early retirement	No early retirement
Specified Resources			
Resource 1			
Resource ID			
Quantity (MW)			
Year			
Resource 2			
Resource ID			
Quantity (MW)			
Year			
Resource 3			
Resource ID			
Quantity (MW)			
Year			

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		99mmt_Ref_2017083 1	99mmt_Ref_2x_aaee_201708	99mmt_Ref_mid_aaee_20170	99mmt_Ref_high_btmpv_201	99mmt_Ref_low_btmpv_201	99mmt_Ref_flexev_20170831	99mmt_Ref_high_pvcost_201	99mmt_Ref_low_pvcost_201	99mmt_Ref_high_storagecost	99mmt_Ref_low_storagecost	99mmt_Ref_no_taxcredits_20	99mmt_Ref_25yr_gasretiremen	99mmt_Ref_chp_retirement_	99mmt_Ref_flex_challenged_	99mmt_Ref_high_load_20170
How referenced in Proposed Reference System Plan slides:		Default 50% RPS_Reference	Default 50% RPS_High EE	Default 50% RPS_Low EE	Default 50% RPS_High BTM PV	Default 50% RPS_Low BTM PV	Default 50% RPS_Flexible EVs	Default 50% RPS_High PV Cost	Default 50% RPS_Low PV Cost	Default 50% RPS_High Battery Cost	Default 50% RPS_Low Battery Cost	Default 50% RPS_No Tax Credits	Default 50% RPS_Gas Retirements	Default 50% RPS_CHP Retirement	Default 50% RPS_Flex Challenged	Default 50% RPS_High Load
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 668,656	$ 668,219	$ 670,054	$ 665,532	$ 674,047	$ 667,550	$ 668,884	$ 667,927	$ 673,091	$ 664,998	$ 669,812	$ 674,548	$ 667,273	$ 669,796	$ 682,718
PV Total Resource Cost	*$MM*	$ 740,793	$ 742,811	$ 739,323	$ 748,702	$ 728,463	$ 739,687	$ 744,821	$ 736,082	$ 745,227	$ 737,134	$ 741,948	$ 746,684	$ 739,409	$ 741,932	$ 734,267
Levelized Revenue Requirement	*$MM*	$ 39,795	$ 39,769	$ 39,878	$ 39,609	$ 40,115	$ 39,729	$ 39,808	$ 39,751	$ 40,059	$ 39,577	$ 39,863	$ 40,145	$ 39,712	$ 39,862	$ 40,632
Levelized Total Resource Cost	*$MM*	$ 44,088	$ 44,208	$ 44,000	$ 44,559	$ 43,354	$ 44,022	$ 44,328	$ 43,807	$ 44,352	$ 43,870	$ 44,157	$ 44,438	$ 44,005	$ 44,156	$ 43,699
Levelized Average Rate	*cts/kWh*	19.8	20.2	19.2	20.2	19.3	19.8	19.8	19.8	19.9	19.7	19.8	20.0	19.8	19.8	18.4
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 40,832	$ 40,778	$ 40,951	$ 40,549	$ 41,316	$ 40,717	$ 40,848	$ 40,784	$ 41,123	$ 40,569	$ 40,971	$ 41,504	$ 40,727	$ 40,919	$ 42,203
Total Resource Cost	*$MM*	$ 46,076	$ 46,233	$ 45,959	$ 46,810	$ 44,931	$ 45,961	$ 46,464	$ 45,655	$ 46,367	$ 45,813	$ 46,215	$ 46,748	$ 45,971	$ 46,163	$ 45,582
Average Rate	*cts/kWh*	20.6	21.4	19.8	21.2	19.8	20.6	20.6	20.6	20.8	20.5	20.7	21.0	20.6	20.7	18.3
Greenhouse Gas Emissions	*MMtCO2*	42.5	40.8	44.4	41.2	44.2	42.1	42.6	42.2	42.7	42.3	42.6	40.9	41.8	41.0	49.2
Effective RPS (incl. banked RECs)	*% of Retail Sales*	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	51%	50%	50%	50%
Renewable Curtailment	*% of RPS Gen.*	2.7%	3.1%	2.6%	3.7%	1.8%	2.4%	2.6%	3.5%	3.0%	2.6%	2.5%	3.1%	2.5%	4.6%	1.7%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	299	146	299	299	299	276	299	-	299	299	146	826	299	942	299
Solar	*MW*	3,078	2,178	4,617	2,193	4,817	2,994	3,023	3,641	3,175	3,041	3,149	3,532	2,997	3,100	8,442
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	807	752	881	955	455	518	820	746	-	2,804	830	8,637	643	1,131	794
Pumped Storage	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**3,356**	**2,324**	**3,356**	**2,493**	**3,356**	**3,270**	**3,322**	**3,056**	**3,356**	**3,341**	**3,295**	**4,358**	**3,296**	**3,937**	**5,797**
Out-Of-State Renewables	*MW*	**22**	**-**	**1,561**	**-**	**1,761**	**-**	**-**	**584**	**119**	**-**	**-**	**-**	**-**	**106**	**2,944**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	-	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	13,075	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	8,493	8,340	8,493	8,493	8,493	8,470	8,493	8,194	8,493	8,493	8,340	9,020	8,493	9,136	8,493
Solar	*MW*	15,928	15,028	17,467	15,044	17,667	15,844	15,873	16,491	16,026	15,892	15,999	16,382	15,847	15,950	21,292
Customer Solar	*MW*	15,941	15,941	15,941	20,091	9,289	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	9,289
Battery Storage	*MW*	2,132	2,077	2,206	2,280	1,780	1,843	2,145	2,071	1,325	4,129	2,155	9,962	1,968	2,456	2,119
Pumped Storage	*MW*	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	3,703	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**40,688**	**39,657**	**40,688**	**43,976**	**34,036**	**40,603**	**40,655**	**40,389**	**40,688**	**40,673**	**40,627**	**41,690**	**40,629**	**41,269**	**36,478**
Out-Of-State Renewables	*MW*	**2,085**	**2,064**	**3,624**	**2,064**	**3,824**	**2,064**	**2,064**	**2,648**	**2,183**	**2,064**	**2,064**	**2,064**	**2,064**	**2,169**	**5,007**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	99mmt_Ref_20170831	99mmt_Ref_2x_aaee_201708	99mmt_Ref_mid_aaee_20170	99mmt_Ref_high_btmpv_201	99mmt_Ref_low_btmpv_201	99mmt_Ref_flexev_20170831	99mmt_Ref_high_pvcost_201	99mmt_Ref_low_pvcost_201	99mmt_Ref_high_storagecost	99mmt_Ref_low_storagecost	99mmt_Ref_notaxcredits_20	99mmt_Ref_25yr_gasretiremen	99mmt_Ref_chp_retirement_	99mmt_Ref_flex_challenged_	99mmt_Ref_high_load_20170
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_Reference	Default 50% RPS_High EE	Default 50% RPS_Low EE	Default 50% RPS_High BTM PV	Default 50% RPS_Low BTM PV	Default 50% RPS_Flexible EVs	Default 50% RPS_High PV Cost	Default 50% RPS_Low PV Cost	Default 50% RPS_High Battery Cost	Default 50% RPS_Low Battery Cost	Default 50% RPS_No Tax Credits	Default 50% RPS_Gas Retirements	Default 50% RPS_CHP Retirement	Default 50% RPS_Flex Challenged	Default 50% RPS_High Load

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	-	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	24,867	24,953	24,857	24,892	24,736	24,753	24,747	25,037	24,728	24,866	24,648	24,805	25,013	24,885	24,694
Gas	GWh	73,011	68,486	77,732	68,024	79,536	70,746	72,856	72,881	74,879	66,501	72,911	45,739	85,568	66,874	88,414
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	106,304	103,064	110,578	110,643	99,568	106,292	106,156	106,941	106,453	106,340	106,067	109,412	106,385	106,729	110,094
Storage Losses	GWh	(1,097)	(1,162)	(1,106)	(1,223)	(930)	(1,038)	(1,044)	(1,268)	(918)	(1,504)	(1,006)	(2,420)	(1,075)	(1,239)	(1,000)
Curtailment	GWh	(649)	(658)	(665)	(1,117)	(157)	(344)	(637)	(732)	(774)	(509)	(648)	(298)	(329)	(1,969)	(218)
Imports	GWh	28,722	28,724	29,016	30,017	26,856	29,630	29,080	28,080	27,601	33,904	29,250	48,165	29,795	30,719	30,801
Exports	GWh	(8,608)	(8,237)	(8,634)	(8,983)	(6,830)	(7,318)	(8,752)	(8,096)	(9,383)	(7,356)	(8,965)	(3,168)	(7,703)	(4,554)	(7,442)
Load	GWh	242,474	234,958	251,716	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	265,208

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 1,320	$ 566	$ 971	$ 950	$ 963	$ 963	$ 963	$ 1,248	$ 766	$ 963	$ 963	$ 963	$ 963	$ 553
New Renewables Fixed Costs	$MM	$ 462	$ 316	$ 658	$ 343	$ 683	$ 448	$ 473	$ 427	$ 475	$ 458	$ 586	$ 609	$ 452	$ 567	$ 1,162
New Storage Fixed Costs	$MM	$ 53	$ 49	$ 57	$ 62	$ 30	$ 34	$ 53	$ 49	$ -	$ 99	$ 54	$ 810	$ 42	$ 74	$ 52
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 74	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Operating Costs	$MM	$ 6,154	$ 5,893	$ 6,470	$ 5,973	$ 6,453	$ 6,073	$ 6,159	$ 6,146	$ 6,201	$ 6,047	$ 6,168	$ 5,849	$ 6,070	$ 6,116	$ 7,237
Total Revenue Requirement	**$MM**	**$ 40,832**	**$ 40,778**	**$ 40,951**	**$ 40,549**	**$ 41,316**	**$ 40,717**	**$ 40,848**	**$ 40,784**	**$ 41,123**	**$ 40,569**	**$ 40,971**	**$ 41,504**	**$ 40,727**	**$ 40,919**	**$ 42,203**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,456	$ 5,008	$ 6,261	$ 3,615	$ 5,244	$ 5,617	$ 4,871	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 3,379
Total Resource Cost	**$MM**	**$ 46,076**	**$ 46,233**	**$ 45,959**	**$ 46,810**	**$ 44,931**	**$ 45,961**	**$ 46,464**	**$ 45,655**	**$ 46,367**	**$ 45,813**	**$ 46,215**	**$ 46,748**	**$ 45,971**	**$ 46,163**	**$ 45,582**
Total Retail Sales	GWh	197,882	190,917	206,446	190,899	209,073	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	230,141
Average Rate (cts/kWh)	**cts/kWh**	**20.6**	**21.4**	**19.8**	**21.2**	**19.8**	**20.6**	**20.6**	**20.6**	**20.8**	**20.5**	**20.7**	**21.0**	**20.6**	**20.7**	**18.3**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 5,310	$ 5,033	$ 5,611	$ 5,073	$ 5,639	$ 5,131	$ 5,301	$ 5,317	$ 5,452	$ 4,864	$ 5,309	$ 3,651	$ 5,127	$ 4,985	$ 6,223
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 1,611	$ 1,613	$ 1,627	$ 1,680	$ 1,508	$ 1,660	$ 1,630	$ 1,576	$ 1,549	$ 1,903	$ 1,639	$ 2,716	$ 1,675	$ 1,718	$ 1,735
Market Revenues	$MM	$ (414)	$ (400)	$ (415)	$ (428)	$ (339)	$ (365)	$ (420)	$ (394)	$ (448)	$ (365)	$ (428)	$ (159)	$ (378)	$ (233)	$ (367)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (353)	$ (353)	$ (353)	$ (353)	$ (354)	$ (353)	$ (353)	$ (353)	$ (352)	$ (354)	$ (352)	$ (359)	$ (353)	$ (354)	$ (354)
Total CAISO Operating Cost	**$MM**	**$ 6,154**	**$ 5,893**	**$ 6,470**	**$ 5,973**	**$ 6,453**	**$ 6,073**	**$ 6,159**	**$ 6,146**	**$ 6,201**	**$ 6,047**	**$ 6,168**	**$ 5,849**	**$ 6,070**	**$ 6,116**	**$ 7,237**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	46%	45%	46%	45%	46%	46%	46%	46%	46%	46%	46%	47%	46%	46%	46%
Banked RECs	% of Retail Sales	4%	5%	4%	5%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	51%	50%	50%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	2%	2%	1%	2%	1%	1%	1%	2%	2%	1%	1%	0%	1%	3%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	3%	3%	3%	4%	2%	2%	3%	4%	3%	3%	2%	3%	2%	5%	2%
Marginal RPS Cost	$/MWh	$ 13	$ 9	$ 14	$ 12	$ 10	$ 10	$ 16	$ 4	$ 14	$ 10	$ 21	$ -	$ 9	$ 20	$ 14
RPS Renewables excl. Pipeline Biogas	GWh	85,448	82,208	89,722	82,252	90,788	85,436	85,299	86,085	85,596	85,484	85,210	88,556	85,529	85,872	101,314
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	99mmt_Ref_20170831	99mmt_Ref_2x_aaee_201708	99mmt_Ref_mid_aaee_20170	99mmt_Ref_high_btmpv_201	99mmt_Ref_low_btmpv_201	99mmt_Ref_flexev_20170831	99mmt_Ref_high_pvcost_201	99mmt_Ref_low_pvcost_201	99mmt_Ref_high_storagecost	99mmt_Ref_low_storagecost	99mmt_Ref_no_taxcredits_20	99mmt_Ref_25yr_gasretireme	99mmt_Ref_chp_retirement_	99mmt_Ref_flex_challenged_	99mmt_Ref_high_load_20170
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_Reference	Default 50% RPS_High EE	Default 50% RPS_Low EE	Default 50% RPS_High BTM PV	Default 50% RPS_Low BTM PV	Default 50% RPS_Flexible EVs	Default 50% RPS_High PV Cost	Default 50% RPS_Low PV Cost	Default 50% RPS_High Battery Cost	Default 50% RPS_Low Battery Cost	Default 50% RPS_No Tax Credits	Default 50% RPS_Gas Retirements	Default 50% RPS_CHP Retirement	Default 50% RPS_Flex Challenged	Default 50% RPS_High Load

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAISO Generator Emissions	MMtCO2	33.0	31.3	34.7	31.1	35.5	32.2	32.9	33.0	33.7	30.6	32.9	23.1	31.8	30.7	38.8
Import Emissions	MMtCO2	9.5	9.5	9.6	10.0	8.7	9.9	9.6	9.2	9.0	11.7	9.7	17.8	10.0	10.3	10.4
Total CAISO Emissions	MMtCO2	42.5	40.8	44.4	41.2	44.2	42.1	42.6	42.2	42.7	42.3	42.6	40.9	41.8	41.0	49.2
Marginal GHG Cost	$/tCO2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total WECC Emissions	MMtCO2	201	199	203	199	203	201	201	201	201	201	201	200	201	201	208

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	43,567	47,287	45,624	45,624	45,058	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	49,368
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	50,102	54,380	52,468	52,468	51,816	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	56,774
Firm Capacity	MW	38,148	38,148	38,148	38,148	38,148	38,148	38,148	38,148	38,148	38,148	38,148	27,816	36,463	38,148	38,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	3,359	3,345	3,377	3,396	3,271	3,286	3,362	3,344	3,157	3,919	3,364	6,950	3,318	3,440	3,356
Variable Renewable ELCC	MW	7,802	7,453	8,019	7,829	7,735	7,696	7,801	7,729	7,803	7,801	7,758	7,810	7,800	7,802	8,230
Total Available Capacity	MW	59,199	58,836	59,435	59,264	59,045	59,022	59,202	59,111	58,999	59,759	59,162	52,468	57,472	59,281	59,624
Actual Reserve Margin	%	30%	35%	26%	30%	29%	31%	30%	30%	29%	31%	30%	15%	26%	30%	21%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	29%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		99mmt_Ref_high_localneed_	99mmt_Ref_low_convdr_201	99mmt_Ref_low_tou_201708	99mmt_Ref_mid_tou_201708	99mmt_Ref_ramix1_201708	99mmt_Ref_noc_curtail_20170	99mmt_Ref_high_der_201708	99mmt_Ref_high_buildelect_	99mmt_Ref_hydrogen_20170	99mmt_Ref_low_exports_201	42mmt_Ref_20170831	42mmt_Ref_2x_aaee_201708	42mmt_Ref_mid_aaee_20170	42mmt_Ref_high_btmpv_201	42mmt_Ref_low_btmpv_201
How referenced in Proposed Reference System Plan slides:		Default 50% RPS_High Local Need	Default 50% RPS_Low DR	Default 50% RPS_Low TOU	Default 50% RPS_Mid TOU	Default 50% RPS_Rate Mix 1	Default 50% RPS_Zero Curtailment	Default 50% RPS_High DER	Default 50% RPS_High BE	Default 50% RPS_Hydrogen	Default 50% RPS_Hydrogen	42 MMT_Reference	42 MMT_High EE	42 MMT_Low EE	42 MMT_High BTM PV	42 MMT_Low BTM PV
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 669,208	$ 667,922	$ 668,778	$ 668,718	$ 665,223	$ 682,531	$ 665,415	$ 675,602	$ 677,404	$ 669,424	$ 672,666	$ 670,758	$ 676,263	$ 668,992	$ 678,920
PV Total Resource Cost	*$MM*	$ 741,344	$ 740,212	$ 740,914	$ 740,855	$ 737,359	$ 754,667	$ 751,041	$ 747,738	$ 749,540	$ 741,561	$ 744,802	$ 745,350	$ 745,532	$ 752,163	$ 733,336
Levelized Revenue Requirement	*$MM*	$ 39,827	$ 39,751	$ 39,802	$ 39,798	$ 39,590	$ 40,620	$ 39,602	$ 40,208	$ 40,315	$ 39,840	$ 40,033	$ 39,920	$ 40,247	$ 39,815	$ 40,405
Levelized Total Resource Cost	*$MM*	$ 44,121	$ 44,053	$ 44,095	$ 44,091	$ 43,883	$ 44,914	$ 44,698	$ 44,501	$ 44,608	$ 44,133	$ 44,326	$ 44,359	$ 44,370	$ 44,764	$ 43,644
Levelized Average Rate	*cts/kWh*	19.8	19.8	19.8	19.8	20.1	20.2	20.6	19.4	19.0	19.8	19.9	20.3	19.4	20.3	19.4
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 40,882	$ 40,766	$ 40,840	$ 40,836	$ 40,615	$ 42,092	$ 40,530	$ 41,566	$ 41,752	$ 40,900	$ 41,150	$ 40,975	$ 41,534	$ 40,838	$ 41,709
Total Resource Cost	*$MM*	$ 46,126	$ 46,024	$ 46,084	$ 46,080	$ 45,859	$ 47,336	$ 47,003	$ 46,810	$ 46,996	$ 46,144	$ 46,394	$ 46,431	$ 46,543	$ 47,100	$ 45,324
Average Rate	*cts/kWh*	20.7	20.6	20.6	20.6	20.9	21.3	22.0	19.8	19.1	20.7	20.8	21.5	20.1	21.4	19.9
Greenhouse Gas Emissions	*MMtCO2*	42.5	42.5	42.5	42.5	41.6	41.0	39.8	45.3	45.0	40.9	34.0	34.0	34.0	34.0	34.0
Effective RPS (incl. banked RECs)	*% of Retail Sales*	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	59%	57%	61%	57%	62%
Renewable Curtailment	*% of RPS Gen.*	2.7%	2.7%	2.7%	2.7%	3.0%	1.8%	3.9%	2.7%	1.1%	4.0%	5.4%	4.8%	5.4%	6.4%	4.4%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	-	-	-	-	-	1,008	-	-	-	-	202	-	937	167	253
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	299	299	299	299	146	789	223	299	146	299	1,145	984	1,645	1,145	1,145
Solar	*MW*	3,078	3,078	3,090	3,084	2,681	-	1,238	5,258	6,763	3,507	8,828	6,419	9,816	6,811	12,535
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	807	807	824	812	770	11,770	913	938	-	1,079	1,992	1,569	2,164	2,052	1,852
Pumped Storage	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**3,356**	**3,356**	**3,356**	**3,356**	**2,827**	**1,797**	**1,461**	**3,356**	**3,965**	**3,294**	**7,169**	**4,398**	**8,891**	**5,116**	**10,926**
Out-Of-State Renewables	*MW*	**22**	**22**	**34**	**28**	**-**	**-**	**-**	**2,201**	**2,944**	**513**	**3,006**	**3,006**	**3,506**	**3,006**	**3,006**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	1,220	1,220	1,220	1,220	1,220	2,228	1,220	1,220	1,220	1,220	1,422	1,220	2,157	1,387	1,473
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	8,493	8,493	8,493	8,493	8,340	8,983	8,417	8,493	8,340	8,493	9,338	9,178	9,838	9,338	9,338
Solar	*MW*	15,928	15,928	15,940	15,934	15,532	12,850	14,088	18,108	19,613	16,357	21,678	19,269	22,666	19,661	25,385
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	20,091	15,941	15,941	15,941	15,941	15,941	15,941	20,091	9,289
Battery Storage	*MW*	2,132	2,132	2,149	2,137	2,095	13,095	2,238	2,263	1,325	2,404	3,317	2,894	3,489	3,377	3,177
Pumped Storage	*MW*	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832
Shed DR	*MW*	3,252	1,119	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	10,343	-	-	-	-	-	-
In-State Renewables	*MW*	**40,688**	**40,688**	**40,688**	**40,688**	**40,160**	**39,129**	**42,944**	**40,688**	**41,298**	**40,626**	**44,501**	**41,730**	**46,223**	**46,599**	**41,606**
Out-Of-State Renewables	*MW*	**2,085**	**2,085**	**2,097**	**2,091**	**2,064**	**2,064**	**2,064**	**4,265**	**5,007**	**2,576**	**5,069**	**5,069**	**5,569**	**5,069**	**5,069**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	99mmt_Ref_high_localneed_	99mmt_Ref_low_convdr_201	99mmt_Ref_low_tou_201708	99mmt_Ref_mid_tou_201708	99mmt_Ref_ramix1_201708	99mmt_Ref_noc_curtail_20170	99mmt_Ref_high_der_201708	99mmt_Ref_high_buildelect_	99mmt_Ref_hydrogen_20170	99mmt_Ref_low_exports_201	42mmt_Ref_20170831	42mmt_Ref_2x_aaee_201708	42mmt_Ref_mid_aaee_20170	42mmt_Ref_high_btmpv_201	42mmt_Ref_low_btmpv_201
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_High Local Need	Default 50% RPS_Low DR	Default 50% RPS_Low TOU	Default 50% RPS_Mid TOU	Default 50% RPS_Rate Mix 1	Default 50% RPS_Zero Curtailment	Default 50% RPS_High DER	Default 50% RPS_High BE	Default 50% RPS_Hydrogen	Default 50% RPS_Hydrogen	42 MMT_Reference	42 MMT_High EE	42 MMT_Low EE	42 MMT_High BTM PV	42 MMT_Low BTM PV

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	24,889	24,865	24,872	24,852	24,940	24,346	24,922	24,796	24,250	24,819	25,044	24,919	25,096	25,129	24,978
Gas	GWh	73,011	73,011	73,103	73,147	70,904	66,307	64,323	77,379	83,848	67,013	65,162	62,040	65,822	65,378	64,509
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	106,304	106,304	106,339	106,321	104,633	106,098	107,452	112,297	116,918	106,594	124,898	116,504	134,576	125,677	124,632
Storage Losses	GWh	(1,097)	(1,097)	(1,101)	(1,099)	(1,143)	(1,574)	(1,220)	(1,126)	(681)	(1,194)	(1,846)	(1,629)	(1,918)	(1,918)	(1,735)
Curtailment	GWh	(649)	(649)	(649)	(649)	(648)	-	(1,102)	(732)	(3)	(1,541)	(2,293)	(1,648)	(2,652)	(2,777)	(1,866)
Imports	GWh	28,722	28,722	28,660	28,616	28,458	31,300	30,040	31,545	24,992	30,408	16,286	18,968	15,699	16,128	16,833
Exports	GWh	(8,608)	(8,608)	(8,600)	(8,618)	(8,445)	(4,412)	(9,030)	(8,832)	(4,361)	(4,301)	(5,397)	(4,374)	(5,799)	(6,065)	(5,178)
Load	GWh	242,474	242,474	242,549	242,510	238,503	242,474	235,558	255,366	265,126	242,474	242,474	234,958	251,716	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 897	$ 963	$ 963	$ 963	$ 963	$ 1,328	$ 963	$ 963	$ 963	$ 963	$ 1,320	$ 566	$ 971	$ 950
New Renewables Fixed Costs	$MM	$ 462	$ 462	$ 464	$ 463	$ 384	$ 801	$ 202	$ 739	$ 911	$ 516	$ 1,475	$ 999	$ 2,246	$ 1,181	$ 2,054
New Storage Fixed Costs	$MM	$ 53	$ 53	$ 54	$ 53	$ 50	$ 1,222	$ 60	$ 61	$ -	$ 70	$ 140	$ 105	$ 153	$ 145	$ 129
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ 50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Operating Costs	$MM	$ 6,154	$ 6,154	$ 6,160	$ 6,158	$ 6,018	$ 5,906	$ 5,741	$ 6,603	$ 6,679	$ 6,150	$ 5,373	$ 5,352	$ 5,370	$ 5,342	$ 5,376
Total Revenue Requirement	**$MM**	**$ 40,882**	**$ 40,766**	**$ 40,840**	**$ 40,836**	**$ 40,615**	**$ 42,092**	**$ 40,530**	**$ 41,566**	**$ 41,752**	**$ 40,900**	**$ 41,150**	**$ 40,975**	**$ 41,534**	**$ 40,838**	**$ 41,709**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,258	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 6,473	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,456	$ 5,008	$ 6,261	$ 3,615
Total Resource Cost	**$MM**	**$ 46,126**	**$ 46,024**	**$ 46,084**	**$ 46,080**	**$ 45,859**	**$ 47,336**	**$ 47,003**	**$ 46,810**	**$ 46,996**	**$ 46,144**	**$ 46,394**	**$ 46,431**	**$ 46,543**	**$ 47,100**	**$ 45,324**
Total Retail Sales	GWh	197,882	197,882	197,951	197,915	194,202	197,882	184,490	209,829	218,873	197,882	197,882	190,917	206,446	190,899	209,073
Average Rate (cts/kWh)	**cts/kWh**	**20.7**	**20.6**	**20.6**	**20.6**	**20.9**	**21.3**	**22.0**	**19.8**	**19.1**	**20.7**	**20.8**	**21.5**	**20.1**	**21.4**	**19.9**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 5,310	$ 5,310	$ 5,318	$ 5,319	$ 5,181	$ 4,782	$ 4,841	$ 5,609	$ 5,864	$ 5,028	$ 5,074	$ 4,861	$ 5,122	$ 5,090	$ 5,030
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 1,611	$ 1,611	$ 1,609	$ 1,606	$ 1,598	$ 1,721	$ 1,682	$ 1,769	$ 1,406	$ 1,698	$ 889	$ 1,041	$ 855	$ 879	$ 921
Market Revenues	$MM	$ (414)	$ (414)	$ (414)	$ (415)	$ (408)	$ (242)	$ (430)	$ (423)	$ (236)	$ (222)	$ (240)	$ (198)	$ (257)	$ (277)	$ (224)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (353)	$ (353)	$ (353)	$ (353)	$ (353)	$ (356)	$ (353)	$ (353)	$ (354)	$ (354)	$ (351)	$ (353)	$ (350)	$ (350)	$ (351)
Total CAISO Operating Cost	**$MM**	**$ 6,154**	**$ 6,154**	**$ 6,160**	**$ 6,158**	**$ 6,018**	**$ 5,906**	**$ 5,741**	**$ 6,603**	**$ 6,679**	**$ 6,150**	**$ 5,373**	**$ 5,352**	**$ 5,370**	**$ 5,342**	**$ 5,376**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	46%	46%	46%	46%	45%	46%	45%	46%	46%	46%	54%	52%	57%	53%	57%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	5%	4%	5%	4%	4%	4%	4%	5%	4%	5%	4%
Effective RPS (with banked RECs)	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	59%	57%	61%	57%	62%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	2%	2%	1%	1%	2%	0%	2%	1%	0%	3%	4%	3%	4%	5%	3%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	3%	3%	3%	3%	3%	2%	4%	3%	1%	4%	5%	5%	5%	6%	4%
Marginal RPS Cost	$/MWh	$ 13	$ 13	$ 13	$ 13	$ 10	$ 61	$ 10	$ 15	$ 8	$ 17	$ -	$ -	$ -	$ -	$ -
RPS Renewables excl. Pipeline Biogas	GWh	85,448	85,448	85,482	85,465	83,777	85,241	79,061	91,440	96,061	85,738	104,042	95,647	113,719	97,286	115,852
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	99mmt_Ref_high_localneed_	99mmt_Ref_low_convdr_201	99mmt_Ref_low_tou_201708	99mmt_Ref_mid_tou_201708	99mmt_Ref_ramix1_201708	99mmt_Ref_no_curtail_20170	99mmt_Ref_high_der_201708	99mmt_Ref_high_buildelect_	99mmt_Ref_hydrogen_20170	99mmt_Ref_low_exports_201	42mmt_Ref_20170831	42mmt_Ref_2x_aaee_201708	42mmt_Ref_mid_aaee_20170	42mmt_Ref_high_btmpv_201	42mmt_Ref_low_btmpv_201
How referenced in Proposed Reference System Plan slides:	Default 50% RPS_High Local Need	Default 50% RPS_Low DR	Default 50% RPS_Low TOU	Default 50% RPS_Mid TOU	Default 50% RPS_Rate Mix 1	Default 50% RPS_Zero Curtailment	Default 50% RPS_High DER	Default 50% RPS_High BE	Default 50% RPS_Hydrogen	Default 50% RPS_Hydrogen	42 MMT_Reference	42 MMT_High EE	42 MMT_Low EE	42 MMT_High BTM PV	42 MMT_Low BTM PV

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	-	-	-	-	-	-	-	-	-	-	34.0	34.0	34.0	34.0	34.0
CAISO Generator Emissions	MMtCO2	33.0	33.0	33.0	33.0	32.2	30.4	29.7	34.6	37.1	30.7	29.9	28.7	30.1	29.9	29.6
Import Emissions	MMtCO2	9.5	9.5	9.5	9.4	9.4	10.6	10.1	10.7	7.9	10.2	4.2	5.3	3.9	4.1	4.4
Total CAISO Emissions	MMtCO2	42.5	42.5	42.5	42.5	41.6	41.0	39.8	45.3	45.0	40.9	34.0	34.0	34.0	34.0	34.0
Marginal GHG Cost	$/tCO2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 121	$ 80	$ 134	$ 124	$ 118
Total WECC Emissions	MMtCO2	201	201	201	201	200	201	198	204	205	201	194	194	194	194	194

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	46,479	45,962	45,624	45,624	43,641	47,631	45,624	45,624	45,624	43,567	47,287	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	53,451	52,857	52,468	52,468	50,187	54,776	52,468	52,468	52,468	50,102	54,380	52,468	52,468
Firm Capacity	MW	39,648	37,514	38,148	38,148	38,148	39,001	38,148	38,148	38,148	38,148	38,310	38,148	38,939	38,281	38,350
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	3,359	3,359	3,363	3,360	3,350	8,157	3,385	3,391	3,157	3,427	3,718	3,569	3,771	3,738	3,674
Variable Renewable ELCC	MW	7,802	7,802	7,947	7,859	7,783	7,712	7,523	8,046	7,785	7,809	7,881	7,547	8,085	7,888	7,820
Total Available Capacity	MW	60,699	58,565	59,349	59,258	59,172	64,761	58,947	59,477	58,981	59,275	59,799	59,155	60,686	59,798	59,735
Actual Reserve Margin	%	33%	28%	28%	29%	30%	42%	35%	25%	29%	30%	31%	36%	28%	31%	31%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	31%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	1,500.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ 25	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		42mmt_Ref_flexev_20170831	42mmt_Ref_high_pvcost_201	42mmt_Ref_low_pvcost_201	42mmt_Ref_high_storagecost	42mmt_Ref_low_storagecost	42mmt_Ref_no_taxcredits_20	42mmt_Ref_25yr_gasretirem	42mmt_Ref_chp_retirement_	42mmt_Ref_flex_challenged_	42mmt_Ref_high_load_20170	42mmt_Ref_high_localneed_	42mmt_Ref_low_convdr_201	42mmt_Ref_low_tou_201708	42mmt_Ref_mid_tou_201708	42mmt_Ref_rate mix1_201708
How referenced in Proposed Reference System Plan slides:		42 MMT_Flexible EVs	42 MMT_High PV Cost	42 MMT_Low PV Cost	42 MMT_High Battery Cost	42 MMT_Low Battery Cost	42 MMT_No Tax Credits	42 MMT_Gas Retirements	42 MMT_CHP Retirement	42 MMT_Flex Challenged	42 MMT_High Load	42 MMT_High Local Need	42 MMT_Low DR	42 MMT_Low TOU	42 MMT_Mid TOU	42 MMT_Rate Mix 1
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 670,870	$ 673,418	$ 670,331	$ 677,600	$ 668,503	$ 675,068	$ 676,715	$ 669,919	$ 675,345	$ 694,662	$ 673,191	$ 671,931	$ 672,797	$ 672,730	$ 668,373
PV Total Resource Cost	*$MM*	$ 743,006	$ 749,355	$ 738,485	$ 749,737	$ 740,640	$ 747,205	$ 748,851	$ 742,056	$ 747,481	$ 746,211	$ 745,327	$ 744,222	$ 744,933	$ 744,866	$ 740,509
Levelized Revenue Requirement	*$MM*	$ 39,926	$ 40,078	$ 39,894	$ 40,327	$ 39,786	$ 40,176	$ 40,274	$ 39,870	$ 40,193	$ 41,342	$ 40,065	$ 39,990	$ 40,041	$ 40,037	$ 39,778
Levelized Total Resource Cost	*$MM*	$ 44,220	$ 44,597	$ 43,950	$ 44,620	$ 44,079	$ 44,469	$ 44,567	$ 44,163	$ 44,486	$ 44,410	$ 44,358	$ 44,292	$ 44,334	$ 44,330	$ 44,071
Levelized Average Rate	*cts/kWh*	19.9	19.9	19.8	20.1	19.8	20.0	20.0	19.8	20.0	18.7	19.9	19.9	19.9	19.9	20.2
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 40,962	$ 41,233	$ 40,953	$ 41,513	$ 40,834	$ 41,560	$ 41,646	$ 40,918	$ 41,505	$ 43,499	$ 41,192	$ 41,084	$ 41,159	$ 41,154	$ 40,852
Total Resource Cost	*$MM*	$ 46,206	$ 46,849	$ 45,824	$ 46,757	$ 46,078	$ 46,804	$ 46,890	$ 46,162	$ 46,749	$ 46,878	$ 46,436	$ 46,342	$ 46,403	$ 46,398	$ 46,096
Average Rate	*cts/kWh*	20.7	20.8	20.7	21.0	20.6	21.0	21.0	20.7	21.0	18.9	20.8	20.8	20.8	20.8	21.0
Greenhouse Gas Emissions	*MMtCO2*	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Effective RPS (incl. banked RECs)	*% of Retail Sales*	58%	59%	60%	59%	59%	59%	61%	58%	57%	66%	59%	59%	59%	59%	58%
Renewable Curtailment	*% of RPS Gen.*	4.4%	5.0%	6.1%	5.9%	4.3%	5.2%	4.1%	4.1%	7.2%	4.2%	5.3%	5.4%	5.4%	5.4%	5.1%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	-	424	-	424	-	295	744	-	995	2,000	172	202	207	205	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	1,145	1,145	1,105	1,351	1,145	1,145	1,145	984	1,645	3,145	1,145	1,145	1,145	1,145	1,145
Solar	*MW*	8,569	7,961	10,112	8,443	8,982	8,466	8,294	8,388	6,000	14,622	8,887	8,828	8,843	8,837	7,608
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	1,452	1,933	1,933	830	3,943	1,957	7,558	1,557	2,085	2,431	1,930	1,992	2,006	1,994	1,815
Pumped Storage	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**6,708**	**6,524**	**8,211**	**7,006**	**7,121**	**6,900**	**7,176**	**6,366**	**5,134**	**14,701**	**7,198**	**7,169**	**7,188**	**7,181**	**5,747**
Out-Of-State Renewables	*MW*	**3,006**	**3,006**	**3,006**	**3,212**	**3,006**	**3,006**	**3,006**	**3,006**	**3,506**	**5,065**	**3,006**	**3,006**	**3,006**	**3,006**	**3,006**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	-	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	13,075	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	1,220	1,644	1,220	1,644	1,220	1,515	1,964	1,220	2,215	3,220	1,392	1,422	1,427	1,425	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	9,338	9,338	9,299	9,544	9,338	9,338	9,338	9,178	9,838	11,338	9,338	9,338	9,338	9,338	9,338
Solar	*MW*	21,419	20,811	22,962	21,293	21,832	21,316	21,144	21,238	18,850	27,472	21,737	21,678	21,693	21,688	20,459
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	9,289	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	2,777	3,258	3,258	2,155	5,268	3,282	8,883	2,882	3,410	3,756	3,255	3,317	3,331	3,319	3,140
Pumped Storage	*MW*	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	3,966	1,752	1,752	1,752	3,049	1,119	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**44,040**	**43,856**	**45,543**	**44,338**	**44,453**	**44,232**	**44,508**	**43,699**	**42,466**	**45,381**	**44,530**	**44,501**	**44,521**	**44,513**	**43,080**
Out-Of-State Renewables	*MW*	**5,069**	**5,069**	**5,069**	**5,276**	**5,069**	**5,069**	**5,069**	**5,069**	**5,569**	**7,129**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	42mmt_Ref_flexev_20170831	42mmt_Ref_high_pvcost_201	42mmt_Ref_low_pvcost_201	42mmt_Ref_high_storagecost	42mmt_Ref_low_storagecost	42mmt_Ref_no_taxcredits_20	42mmt_Ref_25yr_gasretireme	42mmt_Ref_chp_retirement_	42mmt_Ref_flex_challenged_	42mmt_Ref_high_load_20170	42mmt_Ref_high_localneed_	42mmt_Ref_low_convdr_201	42mmt_Ref_low_tou_201708	42mmt_Ref_mid_tou_201708	42mmt_Ref_rate mix1_201708
How referenced in Proposed Reference System Plan slides:	42 MMT_Flexible EVs	42 MMT_High PV Cost	42 MMT_Low PV Cost	42 MMT_High Battery Cost	42 MMT_Low Battery Cost	42 MMT_No Tax Credits	42 MMT_Gas Retirements	42 MMT_CHP Retirement	42 MMT_Flex Challenged	42 MMT_High Load	42 MMT_High Local Need	42 MMT_Low DR	42 MMT_Low TOU	42 MMT_Mid TOU	42 MMT_Rate Mix 1

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	-	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	24,877	24,994	25,126	24,719	25,396	25,010	25,156	24,932	25,150	25,033	25,086	25,077	25,098	25,076	25,058
Gas	GWh	62,899	65,187	63,071	63,544	62,793	65,145	37,655	72,444	67,251	67,859	65,113	65,162	65,234	65,181	64,016
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	123,406	124,170	126,641	125,714	124,182	124,599	127,860	122,647	122,135	147,911	124,858	124,904	124,973	124,940	120,238
Storage Losses	GWh	(1,600)	(1,779)	(1,926)	(1,644)	(2,073)	(1,815)	(2,467)	(1,562)	(1,953)	(1,986)	(1,851)	(1,852)	(1,847)	(1,846)	(1,747)
Curtailment	GWh	(1,595)	(1,987)	(2,861)	(2,533)	(2,052)	(2,162)	(1,757)	(1,383)	(4,149)	(2,643)	(2,298)	(2,286)	(2,294)	(2,296)	(1,894)
Imports	GWh	18,216	16,249	18,093	17,676	18,338	16,289	39,465	23,851	14,274	13,892	16,332	16,286	16,226	16,265	17,282
Exports	GWh	(3,930)	(4,819)	(6,629)	(5,674)	(4,986)	(5,153)	(4,377)	(3,684)	(2,726)	(5,959)	(5,390)	(5,397)	(5,402)	(5,402)	(4,716)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	265,208	242,474	242,474	242,549	242,510	238,503

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 1,248	$ 766	$ 963	$ 963	$ 963	$ 963	$ 553	$ 963	$ 897	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 1,315	$ 1,542	$ 1,360	$ 1,618	$ 1,370	$ 1,880	$ 1,767	$ 1,264	$ 1,773	$ 4,161	$ 1,464	$ 1,475	$ 1,480	$ 1,478	$ 1,185
New Storage Fixed Costs	$MM	$ 101	$ 136	$ 135	$ 97	$ 187	$ 137	$ 638	$ 102	$ 151	$ 179	$ 152	$ 140	$ 141	$ 140	$ 127
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ 94	$ -	$ -	$ -	$ 39	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Operating Costs	$MM	$ 5,384	$ 5,393	$ 5,295	$ 5,351	$ 5,312	$ 5,381	$ 4,985	$ 5,390	$ 5,419	$ 5,406	$ 5,374	$ 5,373	$ 5,376	$ 5,374	$ 5,378
Total Revenue Requirement	**$MM**	**$ 40,962**	**$ 41,233**	**$ 40,953**	**$ 41,513**	**$ 40,834**	**$ 41,560**	**$ 41,646**	**$ 40,918**	**$ 41,505**	**$ 43,499**	**$ 41,192**	**$ 41,084**	**$ 41,159**	**$ 41,154**	**$ 40,852**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,617	$ 4,871	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 3,379	$ 5,244	$ 5,258	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 46,206**	**$ 46,849**	**$ 45,824**	**$ 46,757**	**$ 46,078**	**$ 46,804**	**$ 46,890**	**$ 46,162**	**$ 46,749**	**$ 46,878**	**$ 46,436**	**$ 46,342**	**$ 46,403**	**$ 46,398**	**$ 46,096**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	230,141	197,882	197,882	197,951	197,915	194,202
Average Rate (cts/kWh)	**cts/kWh**	**20.7**	**20.8**	**20.7**	**21.0**	**20.6**	**21.0**	**21.0**	**20.7**	**21.0**	**18.9**	**20.8**	**20.8**	**20.8**	**20.8**	**21.0**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,914	$ 5,071	$ 4,950	$ 4,978	$ 4,897	$ 5,072	$ 3,320	$ 4,589	$ 5,128	$ 5,258	$ 5,072	$ 5,074	$ 5,080	$ 5,076	$ 4,993
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 995	$ 887	$ 995	$ 979	$ 991	$ 890	$ 2,217	$ 1,321	$ 769	$ 750	$ 893	$ 889	$ 887	$ 889	$ 946
Market Revenues	$MM	$ (173)	$ (215)	$ (299)	$ (254)	$ (223)	$ (230)	$ (197)	$ (167)	$ (127)	$ (254)	$ (240)	$ (240)	$ (240)	$ (240)	$ (210)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (352)	$ (351)	$ (351)	$ (351)	$ (352)	$ (351)	$ (355)	$ (353)	$ (351)	$ (348)	$ (351)	$ (351)	$ (351)	$ (351)	$ (352)
Total CAISO Operating Cost	**$MM**	**$ 5,384**	**$ 5,393**	**$ 5,295**	**$ 5,351**	**$ 5,312**	**$ 5,381**	**$ 4,985**	**$ 5,390**	**$ 5,419**	**$ 5,406**	**$ 5,374**	**$ 5,373**	**$ 5,376**	**$ 5,374**	**$ 5,378**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	54%	54%	55%	55%	55%	54%	56%	54%	53%	62%	54%	54%	54%	54%	53%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	5%
Effective RPS (with banked RECs)	% of Retail Sales	58%	59%	60%	59%	59%	59%	61%	58%	57%	66%	59%	59%	59%	59%	58%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	3%	3%	4%	4%	2%	4%	2%	3%	5%	3%	4%	4%	4%	4%	3%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	4%	5%	6%	6%	4%	5%	4%	4%	7%	4%	5%	5%	5%	5%	5%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
RPS Renewables excl. Pipeline Biogas	GWh	102,549	103,314	105,784	104,857	103,326	103,743	107,003	101,791	101,279	139,131	104,001	104,048	104,117	104,083	99,381
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	42mmt_Ref_flexev_20170831	42mmt_Ref_high_pvcost_201	42mmt_Ref_low_pvcost_201	42mmt_Ref_high_storagecost	42mmt_Ref_low_storagecost	42mmt_Ref_no_taxcredits_20	42mmt_Ref_25yr_gasretirem	42mmt_Ref_chp_retirement_	42mmt_Ref_flex_challenged_	42mmt_Ref_high_load_20170	42mmt_Ref_high_localneed_	42mmt_Ref_low_convdr_201	42mmt_Ref_low_tou_201708	42mmt_Ref_mid_tou_201708	42mmt_Ref_rate mix1_201708
How referenced in Proposed Reference System Plan slides:	42 MMT_Flexible EVs	42 MMT_High PV Cost	42 MMT_Low PV Cost	42 MMT_High Battery Cost	42 MMT_Low Battery Cost	42 MMT_No Tax Credits	42 MMT_Gas Retirements	42 MMT_CHP Retirement	42 MMT_Flex Challenged	42 MMT_High Load	42 MMT_High Local Need	42 MMT_Low DR	42 MMT_Low TOU	42 MMT_Mid TOU	42 MMT_Rate Mix 1

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
CAISO Generator Emissions	MMtCO2	29.0	29.9	29.1	29.3	29.0	29.9	19.9	26.6	30.7	30.9	29.8	29.9	29.9	29.9	29.4
Import Emissions	MMtCO2	5.0	4.2	4.9	4.8	5.0	4.2	14.1	7.4	3.3	3.1	4.2	4.2	4.1	4.2	4.6
Total CAISO Emissions	MMtCO2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Marginal GHG Cost	$/tCO2	$ 86	$ 118	$ 94	$ 125	$ 94	$ 120	$ 74	$ 70	$ 140	$ 188	$ 121	$ 121	$ 121	$ 121	$ 100
Total WECC Emissions	MMtCO2	195	194	193	194	194	194	193	194	195	194	194	194	194	194	194

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,058	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	49,368	45,624	45,624	46,479	45,962	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	51,816	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	56,774	52,468	52,468	53,451	52,857	52,468
Firm Capacity	MW	38,148	38,487	38,148	38,487	38,148	38,384	28,699	36,463	38,990	39,851	39,582	37,676	38,313	38,312	38,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	3,559	3,701	3,693	3,364	4,906	3,706	6,006	3,546	3,772	3,897	3,792	3,718	3,721	3,718	3,663
Variable Renewable ELCC	MW	7,779	7,865	7,881	7,874	7,881	7,874	7,871	7,873	7,826	8,296	7,881	7,881	8,028	7,939	7,894
Total Available Capacity	MW	59,376	59,944	59,613	59,617	60,826	59,856	52,468	57,773	60,480	61,936	61,146	59,165	59,953	59,860	59,596
Actual Reserve Margin	%	32%	31%	31%	31%	33%	31%	15%	27%	33%	25%	34%	30%	29%	30%	31%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ 75	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	31%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	1,500.0	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	204	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	204	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 24	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		42mmt_Ref_no_curtail_20170	42mmt_Ref_high_der_201708	42mmt_Ref_high_buildelect_	42mmt_Ref_hydrogen_20170	42mmt_Ref_low_exports_201	30mmt_Ref_20170831	30mmt_Ref_2x_aaee_201708	30mmt_Ref_mid_aaee_20170	30mmt_Ref_high_btmpv_201	30mmt_Ref_low_btmpv_201	30mmt_Ref_flexev_20170831	30mmt_Ref_high_pvcost_201	30mmt_Ref_low_pvcost_201	30mmt_Ref_high_storagecost	30mmt_Ref_low_storagecost
How referenced in Proposed Reference System Plan slides:		42 MMT_Zero Curtailment	42 MMT_High DER	42 MMT_High BE	42 MMT_Hydrogen	42 MMT_Hydrogen	30 MMT_Reference	30 MMT_High EE	30 MMT_Low EE	30 MMT_High BTM PV	30 MMT_Low BTM PV	30 MMT_Flexible EVs	30 MMT_High PV Cost	30 MMT_Low PV Cost	30 MMT_High Battery Cost	30 MMT_Low Battery Cost
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 691,302	$ 667,605	$ 683,275	$ 682,826	$ 673,731	$ 687,768	$ 683,809	$ 693,884	$ 684,122	$ 694,445	$ 684,366	$ 688,706	$ 684,904	$ 693,361	$ 679,022
PV Total Resource Cost	*$MM*	$ 763,439	$ 753,231	$ 755,412	$ 754,962	$ 745,868	$ 759,904	$ 758,401	$ 763,153	$ 767,293	$ 748,861	$ 756,502	$ 764,643	$ 753,059	$ 765,497	$ 751,159
Levelized Revenue Requirement	*$MM*	$ 41,142	$ 39,732	$ 40,665	$ 40,638	$ 40,097	$ 40,932	$ 40,696	$ 41,296	$ 40,715	$ 41,329	$ 40,730	$ 40,988	$ 40,762	$ 41,265	$ 40,412
Levelized Total Resource Cost	*$MM*	$ 45,436	$ 44,828	$ 44,958	$ 44,931	$ 44,390	$ 45,225	$ 45,136	$ 45,419	$ 45,665	$ 44,568	$ 45,023	$ 45,507	$ 44,818	$ 45,558	$ 44,705
Levelized Average Rate	*cts/kWh*	20.5	20.7	19.6	19.1	19.9	20.4	20.7	19.9	20.7	19.8	20.3	20.4	20.3	20.5	20.1
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 43,110	$ 40,713	$ 42,356	$ 42,256	$ 41,285	$ 42,854	$ 42,439	$ 43,468	$ 42,535	$ 43,473	$ 42,478	$ 42,924	$ 42,638	$ 43,283	$ 42,002
Total Resource Cost	*$MM*	$ 48,354	$ 47,186	$ 47,600	$ 47,500	$ 46,529	$ 48,098	$ 47,894	$ 48,477	$ 48,796	$ 47,088	$ 47,721	$ 48,541	$ 47,510	$ 48,527	$ 47,246
Average Rate	*cts/kWh*	21.8	22.1	20.2	19.3	20.9	21.7	22.2	21.1	22.3	20.8	21.5	21.7	21.5	21.9	21.2
Greenhouse Gas Emissions	*MMtCO2*	34.0	34.0	34.0	34.0	34.0	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
Effective RPS (incl. banked RECs)	*% of Retail Sales*	56%	55%	62%	63%	57%	73%	72%	74%	72%	75%	73%	73%	74%	73%	72%
Renewable Curtailment	*% of RPS Gen.*	2.7%	5.9%	5.1%	3.2%	6.7%	6.4%	6.3%	6.4%	7.1%	5.8%	5.9%	6.2%	7.1%	7.5%	5.5%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	-	1,694	424	424	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	1,700
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	1,331	984	1,645	1,145	1,306	4,775	4,092	4,775	4,694	4,775	4,775	4,775	3,840	4,775	1,645
Solar	*MW*	1,235	4,399	8,983	14,676	7,589	11,121	9,160	14,408	9,134	15,216	10,828	10,888	13,079	11,556	13,616
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	21,430	1,662	2,136	1,571	1,986	3,792	3,417	4,976	3,890	3,749	3,101	3,930	3,516	1,616	8,953
Pumped Storage	*MW*	87	-	-	-	-	1,209	702	1,911	1,261	1,144	790	1,218	1,588	2,524	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**2,531**	**3,979**	**8,816**	**13,239**	**6,151**	**12,847**	**10,204**	**16,134**	**10,779**	**16,941**	**12,554**	**12,614**	**13,870**	**13,281**	**13,454**
Out-Of-State Renewables	*MW*	**2,055**	**1,405**	**3,506**	**3,006**	**3,167**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**3,506**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,220	2,914	1,644	1,644	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	2,920
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	9,525	9,178	9,838	9,338	9,500	12,968	12,286	12,968	12,888	12,968	12,968	12,968	12,033	12,968	9,838
Solar	*MW*	14,085	17,249	21,834	27,527	20,439	23,971	22,011	27,258	21,984	28,066	23,678	23,738	25,929	24,406	26,466
Customer Solar	*MW*	15,941	20,091	15,941	15,941	15,941	15,941	15,941	15,941	20,091	9,289	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	22,755	2,987	3,461	2,896	3,311	5,117	4,742	6,301	5,215	5,074	4,426	5,255	4,841	2,941	10,278
Pumped Storage	*MW*	1,919	1,832	1,832	1,832	1,832	3,041	2,534	3,743	3,093	2,976	2,622	3,050	3,420	4,356	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	10,343	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**39,864**	**45,461**	**46,149**	**50,572**	**43,484**	**50,179**	**47,537**	**53,466**	**52,262**	**47,622**	**49,887**	**49,946**	**51,202**	**50,614**	**50,787**
Out-Of-State Renewables	*MW*	**4,118**	**3,468**	**5,569**	**5,069**	**5,231**	**7,132**	**7,132**	**7,132**	**7,132**	**7,132**	**7,132**	**7,132**	**7,132**	**7,132**	**5,569**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	42mmt_Ref_no_curtail_20170	42mmt_Ref_high_der_201708	42mmt_Ref_high_buildelect_	42mmt_Ref_hydrogen_20170	42mmt_Ref_low_exports_201	30mmt_Ref_20170831	30mmt_Ref_2xaaee_201708	30mmt_Ref_mid_aaee_20170	30mmt_Ref_high_btmpv_201	30mmt_Ref_low_btmpv_201	30mmt_Ref_flexev_20170831	30mmt_Ref_high_pvcost_201	30mmt_Ref_low_pvcost_201	30mmt_Ref_high_storagecost	30mmt_Ref_low_storagecost
How referenced in Proposed Reference System Plan slides:	42 MMT_Zero Curtailment	42 MMT_High DER	42 MMT_High BE	42 MMT_Hydrogen	42 MMT_Hydrogen	30 MMT_Reference	30 MMT_High EE	30 MMT_Low EE	30 MMT_High BTM PV	30 MMT_Low BTM PV	30 MMT_Flexible EVs	30 MMT_High PV Cost	30 MMT_Low PV Cost	30 MMT_High Battery Cost	30 MMT_Low Battery Cost

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	24,789	25,019	25,079	24,404	25,004	25,245	25,148	25,399	25,216	25,238	25,237	25,259	25,293	25,253	25,436
Gas	GWh	75,610	62,531	66,225	63,905	65,688	49,479	49,199	50,170	49,324	50,072	49,636	49,881	48,877	48,926	50,032
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	118,821	117,850	138,083	144,683	121,786	152,948	145,395	161,941	153,834	151,849	152,266	152,503	154,791	154,149	151,412
Storage Losses	GWh	(2,704)	(1,734)	(1,899)	(1,518)	(1,845)	(3,127)	(2,686)	(3,916)	(3,180)	(3,042)	(2,671)	(3,138)	(3,289)	(3,311)	(4,085)
Curtailment	GWh	-	(2,123)	(2,506)	(1,187)	(3,768)	(4,587)	(4,489)	(4,296)	(5,117)	(4,467)	(4,404)	(4,343)	(5,486)	(4,670)	(2,582)
Imports	GWh	6,795	18,566	15,353	17,190	15,833	7,123	7,360	6,547	7,251	6,621	7,007	6,787	7,658	7,699	6,547
Exports	GWh	(1,136)	(5,014)	(5,720)	(2,834)	(2,479)	(7,556)	(7,984)	(6,636)	(8,398)	(6,702)	(7,459)	(7,195)	(9,100)	(7,858)	(5,550)
Load	GWh	242,474	235,558	255,366	265,126	242,474	242,474	234,958	251,716	242,474	242,474	242,474	242,474	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 1,328	$ 963	$ 963	$ 963	$ 963	$ 1,320	$ 566	$ 971	$ 950	$ 963	$ 963	$ 963	$ 1,248	$ 766
New Renewables Fixed Costs	$MM	$ 1,876	$ 739	$ 2,669	$ 2,557	$ 1,490	$ 3,980	$ 3,563	$ 4,465	$ 3,677	$ 4,621	$ 3,936	$ 4,007	$ 3,877	$ 4,057	$ 3,387
New Storage Fixed Costs	$MM	$ 1,711	$ 115	$ 151	$ 106	$ 141	$ 843	$ 569	$ 1,319	$ 877	$ 764	$ 513	$ 865	$ 886	$ 912	$ 807
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ 83	$ 22	$ 83	$ 76	$ 83	$ 83	$ 83	$ -	$ 83	$ -
Total Operating Costs	$MM	$ 5,361	$ 5,331	$ 5,373	$ 5,430	$ 5,491	$ 3,786	$ 3,764	$ 3,835	$ 3,735	$ 3,855	$ 3,783	$ 3,806	$ 3,712	$ 3,783	$ 3,842
Total Revenue Requirement	**$MM**	**$ 43,110**	**$ 40,713**	**$ 42,356**	**$ 42,256**	**$ 41,285**	**$ 42,854**	**$ 42,439**	**$ 43,468**	**$ 42,535**	**$ 43,473**	**$ 42,478**	**$ 42,924**	**$ 42,638**	**$ 43,283**	**$ 42,002**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 6,473	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,456	$ 5,008	$ 6,261	$ 3,615	$ 5,244	$ 5,617	$ 4,871	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 48,354**	**$ 47,186**	**$ 47,600**	**$ 47,500**	**$ 46,529**	**$ 48,098**	**$ 47,894**	**$ 48,477**	**$ 48,796**	**$ 47,088**	**$ 47,721**	**$ 48,541**	**$ 47,510**	**$ 48,527**	**$ 47,246**
Total Retail Sales	GWh	197,882	184,490	209,829	218,873	197,882	197,882	190,917	206,446	190,899	209,073	197,882	197,882	197,882	197,882	197,882
Average Rate (cts/kWh)	**cts/kWh**	**21.8**	**22.1**	**20.2**	**19.3**	**20.9**	**21.7**	**22.2**	**21.1**	**22.3**	**20.8**	**21.5**	**21.7**	**21.5**	**21.9**	**21.2**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 5,441	$ 4,895	$ 5,146	$ 4,951	$ 5,100	$ 4,111	$ 4,098	$ 4,148	$ 4,103	$ 4,149	$ 4,112	$ 4,133	$ 4,078	$ 4,081	$ 4,124
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 316	$ 1,019	$ 831	$ 950	$ 859	$ 351	$ 364	$ 314	$ 356	$ 327	$ 343	$ 331	$ 381	$ 392	$ 309
Market Revenues	$MM	$ (47)	$ (230)	$ (254)	$ (119)	$ (117)	$ (333)	$ (355)	$ (284)	$ (381)	$ (278)	$ (329)	$ (316)	$ (404)	$ (348)	$ (241)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (349)	$ (352)	$ (350)	$ (351)	$ (351)	$ (342)	$ (343)	$ (342)	$ (343)	$ (342)	$ (342)	$ (342)	$ (343)	$ (342)	$ (349)
Total CAISO Operating Cost	**$MM**	**$ 5,361**	**$ 5,331**	**$ 5,373**	**$ 5,430**	**$ 5,491**	**$ 3,786**	**$ 3,764**	**$ 3,835**	**$ 3,735**	**$ 3,855**	**$ 3,783**	**$ 3,806**	**$ 3,712**	**$ 3,783**	**$ 3,842**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	52%	50%	58%	59%	53%	69%	68%	70%	68%	71%	69%	69%	70%	69%	68%
Banked RECs	% of Retail Sales	4%	5%	4%	4%	4%	4%	5%	4%	5%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	56%	55%	62%	63%	57%	73%	72%	74%	72%	75%	73%	73%	74%	73%	72%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	0%	4%	4%	2%	5%	4%	4%	4%	5%	4%	4%	4%	5%	5%	2%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	3%	6%	5%	3%	7%	6%	6%	6%	7%	6%	6%	6%	7%	7%	5%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
RPS Renewables excl. Pipeline Biogas	GWh	97,964	89,459	117,226	123,826	100,929	132,071	124,517	141,064	125,422	143,048	131,388	131,625	133,913	133,271	130,536
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	42mmt_Ref_no_curtail_20170	42mmt_Ref_high_der_201708	42mmt_Ref_high_buildelect_	42mmt_Ref_hydrogen_20170	42mmt_Ref_low_exports_201	30mmt_Ref_20170831	30mmt_Ref_2x_aaee_201708	30mmt_Ref_mid_aaee_20170	30mmt_Ref_high_btmpv_201	30mmt_Ref_low_btmpv_201	30mmt_Ref_flexev_20170831	30mmt_Ref_high_pvcost_201	30mmt_Ref_low_pvcost_201	30mmt_Ref_high_storagecost	30mmt_Ref_low_storagecost
How referenced in Proposed Reference System Plan slides:	42 MMT_Zero Curtailment	42 MMT_High DER	42 MMT_High BE	42 MMT_Hydrogen	42 MMT_Hydrogen	30 MMT_Reference	30 MMT_High EE	30 MMT_Low EE	30 MMT_High BTM PV	30 MMT_Low BTM PV	30 MMT_Flexible EVs	30 MMT_High PV Cost	30 MMT_Low PV Cost	30 MMT_High Battery Cost	30 MMT_Low Battery Cost

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	34.0	34.0	34.0	34.0	34.0	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
CAISO Generator Emissions	MMtCO2	33.9	28.9	30.3	29.5	30.0	24.1	24.0	24.3	24.0	24.3	24.1	24.2	23.8	23.8	24.3
Import Emissions	MMtCO2	0.1	5.1	3.8	4.6	4.0	0.2	0.3	-	0.3	0.0	0.2	0.1	0.5	0.5	-
Total CAISO Emissions	MMtCO2	34.0	34.0	34.0	34.0	34.0	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
Marginal GHG Cost	$/tCO2	$ 225	$ 82	$ 134	$ 115	$ 127	$ 254	$ 244	$ 278	$ 246	$ 272	$ 249	$ 264	$ 237	$ 269	$ 155
Total WECC Emissions	MMtCO2	196	194	194	195	195	183	183	184	183	183	183	183	183	183	184

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	43,641	47,631	45,624	45,624	45,624	43,567	47,287	45,624	45,624	45,058	45,624	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	50,187	54,776	52,468	52,468	52,468	50,102	54,380	52,468	52,468	51,816	52,468	52,468	52,468	52,468
Firm Capacity	MW	39,867	38,148	39,606	38,487	38,487	39,867	39,867	39,867	39,867	39,867	39,867	39,867	39,867	39,867	39,611
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	9,580	3,616	3,764	3,570	3,723	7,028	5,712	9,369	7,187	6,564	5,317	7,142	7,043	6,155	12,110
Variable Renewable ELCC	MW	7,736	7,591	8,112	7,907	7,857	8,199	7,718	8,404	8,208	8,132	8,097	8,199	7,954	8,199	7,912
Total Available Capacity	MW	67,074	59,246	61,374	59,855	59,959	64,986	63,188	67,531	65,153	64,454	63,173	65,099	64,756	64,113	69,524
Actual Reserve Margin	%	47%	36%	29%	31%	31%	42%	45%	43%	43%	41%	40%	43%	42%	41%	52%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_Ref_notaxcredits_20	30mmt_Ref_25yr_gasretiremen	30mmt_Ref_chp_retirement_	30mmt_Ref_flex_challenged_	30mmt_Ref_high_load_20170	30mmt_Ref_high_localneed_	30mmt_Ref_low_convdr_201	30mmt_Ref_low_tou_201708	30mmt_Ref_mid_tou_201708	30mmt_Ref_ratemix1_201708	30mmt_Ref_no_curtail_20170	30mmt_Ref_high_der_201708	30mmt_Ref_high_buildelect_	30mmt_Ref_hydrogen_20170	30mmt_Ref_low_exports_201
How referenced in Proposed Reference System Plan slides:		30 MMT_No Tax Credits	30 MMT_Gas Retirements	30 MMT_CHP Retirement	30 MMT_Flex Challenged	30 MMT_High Load	30 MMT_High Local Need	30 MMT_Low DR	30 MMT_Low TOU	30 MMT_Mid TOU	30 MMT_Rate Mix 1	30 MMT_Zero Curtailment	30 MMT_High DER	30 MMT_High BE	30 MMT_Hydrogen	30 MMT_Hydrogen
Present Value Portfolio Metrics	***Unit***															
PV Revenue Requirement	*$MM*	$ 692,027	$ 689,376	$ 681,453	$ 693,171	$ 717,760	$ 688,170	$ 687,033	$ 687,885	$ 687,827	$ 682,400	$ 717,411	$ 679,272	$ 702,329	$ 697,480	$ 689,338
PV Total Resource Cost	*$MM*	$ 764,164	$ 761,513	$ 753,590	$ 765,307	$ 769,309	$ 760,306	$ 759,324	$ 760,021	$ 759,963	$ 754,537	$ 789,547	$ 764,898	$ 774,465	$ 769,617	$ 761,474
Levelized Revenue Requirement	*$MM*	$ 41,186	$ 41,028	$ 40,556	$ 41,254	$ 42,717	$ 40,956	$ 40,888	$ 40,939	$ 40,936	$ 40,613	$ 42,696	$ 40,426	$ 41,799	$ 41,510	$ 41,025
Levelized Total Resource Cost	*$MM*	$ 45,479	$ 45,321	$ 44,849	$ 45,547	$ 45,785	$ 45,249	$ 45,191	$ 45,232	$ 45,229	$ 44,906	$ 46,989	$ 45,522	$ 46,092	$ 45,803	$ 45,319
Levelized Average Rate	*cts/kWh*	20.5	20.4	20.2	20.5	19.3	20.4	20.3	20.4	20.4	20.6	21.2	21.0	20.1	19.6	20.4
Portfolio Metrics	***Unit***	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 43,379	$ 43,041	$ 42,196	$ 43,397	$ 45,964	$ 42,881	$ 42,788	$ 42,862	$ 42,858	$ 42,438	$ 45,683	$ 42,015	$ 44,480	$ 43,924	$ 43,018
Total Resource Cost	*$MM*	$ 48,623	$ 48,285	$ 47,440	$ 48,641	$ 49,343	$ 48,125	$ 48,046	$ 48,106	$ 48,102	$ 47,682	$ 50,927	$ 48,488	$ 49,724	$ 49,168	$ 48,262
Average Rate	*cts/kWh*	21.9	21.8	21.3	21.9	20.0	21.7	21.6	21.7	21.7	21.9	23.1	22.8	21.2	20.1	21.7
Greenhouse Gas Emissions	*MMtCO2*	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
Effective RPS (incl. banked RECs)	*% of Retail Sales*	73%	74%	73%	71%	78%	73%	73%	73%	73%	73%	70%	71%	75%	76%	71%
Renewable Curtailment	*% of RPS Gen.*	6.4%	6.5%	5.7%	8.9%	6.7%	6.4%	6.4%	6.4%	6.4%	6.4%	3.3%	6.3%	6.7%	4.8%	8.3%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020	2,020
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	4,775	4,775	3,840	4,775	4,775	4,775	4,775	4,775	4,775	4,775	2,984	3,840	4,775	4,775	4,775
Solar	*MW*	11,121	12,099	11,399	10,992	24,699	11,121	11,121	11,147	11,131	9,867	9,299	6,907	16,127	18,582	10,512
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	3,792	4,421	3,272	4,623	5,559	3,792	3,792	3,793	3,795	3,428	50,758	3,062	5,653	3,201	4,123
Pumped Storage	*MW*	1,209	1,572	80	1,942	4,000	1,209	1,209	1,219	1,213	876	1,369	-	2,423	816	1,191
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	1,713	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**12,847**	**13,824**	**12,190**	**12,717**	**18,411**	**12,847**	**12,847**	**12,873**	**12,857**	**11,593**	**9,233**	**7,698**	**17,853**	**18,411**	**12,238**
Out-Of-State Renewables	*MW*	**5,069**	**5,069**	**5,069**	**5,069**	**13,082**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**5,069**	**6,965**	**5,069**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	-	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	13,075	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240	3,240
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,968	12,968	12,033	12,968	12,968	12,968	12,968	12,968	12,968	12,968	11,178	12,033	12,968	12,968	12,968
Solar	*MW*	23,971	24,949	24,249	23,842	37,549	23,971	23,971	23,997	23,981	22,717	22,149	19,757	28,977	31,432	23,362
Customer Solar	*MW*	15,941	15,941	15,941	15,941	9,289	15,941	15,941	15,941	15,941	15,941	15,941	20,091	15,941	15,941	15,941
Battery Storage	*MW*	5,117	5,746	4,597	5,948	6,884	5,117	5,117	5,118	5,120	4,753	52,083	4,387	6,978	4,526	5,448
Pumped Storage	*MW*	3,041	3,404	1,912	3,774	5,832	3,041	3,041	3,051	3,045	2,708	3,201	1,832	4,255	2,648	3,023
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	2,768	1,119	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	1,713	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	10,343	-
In-State Renewables	*MW*	**50,179**	**51,157**	**49,522**	**50,050**	**49,092**	**50,179**	**50,179**	**50,205**	**50,190**	**48,925**	**46,566**	**49,181**	**55,186**	**55,744**	**49,570**
Out-Of-State Renewables	*MW*	**7,132**	**7,132**	**7,132**	**7,132**	**15,145**	**7,132**	**7,132**	**7,132**	**7,132**	**7,132**	**7,133**	**7,132**	**7,132**	**9,028**	**7,132**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_Ref_no taxcredits_20	30mmt_Ref_25 yr_gasretireme	30mmt_Ref_ch p_retirement_	30mmt_Ref_fle x_challenged_	30mmt_Ref_hi gh_load_20170	30mmt_Ref_hi gh_localneed_	30mmt_Ref_lo w_convdr_201	30mmt_Ref_lo w_tou_201708	30mmt_Ref_mi d_tou_201708	30mmt_Ref_ra temix1_201708	30mmt_Ref_no _curtail_20170	30mmt_Ref_hi gh_der_201708	30mmt_Ref_hi gh_buildelect_	30mmt_Ref_hy drogen_20170	30mmt_Ref_lo w_exports_201
How referenced in Proposed Reference System Plan slides:	30 MMT_No Tax Credits	30 MMT_Gas Retirements	30 MMT_CHP Retirement	30 MMT_Flex Challenged	30 MMT_High Load	30 MMT_High Local Need	30 MMT_Low DR	30 MMT_Low TOU	30 MMT_Mid TOU	30 MMT_Rate Mix 1	30 MMT_Zero Curtailment	30 MMT_High DER	30 MMT_High BE	30 MMT_Hydrogen	30 MMT_Hydrogen

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	-	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,260	25,552	25,374	25,417	25,563	25,240	25,251	25,241	25,242	25,154	25,136	25,176	25,551	25,058	25,226
Gas	GWh	49,479	34,547	61,283	49,720	50,108	49,479	49,479	49,380	49,442	49,280	50,098	48,891	50,123	48,901	49,877
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	152,948	155,707	151,470	149,880	176,905	152,943	152,948	153,024	152,980	149,078	147,380	145,650	166,269	173,506	148,700
Storage Losses	GWh	(3,127)	(3,553)	(2,331)	(3,836)	(5,288)	(3,122)	(3,127)	(3,128)	(3,128)	(2,786)	(4,294)	(2,214)	(4,415)	(2,752)	(3,196)
Curtailment	GWh	(4,587)	(4,524)	(4,360)	(7,163)	(5,631)	(4,592)	(4,587)	(4,588)	(4,585)	(4,742)	-	(4,363)	(4,545)	(4,060)	(7,035)
Imports	GWh	7,123	19,435	10,891	6,547	6,547	7,123	7,123	7,209	7,155	7,278	6,547	7,611	6,547	7,679	6,770
Exports	GWh	(7,556)	(7,297)	(7,669)	(3,474)	(6,890)	(7,556)	(7,556)	(7,541)	(7,546)	(8,035)	(1,935)	(7,964)	(6,841)	(6,031)	(3,385)
Load	GWh	242,474	242,474	242,474	242,474	265,208	242,474	242,474	242,549	242,510	238,503	242,474	235,558	255,366	265,126	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 963	$ 553	$ 963	$ 897	$ 963	$ 963	$ 963	$ 963	$ 1,328	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 4,503	$ 4,145	$ 3,810	$ 3,958	$ 6,028	$ 3,977	$ 3,980	$ 3,984	$ 3,981	$ 3,806	$ 3,697	$ 3,192	$ 4,799	$ 5,207	$ 3,899
New Storage Fixed Costs	$MM	$ 844	$ 1,092	$ 389	$ 1,306	$ 1,994	$ 848	$ 843	$ 847	$ 845	$ 622	$ 3,844	$ 295	$ 1,618	$ 522	$ 917
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ 25	$ -	$ -	$ -	$ -	$ -	$ 257	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ 83	$ 83	$ -	$ 83	$ 351	$ 83	$ 83	$ 83	$ 83	$ 83	$ -	$ -	$ 83	$ 146	$ 83
Total Operating Costs	$MM	$ 3,786	$ 3,558	$ 3,834	$ 3,888	$ 3,838	$ 3,786	$ 3,786	$ 3,786	$ 3,786	$ 3,764	$ 3,979	$ 3,743	$ 3,819	$ 3,886	$ 3,957
Total Revenue Requirement	**$MM**	**$ 43,379**	**$ 43,041**	**$ 42,196**	**$ 43,397**	**$ 45,964**	**$ 42,881**	**$ 42,788**	**$ 42,862**	**$ 42,858**	**$ 42,438**	**$ 45,683**	**$ 42,015**	**$ 44,480**	**$ 43,924**	**$ 43,018**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 3,379	$ 5,244	$ 5,258	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 6,473	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 48,623**	**$ 48,285**	**$ 47,440**	**$ 48,641**	**$ 49,343**	**$ 48,125**	**$ 48,046**	**$ 48,106**	**$ 48,102**	**$ 47,682**	**$ 50,927**	**$ 48,488**	**$ 49,724**	**$ 49,168**	**$ 48,262**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	230,141	197,882	197,882	197,951	197,915	194,202	197,882	184,490	209,829	218,873	197,882
Average Rate (cts/kWh)	**cts/kWh**	**21.9**	**21.8**	**21.3**	**21.9**	**20.0**	**21.7**	**21.6**	**21.7**	**21.7**	**21.9**	**23.1**	**22.8**	**21.2**	**20.1**	**21.7**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,111	$ 3,181	$ 3,945	$ 4,063	$ 4,157	$ 4,111	$ 4,111	$ 4,104	$ 4,108	$ 4,104	$ 4,105	$ 4,073	$ 4,149	$ 4,086	$ 4,130
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 351	$ 1,045	$ 572	$ 335	$ 313	$ 351	$ 351	$ 356	$ 353	$ 359	$ 301	$ 372	$ 307	$ 390	$ 331
Market Revenues	$MM	$ (333)	$ (323)	$ (339)	$ (164)	$ (290)	$ (333)	$ (333)	$ (332)	$ (333)	$ (356)	$ (80)	$ (358)	$ (294)	$ (249)	$ (160)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (342)	$ (346)	$ (344)	$ (346)	$ (343)	$ (342)	$ (342)	$ (342)	$ (342)	$ (343)	$ (348)	$ (344)	$ (343)	$ (341)	$ (344)
Total CAISO Operating Cost	**$MM**	**$ 3,786**	**$ 3,558**	**$ 3,834**	**$ 3,888**	**$ 3,838**	**$ 3,786**	**$ 3,786**	**$ 3,786**	**$ 3,786**	**$ 3,764**	**$ 3,979**	**$ 3,743**	**$ 3,819**	**$ 3,886**	**$ 3,957**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	69%	70%	68%	67%	74%	69%	69%	69%	69%	68%	66%	66%	71%	72%	67%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	5%	4%	5%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	73%	74%	73%	71%	78%	73%	73%	73%	73%	73%	70%	71%	75%	76%	71%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	4%	4%	6%	4%	4%	4%	4%	4%	4%	0%	4%	4%	3%	6%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	6%	7%	6%	9%	7%	6%	6%	6%	6%	6%	3%	6%	7%	5%	8%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
RPS Renewables excl. Pipeline Biogas	GWh	132,071	134,830	130,614	129,002	168,104	132,066	132,070	132,147	132,102	128,201	126,524	117,238	145,391	152,628	127,823
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_Ref_notaxcredits_20	30mmt_Ref_25yr_gasretiremep_retirement_	30mmt_Ref_chx_challenged_	30mmt_Ref_flegh_load_20170	30mmt_Ref_high_localneed_	30mmt_Ref_low_convdr_201	30mmt_Ref_low_tou_201708	30mmt_Ref_lod_tou_201708	30mmt_Ref_mitemix1_201708	30mmt_Ref_ra_curtail_20170	30mmt_Ref_nogh_der_201708	30mmt_Ref_high_buildelect_	30mmt_Ref_high_drogen_20170	30mmt_Ref_low_exports_201
How referenced in Proposed Reference System Plan slides:	30 MMT_No Tax Credits	30 MMT_Gas Retirements	30 MMT_CHP Retirement	30 MMT_Flex Challenged	30 MMT_High Load	30 MMT_High Local Need	30 MMT_Low DR	30 MMT_Low TOU	30 MMT_Mid TOU	30 MMT_Rate Mix 1	30 MMT_Zero Curtailment	30 MMT_High DER	30 MMT_High BE	30 MMT_Hydrogen	30 MMT_Hydrogen

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
CAISO Generator Emissions	MMtCO2	24.1	18.8	22.4	24.3	24.3	24.1	24.1	24.0	24.0	24.0	24.3	23.8	24.3	23.8	24.2
Import Emissions	MMtCO2	0.2	5.5	1.9	-	-	0.2	0.2	0.3	0.3	0.3	-	0.5	-	0.5	0.1
Total CAISO Emissions	MMtCO2	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
Marginal GHG Cost	$/tCO2	$ 254	$ 253	$ 234	$ 283	$ 321	$ 254	$ 254	$ 254	$ 254	$ 247	$ 296	$ 225	$ 291	$ 288	$ 256
Total WECC Emissions	MMtCO2	183	183	183	184	183	183	183	183	183	183	185	183	184	183	185

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,624	49,368	45,624	45,624	46,479	45,962	45,624	45,624	43,641	47,631	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	52,468	56,774	52,468	52,468	53,451	52,857	52,468	52,468	50,187	54,776	52,468	52,468
Firm Capacity	MW	39,867	27,584	38,182	39,867	39,867	40,882	39,233	39,867	39,867	39,867	39,867	39,867	39,867	39,867	39,867
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	7,028	8,257	5,070	9,321	11,964	7,028	7,028	7,045	7,037	5,909	17,215	4,551	10,800	5,338	7,467
Variable Renewable ELCC	MW	8,187	8,199	7,954	8,187	8,828	8,199	8,199	8,352	8,259	8,229	7,866	7,682	8,442	8,350	8,190
Total Available Capacity	MW	64,974	53,932	61,097	67,266	70,550	66,001	64,352	65,155	65,055	63,896	74,840	61,992	69,000	63,446	65,415
Actual Reserve Margin	%	42%	18%	34%	47%	43%	45%	41%	40%	42%	40%	64%	42%	45%	39%	43%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	31%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	1,500.0	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	485	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	485	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_Ref_early_ooswind_2	42mmt_Ref_early_ooswind_2	99mmt_Ref_early_ooswind_2	30mmt_OOSWind_20170831	42mmt_OOSWind_20170831	99mmt_OOSWind_20170831	30mmt_OOSWind_2x_aaee_2	42mmt_OOSWind_2x_aaee_2	99mmt_OOSWind_2x_aaee_2	30mmt_OOSWind_mid_aaee_	42mmt_OOSWind_mid_aaee_	99mmt_OOSWind_mid_aaee_	30mmt_OOSWind_high_btmp	42mmt_OOSWind_high_btmp	99mmt_OOSWind_high_btmp
How referenced in Proposed Reference System Plan slides:		Resource Study_OOS Wind_Default 50% RPS_Earlier	Resource Study_OOS Wind_42 MMT_Earlier Wind	Resource Study_OOS Wind_30 MMT_Earlier Wind	Resource Study_OOS Wind_Default 50% RPS_Reference	Resource Study_OOS Wind_42 MMT_Reference	Resource Study_OOS Wind_30 MMT_Reference	Resource Study_OOS Wind_Default 50% RPS_High EE	Resource Study_OOS Wind_42 MMT_High EE	Resource Study_OOS Wind_30 MMT_High EE	Resource Study_OOS Wind_Default 50% RPS_Low EE	Resource Study_OOS Wind_42 MMT_Low EE	Resource Study_OOS Wind_30 MMT_Low EE	Resource Study_OOS Wind_Default 50% RPS_High BTM PV	Resource Study_OOS Wind_42 MMT_High BTM PV	Resource Study_OOS Wind_30 MMT_High BTM PV
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 684,676	$ 672,740	$ 670,450	$ 686,239	$ 674,411	$ 672,205	$ 682,895	$ 673,090	$ 671,922	$ 691,873	$ 677,140	$ 673,315	$ 682,782	$ 670,824	$ 669,170
PV Total Resource Cost	*$MM*	$ 756,812	$ 744,876	$ 742,586	$ 758,376	$ 746,548	$ 744,342	$ 757,487	$ 747,682	$ 746,514	$ 761,142	$ 746,409	$ 742,584	$ 765,953	$ 753,994	$ 752,341
Levelized Revenue Requirement	*$MM*	$ 40,748	$ 40,038	$ 39,901	$ 40,841	$ 40,137	$ 40,006	$ 40,642	$ 40,059	$ 39,989	$ 41,176	$ 40,300	$ 40,072	$ 40,635	$ 39,924	$ 39,825
Levelized Total Resource Cost	*$MM*	$ 45,041	$ 44,331	$ 44,195	$ 45,134	$ 44,430	$ 44,299	$ 45,081	$ 44,498	$ 44,428	$ 45,299	$ 44,422	$ 44,194	$ 45,585	$ 44,873	$ 44,775
Levelized Average Rate	*cts/kWh*	20.3	19.9	19.9	20.3	20.0	19.9	20.7	20.4	20.4	19.9	19.4	19.3	20.7	20.3	20.3
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 42,405	$ 41,082	$ 40,905	$ 42,650	$ 41,337	$ 41,162	$ 42,274	$ 41,215	$ 41,113	$ 43,252	$ 41,546	$ 41,266	$ 42,370	$ 41,019	$ 40,886
Total Resource Cost	*$MM*	$ 47,649	$ 46,326	$ 46,149	$ 47,894	$ 46,581	$ 46,406	$ 47,730	$ 46,671	$ 46,569	$ 48,260	$ 46,554	$ 46,274	$ 48,631	$ 47,280	$ 47,147
Average Rate	*cts/kWh*	21.4	20.8	20.7	21.6	20.9	20.8	22.1	21.6	21.5	21.0	20.1	20.0	22.2	21.5	21.4
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	41.3	24.3	34.0	41.3	24.3	34.0	38.8	24.3	34.0	43.7	24.3	34.0	39.4
Effective RPS (incl. banked RECs)	*% of Retail Sales*	73%	58%	50%	74%	58%	50%	72%	57%	52%	75%	61%	50%	72%	57%	52%
Renewable Curtailment	*% of RPS Gen.*	6.1%	4.1%	3.0%	6.2%	4.1%	3.0%	6.2%	4.2%	3.4%	6.1%	5.0%	2.5%	6.7%	5.1%	4.1%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	-	-	2,020	-	-	1,700	-	-	2,020	-	-	2,020	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	6,860	3,984	3,000	6,839	3,984	3,000	6,283	3,299	3,000	7,774	4,144	3,000	6,839	3,942	3,000
Solar	*MW*	7,994	4,656	-	8,035	4,700	-	6,591	2,994	-	10,418	8,423	977	5,735	2,886	-
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	3,310	1,506	456	3,309	1,501	456	2,815	1,063	523	3,695	1,946	562	3,451	1,408	747
Pumped Storage	*MW*	175	-	-	181	-	-	-	-	-	930	-	-	157	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**10,309**	**4,138**	**-**	**10,328**	**4,181**	**-**	**8,071**	**3,294**	**-**	**13,647**	**8,064**	**977**	**8,029**	**3,828**	**-**
Out-Of-State Renewables	*MW*	**6,565**	**4,503**	**3,000**	**6,565**	**4,503**	**3,000**	**6,502**	**3,000**	**3,000**	**6,565**	**4,503**	**3,000**	**6,565**	**3,000**	**3,000**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,220	1,220	3,240	1,220	1,220	2,920	1,220	1,220	3,240	1,220	1,220	3,240	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	15,054	12,178	11,193	15,033	12,178	11,193	14,477	11,493	11,193	15,968	12,338	11,193	15,033	12,136	11,193
Solar	*MW*	20,844	17,506	12,850	20,885	17,550	12,850	19,441	15,844	12,850	23,269	21,273	13,827	18,586	15,736	12,850
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	20,091	20,091	20,091
Battery Storage	*MW*	4,635	2,831	1,781	4,634	2,826	1,781	4,140	2,388	1,848	5,020	3,271	1,887	4,776	2,733	2,072
Pumped Storage	*MW*	2,007	1,832	1,832	2,013	1,832	1,832	1,832	1,832	1,832	2,762	1,832	1,832	1,989	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**47,641**	**41,470**	**37,333**	**47,661**	**41,514**	**37,333**	**45,404**	**40,626**	**37,333**	**50,980**	**45,397**	**38,309**	**49,512**	**45,311**	**41,483**
Out-Of-State Renewables	*MW*	**8,629**	**6,566**	**5,063**	**8,629**	**6,566**	**5,063**	**8,566**	**5,063**	**5,063**	**8,629**	**6,566**	**5,063**	**8,629**	**5,063**	**5,063**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_Ref_early_oswind_2	42mmt_Ref_early_oswind_2	99mmt_Ref_early_oswind_2	30mmt_OOSWind_20170831	42mmt_OOSWind_20170831	99mmt_OOSWind_20170831	30mmt_OOSWind_2x_aaee_2	42mmt_OOSWind_2x_aaee_2	99mmt_OOSWind_2x_aaee_2	30mmt_OOSWind_mid_aaee_	42mmt_OOSWind_mid_aaee_	99mmt_OOSWind_mid_aaee_	30mmt_OOSWind_high_btmp	42mmt_OOSWind_high_btmp	99mmt_OOSWind_high_btmp
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Earlier	Resource Study_OOS Wind_42 MMT_Earlier Wind	Resource Study_OOS Wind_30 MMT_Earlier Wind	Resource Study_OOS Wind_Default 50% RPS_Reference	Resource Study_OOS Wind_42 MMT_Reference	Resource Study_OOS Wind_30 MMT_Reference	Resource Study_OOS Wind_Default 50% RPS_High EE	Resource Study_OOS Wind_42 MMT_High EE	Resource Study_OOS Wind_30 MMT_High EE	Resource Study_OOS Wind_Default 50% RPS_Low EE	Resource Study_OOS Wind_42 MMT_Low EE	Resource Study_OOS Wind_30 MMT_Low EE	Resource Study_OOS Wind_Default 50% RPS_High RTM PU	Resource Study_OOS Wind_42 MMT_High RTM PU	Resource Study_OOS Wind_30 MMT_High RTM PU

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,190	24,755	24,963	25,196	24,740	24,904	25,148	24,590	24,906	25,217	24,955	24,927	25,206	24,781	24,997
Gas	GWh	48,431	61,648	71,687	48,369	61,286	71,687	47,368	57,354	64,487	49,584	64,861	77,649	48,188	58,136	65,033
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	152,597	123,370	107,751	152,659	123,483	107,751	145,215	117,041	107,579	161,557	133,980	110,840	153,088	125,146	114,688
Storage Losses	GWh	(2,377)	(1,566)	(1,136)	(2,392)	(1,576)	(1,136)	(2,303)	(1,488)	(1,195)	(2,905)	(1,795)	(1,084)	(2,428)	(1,626)	(1,328)
Curtailment	GWh	(5,049)	(1,411)	(374)	(5,051)	(1,429)	(374)	(4,494)	(1,259)	(546)	(5,037)	(2,475)	(336)	(5,320)	(2,049)	(972)
Imports	GWh	7,994	19,238	27,000	8,047	19,555	27,000	8,903	22,813	27,430	7,013	16,510	27,249	8,206	22,248	28,261
Exports	GWh	(7,847)	(3,799)	(6,859)	(7,884)	(3,834)	(6,859)	(7,720)	(4,274)	(7,279)	(7,253)	(5,298)	(7,102)	(8,256)	(4,867)	(7,981)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	234,958	234,958	234,958	251,716	251,716	251,716	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 1,320	$ 1,320	$ 1,320	$ 566	$ 566	$ 566	$ 971	$ 971	$ 971
New Renewables Fixed Costs	$MM	$ 4,090	$ 1,485	$ 712	$ 4,338	$ 1,748	$ 969	$ 3,765	$ 1,421	$ 969	$ 4,902	$ 2,276	$ 1,101	$ 4,028	$ 1,509	$ 969
New Storage Fixed Costs	$MM	$ 389	$ 99	$ 30	$ 391	$ 99	$ 30	$ 239	$ 69	$ 34	$ 696	$ 136	$ 37	$ 438	$ 92	$ 49
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ 2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 83	$ -	$ -	$ -	$ -	$ -
Total Operating Costs	$MM	$ 3,762	$ 5,334	$ 6,001	$ 3,759	$ 5,327	$ 6,001	$ 3,750	$ 5,206	$ 5,590	$ 3,805	$ 5,367	$ 6,363	$ 3,733	$ 5,247	$ 5,697
Total Revenue Requirement	**$MM**	**$ 42,405**	**$ 41,082**	**$ 40,905**	**$ 42,650**	**$ 41,337**	**$ 41,162**	**$ 42,274**	**$ 41,215**	**$ 41,113**	**$ 43,252**	**$ 41,546**	**$ 41,266**	**$ 42,370**	**$ 41,019**	**$ 40,886**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,456	$ 5,456	$ 5,456	$ 5,008	$ 5,008	$ 5,008	$ 6,261	$ 6,261	$ 6,261
Total Resource Cost	**$MM**	**$ 47,649**	**$ 46,326**	**$ 46,149**	**$ 47,894**	**$ 46,581**	**$ 46,406**	**$ 47,730**	**$ 46,671**	**$ 46,569**	**$ 48,260**	**$ 46,554**	**$ 46,274**	**$ 48,631**	**$ 47,280**	**$ 47,147**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	197,882	197,882	190,917	190,917	190,917	206,446	206,446	206,446	190,899	190,899	190,899
Average Rate (cts/kWh)	**cts/kWh**	**21.4**	**20.8**	**20.7**	**21.6**	**20.9**	**20.8**	**22.1**	**21.6**	**21.5**	**21.0**	**20.1**	**20.0**	**22.2**	**21.5**	**21.4**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,051	$ 4,799	$ 5,179	$ 4,047	$ 4,775	$ 5,179	$ 3,985	$ 4,497	$ 4,765	$ 4,117	$ 5,050	$ 5,537	$ 4,037	$ 4,593	$ 4,852
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 400	$ 1,056	$ 1,519	$ 402	$ 1,074	$ 1,519	$ 452	$ 1,264	$ 1,541	$ 345	$ 902	$ 1,531	$ 408	$ 1,230	$ 1,586
Market Revenues	$MM	$ (346)	$ (168)	$ (344)	$ (348)	$ (170)	$ (344)	$ (342)	$ (201)	$ (363)	$ (315)	$ (234)	$ (353)	$ (369)	$ (223)	$ (389)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (343)	$ (353)	$ (353)	$ (343)	$ (353)	$ (353)	$ (344)	$ (353)	$ (352)	$ (342)	$ (351)	$ (353)	$ (343)	$ (353)	$ (352)
Total CAISO Operating Cost	**$MM**	**$ 3,762**	**$ 5,334**	**$ 6,001**	**$ 3,759**	**$ 5,327**	**$ 6,001**	**$ 3,750**	**$ 5,206**	**$ 5,590**	**$ 3,805**	**$ 5,367**	**$ 6,363**	**$ 3,733**	**$ 5,247**	**$ 5,697**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	69%	54%	46%	69%	54%	46%	68%	53%	48%	70%	57%	46%	68%	53%	47%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	5%	5%	5%	4%	4%	4%	5%	5%	5%
Effective RPS (with banked RECs)	% of Retail Sales	73%	58%	50%	74%	58%	50%	72%	57%	52%	75%	61%	50%	72%	57%	52%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	3%	2%	4%	3%	2%	4%	3%	2%	4%	4%	1%	5%	4%	3%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	6%	4%	3%	6%	4%	3%	6%	4%	3%	6%	5%	3%	7%	5%	4%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4	$ -	$ -	$ -
RPS Renewables excl. Pipeline Biogas	GWh	131,719	102,513	86,895	131,781	102,627	86,895	124,337	96,184	86,723	140,679	113,123	89,983	124,676	96,755	86,297
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_Ref_early_ooswind_2	42mmt_Ref_early_ooswind_2	99mmt_Ref_early_ooswind_2	30mmt_OOSWind_20170831	42mmt_OOSWind_20170831	99mmt_OOSWind_20170831	30mmt_OOSWind_2x_aaee_2	42mmt_OOSWind_2x_aaee_2	99mmt_OOSWind_2x_aaee_2	30mmt_OOSWind_mid_aaee_	42mmt_OOSWind_mid_aaee_	99mmt_OOSWind_mid_aaee_	30mmt_OOSWind_high_btmp	42mmt_OOSWind_high_btmp	99mmt_OOSWind_high_btmp
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Earlier	Resource Study_OOS Wind_42 MMT_Earlier Wind	Resource Study_OOS Wind_30 MMT_Earlier Wind	Resource Study_OOS Wind_Default 50% RPS_Reference	Resource Study_OOS Wind_42 MMT_Reference	Resource Study_OOS Wind_30 MMT_Reference	Resource Study_OOS Wind_Default 50% RPS_High EE	Resource Study_OOS Wind_42 MMT_High EE	Resource Study_OOS Wind_30 MMT_High EE	Resource Study_OOS Wind_Default 50% RPS_Low EE	Resource Study_OOS Wind_42 MMT_Low EE	Resource Study_OOS Wind_30 MMT_Low EE	Resource Study_OOS Wind_Default 50% RPS_High RTM PU	Resource Study_OOS Wind_42 MMT_High RTM PU	Resource Study_OOS Wind_30 MMT_High RTM PU

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	23.7	28.6	32.6	23.7	28.5	32.6	23.3	27.1	29.9	24.1	29.8	34.8	23.6	27.3	30.1
Import Emissions	MMtCO2	0.6	5.4	8.8	0.6	5.6	8.8	1.0	7.0	8.9	0.2	4.3	8.9	0.7	6.7	9.3
Total CAISO Emissions	MMtCO2	24.3	34.0	41.3	24.3	34.0	41.3	24.3	34.0	38.8	24.3	34.0	43.7	24.3	34.0	39.4
Marginal GHG Cost	$/tCO2	$ 239	$ 73	$ -	$ 238	$ 71	$ -	$ 202	$ 48	$ -	$ 262	$ 115	$ -	$ 227	$ 55	$ -
Total WECC Emissions	MMtCO2	183	195	201	183	195	201	183	194	198	183	194	203	183	194	198

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,624	45,624	45,624	43,567	43,567	43,567	47,287	47,287	47,287	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	52,468	52,468	52,468	50,102	50,102	50,102	54,380	54,380	54,380	52,468	52,468	52,468
Firm Capacity	MW	39,867	38,148	38,148	39,867	38,148	38,148	39,611	38,148	38,148	39,867	38,148	38,148	39,867	38,148	38,148
Import Capacity	MW	11,271	11,271	11,271	9,891	10,791	11,271	10,224	11,271	11,271	9,891	9,891	11,271	10,400	11,271	11,271
Storage	MW	4,978	3,542	3,271	4,987	3,539	3,271	4,222	3,423	3,288	6,309	3,700	3,298	5,296	3,509	3,344
Variable Renewable ELCC	MW	7,916	7,815	7,674	7,954	7,830	7,674	7,582	7,513	7,390	8,407	8,086	7,899	7,971	7,843	7,722
Total Available Capacity	MW	64,031	60,776	60,364	62,700	60,309	60,364	61,639	60,355	60,097	64,475	59,825	60,616	63,534	60,772	60,485
Actual Reserve Margin	%	40%	33%	32%	37%	32%	32%	41%	39%	38%	36%	27%	28%	39%	33%	33%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	29%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_OOSWind_low_btmpv	42mmt_OOSWind_low_btmpv	99mmt_OOSWind_low_btmpv	30mmt_OOSWind_flexev_201	42mmt_OOSWind_flexev_201	99mmt_OOSWind_flexev_201	30mmt_OOSWind_high_pvcos	42mmt_OOSWind_high_pvcos	99mmt_OOSWind_high_pvcos	30mmt_OOSWind_low_pvcost	42mmt_OOSWind_low_pvcost	99mmt_OOSWind_low_pvcost	30mmt_OOSWind_high_stora	42mmt_OOSWind_high_stora	99mmt_OOSWind_high_stora
		Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource
How referenced in Proposed Reference System Plan slides:		Study_OOS Wind_Default 50% RPS_Low BTM PV	Study_OOS Wind_42 MMT_Low BTM PV	Study_OOS Wind_30 MMT_Low BTM PV	Study_OOS Wind_Default 50% RPS_Flexible	Study_OOS Wind_42 MMT_Flexible EVs	Study_OOS Wind_30 MMT_Flexible EVs	Study_OOS Wind_Default 50% RPS_High PV Cost	Study_OOS Wind_42 MMT_High PV Cost	Study_OOS Wind_30 MMT_High PV Cost	Study_OOS Wind_Default 50% RPS_Low PV Cost	Study_OOS Wind_42 MMT_Low PV Cost	Study_OOS Wind_30 MMT_Low PV Cost	Study_OOS Wind_Default 50% RPS_High Battery Cost	Study_OOS Wind_42 MMT_High Battery Cost	Study_OOS Wind_30 MMT_High Battery Cost
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 692,767	$ 680,398	$ 677,605	$ 683,161	$ 673,059	$ 671,263	$ 686,936	$ 674,826	$ 672,205	$ 684,186	$ 672,968	$ 671,939	$ 691,720	$ 679,063	$ 676,604
PV Total Resource Cost	*$MM*	$ 747,182	$ 734,814	$ 732,021	$ 755,297	$ 745,195	$ 743,400	$ 762,873	$ 750,763	$ 748,142	$ 752,341	$ 741,123	$ 740,094	$ 763,857	$ 751,200	$ 748,740
Levelized Revenue Requirement	*$MM*	$ 41,230	$ 40,493	$ 40,327	$ 40,658	$ 40,057	$ 39,950	$ 40,883	$ 40,162	$ 40,006	$ 40,719	$ 40,051	$ 39,990	$ 41,167	$ 40,414	$ 40,268
Levelized Total Resource Cost	*$MM*	$ 44,468	$ 43,732	$ 43,566	$ 44,951	$ 44,350	$ 44,243	$ 45,402	$ 44,681	$ 44,525	$ 44,775	$ 44,107	$ 44,046	$ 45,460	$ 44,707	$ 44,561
Levelized Average Rate	*cts/kWh*	19.8	19.4	19.4	20.2	19.9	19.9	20.3	20.0	19.9	20.3	19.9	19.9	20.5	20.1	20.0
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 43,275	$ 41,843	$ 41,656	$ 42,304	$ 41,201	$ 41,063	$ 42,724	$ 41,371	$ 41,162	$ 42,488	$ 41,222	$ 41,139	$ 43,065	$ 41,646	$ 41,451
Total Resource Cost	*$MM*	$ 46,889	$ 45,458	$ 45,270	$ 47,548	$ 46,445	$ 46,307	$ 48,340	$ 46,988	$ 46,779	$ 47,360	$ 46,093	$ 46,010	$ 48,309	$ 46,890	$ 46,695
Average Rate	*cts/kWh*	20.7	20.0	19.9	21.4	20.8	20.8	21.6	20.9	20.8	21.5	20.8	20.8	21.8	21.0	20.9
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	42.9	24.3	34.0	40.8	24.3	34.0	41.3	24.3	34.0	39.2	24.3	34.0	41.5
Effective RPS (incl. banked RECs)	*% of Retail Sales*	75%	61%	51%	73%	58%	51%	73%	58%	50%	74%	60%	54%	73%	59%	50%
Renewable Curtailment	*% of RPS Gen.*	5.2%	3.5%	1.9%	5.5%	3.5%	2.3%	6.0%	4.0%	3.0%	6.8%	4.9%	3.6%	6.9%	4.9%	3.3%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	-	-	1,949	-	-	2,020	-	-	1,826	-	-	2,020	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	7,649	3,984	3,000	6,368	3,942	3,000	7,427	4,009	3,000	6,345	3,299	3,000	7,023	3,984	3,000
Solar	*MW*	11,101	8,518	1,563	8,047	4,356	-	7,305	4,497	-	9,800	6,447	2,475	8,060	5,151	-
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	2,882	1,399	172	2,652	1,014	165	3,188	1,549	456	3,424	1,351	731	1,663	400	-
Pumped Storage	*MW*	-	-	-	-	-	-	39	-	-	241	-	-	897	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**14,204**	**8,000**	**1,563**	**9,812**	**3,937**	**-**	**10,186**	**4,004**	**-**	**11,443**	**5,243**	**2,475**	**10,537**	**4,632**	**-**
Out-Of-State Renewables	*MW*	**6,565**	**4,503**	**3,000**	**6,552**	**4,362**	**3,000**	**6,565**	**4,503**	**3,000**	**6,528**	**4,503**	**3,000**	**6,565**	**4,503**	**3,000**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,220	1,220	3,169	1,220	1,220	3,240	1,220	1,220	3,046	1,220	1,220	3,240	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	15,842	12,178	11,193	14,561	12,136	11,193	15,621	12,203	11,193	14,539	11,493	11,193	15,217	12,178	11,193
Solar	*MW*	23,951	21,369	14,414	20,897	17,206	12,850	20,155	17,347	12,850	22,650	19,297	15,325	20,910	18,001	12,850
Customer Solar	*MW*	9,289	9,289	9,289	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	4,207	2,724	1,497	3,977	2,339	1,490	4,513	2,874	1,781	4,749	2,676	2,056	2,988	1,725	1,325
Pumped Storage	*MW*	1,832	1,832	1,832	1,832	1,832	1,832	1,871	1,832	1,832	2,073	1,832	1,832	2,729	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**44,884**	**38,680**	**32,244**	**47,144**	**41,269**	**37,333**	**47,519**	**41,336**	**37,333**	**48,775**	**42,576**	**39,808**	**47,870**	**41,965**	**37,333**
Out-Of-State Renewables	*MW*	**8,629**	**6,566**	**5,063**	**8,615**	**6,425**	**5,063**	**8,629**	**6,566**	**5,063**	**8,591**	**6,566**	**5,063**	**8,629**	**6,566**	**5,063**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_low_btmpv	42mmt_OOSWind_low_btmpv	99mmt_OOSWind_low_btmpv	30mmt_OOSWind_flexev_201	42mmt_OOSWind_flexev_201	99mmt_OOSWind_flexev_201	30mmt_OOSWind_high_pvcos	42mmt_OOSWind_high_pvcos	99mmt_OOSWind_high_pvcos	30mmt_OOSWind_low_pvcost	42mmt_OOSWind_low_pvcost	99mmt_OOSWind_low_pvcost	30mmt_OOSWind_high_stora	42mmt_OOSWind_high_stora	99mmt_OOSWind_high_stora
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Low BTM PV	Resource Study_OOS Wind_42 MMT_Low BTM PV	Resource Study_OOS Wind_30 MMT_Low BTM PV	Resource Study_OOS Wind_Default 50% RPS_Flexible	Resource Study_OOS Wind_42 MMT_Flexible EVs	Resource Study_OOS Wind_30 MMT_Flexible EVs	Resource Study_OOS Wind_Default 50% RPS_High PV Cost	Resource Study_OOS Wind_42 MMT_High PV Cost	Resource Study_OOS Wind_30 MMT_High PV Cost	Resource Study_OOS Wind_Default 50% RPS_Low PV Cost	Resource Study_OOS Wind_42 MMT_Low PV Cost	Resource Study_OOS Wind_30 MMT_Low PV Cost	Resource Study_OOS Wind_Default 50% RPS_High Battery Cost	Resource Study_OOS Wind_42 MMT_High Battery Cost	Resource Study_OOS Wind_30 MMT_High Battery Cost

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,082	24,664	24,833	25,128	24,612	24,569	25,197	24,723	24,929	25,191	24,781	24,942	25,098	24,657	24,913
Gas	GWh	48,233	62,649	77,194	47,777	58,449	69,462	48,272	62,739	71,687	48,064	57,468	65,428	47,295	61,117	72,296
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	151,732	123,067	100,886	152,116	122,811	107,967	152,189	123,019	107,751	154,123	126,170	114,979	153,524	124,411	107,691
Storage Losses	GWh	(2,258)	(1,511)	(893)	(2,285)	(1,392)	(928)	(2,261)	(1,549)	(1,136)	(2,498)	(1,646)	(1,313)	(2,457)	(1,429)	(1,056)
Curtailment	GWh	(4,298)	(1,166)	(44)	(3,929)	(982)	(158)	(4,938)	(1,354)	(374)	(5,907)	(2,141)	(863)	(4,752)	(1,846)	(434)
Imports	GWh	8,127	18,293	25,906	8,550	21,859	27,701	8,131	18,293	27,000	8,318	22,792	27,541	9,064	19,607	26,778
Exports	GWh	(7,003)	(3,616)	(4,842)	(7,125)	(2,897)	(5,868)	(7,546)	(3,661)	(6,859)	(9,184)	(5,684)	(8,013)	(7,789)	(4,279)	(7,064)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 950	$ 950	$ 950	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 1,248	$ 1,248	$ 1,248
New Renewables Fixed Costs	$MM	$ 4,994	$ 2,263	$ 1,180	$ 4,166	$ 1,696	$ 969	$ 4,410	$ 1,751	$ 969	$ 4,184	$ 1,770	$ 1,263	$ 4,381	$ 1,809	$ 969
New Storage Fixed Costs	$MM	$ 250	$ 92	$ 11	$ 208	$ 66	$ 11	$ 325	$ 103	$ 30	$ 441	$ 89	$ 48	$ 455	$ 47	$ -
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ 72	$ -	$ -	$ -	$ -	$ -	$ 52	$ -	$ -	$ -	$ -	$ -	$ 16	$ -	$ -
Total Operating Costs	$MM	$ 3,810	$ 5,339	$ 6,315	$ 3,768	$ 5,277	$ 5,920	$ 3,774	$ 5,355	$ 6,001	$ 3,701	$ 5,200	$ 5,666	$ 3,765	$ 5,343	$ 6,034
Total Revenue Requirement	**$MM**	**$ 43,275**	**$ 41,843**	**$ 41,656**	**$ 42,304**	**$ 41,201**	**$ 41,063**	**$ 42,724**	**$ 41,371**	**$ 41,162**	**$ 42,488**	**$ 41,222**	**$ 41,139**	**$ 43,065**	**$ 41,646**	**$ 41,451**
Customer Costs (Scenario Specific)	$MM	$ 3,615	$ 3,615	$ 3,615	$ 5,244	$ 5,244	$ 5,244	$ 5,617	$ 5,617	$ 5,617	$ 4,871	$ 4,871	$ 4,871	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 46,889**	**$ 45,458**	**$ 45,270**	**$ 47,548**	**$ 46,445**	**$ 46,307**	**$ 48,340**	**$ 46,988**	**$ 46,779**	**$ 47,360**	**$ 46,093**	**$ 46,010**	**$ 48,309**	**$ 46,890**	**$ 46,695**
Total Retail Sales	GWh	209,073	209,073	209,073	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882
Average Rate (cts/kWh)	**cts/kWh**	**20.7**	**20.0**	**19.9**	**21.4**	**20.8**	**20.8**	**21.6**	**20.9**	**20.8**	**21.5**	**20.8**	**20.8**	**21.8**	**21.0**	**20.9**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,038	$ 4,844	$ 5,474	$ 3,997	$ 4,557	$ 5,025	$ 4,040	$ 4,867	$ 5,179	$ 4,034	$ 4,554	$ 4,865	$ 3,983	$ 4,795	$ 5,233
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 409	$ 1,005	$ 1,448	$ 432	$ 1,202	$ 1,550	$ 408	$ 1,002	$ 1,519	$ 419	$ 1,264	$ 1,544	$ 468	$ 1,089	$ 1,507
Market Revenues	$MM	$ (296)	$ (158)	$ (254)	$ (315)	$ (129)	$ (302)	$ (331)	$ (161)	$ (344)	$ (409)	$ (264)	$ (391)	$ (345)	$ (189)	$ (354)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (342)	$ (352)	$ (354)	$ (346)	$ (353)	$ (353)	$ (342)	$ (352)	$ (353)	$ (344)	$ (353)	$ (352)	$ (342)	$ (352)	$ (353)
Total CAISO Operating Cost	**$MM**	**$ 3,810**	**$ 5,339**	**$ 6,315**	**$ 3,768**	**$ 5,277**	**$ 5,920**	**$ 3,774**	**$ 5,355**	**$ 6,001**	**$ 3,701**	**$ 5,200**	**$ 5,666**	**$ 3,765**	**$ 5,343**	**$ 6,034**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	71%	57%	46%	69%	54%	46%	69%	54%	46%	70%	55%	50%	69%	54%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	75%	61%	51%	73%	58%	51%	73%	58%	50%	74%	60%	54%	73%	59%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	2%	1%	4%	2%	1%	4%	3%	2%	5%	3%	2%	5%	4%	2%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	5%	3%	2%	5%	3%	2%	6%	4%	3%	7%	5%	4%	7%	5%	3%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
RPS Renewables excl. Pipeline Biogas	GWh	142,931	114,286	92,106	131,238	101,954	87,111	131,312	102,163	86,895	133,245	105,314	94,123	132,647	103,555	86,835
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_low_btmpv	42mmt_OOSWind_low_btmpv	99mmt_OOSWind_low_btmpv	30mmt_OOSWind_flexev_201	42mmt_OOSWind_flexev_201	99mmt_OOSWind_flexev_201	30mmt_OOSWind_high_pvcos	42mmt_OOSWind_high_pvcos	99mmt_OOSWind_high_pvcos	30mmt_OOSWind_low_pvcost	42mmt_OOSWind_low_pvcost	99mmt_OOSWind_low_pvcost	30mmt_OOSWind_high_stora	42mmt_OOSWind_high_stora	99mmt_OOSWind_high_stora
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Low BTM PV	Resource Study_OOS Wind_42 MMT_Low BTM PV	Resource Study_OOS Wind_30 MMT_Low BTM PV	Resource Study_OOS Wind_Default 50% RPS_Flexible	Resource Study_OOS Wind_42 MMT_Flexible EVs	Resource Study_OOS Wind_30 MMT_Flexible EVs	Resource Study_OOS Wind_Default 50% RPS_High PV Cost	Resource Study_OOS Wind_42 MMT_High PV Cost	Resource Study_OOS Wind_30 MMT_High PV Cost	Resource Study_OOS Wind_Default 50% RPS_Low PV Cost	Resource Study_OOS Wind_42 MMT_Low PV Cost	Resource Study_OOS Wind_30 MMT_Low PV Cost	Resource Study_OOS Wind_Default 50% RPS_High Battery Cost	Resource Study_OOS Wind_42 MMT_High Battery Cost	Resource Study_OOS Wind_30 MMT_High Battery Cost

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	23.6	29.0	34.6	23.4	27.5	31.8	23.6	29.0	32.6	23.5	27.1	30.2	23.2	28.4	32.8
Import Emissions	MMtCO2	0.7	5.0	8.3	0.9	6.6	9.1	0.7	5.0	8.8	0.8	7.0	9.0	1.1	5.6	8.7
Total CAISO Emissions	MMtCO2	24.3	34.0	42.9	24.3	34.0	40.8	24.3	34.0	41.3	24.3	34.0	39.2	24.3	34.0	41.5
Marginal GHG Cost	$/tCO2	$ 235	$ 79	$ -	$ 205	$ 55	$ -	$ 239	$ 80	$ -	$ 221	$ 45	$ -	$ 239	$ 82	$ -
Total WECC Emissions	MMtCO2	183	195	203	183	195	200	183	195	201	183	194	198	183	194	201

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,058	45,058	45,058	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	51,816	51,816	51,816	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468
Firm Capacity	MW	39,867	38,148	38,148	39,810	38,148	38,148	39,867	38,148	38,148	39,712	38,148	38,148	39,867	38,148	38,148
Import Capacity	MW	9,891	9,891	11,271	9,891	10,791	11,271	9,891	10,791	11,271	9,891	10,418	11,271	9,891	10,791	11,271
Storage	MW	4,283	3,507	3,200	4,045	3,410	3,198	4,693	3,555	3,271	5,250	3,495	3,340	4,507	3,257	3,157
Variable Renewable ELCC	MW	8,121	7,811	7,598	7,795	7,718	7,578	8,099	7,826	7,674	7,953	7,853	7,706	8,002	7,839	7,674
Total Available Capacity	MW	62,162	59,357	60,217	61,542	60,067	60,196	62,551	60,321	60,364	62,806	59,913	60,465	62,267	60,035	60,250
Actual Reserve Margin	%	36%	30%	32%	37%	33%	34%	37%	32%	32%	38%	31%	33%	36%	32%	32%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	29%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_OOSWind_low_storage	42mmt_OOSWind_low_storage	99mmt_OOSWind_low_storage	30mmt_OOSWind_no_taxcredit	42mmt_OOSWind_no_taxcredit	99mmt_OOSWind_no_taxcredit	30mmt_OOSWind_25yr_gasre	42mmt_OOSWind_25yr_gasre	99mmt_OOSWind_25yr_gasre	30mmt_OOSWind_high_build	42mmt_OOSWind_high_build	99mmt_OOSWind_high_build	30mmt_PS_20170831	42mmt_PS_20170831	99mmt_PS_20170831
How referenced in Proposed Reference System Plan slides:		Resource Study_OOS Wind_Default 50% RPS_Low Battery Cost	Resource Study_OOS Wind_42 MMT_Low Battery Cost	Resource Study_OOS Wind_30 MMT_Low Battery Cost	Resource Study_OOS Wind_Default 50% RPS_No Tax Credits	Resource Study_OOS Wind_42 MMT_No Tax Credits	Resource Study_OOS Wind_30 MMT_No Tax Credits	Resource Study_OOS Wind_Default 50% RPS_Gas Retirements	Resource Study_OOS Wind_42 MMT_Gas Retirements	Resource Study_OOS Wind_30 MMT_Gas Retirements	Resource Study_OOS Wind_Default 50% RPS_High BE	Resource Study_OOS Wind_42 MMT_High BE	Resource Study_OOS Wind_30 MMT_High BE	Resource Study_Pumped Storage_Default 50% RPS_Reference	Resource Study_Pumped Storage_42 MMT_Reference	Resource Study_Pumped Storage_30 MMT_Reference
Present Value Portfolio Metrics	***Unit***															
PV Revenue Requirement	*$MM*	$ 679,722	$ 670,610	$ 668,705	$ 689,248	$ 675,631	$ 672,205	$ 687,499	$ 677,561	$ 676,739	$ 700,126	$ 683,992	$ 678,712	$ 688,778	$ 674,988	$ 671,696
PV Total Resource Cost	*$MM*	$ 751,858	$ 742,746	$ 740,842	$ 761,385	$ 747,768	$ 744,342	$ 759,635	$ 749,697	$ 748,876	$ 772,263	$ 756,128	$ 750,848	$ 760,915	$ 747,124	$ 743,832
Levelized Revenue Requirement	*$MM*	$ 40,453	$ 39,911	$ 39,798	$ 41,020	$ 40,210	$ 40,006	$ 40,916	$ 40,325	$ 40,276	$ 41,668	$ 40,707	$ 40,393	$ 40,992	$ 40,171	$ 39,976
Levelized Total Resource Cost	*$MM*	$ 44,746	$ 44,204	$ 44,091	$ 45,313	$ 44,503	$ 44,299	$ 45,209	$ 44,618	$ 44,569	$ 45,961	$ 45,000	$ 44,686	$ 45,285	$ 44,465	$ 44,269
Levelized Average Rate	*cts/kWh*	20.1	19.9	19.8	20.4	20.0	19.9	20.4	20.1	20.0	20.1	19.6	19.5	20.4	20.0	19.9
Portfolio Metrics	***Unit***	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 42,031	$ 41,061	$ 40,915	$ 43,045	$ 41,570	$ 41,162	$ 42,791	$ 41,681	$ 41,665	$ 44,233	$ 42,323	$ 41,874	$ 42,843	$ 41,278	$ 41,032
Total Resource Cost	*$MM*	$ 47,275	$ 46,305	$ 46,158	$ 48,289	$ 46,814	$ 46,406	$ 48,035	$ 46,924	$ 46,909	$ 49,477	$ 47,567	$ 47,118	$ 48,087	$ 46,522	$ 46,276
Average Rate	*cts/kWh*	21.2	20.8	20.7	21.8	21.0	20.8	21.6	21.1	21.1	21.1	20.2	20.0	21.7	20.9	20.7
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	41.1	24.3	34.0	41.3	24.3	34.0	38.4	24.3	34.0	44.7	24.3	34.0	42.4
Effective RPS (incl. banked RECs)	*% of Retail Sales*	72%	59%	51%	73%	58%	50%	75%	60%	55%	75%	62%	50%	73%	59%	50%
Renewable Curtailment	*% of RPS Gen.*	4.9%	3.4%	2.3%	6.1%	4.0%	3.0%	6.2%	3.7%	2.8%	6.2%	5.2%	2.6%	6.5%	5.4%	2.8%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	1,700	-	-	2,020	-	-	2,020	-	-	2,020	424	-	2,020	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	4,144	3,942	3,000	6,860	3,984	3,000	7,668	4,144	3,660	7,774	4,515	3,000	4,775	1,145	299
Solar	*MW*	9,745	4,796	-	7,994	4,368	-	8,260	5,742	2,054	11,689	8,385	1,549	11,228	9,092	3,088
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	7,118	3,110	2,186	3,310	1,596	456	3,867	7,088	7,765	4,033	2,020	593	3,724	1,066	59
Pumped Storage	*MW*	-	-	-	175	-	-	273	-	-	1,418	-	-	1,260	1,000	1,000
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**11,087**	**4,235**	**-**	**10,309**	**5,353**	**-**	**11,383**	**5,339**	**2,714**	**14,918**	**8,450**	**1,549**	**12,954**	**7,231**	**3,356**
Out-Of-State Renewables	*MW*	**4,503**	**4,503**	**3,000**	**6,565**	**3,000**	**3,000**	**6,565**	**4,547**	**3,000**	**6,565**	**4,874**	**3,000**	**5,069**	**3,006**	**32**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	13,075	13,075	13,075	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	2,920	1,220	1,220	3,240	1,220	1,220	3,240	1,220	1,220	3,240	1,644	1,220	3,240	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,338	12,136	11,193	15,054	12,178	11,193	15,861	12,338	11,854	15,968	12,709	11,193	12,968	9,338	8,493
Solar	*MW*	22,596	17,646	12,850	20,844	17,219	12,850	21,111	18,592	14,904	24,539	21,235	14,399	24,078	21,942	15,939
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	8,443	4,435	3,511	4,635	2,921	1,781	5,192	8,413	9,090	5,358	3,345	1,918	5,049	2,391	1,384
Pumped Storage	*MW*	1,832	1,832	1,832	2,007	1,832	1,832	2,105	1,832	1,832	3,250	1,832	1,832	3,092	2,832	2,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	3,613	3,318	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**48,420**	**41,568**	**37,333**	**47,641**	**42,685**	**37,333**	**48,715**	**42,672**	**40,047**	**52,250**	**45,783**	**38,881**	**50,286**	**44,563**	**40,688**
Out-Of-State Renewables	*MW*	**6,566**	**6,566**	**5,063**	**8,629**	**5,063**	**5,063**	**8,629**	**6,610**	**5,063**	**8,629**	**6,937**	**5,063**	**7,132**	**5,069**	**2,096**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_low_storag	42mmt_OOSWind_low_storag	99mmt_OOSWind_low_storag	30mmt_OOSWind_no_taxcred	42mmt_OOSWind_no_taxcred	99mmt_OOSWind_no_taxcred	30mmt_OOSWind_25yr_gasre	42mmt_OOSWind_25yr_gasre	99mmt_OOSWind_25yr_gasre	30mmt_OOSWind_high_build	42mmt_OOSWind_high_build	99mmt_OOSWind_high_build	30mmt_PS_20170831	42mmt_PS_20170831	99mmt_PS_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Low Battery Cost	Resource Study_OOS Wind_42 MMT_Low Battery Cost	Resource Study_OOS Wind_30 MMT_Low Battery Cost	Resource Study_OOS Wind_Default 50% RPS_No Tax Credits	Resource Study_OOS Wind_42 MMT_No Tax Credits	Resource Study_OOS Wind_30 MMT_No Tax Credits	Resource Study_OOS Wind_Default 50% RPS_Gas Retirements	Resource Study_OOS Wind_42 MMT_Gas Retirements	Resource Study_OOS Wind_30 MMT_Gas Retirements	Resource Study_OOS Wind_Default 50% RPS_High BE	Resource Study_OOS Wind_42 MMT_High BE	Resource Study_OOS Wind_30 MMT_High BE	Resource Study_Pumped Storage_Defaul t 50% RPS_Reference	Resource Study_Pumped Storage_42 MMT_Referenc e	Resource Study_Pumped Storage_30 MMT_Referenc e

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,302	25,190	24,835	25,190	24,752	24,960	25,441	25,127	24,834	25,326	25,006	24,994	25,205	24,982	24,968
Gas	GWh	49,402	58,934	66,462	48,431	63,508	71,687	33,653	38,120	41,968	50,159	66,208	78,692	49,450	63,836	72,615
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	150,690	123,747	107,868	152,603	122,871	107,751	155,275	126,990	115,896	165,283	137,789	112,560	153,134	124,539	106,459
Storage Losses	GWh	(3,347)	(1,821)	(1,314)	(2,383)	(1,563)	(1,136)	(2,557)	(2,293)	(2,164)	(3,364)	(1,867)	(1,104)	(3,119)	(2,037)	(1,230)
Curtailment	GWh	(2,512)	(1,331)	(257)	(5,044)	(1,353)	(374)	(5,321)	(1,453)	(421)	(4,626)	(2,684)	(401)	(4,717)	(2,024)	(525)
Imports	GWh	7,049	21,526	30,963	7,994	17,630	27,000	20,247	39,097	45,905	6,547	15,373	28,712	7,147	17,453	28,756
Exports	GWh	(5,451)	(4,164)	(6,070)	(7,847)	(3,622)	(6,859)	(7,964)	(3,830)	(3,820)	(6,778)	(5,514)	(7,618)	(7,763)	(4,712)	(8,367)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	255,366	255,366	255,366	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 766	$ 766	$ 766	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 3,648	$ 1,754	$ 969	$ 4,728	$ 1,933	$ 969	$ 4,548	$ 1,915	$ 1,352	$ 5,152	$ 2,636	$ 1,178	$ 3,990	$ 1,385	$ 464
New Storage Fixed Costs	$MM	$ 591	$ 124	$ 74	$ 390	$ 107	$ 30	$ 493	$ 566	$ 637	$ 1,001	$ 143	$ 39	$ 832	$ 349	$ 282
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 68	$ 53	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ -	$ -	$ -	$ 2	$ -	$ -	$ 73	$ 1	$ -	$ 83	$ -	$ -	$ 83	$ -	$ -
Total Operating Costs	$MM	$ 3,828	$ 5,217	$ 5,907	$ 3,762	$ 5,367	$ 6,001	$ 3,514	$ 4,969	$ 5,460	$ 3,834	$ 5,381	$ 6,495	$ 3,776	$ 5,382	$ 6,123
Total Revenue Requirement	**$MM**	**$ 42,031**	**$ 41,061**	**$ 40,915**	**$ 43,045**	**$ 41,570**	**$ 41,162**	**$ 42,791**	**$ 41,681**	**$ 41,665**	**$ 44,233**	**$ 42,323**	**$ 41,874**	**$ 42,843**	**$ 41,278**	**$ 41,032**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 47,275**	**$ 46,305**	**$ 46,158**	**$ 48,289**	**$ 46,814**	**$ 46,406**	**$ 48,035**	**$ 46,924**	**$ 46,909**	**$ 49,477**	**$ 47,567**	**$ 47,118**	**$ 48,087**	**$ 46,522**	**$ 46,276**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	209,829	209,829	209,829	197,882	197,882	197,882
Average Rate (cts/kWh)	**cts/kWh**	**21.2**	**20.8**	**20.7**	**21.8**	**21.0**	**20.8**	**21.6**	**21.1**	**21.1**	**21.1**	**20.2**	**20.0**	**21.7**	**20.9**	**20.7**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,076	$ 4,588	$ 4,839	$ 4,051	$ 4,915	$ 5,179	$ 3,118	$ 3,301	$ 3,420	$ 4,148	$ 5,140	$ 5,609	$ 4,110	$ 4,985	$ 5,268
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 338	$ 1,176	$ 1,731	$ 400	$ 964	$ 1,519	$ 1,094	$ 2,195	$ 2,586	$ 315	$ 833	$ 1,613	$ 352	$ 957	$ 1,613
Market Revenues	$MM	$ (237)	$ (193)	$ (309)	$ (346)	$ (159)	$ (344)	$ (352)	$ (172)	$ (188)	$ (287)	$ (242)	$ (375)	$ (344)	$ (210)	$ (405)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (349)	$ (354)	$ (354)	$ (343)	$ (352)	$ (353)	$ (346)	$ (356)	$ (358)	$ (342)	$ (350)	$ (353)	$ (342)	$ (352)	$ (353)
Total CAISO Operating Cost	**$MM**	**$ 3,828**	**$ 5,217**	**$ 5,907**	**$ 3,762**	**$ 5,367**	**$ 6,001**	**$ 3,514**	**$ 4,969**	**$ 5,460**	**$ 3,834**	**$ 5,381**	**$ 6,495**	**$ 3,776**	**$ 5,382**	**$ 6,123**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	68%	54%	46%	69%	54%	46%	70%	56%	50%	71%	58%	46%	69%	54%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	72%	59%	51%	73%	58%	50%	75%	60%	55%	75%	62%	50%	73%	59%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	2%	2%	1%	4%	3%	2%	4%	2%	1%	4%	4%	1%	4%	3%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	5%	3%	2%	6%	4%	3%	6%	4%	3%	6%	5%	3%	6%	5%	3%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6	$ -	$ -	$ 11
RPS Renewables excl. Pipeline Biogas	GWh	129,813	102,890	87,012	131,725	102,014	86,895	134,398	106,133	95,039	144,405	116,932	91,703	132,256	103,682	85,603
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_OOSWind_low_storage	42mmt_OOSWind_low_storage	99mmt_OOSWind_low_storage	30mmt_OOSWind_no_taxcredit	42mmt_OOSWind_no_taxcredit	99mmt_OOSWind_no_taxcredit	30mmt_OOSWind_25yr_gasretire	42mmt_OOSWind_25yr_gasretire	99mmt_OOSWind_25yr_gasretire	30mmt_OOSWind_high_build	42mmt_OOSWind_high_build	99mmt_OOSWind_high_build	30mmt_PS_20170831	42mmt_PS_20170831	99mmt_PS_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_OOS Wind_Default 50% RPS_Low Battery Cost	Resource Study_OOS Wind_42 MMT_Low Battery Cost	Resource Study_OOS Wind_30 MMT_Low Battery Cost	Resource Study_OOS Wind_Default 50% RPS_No Tax Credits	Resource Study_OOS Wind_42 MMT_No Tax Credits	Resource Study_OOS Wind_30 MMT_No Tax Credits	Resource Study_OOS Wind_Default 50% RPS_Gas Retirements	Resource Study_OOS Wind_42 MMT_Gas Retirements	Resource Study_OOS Wind_30 MMT_Gas Retirements	Resource Study_OOS Wind_Default 50% RPS_High BE	Resource Study_OOS Wind_42 MMT_High BE	Resource Study_OOS Wind_30 MMT_High BE	Resource Study_Pumped Storage_Default 50% RPS_Reference	Resource Study_Pumped Storage_42 MMT_Reference	Resource Study_Pumped Storage_30 MMT_Reference

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	24.1	27.6	30.6	23.7	29.3	32.6	18.4	20.1	21.6	24.3	30.2	35.2	24.0	29.4	32.9
Import Emissions	MMtCO2	0.2	6.4	10.4	0.6	4.7	8.8	5.9	13.9	16.8	-	3.8	9.5	0.3	4.7	9.5
Total CAISO Emissions	MMtCO2	24.3	34.0	41.1	24.3	34.0	41.3	24.3	34.0	38.4	24.3	34.0	44.7	24.3	34.0	42.4
Marginal GHG Cost	$/tCO2	$ 144	$ 60	$ -	$ 239	$ 88	$ -	$ 222	$ 56	$ -	$ 270	$ 131	$ -	$ 252	$ 98	$ -
Total WECC Emissions	MMtCO2	184	194	200	183	195	201	182	194	198	183	194	203	183	194	201

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	47,631	47,631	47,631	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	54,776	54,776	54,776	52,468	52,468	52,468
Firm Capacity	MW	39,611	38,148	38,148	39,867	38,148	38,148	27,584	27,725	27,431	39,867	38,487	38,148	39,867	38,148	38,148
Import Capacity	MW	9,891	10,791	11,271	11,271	11,271	11,271	11,271	11,297	11,271	9,891	9,891	11,271	9,891	9,891	9,891
Storage	MW	10,275	4,219	3,703	4,978	3,578	3,271	5,485	5,610	5,966	7,858	3,731	3,305	6,930	4,434	4,172
Variable Renewable ELCC	MW	7,893	7,820	7,674	7,896	7,837	7,674	8,127	7,835	7,800	8,436	8,120	7,927	8,199	7,881	7,802
Total Available Capacity	MW	67,670	60,979	60,796	64,011	60,834	60,364	52,468	52,468	52,468	66,052	60,230	60,651	64,887	60,354	60,013
Actual Reserve Margin	%	48%	34%	33%	40%	33%	32%	15%	15%	15%	39%	26%	27%	42%	32%	32%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ 5	$ 71	$ 50	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_PS_2x_aaee_2017083	42mmt_PS_2x_aaee_2017083	99mmt_PS_2x_aaee_2017083	30mmt_PS_mid_aaee_20170	42mmt_PS_mid_aaee_20170	99mmt_PS_mid_aaee_20170	30mmt_PS_high_btmpv_2017	42mmt_PS_high_btmpv_2017	99mmt_PS_high_btmpv_2017	30mmt_PS_low_btmpv_201	42mmt_PS_low_btmpv_201	99mmt_PS_low_btmpv_201	30mmt_PS_flexev_20170831	42mmt_PS_flexev_20170831	99mmt_PS_flexev_20170831
How referenced in Proposed Reference System Plan slides:		Resource Study_Pumped Storage_Default 50% RPS_High EE	Resource Study_Pumped Storage_42 MMT_High EE	Resource Study_Pumped Storage_30 MMT_High EE	Resource Study_Pumped Storage_Default 50% RPS_Low EE	Resource Study_Pumped Storage_42 MMT_Low EE	Resource Study_Pumped Storage_30 MMT_Low EE	Resource Study_Pumped Storage_Default 50% RPS_High BTM PV	Resource Study_Pumped Storage_42 MMT_High BTM PV	Resource Study_Pumped Storage_30 MMT_High BTM PV	Resource Study_Pumped Storage_Default 50% RPS_Low BTM PV	Resource Study_Pumped Storage_42 MMT_Low BTM PV	Resource Study_Pumped Storage_30 MMT_Low BTM PV	Resource Study_Pumped Storage_Default 50% RPS_Flexible EVs	Resource Study_Pumped Storage_42 MMT_Flexible EVs	Resource Study_Pumped Storage_30 MMT_Flexible EVs
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 684,932	$ 673,459	$ 671,293	$ 694,890	$ 678,362	$ 673,055	$ 685,193	$ 671,339	$ 668,514	$ 695,471	$ 681,224	$ 677,186	$ 685,410	$ 673,469	$ 670,655
PV Total Resource Cost	*$MM*	$ 759,524	$ 748,052	$ 745,885	$ 764,159	$ 747,631	$ 742,324	$ 768,363	$ 754,510	$ 751,685	$ 749,887	$ 735,640	$ 731,601	$ 757,546	$ 745,605	$ 742,791
Levelized Revenue Requirement	*$MM*	$ 40,763	$ 40,080	$ 39,952	$ 41,356	$ 40,372	$ 40,056	$ 40,779	$ 39,954	$ 39,786	$ 41,390	$ 40,543	$ 40,302	$ 40,792	$ 40,081	$ 39,914
Levelized Total Resource Cost	*$MM*	$ 45,203	$ 44,520	$ 44,391	$ 45,478	$ 44,495	$ 44,179	$ 45,729	$ 44,904	$ 44,736	$ 44,629	$ 43,781	$ 43,541	$ 45,085	$ 44,374	$ 44,207
Levelized Average Rate	*cts/kWh*	20.8	20.4	20.3	20.0	19.5	19.3	20.8	20.3	20.3	19.9	19.5	19.3	20.3	19.9	19.9

Portfolio Metrics	*Unit*	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Revenue Requirement	*$MM*	$ 42,427	$ 41,153	$ 40,978	$ 43,477	$ 41,604	$ 41,151	$ 42,532	$ 40,971	$ 40,747	$ 43,461	$ 41,816	$ 41,529	$ 42,467	$ 41,137	$ 40,924
Total Resource Cost	*$MM*	$ 47,883	$ 46,609	$ 46,434	$ 48,485	$ 46,612	$ 46,160	$ 48,794	$ 47,232	$ 47,008	$ 47,075	$ 45,431	$ 45,144	$ 47,711	$ 46,381	$ 46,168
Average Rate	*cts/kWh*	22.2	21.6	21.5	21.1	20.2	19.9	22.3	21.5	21.3	20.8	20.0	19.9	21.5	20.8	20.7
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	40.7	24.3	34.0	44.2	24.3	34.0	41.0	24.3	34.0	43.8	24.3	34.0	41.9
Effective RPS (incl. banked RECs)	*% of Retail Sales*	72%	56%	50%	74%	61%	50%	72%	57%	50%	75%	61%	50%	73%	58%	50%
Renewable Curtailment	*% of RPS Gen.*	6.4%	4.8%	3.2%	6.4%	5.6%	2.6%	7.2%	6.3%	3.8%	5.8%	4.5%	1.9%	5.9%	4.3%	2.3%

Selected Resource Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	-	-	2,020	424	-	2,020	-	-	2,020	-	-	2,020	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	3,840	984	146	4,775	1,645	299	4,191	1,145	146	4,775	1,145	146	4,478	984	146
Solar	*MW*	9,481	6,158	2,195	14,408	11,108	4,613	9,600	6,849	2,370	15,216	12,941	5,028	11,114	8,508	3,089
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	3,145	554	2	4,976	1,692	154	3,960	1,144	221	3,749	1,038	-	2,940	544	-
Pumped Storage	*MW*	1,000	1,000	1,000	1,911	1,000	1,000	1,448	1,000	1,000	1,144	1,000	1,000	1,000	1,000	1,000
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**10,272**	**4,136**	**2,341**	**16,134**	**9,671**	**3,356**	**10,742**	**4,988**	**2,516**	**16,941**	**11,079**	**3,202**	**12,544**	**6,486**	**3,202**
Out-Of-State Renewables	*MW*	**5,069**	**3,006**	**-**	**5,069**	**3,506**	**1,557**	**5,069**	**3,006**	**-**	**5,069**	**3,006**	**1,972**	**5,069**	**3,006**	**33**

Total Resource Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,220	1,220	3,240	1,644	1,220	3,240	1,220	1,220	3,240	1,220	1,220	3,240	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,033	9,178	8,340	12,968	9,838	8,493	12,385	9,338	8,340	12,968	9,338	8,340	12,672	9,178	8,340
Solar	*MW*	22,331	19,008	15,045	27,258	23,959	17,463	22,450	19,699	15,221	28,066	25,791	17,878	23,964	21,358	15,940
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	20,091	20,091	20,091	9,289	9,289	9,289	15,941	15,941	15,941
Battery Storage	*MW*	4,470	1,879	1,327	6,301	3,017	1,479	5,285	2,469	1,546	5,074	2,363	1,325	4,265	1,869	1,325
Pumped Storage	*MW*	2,832	2,832	2,832	3,743	2,832	2,832	3,280	2,832	2,832	2,976	2,832	2,832	2,832	2,832	2,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**47,604**	**41,469**	**39,673**	**53,466**	**47,004**	**40,688**	**52,225**	**46,471**	**43,999**	**47,622**	**41,760**	**33,883**	**49,876**	**43,819**	**40,535**
Out-Of-State Renewables	*MW*	**7,132**	**5,069**	**2,064**	**7,132**	**5,569**	**3,620**	**7,132**	**5,069**	**2,064**	**7,132**	**5,069**	**4,035**	**7,132**	**5,069**	**2,097**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_PS_2x_aaee_2017083	42mmt_PS_2x_aaee_2017083	99mmt_PS_2x_aaee_2017083	30mmt_PS_mid_aaee_20170	42mmt_PS_mid_aaee_20170	99mmt_PS_mid_aaee_20170	30mmt_PS_high_btmpv_2017	42mmt_PS_high_btmpv_2017	99mmt_PS_high_btmpv_2017	30mmt_PS_low_btmpv_201	42mmt_PS_low_btmpv_201	99mmt_PS_low_btmpv_201	30mmt_PS_flexv_20170831	42mmt_PS_flexv_20170831	99mmt_PS_flexv_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_High EE	Resource Study_Pumped Storage_42 MMT_High EE	Resource Study_Pumped Storage_30 MMT_High EE	Resource Study_Pumped Storage_Default 50% RPS_Low EE	Resource Study_Pumped Storage_42 MMT_Low EE	Resource Study_Pumped Storage_30 MMT_Low EE	Resource Study_Pumped Storage_Default 50% RPS_High BTM PV	Resource Study_Pumped Storage_42 MMT_High BTM PV	Resource Study_Pumped Storage_30 MMT_High BTM PV	Resource Study_Pumped Storage_Default 50% RPS_Low BTM PV	Resource Study_Pumped Storage_42 MMT_Low BTM PV	Resource Study_Pumped Storage_30 MMT_Low BTM PV	Resource Study_Pumped Storage_Default 50% RPS_Flexible EVs	Resource Study_Pumped Storage_42 MMT_Flexible EVs	Resource Study_Pumped Storage_30 MMT_Flexible EVs

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,169	24,884	25,042	25,386	25,205	24,990	25,251	25,118	25,070	25,240	24,900	24,861	25,270	24,922	24,777
Gas	GWh	48,760	60,447	67,928	50,170	65,737	77,737	49,382	63,910	67,756	50,072	64,201	77,846	49,498	60,854	69,323
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	145,644	115,995	103,233	161,936	134,565	110,707	153,968	124,998	110,888	151,860	124,261	99,753	152,376	123,045	106,294
Storage Losses	GWh	(2,760)	(1,816)	(1,299)	(3,911)	(2,250)	(1,240)	(3,307)	(2,101)	(1,402)	(3,053)	(1,970)	(1,129)	(2,742)	(1,760)	(1,167)
Curtailment	GWh	(4,520)	(1,377)	(540)	(4,301)	(2,559)	(526)	(5,028)	(2,402)	(964)	(4,456)	(1,669)	(103)	(4,345)	(1,345)	(237)
Imports	GWh	7,733	20,296	28,815	6,547	15,820	28,711	7,214	17,414	29,872	6,621	17,100	27,335	7,129	19,959	30,367
Exports	GWh	(8,057)	(3,476)	(7,883)	(6,636)	(5,503)	(8,453)	(8,398)	(5,071)	(8,702)	(6,702)	(4,558)	(5,766)	(7,420)	(3,219)	(6,694)
Load	GWh	234,958	234,958	234,958	251,716	251,716	251,716	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 1,320	$ 1,320	$ 1,320	$ 566	$ 566	$ 566	$ 971	$ 971	$ 971	$ 950	$ 950	$ 950	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 3,551	$ 963	$ 318	$ 4,476	$ 2,058	$ 657	$ 3,644	$ 1,083	$ 342	$ 4,610	$ 1,930	$ 685	$ 3,910	$ 1,280	$ 439
New Storage Fixed Costs	$MM	$ 603	$ 314	$ 278	$ 1,317	$ 400	$ 288	$ 951	$ 355	$ 292	$ 762	$ 346	$ 278	$ 555	$ 313	$ 278
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ -	$ -	$ -	$ 83	$ -	$ -	$ 31	$ -	$ -	$ 83	$ -	$ -	$ 57	$ -	$ -
Total Operating Costs	$MM	$ 3,753	$ 5,356	$ 5,862	$ 3,835	$ 5,381	$ 6,440	$ 3,735	$ 5,362	$ 5,942	$ 3,855	$ 5,391	$ 6,417	$ 3,783	$ 5,381	$ 6,045
Total Revenue Requirement	**$MM**	**$ 42,427**	**$ 41,153**	**$ 40,978**	**$ 43,477**	**$ 41,604**	**$ 41,151**	**$ 42,532**	**$ 40,971**	**$ 40,747**	**$ 43,461**	**$ 41,816**	**$ 41,529**	**$ 42,467**	**$ 41,137**	**$ 40,924**
Customer Costs (Scenario Specific)	$MM	$ 5,456	$ 5,456	$ 5,456	$ 5,008	$ 5,008	$ 5,008	$ 6,261	$ 6,261	$ 6,261	$ 3,615	$ 3,615	$ 3,615	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 47,883**	**$ 46,609**	**$ 46,434**	**$ 48,485**	**$ 46,612**	**$ 46,160**	**$ 48,794**	**$ 47,232**	**$ 47,008**	**$ 47,075**	**$ 45,431**	**$ 45,144**	**$ 47,711**	**$ 46,381**	**$ 46,168**
Total Retail Sales	GWh	190,917	190,917	190,917	206,446	206,446	206,446	190,899	190,899	190,899	209,073	209,073	209,073	197,882	197,882	197,882
Average Rate (cts/kWh)	**cts/kWh**	**22.2**	**21.6**	**21.5**	**21.1**	**20.2**	**19.9**	**22.3**	**21.5**	**21.3**	**20.8**	**20.0**	**19.9**	**21.5**	**20.8**	**20.7**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,070	$ 4,745	$ 4,983	$ 4,148	$ 5,114	$ 5,591	$ 4,105	$ 4,989	$ 5,040	$ 4,149	$ 5,001	$ 5,532	$ 4,102	$ 4,779	$ 5,035
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 385	$ 1,119	$ 1,617	$ 314	$ 862	$ 1,611	$ 353	$ 954	$ 1,672	$ 327	$ 938	$ 1,532	$ 351	$ 1,094	$ 1,701
Market Revenues	$MM	$ (358)	$ (156)	$ (385)	$ (284)	$ (245)	$ (408)	$ (380)	$ (230)	$ (418)	$ (278)	$ (197)	$ (293)	$ (327)	$ (140)	$ (338)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (344)	$ (353)	$ (353)	$ (342)	$ (350)	$ (353)	$ (343)	$ (352)	$ (352)	$ (342)	$ (351)	$ (354)	$ (343)	$ (353)	$ (353)
Total CAISO Operating Cost	**$MM**	**$ 3,753**	**$ 5,356**	**$ 5,862**	**$ 3,835**	**$ 5,381**	**$ 6,440**	**$ 3,735**	**$ 5,362**	**$ 5,942**	**$ 3,855**	**$ 5,391**	**$ 6,417**	**$ 3,783**	**$ 5,381**	**$ 6,045**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	68%	52%	45%	70%	57%	46%	68%	52%	45%	71%	57%	46%	69%	54%	46%
Banked RECs	% of Retail Sales	5%	5%	5%	4%	4%	4%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	72%	56%	50%	74%	61%	50%	72%	57%	50%	75%	61%	50%	73%	58%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	3%	2%	4%	4%	1%	5%	4%	2%	4%	3%	1%	4%	3%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	6%	5%	3%	6%	6%	3%	7%	6%	4%	6%	5%	2%	6%	4%	2%
Marginal RPS Cost	$/MWh	$ -	$ -	$ 7	$ -	$ -	$ 12	$ -	$ -	$ 9	$ -	$ -	$ 7	$ -	$ -	$ 9
RPS Renewables excl. Pipeline Biogas	GWh	124,766	95,138	82,377	141,059	113,709	89,851	125,555	96,607	82,497	143,059	115,481	90,973	131,499	102,188	85,437
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_PS_2x_aaee_2017083	42mmt_PS_2x_aaee_2017083	99mmt_PS_2x_aaee_2017083	30mmt_PS_mid_aaee_20170	42mmt_PS_mid_aaee_20170	99mmt_PS_mid_aaee_20170	30mmt_PS_high_btmpv_2017	42mmt_PS_high_btmpv_2017	99mmt_PS_high_btmpv_2017	30mmt_PS_low_btmpv_201	42mmt_PS_low_btmpv_201	99mmt_PS_low_btmpv_201	30mmt_PS_flexev_20170831	42mmt_PS_flexev_20170831	99mmt_PS_flexev_20170831
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_High EE	Resource Study_Pumped Storage_42 MMT_High EE	Resource Study_Pumped Storage_30 MMT_High EE	Resource Study_Pumped Storage_Default 50% RPS_Low EE	Resource Study_Pumped Storage_42 MMT_Low EE	Resource Study_Pumped Storage_30 MMT_Low EE	Resource Study_Pumped Storage_Default 50% RPS_High BTM PV	Resource Study_Pumped Storage_42 MMT_High BTM PV	Resource Study_Pumped Storage_30 MMT_High BTM PV	Resource Study_Pumped Storage_Default 50% RPS_Low BTM PV	Resource Study_Pumped Storage_42 MMT_Low BTM PV	Resource Study_Pumped Storage_30 MMT_Low BTM PV	Resource Study_Pumped Storage_Default 50% RPS_Flexible EVs	Resource Study_Pumped Storage_42 MMT_Flexible EVs	Resource Study_Pumped Storage_30 MMT_Flexible EVs

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	23.8	28.1	31.1	24.3	30.1	34.8	24.0	29.4	31.0	24.3	29.5	34.9	24.1	28.3	31.7
Import Emissions	MMtCO2	0.5	5.9	9.5	-	4.0	9.5	0.3	4.7	10.0	0.0	4.5	8.9	0.2	5.7	10.2
Total CAISO Emissions	MMtCO2	24.3	34.0	40.7	24.3	34.0	44.2	24.3	34.0	41.0	24.3	34.0	43.8	24.3	34.0	41.9
Marginal GHG Cost	$/tCO2	$ 237	$ 64	$ -	$ 278	$ 128	$ -	$ 245	$ 97	$ -	$ 272	$ 108	$ -	$ 245	$ 70	$ -
Total WECC Emissions	MMtCO2	183	195	199	184	194	203	183	194	199	183	194	203	183	195	201

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	43,567	43,567	43,567	47,287	47,287	47,287	45,624	45,624	45,624	45,624	45,624	45,624	45,058	45,058	45,058
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	50,102	50,102	50,102	54,380	54,380	54,380	52,468	52,468	52,468	52,468	52,468	52,468	51,816	51,816	51,816
Firm Capacity	MW	39,867	38,148	38,148	39,867	38,487	38,148	39,867	38,148	38,148	39,867	38,148	38,148	39,867	38,148	38,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	5,738	4,296	4,157	9,369	4,656	4,195	7,522	4,462	4,212	6,564	4,416	4,157	5,456	4,293	4,157
Variable Renewable ELCC	MW	7,653	7,542	7,453	8,400	8,090	8,019	8,080	7,889	7,788	8,132	7,820	7,690	8,021	7,778	7,661
Total Available Capacity	MW	63,149	59,876	59,649	67,527	61,124	60,253	65,360	60,389	60,040	64,454	60,275	59,886	63,235	60,110	59,857
Actual Reserve Margin	%	45%	37%	37%	43%	29%	27%	43%	32%	32%	41%	32%	31%	40%	33%	33%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_PS_high_pvcost_2017	42mmt_PS_high_pvcost_2017	99mmt_PS_high_pvcost_2017	30mmt_PS_low_pvcost_201	42mmt_PS_low_pvcost_201	99mmt_PS_low_pvcost_201	30mmt_PS_high_storagecost_	42mmt_PS_high_storagecost_	99mmt_PS_high_storagecost_	30mmt_PS_low_storagecost	42mmt_PS_low_storagecost	99mmt_PS_low_storagecost	30mmt_PS_no_taxcredits_20	42mmt_PS_no_taxcredits_20	99mmt_PS_no_taxcredits_20
		Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource
How referenced in Proposed Reference System Plan slides:		Study_Pumped Storage_Default 50% RPS_High PV Cost	Study_Pumped Storage_42 MMT_High PV Cost	Study_Pumped Storage_30 MMT_High PV Cost	Study_Pumped Storage_Default 50% RPS_Low PV Cost	Study_Pumped Storage_42 MMT_Low PV Cost	Study_Pumped Storage_30 MMT_Low PV Cost	Study_Pumped Storage_Default 50% RPS_High Battery Cost	Study_Pumped Storage_42 MMT_High Battery Cost	Study_Pumped Storage_30 MMT_High Battery Cost	Study_Pumped Storage_Default 50% RPS_Low Battery Cost	Study_Pumped Storage_42 MMT_Low Battery Cost	Study_Pumped Storage_30 MMT_Low Battery Cost	Study_Pumped Storage_Default 50% RPS_No Tax Credits	Study_Pumped Storage_42 MMT_No Tax Credits	Study_Pumped Storage_30 MMT_No Tax Credits
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 689,741	$ 675,767	$ 671,943	$ 685,931	$ 672,707	$ 670,955	$ 694,350	$ 679,530	$ 676,066	$ 681,326	$ 671,267	$ 668,281	$ 693,311	$ 677,657	$ 672,928
PV Total Resource Cost	*$MM*	$ 765,678	$ 751,704	$ 747,880	$ 754,085	$ 740,861	$ 739,109	$ 766,486	$ 751,666	$ 748,203	$ 753,462	$ 743,403	$ 740,417	$ 765,447	$ 749,793	$ 745,064
Levelized Revenue Requirement	*$MM*	$ 41,049	$ 40,218	$ 39,990	$ 40,823	$ 40,036	$ 39,931	$ 41,324	$ 40,442	$ 40,236	$ 40,549	$ 39,950	$ 39,772	$ 41,262	$ 40,330	$ 40,049
Levelized Total Resource Cost	*$MM*	$ 45,569	$ 44,737	$ 44,510	$ 44,879	$ 44,092	$ 43,988	$ 45,617	$ 44,735	$ 44,529	$ 44,842	$ 44,243	$ 44,065	$ 45,555	$ 44,623	$ 44,342
Levelized Average Rate	*cts/kWh*	20.4	20.0	19.9	20.3	19.9	19.9	20.6	20.1	20.0	20.2	19.9	19.8	20.5	20.1	19.9
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 42,922	$ 41,340	$ 41,049	$ 42,631	$ 41,102	$ 40,985	$ 43,267	$ 41,570	$ 41,317	$ 42,129	$ 41,020	$ 40,794	$ 43,381	$ 41,700	$ 41,170
Total Resource Cost	*$MM*	$ 48,538	$ 46,956	$ 46,666	$ 47,502	$ 45,974	$ 45,857	$ 48,511	$ 46,814	$ 46,561	$ 47,373	$ 46,264	$ 46,038	$ 48,625	$ 46,944	$ 46,414
Average Rate	*cts/kWh*	21.7	20.9	20.7	21.5	20.8	20.7	21.9	21.0	20.9	21.3	20.7	20.6	21.9	21.1	20.8
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	42.4	24.3	34.0	41.9	24.3	34.0	42.4	24.3	34.0	42.1	24.3	34.0	42.5
Effective RPS (incl. banked RECs)	*% of Retail Sales*	73%	58%	50%	74%	59%	50%	73%	59%	50%	72%	59%	50%	73%	58%	50%
Renewable Curtailment	*% of RPS Gen.*	6.3%	5.2%	2.6%	7.1%	5.9%	3.9%	7.5%	6.0%	2.8%	5.5%	4.3%	2.8%	6.4%	5.3%	2.3%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	-	-	2,020	-	-	2,020	-	-	1,700	-	-	2,020	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	4,775	1,145	299	3,840	942	-	4,775	1,145	299	1,590	984	146	4,775	1,145	146
Solar	*MW*	10,937	8,888	3,035	13,079	9,994	3,756	11,556	9,556	3,090	13,592	8,963	3,273	11,121	8,932	3,110
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	3,898	1,258	69	3,516	919	75	1,616	266	-	7,880	3,162	2,225	3,792	1,210	78
Pumped Storage	*MW*	1,245	1,000	1,000	1,588	1,000	1,000	2,524	1,000	1,000	1,000	1,000	1,000	1,209	1,000	1,000
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**12,663**	**7,027**	**3,334**	**13,870**	**7,930**	**3,056**	**13,281**	**7,694**	**3,356**	**13,431**	**6,941**	**3,202**	**12,847**	**7,133**	**3,256**
Out-Of-State Renewables	*MW*	**5,069**	**3,006**	**-**	**5,069**	**3,006**	**700**	**5,069**	**3,006**	**34**	**3,452**	**3,006**	**217**	**5,069**	**2,944**	**-**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,220	1,220	3,240	1,220	1,220	3,240	1,220	1,220	2,920	1,220	1,220	3,240	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,968	9,338	8,493	12,033	9,136	8,194	12,968	9,338	8,493	9,784	9,178	8,340	12,968	9,338	8,340
Solar	*MW*	23,787	21,739	15,885	25,929	22,844	16,606	24,406	22,406	15,941	26,442	21,813	16,123	23,971	21,782	15,961
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	5,223	2,583	1,394	4,841	2,244	1,400	2,941	1,591	1,325	9,205	4,487	3,550	5,117	2,535	1,403
Pumped Storage	*MW*	3,077	2,832	2,832	3,420	2,832	2,832	4,356	2,832	2,832	2,832	2,832	2,832	3,041	2,832	2,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**49,996**	**44,360**	**40,666**	**51,202**	**45,263**	**40,389**	**50,614**	**45,027**	**40,688**	**50,763**	**44,274**	**40,535**	**50,179**	**44,465**	**40,589**
Out-Of-State Renewables	*MW*	**7,132**	**5,069**	**2,064**	**7,132**	**5,069**	**2,763**	**7,132**	**5,069**	**2,098**	**5,515**	**5,069**	**2,280**	**7,132**	**5,007**	**2,064**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_PS_high_pvcost_2017	42mmt_PS_high_pvcost_2017	99mmt_PS_high_pvcost_2017	30mmt_PS_low_pvcost_201	42mmt_PS_low_pvcost_201	99mmt_PS_low_pvcost_201	30mmt_PS_high_storagecost_	42mmt_PS_high_storagecost_	99mmt_PS_high_storagecost_	30mmt_PS_low_storagecost	42mmt_PS_low_storagecost	99mmt_PS_low_storagecost	30mmt_PS_no_taxcredits_20	42mmt_PS_no_taxcredits_20	99mmt_PS_no_taxcredits_20
	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource	Resource
How referenced in Proposed Reference System Plan slides:	Study_Pumped Storage_Default 50% RPS_High PV Cost	Study_Pumped Storage_42 MMT_High PV Cost	Study_Pumped Storage_30 MMT_High PV Cost	Study_Pumped Storage_Default 50% RPS_Low PV Cost	Study_Pumped Storage_42 MMT_Low PV Cost	Study_Pumped Storage_30 MMT_Low PV Cost	Study_Pumped Storage_Default 50% RPS_High Battery Cost	Study_Pumped Storage_42 MMT_High Battery Cost	Study_Pumped Storage_30 MMT_High Battery Cost	Study_Pumped Storage_Default 50% RPS_Low Battery Cost	Study_Pumped Storage_42 MMT_Low Battery Cost	Study_Pumped Storage_30 MMT_Low Battery Cost	Study_Pumped Storage_Default 50% RPS_No Tax Credits	Study_Pumped Storage_42 MMT_No Tax Credits	Study_Pumped Storage_30 MMT_No Tax Credits

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,238	25,045	24,881	25,284	25,054	25,140	25,256	24,908	24,929	25,439	25,443	25,034	25,245	25,055	24,731
Gas	GWh	49,868	64,726	72,472	48,877	59,910	72,399	48,926	63,453	72,789	50,049	60,824	65,424	49,479	64,537	72,442
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	152,586	124,062	106,315	154,791	126,269	107,387	154,149	125,507	106,452	151,273	124,040	106,682	152,948	124,175	106,088
Storage Losses	GWh	(3,134)	(2,049)	(1,181)	(3,289)	(2,095)	(1,495)	(3,311)	(1,935)	(1,213)	(4,159)	(2,307)	(1,748)	(3,127)	(2,045)	(1,093)
Curtailment	GWh	(4,406)	(1,892)	(513)	(5,485)	(2,437)	(608)	(4,670)	(2,441)	(537)	(2,507)	(1,708)	(361)	(4,587)	(1,925)	(512)
Imports	GWh	6,798	16,685	28,977	7,658	20,799	27,714	7,699	17,775	28,636	6,547	20,018	34,239	7,123	16,846	29,397
Exports	GWh	(7,285)	(4,426)	(8,378)	(9,100)	(5,689)	(7,497)	(7,858)	(5,344)	(8,415)	(5,321)	(4,246)	(6,736)	(7,556)	(4,497)	(8,675)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 1,248	$ 1,248	$ 1,248	$ 766	$ 766	$ 766	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 4,014	$ 1,409	$ 475	$ 3,871	$ 1,313	$ 440	$ 4,042	$ 1,448	$ 464	$ 3,356	$ 1,341	$ 462	$ 4,507	$ 1,778	$ 580
New Storage Fixed Costs	$MM	$ 859	$ 365	$ 283	$ 885	$ 338	$ 283	$ 912	$ 309	$ 278	$ 950	$ 412	$ 352	$ 842	$ 361	$ 283
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ 83	$ -	$ -	$ -	$ -	$ -	$ 83	$ -	$ -	$ -	$ -	$ -	$ 83	$ -	$ -
Total Operating Costs	$MM	$ 3,803	$ 5,403	$ 6,129	$ 3,712	$ 5,289	$ 6,100	$ 3,783	$ 5,366	$ 6,128	$ 3,857	$ 5,302	$ 6,015	$ 3,786	$ 5,399	$ 6,144
Total Revenue Requirement	**$MM**	**$ 42,922**	**$ 41,340**	**$ 41,049**	**$ 42,631**	**$ 41,102**	**$ 40,985**	**$ 43,267**	**$ 41,570**	**$ 41,317**	**$ 42,129**	**$ 41,020**	**$ 40,794**	**$ 43,381**	**$ 41,700**	**$ 41,170**
Customer Costs (Scenario Specific)	$MM	$ 5,617	$ 5,617	$ 5,617	$ 4,871	$ 4,871	$ 4,871	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 48,538**	**$ 46,956**	**$ 46,666**	**$ 47,502**	**$ 45,974**	**$ 45,857**	**$ 48,511**	**$ 46,814**	**$ 46,561**	**$ 47,373**	**$ 46,264**	**$ 46,038**	**$ 48,625**	**$ 46,944**	**$ 46,414**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882
Average Rate (cts/kWh)	**cts/kWh**	**21.7**	**20.9**	**20.7**	**21.5**	**20.8**	**20.7**	**21.9**	**21.0**	**20.9**	**21.3**	**20.7**	**20.6**	**21.9**	**21.1**	**20.8**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,133	$ 5,039	$ 5,262	$ 4,078	$ 4,747	$ 5,266	$ 4,081	$ 4,972	$ 5,280	$ 4,128	$ 4,763	$ 4,788	$ 4,111	$ 5,027	$ 5,265
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 333	$ 912	$ 1,625	$ 381	$ 1,152	$ 1,556	$ 392	$ 984	$ 1,607	$ 309	$ 1,083	$ 1,921	$ 351	$ 922	$ 1,649
Market Revenues	$MM	$ (320)	$ (196)	$ (405)	$ (404)	$ (257)	$ (370)	$ (348)	$ (239)	$ (407)	$ (230)	$ (191)	$ (339)	$ (333)	$ (199)	$ (417)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (342)	$ (351)	$ (353)	$ (343)	$ (353)	$ (353)	$ (342)	$ (351)	$ (353)	$ (350)	$ (353)	$ (354)	$ (342)	$ (351)	$ (353)
Total CAISO Operating Cost	**$MM**	**$ 3,803**	**$ 5,403**	**$ 6,129**	**$ 3,712**	**$ 5,289**	**$ 6,100**	**$ 3,783**	**$ 5,366**	**$ 6,128**	**$ 3,857**	**$ 5,302**	**$ 6,015**	**$ 3,786**	**$ 5,399**	**$ 6,144**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	69%	54%	46%	70%	55%	46%	69%	54%	46%	68%	54%	46%	69%	54%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	73%	58%	50%	74%	59%	50%	73%	59%	50%	72%	59%	50%	73%	58%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	3%	1%	5%	4%	2%	5%	4%	1%	2%	2%	1%	4%	3%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	6%	5%	3%	7%	6%	4%	7%	6%	3%	5%	4%	3%	6%	5%	2%
Marginal RPS Cost	$/MWh	$ -	$ -	$ 14	$ -	$ -	$ 1	$ -	$ -	$ 11	$ -	$ -	$ 8	$ -	$ -	$ 20
RPS Renewables excl. Pipeline Biogas	GWh	131,708	103,206	85,458	133,914	105,413	86,530	133,271	104,651	85,596	130,395	103,183	85,825	132,070	103,318	85,232
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_PS_high_pvcost_2017	42mmt_PS_high_pvcost_2017	99mmt_PS_high_pvcost_2017	30mmt_PS_low_pvcost_201	42mmt_PS_low_pvcost_201	99mmt_PS_low_pvcost_201	30mmt_PS_high_storagecost_	42mmt_PS_high_storagecost_	99mmt_PS_high_storagecost_	30mmt_PS_low_storagecost	42mmt_PS_low_storagecost	99mmt_PS_low_storagecost	30mmt_PS_no_taxcredits_20	42mmt_PS_no_taxcredits_20	99mmt_PS_no_taxcredits_20
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_High PV Cost	Resource Study_Pumped Storage_42 MMT_High PV Cost	Resource Study_Pumped Storage_30 MMT_High PV Cost	Resource Study_Pumped Storage_Default 50% RPS_Low PV Cost	Resource Study_Pumped Storage_42 MMT_Low PV Cost	Resource Study_Pumped Storage_30 MMT_Low PV Cost	Resource Study_Pumped Storage_Default 50% RPS_High Battery Cost	Resource Study_Pumped Storage_42 MMT_High Battery Cost	Resource Study_Pumped Storage_30 MMT_High Battery Cost	Resource Study_Pumped Storage_Default 50% RPS_Low Battery Cost	Resource Study_Pumped Storage_42 MMT_Low Battery Cost	Resource Study_Pumped Storage_30 MMT_Low Battery Cost	Resource Study_Pumped Storage_Default 50% RPS_No Tax Credits	Resource Study_Pumped Storage_42 MMT_No Tax Credits	Resource Study_Pumped Storage_30 MMT_No Tax Credits

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	24.2	29.7	32.8	23.8	27.9	32.8	23.8	29.2	32.9	24.3	28.3	30.2	24.1	29.6	32.7
Import Emissions	MMtCO2	0.1	4.3	9.6	0.5	6.1	9.1	0.5	4.8	9.5	-	5.8	11.9	0.2	4.4	9.8
Total CAISO Emissions	MMtCO2	24.3	34.0	42.4	24.3	34.0	41.9	24.3	34.0	42.4	24.3	34.0	42.1	24.3	34.0	42.5
Marginal GHG Cost	$/tCO2	$ 261	$ 111	$ -	$ 237	$ 65	$ -	$ 269	$ 118	$ -	$ 153	$ 77	$ -	$ 254	$ 108	$ -
Total WECC Emissions	MMtCO2	183	194	201	183	194	201	183	194	201	184	194	201	183	194	201

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468
Firm Capacity	MW	39,867	38,148	38,148	39,867	38,148	38,148	39,867	38,148	38,148	39,611	38,148	38,148	39,867	38,148	38,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	7,090	4,503	4,174	7,043	4,387	4,176	6,155	4,223	4,157	12,037	5,356	4,713	7,028	4,487	4,177
Variable Renewable ELCC	MW	8,199	7,881	7,801	7,954	7,870	7,731	8,199	7,881	7,802	7,915	7,881	7,761	8,171	7,881	7,758
Total Available Capacity	MW	65,047	60,423	60,014	64,756	60,296	59,946	64,113	60,143	59,998	69,455	61,276	60,513	64,958	60,407	59,973
Actual Reserve Margin	%	43%	32%	32%	42%	32%	31%	41%	32%	32%	52%	34%	33%	42%	32%	31%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_PS_25yr_gasretiremen	42mmt_PS_25yr_gasretiremen	99mmt_PS_25yr_gasretiremen	30mmt_PS_high_buildelect_2	42mmt_PS_high_buildelect_2	99mmt_PS_high_buildelect_2	30mmt_Geo_20170831	42mmt_Geo_20170831	99mmt_Geo_20170831	30mmt_Geo_2x_aaee_20170	42mmt_Geo_2x_aaee_20170	99mmt_Geo_2x_aaee_20170	30mmt_Geo_mid_aaee_20170	42mmt_Geo_mid_aaee_20170	99mmt_Geo_mid_aaee_20170
How referenced in Proposed Reference System Plan slides:		Resource Study_Pumped Storage_Default 50% RPS_Gas Retirements	Resource Study_Pumped Storage_42 MMT_Gas Retirements	Resource Study_Pumped Storage_30 MMT_Gas Retirements	Resource Study_Pumped Storage_Default 50% RPS_High BE	Resource Study_Pumped Storage_42 MMT_High BE	Resource Study_Pumped Storage_30 MMT_High BE	Resource Study_Geothermal_Default 50% RPS_Reference	Resource Study_Geothermal_42 MMT_Reference	Resource Study_Geothermal_30 MMT_Reference	Resource Study_Geothermal_Default 50% RPS_High EE	Resource Study_Geothermal_42 MMT_High EE	Resource Study_Geothermal_30 MMT_High EE	Resource Study_Geothermal_Default 50% RPS_Low EE	Resource Study_Geothermal_42 MMT_Low EE	Resource Study_Geothermal_30 MMT_Low EE
Present Value Portfolio Metrics	***Unit***															
PV Revenue Requirement	*$MM*	$ 690,392	$ 678,480	$ 676,594	$ 703,325	$ 685,343	$ 678,565	$ 690,123	$ 675,831	$ 673,267	$ 686,260	$ 674,525	$ 672,965	$ 696,092	$ 678,820	$ 674,493
PV Total Resource Cost	*$MM*	$ 762,528	$ 750,616	$ 748,731	$ 775,461	$ 757,479	$ 750,701	$ 762,259	$ 747,968	$ 745,403	$ 760,852	$ 749,117	$ 747,558	$ 765,361	$ 748,089	$ 743,762
Levelized Revenue Requirement	*$MM*	$ 41,088	$ 40,379	$ 40,267	$ 41,858	$ 40,788	$ 40,384	$ 41,072	$ 40,222	$ 40,069	$ 40,842	$ 40,144	$ 40,051	$ 41,427	$ 40,400	$ 40,142
Levelized Total Resource Cost	*$MM*	$ 45,381	$ 44,672	$ 44,560	$ 46,151	$ 45,081	$ 44,677	$ 45,365	$ 44,515	$ 44,362	$ 45,282	$ 44,583	$ 44,490	$ 45,550	$ 44,522	$ 44,264
Levelized Average Rate	*cts/kWh*	20.4	20.1	20.0	20.2	19.7	19.5	20.4	20.0	19.9	20.8	20.4	20.4	20.0	19.5	19.4
Portfolio Metrics	***Unit***	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 43,029	$ 41,691	$ 41,588	$ 44,483	$ 42,411	$ 41,765	$ 42,943	$ 41,333	$ 41,144	$ 42,476	$ 41,217	$ 41,095	$ 43,573	$ 41,579	$ 41,254
Total Resource Cost	*$MM*	$ 48,273	$ 46,935	$ 46,832	$ 49,727	$ 47,655	$ 47,009	$ 48,187	$ 46,577	$ 46,388	$ 47,932	$ 46,672	$ 46,550	$ 48,581	$ 46,587	$ 46,262
Average Rate	*cts/kWh*	21.7	21.1	21.0	21.2	20.2	19.9	21.7	20.9	20.8	22.2	21.6	21.5	21.1	20.1	20.0
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	40.5	24.3	34.0	45.2	24.3	34.0	41.9	24.3	34.0	39.8	24.3	34.0	43.9
Effective RPS (incl. banked RECs)	*% of Retail Sales*	74%	61%	52%	75%	62%	50%	73%	59%	50%	72%	57%	51%	74%	61%	50%
Renewable Curtailment	*% of RPS Gen.*	6.5%	4.3%	3.3%	6.7%	5.5%	2.7%	6.4%	4.3%	2.8%	6.2%	4.1%	3.3%	6.4%	4.9%	2.5%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	424	-	2,020	1,086	-	2,020	1,135	1,135	2,020	1,135	1,135	2,020	1,339	1,135
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	4,775	1,145	523	4,775	1,645	299	4,775	984	-	4,502	892	-	4,775	1,145	146
Solar	*MW*	12,099	9,110	4,207	16,127	10,660	5,254	11,121	5,874	542	8,751	3,124	-	14,408	8,943	1,749
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	4,421	6,838	7,503	5,653	1,722	218	3,792	1,475	555	3,392	1,150	460	4,976	2,034	632
Pumped Storage	*MW*	1,572	1,000	1,000	2,423	1,000	1,000	1,209	-	-	536	-	-	1,911	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**13,824**	**7,673**	**4,730**	**17,853**	**9,884**	**3,356**	**12,847**	**5,114**	**1,677**	**10,204**	**5,021**	**1,135**	**16,134**	**8,420**	**3,030**
Out-Of-State Renewables	*MW*	**5,069**	**3,006**	**-**	**5,069**	**3,506**	**2,198**	**5,069**	**2,880**	**-**	**5,069**	**130**	**-**	**5,069**	**3,006**	**-**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	13,075	13,075	13,075	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,644	1,220	3,240	2,306	1,220	3,240	2,355	2,355	3,240	2,355	2,355	3,240	2,559	2,355
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,968	9,338	8,717	12,968	9,838	8,493	12,968	9,178	8,194	12,695	9,086	8,194	12,968	9,338	8,340
Solar	*MW*	24,949	21,960	17,057	28,977	23,510	18,104	23,971	18,725	13,392	21,601	15,974	12,850	27,258	21,793	14,599
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	5,746	8,163	8,828	6,978	3,047	1,543	5,117	2,800	1,880	4,717	2,475	1,785	6,301	3,359	1,957
Pumped Storage	*MW*	3,404	2,832	2,832	4,255	2,832	2,832	3,041	1,832	1,832	2,368	1,832	1,832	3,743	1,832	1,832
Shed DR	*MW*	1,752	3,802	3,613	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**51,157**	**45,005**	**42,063**	**55,186**	**47,217**	**40,688**	**50,179**	**42,446**	**39,010**	**47,536**	**42,354**	**38,468**	**53,466**	**45,753**	**40,363**
Out-Of-State Renewables	*MW*	**7,132**	**5,069**	**2,064**	**7,132**	**5,569**	**4,261**	**7,132**	**4,944**	**2,064**	**7,132**	**2,194**	**2,064**	**7,132**	**5,069**	**2,064**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_PS_25y r_gasretiremen	42mmt_PS_25y r_gasretiremen	99mmt_PS_25y r_gasretiremen	30mmt_PS_hig h_buildelect_2	42mmt_PS_hig h_buildelect_2	99mmt_PS_hig h_buildelect_2	30mmt_Geo_2 0170831	42mmt_Geo_2 0170831	99mmt_Geo_2 0170831	30mmt_Geo_2 x_aaee_20170	42mmt_Geo_2 x_aaee_20170	99mmt_Geo_2 x_aaee_20170	30mmt_Geo_m id_aaee_20170	42mmt_Geo_m id_aaee_20170	99mmt_Geo_m id_aaee_20170
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Defaul t 50% RPS_Gas Retirements	Resource Study_Pumped Storage_42 MMT_Gas Retirements	Resource Study_Pumped Storage_30 MMT_Gas Retirements	Resource Study_Pumped Storage_Defaul t 50% RPS_High BE	Resource Study_Pumped Storage_42 MMT_High BE	Resource Study_Pumped Storage_30 MMT_High BE	Resource Study_Geother mal_Default 50% RPS_Reference	Resource Study_Geother mal_42 MMT_Referenc e	Resource Study_Geother mal_30 MMT_Referenc e	Resource Study_Geother mal_Default 50% RPS_High EE	Resource Study_Geother mal_42 MMT_High EE	Resource Study_Geother mal_30 MMT_High EE	Resource Study_Geother mal_Default 50% RPS_Low EE	Resource Study_Geother mal_42 MMT_Low EE	Resource Study_Geother mal_30 MMT_Low EE

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,559	25,187	24,720	25,571	25,268	25,030	25,249	24,858	24,924	25,148	24,670	24,928	25,387	25,084	24,915
Gas	GWh	34,547	37,438	44,635	50,123	66,303	77,383	49,479	61,140	72,859	49,213	58,258	67,071	50,170	65,050	78,351
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	155,709	127,920	110,604	166,282	138,350	112,434	152,945	123,791	106,617	145,236	116,250	104,849	161,938	134,036	110,772
Storage Losses	GWh	(3,554)	(2,792)	(2,662)	(4,428)	(2,285)	(1,268)	(3,124)	(1,588)	(1,106)	(2,598)	(1,495)	(1,173)	(3,912)	(1,843)	(1,092)
Curtailment	GWh	(4,523)	(1,668)	(323)	(4,531)	(2,548)	(585)	(4,590)	(1,519)	(367)	(4,521)	(1,143)	(442)	(4,300)	(2,267)	(375)
Imports	GWh	19,435	39,682	48,286	6,547	15,323	31,256	7,123	19,713	27,419	7,344	22,090	27,485	6,547	16,365	27,144
Exports	GWh	(7,297)	(4,129)	(3,151)	(6,841)	(5,623)	(8,650)	(7,556)	(4,045)	(7,436)	(7,928)	(3,681)	(7,227)	(6,636)	(5,303)	(7,644)
Load	GWh	242,474	242,474	242,474	255,366	255,366	255,366	242,474	242,474	242,474	234,958	234,958	234,958	251,716	251,716	251,716

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 1,320	$ 1,320	$ 1,320	$ 566	$ 566	$ 566
New Renewables Fixed Costs	$MM	$ 4,135	$ 1,651	$ 651	$ 4,802	$ 2,465	$ 738	$ 4,068	$ 1,729	$ 876	$ 3,619	$ 1,365	$ 803	$ 4,571	$ 2,294	$ 1,061
New Storage Fixed Costs	$MM	$ 1,091	$ 811	$ 917	$ 1,616	$ 403	$ 292	$ 843	$ 97	$ 36	$ 510	$ 75	$ 30	$ 1,318	$ 143	$ 41
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ 82	$ 68	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ 83	$ -	$ -	$ 83	$ -	$ -	$ 83	$ -	$ -	$ 59	$ -	$ -	$ 83	$ -	$ -
Total Operating Costs	$MM	$ 3,558	$ 4,985	$ 5,789	$ 3,819	$ 5,381	$ 6,572	$ 3,786	$ 5,344	$ 6,069	$ 3,769	$ 5,257	$ 5,743	$ 3,835	$ 5,377	$ 6,386
Total Revenue Requirement	**$MM**	**$ 43,029**	**$ 41,691**	**$ 41,588**	**$ 44,483**	**$ 42,411**	**$ 41,765**	**$ 42,943**	**$ 41,333**	**$ 41,144**	**$ 42,476**	**$ 41,217**	**$ 41,095**	**$ 43,573**	**$ 41,579**	**$ 41,254**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,456	$ 5,456	$ 5,456	$ 5,008	$ 5,008	$ 5,008
Total Resource Cost	**$MM**	**$ 48,273**	**$ 46,935**	**$ 46,832**	**$ 49,727**	**$ 47,655**	**$ 47,009**	**$ 48,187**	**$ 46,577**	**$ 46,388**	**$ 47,932**	**$ 46,672**	**$ 46,550**	**$ 48,581**	**$ 46,587**	**$ 46,262**
Total Retail Sales	GWh	197,882	197,882	197,882	209,829	209,829	209,829	197,882	197,882	197,882	190,917	190,917	190,917	206,446	206,446	206,446
Average Rate (cts/kWh)	**cts/kWh**	**21.7**	**21.1**	**21.0**	**21.2**	**20.2**	**19.9**	**21.7**	**20.9**	**20.8**	**22.2**	**21.6**	**21.5**	**21.1**	**20.1**	**20.0**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 3,181	$ 3,298	$ 3,583	$ 4,149	$ 5,152	$ 5,587	$ 4,111	$ 4,794	$ 5,251	$ 4,100	$ 4,564	$ 4,913	$ 4,148	$ 5,068	$ 5,590
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 1,045	$ 2,228	$ 2,722	$ 307	$ 828	$ 1,755	$ 351	$ 1,086	$ 1,539	$ 363	$ 1,221	$ 1,545	$ 314	$ 896	$ 1,524
Market Revenues	$MM	$ (323)	$ (186)	$ (157)	$ (294)	$ (249)	$ (417)	$ (333)	$ (183)	$ (369)	$ (352)	$ (174)	$ (362)	$ (284)	$ (236)	$ (376)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (346)	$ (355)	$ (359)	$ (343)	$ (350)	$ (353)	$ (342)	$ (353)	$ (353)	$ (343)	$ (353)	$ (353)	$ (342)	$ (351)	$ (353)
Total CAISO Operating Cost	**$MM**	**$ 3,558**	**$ 4,985**	**$ 5,789**	**$ 3,819**	**$ 5,381**	**$ 6,572**	**$ 3,786**	**$ 5,344**	**$ 6,069**	**$ 3,769**	**$ 5,257**	**$ 5,743**	**$ 3,835**	**$ 5,377**	**$ 6,386**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	70%	56%	47%	71%	58%	46%	69%	54%	46%	68%	52%	46%	70%	57%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	5%	5%	5%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	74%	61%	52%	75%	62%	50%	73%	59%	50%	72%	57%	51%	74%	61%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	2%	0%	4%	4%	1%	4%	3%	2%	4%	3%	2%	4%	3%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	7%	4%	3%	7%	6%	3%	6%	4%	3%	6%	4%	3%	6%	5%	3%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ 13	$ -	$ -	$ 5	$ -	$ -	$ -	$ -	$ -	$ 6
RPS Renewables excl. Pipeline Biogas	GWh	134,831	107,063	89,748	145,405	117,494	91,578	132,068	102,935	85,761	124,359	95,394	83,993	141,060	113,179	89,916
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_PS_25yr_gasretiremen	42mmt_PS_25yr_gasretiremen	99mmt_PS_25yr_gasretiremen	30mmt_PS_high_buildelect_2	42mmt_PS_high_buildelect_2	99mmt_PS_high_buildelect_2	30mmt_Geo_20170831	42mmt_Geo_20170831	99mmt_Geo_20170831	30mmt_Geo_2x_aaee_20170	42mmt_Geo_2x_aaee_20170	99mmt_Geo_2x_aaee_20170	30mmt_Geo_mid_aaee_20170	42mmt_Geo_mid_aaee_20170	99mmt_Geo_mid_aaee_20170
How referenced in Proposed Reference System Plan slides:	Resource Study_Pumped Storage_Default 50% RPS_Gas Retirements	Resource Study_Pumped Storage_42 MMT_Gas Retirements	Resource Study_Pumped Storage_30 MMT_Gas Retirements	Resource Study_Pumped Storage_Default 50% RPS_High BE	Resource Study_Pumped Storage_42 MMT_High BE	Resource Study_Pumped Storage_30 MMT_High BE	Resource Study_Geothermal_Default 50% RPS_Reference	Resource Study_Geothermal_42 MMT_Reference	Resource Study_Geothermal_30 MMT_Reference	Resource Study_Geothermal_Default 50% RPS_High EE	Resource Study_Geothermal_42 MMT_High EE	Resource Study_Geothermal_30 MMT_High EE	Resource Study_Geothermal_Default 50% RPS_Low EE	Resource Study_Geothermal_42 MMT_Low EE	Resource Study_Geothermal_30 MMT_Low EE

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	18.8	19.8	22.6	24.3	30.3	34.6	24.1	28.4	33.0	24.0	27.4	30.9	24.3	29.8	35.1
Import Emissions	MMtCO2	5.5	14.2	17.9	-	3.8	10.6	0.2	5.6	8.9	0.3	6.7	9.0	-	4.2	8.8
Total CAISO Emissions	MMtCO2	24.3	34.0	40.5	24.3	34.0	45.2	24.3	34.0	41.9	24.3	34.0	39.8	24.3	34.0	43.9
Marginal GHG Cost	$/tCO2	$ 253	$ 71	$ -	$ 291	$ 132	$ -	$ 254	$ 72	$ -	$ 245	$ 54	$ -	$ 278	$ 120	$ -
Total WECC Emissions	MMtCO2	183	193	200	184	194	203	183	194	201	183	195	199	184	194	203

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	47,631	47,631	47,631	45,624	45,624	45,624	43,567	43,567	43,567	47,287	47,287	47,287
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	54,776	54,776	54,776	52,468	52,468	52,468	50,102	50,102	50,102	54,380	54,380	54,380
Firm Capacity	MW	27,584	28,254	27,725	39,867	39,070	38,148	39,867	39,148	39,148	39,867	39,148	39,148	39,867	39,311	39,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	8,257	6,442	7,028	10,800	4,672	4,211	7,028	3,530	3,296	5,463	3,445	3,272	9,369	3,727	3,315
Variable Renewable ELCC	MW	8,199	7,881	7,824	8,445	8,112	8,046	8,187	7,826	7,687	7,824	7,515	7,390	8,390	8,085	7,937
Total Available Capacity	MW	53,932	52,468	52,468	69,004	61,745	60,297	64,974	60,395	60,022	63,045	59,999	59,701	67,517	61,013	60,291
Actual Reserve Margin	%	18%	15%	15%	45%	30%	27%	42%	32%	32%	45%	38%	37%	43%	29%	28%
Marginal PRM Cost	$/kW-yr.	$ -	$ 75	$ 64	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	29%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_Geo_high_btmpv_201	42mmt_Geo_high_btmpv_201	99mmt_Geo_high_btmpv_201	30mmt_Geo_low_btmpv_201	42mmt_Geo_low_btmpv_201	99mmt_Geo_low_btmpv_201	30mmt_Geo_flexevex_20170831	42mmt_Geo_flexevex_20170831	99mmt_Geo_flexevex_20170831	30mmt_Geo_high_pvcost_201	42mmt_Geo_high_pvcost_201	99mmt_Geo_high_pvcost_201	30mmt_Geo_low_pvcost_201	42mmt_Geo_low_pvcost_201	99mmt_Geo_low_pvcost_201
How referenced in Proposed Reference System Plan slides:		Resource Study_Geothermal_Default 50% RPS_High BTM PV	Resource Study_Geothermal_42 MMT_High BTM PV	Resource Study_Geothermal_30 MMT_High BTM PV	Resource Study_Geothermal_Default 50% RPS_Low BTM PV	Resource Study_Geothermal_42 MMT_Low BTM PV	Resource Study_Geothermal_30 MMT_Low BTM PV	Resource Study_Geothermal_Default 50% RPS_Flexible	Resource Study_Geothermal_42 MMT_Flexible EVs	Resource Study_Geothermal_30 MMT_Flexible EVs	Resource Study_Geothermal_Default 50% RPS_High PV Cost	Resource Study_Geothermal_42 MMT_High PV Cost	Resource Study_Geothermal_30 MMT_High PV Cost	Resource Study_Geothermal_Default 50% RPS_Low PV Cost	Resource Study_Geothermal_42 MMT_Low PV Cost	Resource Study_Geothermal_30 MMT_Low PV Cost
Present Value Portfolio Metrics	***Unit***															
PV Revenue Requirement	*$MM*	$ 686,482	$ 672,248	$ 670,198	$ 696,700	$ 681,987	$ 678,696	$ 686,731	$ 674,467	$ 672,334	$ 691,095	$ 676,348	$ 673,296	$ 687,273	$ 674,225	$ 673,022
PV Total Resource Cost	*$MM*	$ 769,653	$ 755,419	$ 753,369	$ 751,116	$ 736,403	$ 733,111	$ 758,868	$ 746,603	$ 744,471	$ 767,031	$ 752,285	$ 749,233	$ 755,428	$ 742,379	$ 741,177
Levelized Revenue Requirement	*$MM*	$ 40,856	$ 40,008	$ 39,886	$ 41,464	$ 40,588	$ 40,392	$ 40,870	$ 40,140	$ 40,014	$ 41,130	$ 40,252	$ 40,071	$ 40,903	$ 40,126	$ 40,054
Levelized Total Resource Cost	*$MM*	$ 45,805	$ 44,958	$ 44,836	$ 44,702	$ 43,827	$ 43,631	$ 45,164	$ 44,434	$ 44,307	$ 45,649	$ 44,772	$ 44,590	$ 44,959	$ 44,182	$ 44,111
Levelized Average Rate	*cts/kWh*	20.8	20.4	20.3	19.9	19.5	19.4	20.3	20.0	19.9	20.5	20.0	19.9	20.3	20.0	19.9
Portfolio Metrics	***Unit***	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 42,603	$ 41,028	$ 40,866	$ 43,556	$ 41,850	$ 41,639	$ 42,556	$ 41,202	$ 41,047	$ 42,932	$ 41,375	$ 41,144	$ 42,702	$ 41,210	$ 41,122
Total Resource Cost	*$MM*	$ 48,865	$ 47,289	$ 47,127	$ 47,171	$ 45,465	$ 45,254	$ 47,800	$ 46,446	$ 46,291	$ 48,549	$ 46,992	$ 46,761	$ 47,573	$ 46,081	$ 45,994
Average Rate	*cts/kWh*	22.3	21.5	21.4	20.8	20.0	19.9	21.5	20.8	20.7	21.7	20.9	20.8	21.6	20.8	20.8
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	40.3	24.3	34.0	43.4	24.3	34.0	41.5	24.3	34.0	42.0	24.3	34.0	40.2
Effective RPS (incl. banked RECs)	*% of Retail Sales*	72%	57%	50%	75%	61%	50%	73%	58%	50%	73%	58%	50%	74%	60%	53%
Renewable Curtailment	*% of RPS Gen.*	7.0%	5.0%	4.0%	5.8%	3.6%	1.9%	5.8%	3.5%	2.2%	6.1%	4.1%	2.5%	7.1%	4.9%	3.6%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	1,135	1,135	2,020	1,135	1,135	2,020	1,135	1,135	2,020	1,135	1,135	2,020	1,135	1,135
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	4,775	984	-	4,775	984	-	4,775	942	-	4,775	1,113	146	3,840	299	-
Solar	*MW*	8,861	3,507	-	15,216	9,565	2,125	10,754	5,290	377	10,705	5,479	326	13,079	7,371	2,397
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	3,974	1,577	714	3,749	1,465	255	3,104	1,079	234	4,143	1,583	557	3,516	1,483	656
Pumped Storage	*MW*	1,226	-	-	1,144	-	-	808	-	-	1,167	-	-	1,588	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**10,587**	**5,114**	**1,135**	**16,941**	**8,679**	**3,260**	**12,479**	**5,072**	**1,512**	**12,431**	**5,243**	**1,607**	**13,870**	**5,799**	**3,532**
Out-Of-State Renewables	*MW*	**5,069**	**513**	**-**	**5,069**	**3,006**	**-**	**5,069**	**2,296**	**-**	**5,069**	**2,485**	**-**	**5,069**	**3,006**	**-**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	2,355	2,355	3,240	2,355	2,355	3,240	2,355	2,355	3,240	2,355	2,355	3,240	2,355	2,355
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,968	9,178	8,194	12,968	9,178	8,194	12,968	9,136	8,194	12,968	9,307	8,340	12,033	8,493	8,194
Solar	*MW*	21,711	16,357	12,850	28,066	22,415	14,975	23,604	18,140	13,227	23,555	18,329	13,176	25,929	20,221	15,247
Customer Solar	*MW*	20,091	20,091	20,091	9,289	9,289	9,289	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	5,299	2,902	2,039	5,074	2,790	1,580	4,429	2,404	1,559	5,468	2,908	1,882	4,841	2,808	1,981
Pumped Storage	*MW*	3,058	1,832	1,832	2,976	1,832	1,832	2,640	1,832	1,832	2,999	1,832	1,832	3,420	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**52,070**	**46,597**	**42,618**	**47,622**	**39,359**	**33,941**	**49,812**	**42,404**	**38,844**	**49,763**	**42,575**	**38,939**	**51,202**	**43,132**	**40,865**
Out-Of-State Renewables	*MW*	**7,132**	**2,576**	**2,064**	**7,132**	**5,069**	**2,064**	**7,132**	**4,359**	**2,064**	**7,132**	**4,548**	**2,064**	**7,132**	**5,069**	**2,064**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_Geo_hi gh_btmpv_201	42mmt_Geo_hi gh_btmpv_201	99mmt_Geo_hi gh_btmpv_201	30mmt_Geo_lo w_btmpv_201	42mmt_Geo_lo w_btmpv_201	99mmt_Geo_lo w_btmpv_201	30mmt_Geo_fl exev_20170831	42mmt_Geo_fl exev_20170831	99mmt_Geo_fl exev_20170831	30mmt_Geo_hi gh_pvcost_201	42mmt_Geo_hi gh_pvcost_201	99mmt_Geo_hi gh_pvcost_201	30mmt_Geo_lo w_pvcost_201	42mmt_Geo_lo w_pvcost_201	99mmt_Geo_lo w_pvcost_201
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_High BTM PV	Resource Study_Geothermal_42 MMT_High BTM PV	Resource Study_Geothermal_30 MMT_High BTM PV	Resource Study_Geothermal_Default 50% RPS_Low BTM PV	Resource Study_Geothermal_42 MMT_Low BTM PV	Resource Study_Geothermal_30 MMT_Low BTM PV	Resource Study_Geothermal_Default 50% RPS_Flexible	Resource Study_Geothermal_42 MMT_Flexible EVs	Resource Study_Geothermal_30 MMT_Flexible EVs	Resource Study_Geothermal_Default 50% RPS_High PV Cost	Resource Study_Geothermal_42 MMT_High PV Cost	Resource Study_Geothermal_30 MMT_High PV Cost	Resource Study_Geothermal_Default 50% RPS_Low PV Cost	Resource Study_Geothermal_42 MMT_Low PV Cost	Resource Study_Geothermal_30 MMT_Low PV Cost

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,242	24,922	25,003	25,259	24,683	24,827	25,213	24,598	24,622	25,240	24,815	24,859	25,343	24,858	24,951
Gas	GWh	49,518	61,232	67,740	50,072	63,206	78,750	49,685	58,913	70,658	50,131	62,678	72,791	48,877	57,927	68,386
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	153,475	124,395	111,999	151,852	123,015	99,802	152,126	122,539	106,342	152,180	123,138	106,359	154,778	125,905	112,047
Storage Losses	GWh	(3,163)	(1,645)	(1,313)	(3,045)	(1,550)	(920)	(2,670)	(1,416)	(936)	(3,171)	(1,579)	(1,044)	(3,276)	(1,692)	(1,294)
Curtailment	GWh	(4,877)	(1,852)	(827)	(4,463)	(1,214)	(45)	(4,324)	(1,022)	(124)	(4,126)	(1,416)	(342)	(5,499)	(2,031)	(719)
Imports	GWh	7,100	19,667	28,150	6,621	17,893	25,664	6,968	21,531	28,252	6,547	18,391	27,672	7,658	22,473	27,368
Exports	GWh	(8,077)	(4,625)	(7,935)	(6,702)	(3,610)	(5,089)	(7,334)	(2,708)	(6,017)	(6,928)	(3,723)	(7,494)	(9,100)	(5,463)	(7,898)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 971	$ 971	$ 971	$ 950	$ 950	$ 950	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 3,714	$ 1,429	$ 803	$ 4,705	$ 2,225	$ 1,089	$ 4,001	$ 1,648	$ 853	$ 3,982	$ 1,731	$ 871	$ 3,941	$ 1,702	$ 1,087
New Storage Fixed Costs	$MM	$ 883	$ 106	$ 47	$ 763	$ 97	$ 17	$ 520	$ 70	$ 15	$ 887	$ 106	$ 36	$ 886	$ 97	$ 43
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ 83	$ -	$ -	$ 83	$ -	$ -	$ 83	$ -	$ -	$ 83	$ -	$ -	$ -	$ -	$ -
Total Operating Costs	$MM	$ 3,752	$ 5,322	$ 5,846	$ 3,855	$ 5,378	$ 6,384	$ 3,790	$ 5,322	$ 6,015	$ 3,819	$ 5,375	$ 6,074	$ 3,712	$ 5,248	$ 5,830
Total Revenue Requirement	**$MM**	**$ 42,603**	**$ 41,028**	**$ 40,866**	**$ 43,556**	**$ 41,850**	**$ 41,639**	**$ 42,556**	**$ 41,202**	**$ 41,047**	**$ 42,932**	**$ 41,375**	**$ 41,144**	**$ 42,702**	**$ 41,210**	**$ 41,122**
Customer Costs (Scenario Specific)	$MM	$ 6,261	$ 6,261	$ 6,261	$ 3,615	$ 3,615	$ 3,615	$ 5,244	$ 5,244	$ 5,244	$ 5,617	$ 5,617	$ 5,617	$ 4,871	$ 4,871	$ 4,871
Total Resource Cost	**$MM**	**$ 48,865**	**$ 47,289**	**$ 47,127**	**$ 47,171**	**$ 45,465**	**$ 45,254**	**$ 47,800**	**$ 46,446**	**$ 46,291**	**$ 48,549**	**$ 46,992**	**$ 46,761**	**$ 47,573**	**$ 46,081**	**$ 45,994**
Total Retail Sales	GWh	190,899	190,899	190,899	209,073	209,073	209,073	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882
Average Rate (cts/kWh)	**cts/kWh**	**22.3**	**21.5**	**21.4**	**20.8**	**20.0**	**19.9**	**21.5**	**20.8**	**20.7**	**21.7**	**20.9**	**20.8**	**21.6**	**20.8**	**20.8**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,113	$ 4,806	$ 5,005	$ 4,149	$ 4,903	$ 5,564	$ 4,115	$ 4,615	$ 5,092	$ 4,149	$ 4,885	$ 5,243	$ 4,078	$ 4,607	$ 5,033
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 347	$ 1,082	$ 1,582	$ 327	$ 985	$ 1,438	$ 340	$ 1,182	$ 1,583	$ 316	$ 1,009	$ 1,554	$ 381	$ 1,245	$ 1,538
Market Revenues	$MM	$ (365)	$ (212)	$ (388)	$ (278)	$ (158)	$ (264)	$ (323)	$ (122)	$ (307)	$ (304)	$ (167)	$ (370)	$ (404)	$ (251)	$ (388)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (343)	$ (353)	$ (353)	$ (342)	$ (352)	$ (354)	$ (342)	$ (353)	$ (353)	$ (342)	$ (352)	$ (353)	$ (343)	$ (353)	$ (353)
Total CAISO Operating Cost	**$MM**	**$ 3,752**	**$ 5,322**	**$ 5,846**	**$ 3,855**	**$ 5,378**	**$ 6,384**	**$ 3,790**	**$ 5,322**	**$ 6,015**	**$ 3,819**	**$ 5,375**	**$ 6,074**	**$ 3,712**	**$ 5,248**	**$ 5,830**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	68%	52%	46%	71%	57%	46%	69%	54%	46%	68%	54%	46%	70%	55%	48%
Banked RECs	% of Retail Sales	5%	5%	5%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	72%	57%	50%	75%	61%	50%	73%	58%	50%	73%	58%	50%	74%	60%	53%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	5%	3%	3%	4%	2%	1%	4%	2%	1%	4%	3%	1%	5%	3%	2%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	7%	5%	4%	6%	4%	2%	6%	4%	2%	6%	4%	2%	7%	5%	4%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ 2	$ -	$ -	$ 2	$ -	$ -	$ 8	$ -	$ -	$ -
RPS Renewables excl. Pipeline Biogas	GWh	125,063	96,004	83,608	143,051	114,235	91,023	131,249	101,683	85,486	131,303	102,281	85,503	133,900	105,048	91,191
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

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How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_High BTM PV	Resource Study_Geothermal_42 MMT_High BTM PV	Resource Study_Geothermal_30 MMT_High BTM PV	Resource Study_Geothermal_Default 50% RPS_Low BTM PV	Resource Study_Geothermal_42 MMT_Low BTM PV	Resource Study_Geothermal_30 MMT_Low BTM PV	Resource Study_Geothermal_Default 50% RPS_Flexible EVs	Resource Study_Geothermal_42 MMT_Flexible EVs	Resource Study_Geothermal_30 MMT_Flexible EVs	Resource Study_Geothermal_Default 50% RPS_High PV Cost	Resource Study_Geothermal_42 MMT_High PV Cost	Resource Study_Geothermal_30 MMT_High PV Cost	Resource Study_Geothermal_Default 50% RPS_Low PV Cost	Resource Study_Geothermal_42 MMT_Low PV Cost	Resource Study_Geothermal_30 MMT_Low PV Cost

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	24.1	28.4	31.1	24.3	29.2	35.2	24.1	27.6	32.2	24.3	29.0	33.0	23.8	27.2	31.3
Import Emissions	MMtCO2	0.2	5.6	9.2	0.0	4.9	8.2	0.2	6.4	9.3	-	5.1	9.0	0.5	6.8	8.9
Total CAISO Emissions	MMtCO2	24.3	34.0	40.3	24.3	34.0	43.4	24.3	34.0	41.5	24.3	34.0	42.0	24.3	34.0	40.2
Marginal GHG Cost	$/tCO2	$ 250	$ 72	$ -	$ 272	$ 86	$ -	$ 250	$ 59	$ -	$ 275	$ 82	$ -	$ 237	$ 53	$ -
Total WECC Emissions	MMtCO2	183	194	199	183	195	203	183	195	201	183	195	201	183	194	199

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,624	45,624	45,624	45,058	45,058	45,058	45,624	45,624	45,624	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	52,468	52,468	52,468	51,816	51,816	51,816	52,468	52,468	52,468	52,468	52,468	52,468
Firm Capacity	MW	39,867	39,148	39,148	39,867	39,148	39,148	39,867	39,148	39,148	39,867	39,148	39,148	39,867	39,148	39,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	7,250	3,574	3,336	6,564	3,532	3,221	5,351	3,427	3,215	7,290	3,570	3,296	7,043	3,528	3,321
Variable Renewable ELCC	MW	8,225	7,867	7,722	8,137	7,808	7,603	8,085	7,718	7,587	8,198	7,826	7,720	7,942	7,841	7,705
Total Available Capacity	MW	65,234	60,480	60,097	64,459	60,379	59,863	63,194	60,183	59,842	65,245	60,436	60,055	64,744	60,408	60,065
Actual Reserve Margin	%	43%	33%	32%	41%	32%	31%	40%	34%	33%	43%	32%	32%	42%	32%	32%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	29%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_Geo_high_storagecost	42mmt_Geo_high_storagecost	99mmt_Geo_high_storagecost	30mmt_Geo_low_storagecost	42mmt_Geo_low_storagecost	99mmt_Geo_low_storagecost	30mmt_Geo_no_taxcredits_2	42mmt_Geo_no_taxcredits_2	99mmt_Geo_no_taxcredits_2	30mmt_Geo_25yr_gasretirem	42mmt_Geo_25yr_gasretirem	99mmt_Geo_25yr_gasretirem	30mmt_Geo_high_buildelect_	42mmt_Geo_high_buildelect_	99mmt_Geo_high_buildelect_
How referenced in Proposed Reference System Plan slides:		Resource Study_Geothermal_Default 50% RPS_High Battery Cost	Resource Study_Geothermal_42 MMT_High Battery Cost	Resource Study_Geothermal_30 MMT_High Battery Cost	Resource Study_Geothermal_Default 50% RPS_Low Battery Cost	Resource Study_Geothermal_42 MMT_Low Battery Cost	Resource Study_Geothermal_30 MMT_Low Battery Cost	Resource Study_Geothermal_Default 50% RPS_No Tax Credits	Resource Study_Geothermal_42 MMT_No Tax Credits	Resource Study_Geothermal_30 MMT_No Tax Credits	Resource Study_Geothermal_Default 50% RPS_Gas Retirements	Resource Study_Geothermal_42 MMT_Gas Retirements	Resource Study_Geothermal_30 MMT_Gas Retirements	Resource Study_Geothermal_Default 50% RPS_High BE	Resource Study_Geothermal_42 MMT_High BE	Resource Study_Geothermal_30 MMT_High BE
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 695,699	$ 680,519	$ 677,679	$ 681,417	$ 672,047	$ 669,763	$ 693,343	$ 677,226	$ 673,334	$ 691,732	$ 679,315	$ 678,091	$ 704,626	$ 685,714	$ 679,959
PV Total Resource Cost	*$MM*	$ 767,835	$ 752,655	$ 749,815	$ 753,553	$ 744,184	$ 741,900	$ 765,480	$ 749,362	$ 745,470	$ 763,869	$ 751,451	$ 750,228	$ 776,762	$ 757,850	$ 752,095
Levelized Revenue Requirement	*$MM*	$ 41,404	$ 40,501	$ 40,332	$ 40,554	$ 39,996	$ 39,861	$ 41,264	$ 40,305	$ 40,073	$ 41,168	$ 40,429	$ 40,356	$ 41,935	$ 40,810	$ 40,467
Levelized Total Resource Cost	*$MM*	$ 45,697	$ 44,794	$ 44,625	$ 44,847	$ 44,290	$ 44,154	$ 45,557	$ 44,598	$ 44,366	$ 45,461	$ 44,722	$ 44,649	$ 46,228	$ 45,103	$ 44,760
Levelized Average Rate	*cts/kWh*	20.6	20.1	20.1	20.2	19.9	19.8	20.5	20.1	19.9	20.5	20.1	20.1	20.2	19.7	19.5
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 43,370	$ 41,645	$ 41,434	$ 42,083	$ 41,065	$ 40,896	$ 43,368	$ 41,609	$ 41,154	$ 43,132	$ 41,724	$ 41,677	$ 44,587	$ 42,363	$ 41,865
Total Resource Cost	*$MM*	$ 48,614	$ 46,889	$ 46,678	$ 47,327	$ 46,309	$ 46,140	$ 48,612	$ 46,853	$ 46,398	$ 48,376	$ 46,968	$ 46,921	$ 49,831	$ 47,607	$ 47,109
Average Rate	*cts/kWh*	21.9	21.0	20.9	21.3	20.8	20.7	21.9	21.0	20.8	21.8	21.1	21.1	21.2	20.2	20.0
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	42.2	24.3	34.0	41.8	24.3	34.0	42.2	24.3	34.0	39.1	24.3	34.0	44.8
Effective RPS (incl. banked RECs)	*% of Retail Sales*	73%	59%	50%	72%	59%	50%	73%	58%	50%	74%	60%	54%	75%	62%	50%
Renewable Curtailment	*% of RPS Gen.*	7.5%	4.9%	2.8%	5.5%	3.5%	2.2%	6.4%	4.2%	2.1%	6.5%	3.7%	2.8%	6.7%	5.0%	2.5%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	1,135	1,135	1,700	1,135	1,135	2,020	1,135	1,135	2,020	1,242	1,135	2,020	1,700	1,135
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	4,775	1,145	-	1,645	942	-	4,775	984	-	4,775	1,145	605	4,775	1,645	146
Solar	*MW*	11,556	6,056	547	13,616	5,740	388	11,121	5,453	347	12,099	6,471	2,381	16,127	8,904	2,308
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	1,616	471	-	8,953	3,216	2,291	3,792	1,617	595	4,421	7,094	7,750	5,653	2,197	714
Pumped Storage	*MW*	2,524	-	-	-	-	-	1,209	-	-	1,572	-	-	2,423	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**13,281**	**5,329**	**1,682**	**13,454**	**5,072**	**1,523**	**12,847**	**7,572**	**1,483**	**13,824**	**5,852**	**4,122**	**17,853**	**8,743**	**3,589**
Out-Of-State Renewables	*MW*	**5,069**	**3,006**	**-**	**3,506**	**2,745**	**-**	**5,069**	**-**	**-**	**5,069**	**3,006**	**-**	**5,069**	**3,506**	**-**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	13,075	13,075	13,075	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	2,355	2,355	2,920	2,355	2,355	3,240	2,355	2,355	3,240	2,462	2,355	3,240	2,920	2,355
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,968	9,338	8,194	9,838	9,136	8,194	12,968	9,178	8,194	12,968	9,338	8,799	12,968	9,838	8,340
Solar	*MW*	24,406	18,906	13,397	26,466	18,590	13,238	23,971	18,303	13,198	24,949	19,321	15,231	28,977	21,755	15,158
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	2,941	1,796	1,325	10,278	4,541	3,616	5,117	2,942	1,920	5,746	8,419	9,075	6,978	3,522	2,039
Pumped Storage	*MW*	4,356	1,832	1,832	1,832	1,832	1,832	3,041	1,832	1,832	3,404	1,832	1,832	4,255	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	3,919	3,613	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**50,614**	**42,662**	**39,014**	**50,787**	**42,404**	**38,855**	**50,179**	**44,905**	**38,815**	**51,157**	**43,184**	**41,454**	**55,186**	**46,076**	**40,922**
Out-Of-State Renewables	*MW*	**7,132**	**5,069**	**2,064**	**5,569**	**4,809**	**2,064**	**7,132**	**2,064**	**2,064**	**7,132**	**5,069**	**2,064**	**7,132**	**5,569**	**2,064**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_Geo_high_storagecost	42mmt_Geo_high_storagecost	99mmt_Geo_high_storagecost	30mmt_Geo_low_storagecost	42mmt_Geo_low_storagecost	99mmt_Geo_low_storagecost	30mmt_Geo_no_taxcredits_2	42mmt_Geo_no_taxcredits_2	99mmt_Geo_no_taxcredits_2	30mmt_Geo_25yr_gasretirem	42mmt_Geo_25yr_gasretirem	99mmt_Geo_25yr_gasretirem	30mmt_Geo_high_buildelect_	42mmt_Geo_high_buildelect_	99mmt_Geo_high_buildelect_
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_High Battery Cost	Resource Study_Geothermal_42 MMT_High Battery Cost	Resource Study_Geothermal_30 MMT_High Battery Cost	Resource Study_Geothermal_Default 50% RPS_Low Battery Cost	Resource Study_Geothermal_42 MMT_Low Battery Cost	Resource Study_Geothermal_30 MMT_Low Battery Cost	Resource Study_Geothermal_Default 50% RPS_No Tax Credits	Resource Study_Geothermal_42 MMT_No Tax Credits	Resource Study_Geothermal_30 MMT_No Tax Credits	Resource Study_Geothermal_Default 50% RPS_Gas Retirements	Resource Study_Geothermal_42 MMT_Gas Retirements	Resource Study_Geothermal_30 MMT_Gas Retirements	Resource Study_Geothermal_Default 50% RPS_High BE	Resource Study_Geothermal_42 MMT_High BE	Resource Study_Geothermal_30 MMT_High BE

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,242	24,666	24,871	25,424	25,238	24,867	25,232	24,812	24,727	25,525	25,135	24,733	25,546	25,079	25,036
Gas	GWh	48,926	61,474	74,277	50,032	59,657	67,285	49,479	63,494	72,930	34,547	37,974	43,200	50,123	66,492	78,424
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	154,149	124,470	106,568	151,410	123,458	106,253	152,945	123,168	106,041	155,709	126,822	113,931	166,274	137,941	112,457
Storage Losses	GWh	(3,311)	(1,465)	(949)	(4,082)	(1,844)	(1,335)	(3,124)	(1,594)	(949)	(3,555)	(2,325)	(2,181)	(4,420)	(1,907)	(1,119)
Curtailment	GWh	(4,670)	(1,785)	(430)	(2,584)	(1,357)	(248)	(4,590)	(1,460)	(335)	(4,522)	(1,422)	(384)	(4,540)	(2,456)	(427)
Imports	GWh	7,699	19,336	26,751	6,547	20,965	31,893	7,123	17,696	28,091	19,435	39,201	46,337	6,547	15,131	29,393
Exports	GWh	(7,858)	(4,370)	(8,097)	(5,550)	(4,008)	(6,232)	(7,556)	(3,846)	(7,865)	(7,297)	(3,560)	(3,539)	(6,841)	(5,636)	(7,947)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	255,366	255,366	255,366

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 1,248	$ 1,248	$ 1,248	$ 766	$ 766	$ 766	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 4,144	$ 1,779	$ 876	$ 3,469	$ 1,705	$ 855	$ 4,492	$ 1,954	$ 863	$ 4,237	$ 1,901	$ 1,221	$ 4,906	$ 2,665	$ 1,136
New Storage Fixed Costs	$MM	$ 912	$ 55	$ -	$ 807	$ 130	$ 77	$ 844	$ 110	$ 39	$ 1,092	$ 568	$ 649	$ 1,617	$ 156	$ 47
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 91	$ 68	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ 83	$ -	$ -	$ -	$ -	$ -	$ 83	$ -	$ -	$ 83	$ -	$ -	$ 83	$ -	$ -
Total Operating Costs	$MM	$ 3,783	$ 5,364	$ 6,110	$ 3,842	$ 5,266	$ 6,000	$ 3,786	$ 5,383	$ 6,090	$ 3,558	$ 5,002	$ 5,577	$ 3,819	$ 5,379	$ 6,520
Total Revenue Requirement	**$MM**	**$ 43,370**	**$ 41,645**	**$ 41,434**	**$ 42,083**	**$ 41,065**	**$ 40,896**	**$ 43,368**	**$ 41,609**	**$ 41,154**	**$ 43,132**	**$ 41,724**	**$ 41,677**	**$ 44,587**	**$ 42,363**	**$ 41,865**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 48,614**	**$ 46,889**	**$ 46,678**	**$ 47,327**	**$ 46,309**	**$ 46,140**	**$ 48,612**	**$ 46,853**	**$ 46,398**	**$ 48,376**	**$ 46,968**	**$ 46,921**	**$ 49,831**	**$ 47,607**	**$ 47,109**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	209,829	209,829	209,829
Average Rate (cts/kWh)	**cts/kWh**	**21.9**	**21.0**	**20.9**	**21.3**	**20.8**	**20.7**	**21.9**	**21.0**	**20.8**	**21.8**	**21.1**	**21.1**	**21.2**	**20.2**	**20.0**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,081	$ 4,837	$ 5,354	$ 4,124	$ 4,660	$ 4,882	$ 4,111	$ 4,939	$ 5,252	$ 3,181	$ 3,316	$ 3,499	$ 4,149	$ 5,161	$ 5,607
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 392	$ 1,073	$ 1,504	$ 309	$ 1,145	$ 1,789	$ 351	$ 969	$ 1,577	$ 1,045	$ 2,202	$ 2,613	$ 307	$ 818	$ 1,652
Market Revenues	$MM	$ (348)	$ (195)	$ (395)	$ (241)	$ (185)	$ (317)	$ (333)	$ (173)	$ (385)	$ (323)	$ (160)	$ (177)	$ (294)	$ (250)	$ (386)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (342)	$ (352)	$ (352)	$ (349)	$ (354)	$ (355)	$ (342)	$ (352)	$ (353)	$ (346)	$ (356)	$ (358)	$ (343)	$ (350)	$ (353)
Total CAISO Operating Cost	**$MM**	**$ 3,783**	**$ 5,364**	**$ 6,110**	**$ 3,842**	**$ 5,266**	**$ 6,000**	**$ 3,786**	**$ 5,383**	**$ 6,090**	**$ 3,558**	**$ 5,002**	**$ 5,577**	**$ 3,819**	**$ 5,379**	**$ 6,520**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	69%	54%	46%	68%	54%	46%	69%	54%	46%	70%	56%	49%	71%	58%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	73%	59%	50%	72%	59%	50%	73%	58%	50%	74%	60%	54%	75%	62%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	5%	4%	2%	2%	2%	1%	4%	3%	1%	4%	2%	1%	4%	3%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	7%	5%	3%	5%	3%	2%	6%	4%	2%	7%	4%	3%	7%	5%	3%
Marginal RPS Cost	$/MWh	$ -	$ -	$ 6	$ -	$ -	$ 2	$ -	$ -	$ 15	$ -	$ -	$ -	$ -	$ -	$ 9
RPS Renewables excl. Pipeline Biogas	GWh	133,271	103,614	85,711	130,533	102,601	85,397	132,067	102,311	85,184	134,832	105,966	93,074	145,397	117,084	91,601
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_Geo_high_storagecost	42mmt_Geo_high_storagecost	99mmt_Geo_high_storagecost	30mmt_Geo_low_storagecost	42mmt_Geo_low_storagecost	99mmt_Geo_low_storagecost	30mmt_Geo_no_taxcredits_2	42mmt_Geo_no_taxcredits_2	99mmt_Geo_no_taxcredits_2	30mmt_Geo_25yr_gasretirem	42mmt_Geo_25yr_gasretirem	99mmt_Geo_25yr_gasretirem	30mmt_Geo_high_buildelect_	42mmt_Geo_high_buildelect_	99mmt_Geo_high_buildelect_
How referenced in Proposed Reference System Plan slides:	Resource Study_Geothermal_Default 50% RPS_High Battery Cost	Resource Study_Geothermal_42 MMT_High Battery Cost	Resource Study_Geothermal_30 MMT_High Battery Cost	Resource Study_Geothermal_Default 50% RPS_Low Battery Cost	Resource Study_Geothermal_42 MMT_Low Battery Cost	Resource Study_Geothermal_30 MMT_Low Battery Cost	Resource Study_Geothermal_Default 50% RPS_No Tax Credits	Resource Study_Geothermal_42 MMT_No Tax Credits	Resource Study_Geothermal_30 MMT_No Tax Credits	Resource Study_Geothermal_Default 50% RPS_Gas Retirements	Resource Study_Geothermal_42 MMT_Gas Retirements	Resource Study_Geothermal_30 MMT_Gas Retirements	Resource Study_Geothermal_Default 50% RPS_High BE	Resource Study_Geothermal_42 MMT_High BE	Resource Study_Geothermal_30 MMT_High BE

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	23.8	28.5	33.6	24.3	27.8	30.9	24.1	29.2	33.0	18.8	20.0	22.1	24.3	30.3	35.0
Import Emissions	MMtCO2	0.5	5.5	8.6	-	6.2	10.8	0.2	4.8	9.2	5.5	14.0	17.0	-	3.7	9.8
Total CAISO Emissions	MMtCO2	24.3	34.0	42.2	24.3	34.0	41.8	24.3	34.0	42.2	24.3	34.0	39.1	24.3	34.0	44.8
Marginal GHG Cost	$/tCO2	$ 269	$ 87	$ -	$ 155	$ 62	$ -	$ 254	$ 89	$ -	$ 253	$ 63	$ -	$ 291	$ 139	$ -
Total WECC Emissions	MMtCO2	183	194	201	184	194	201	183	195	201	183	194	199	184	194	204

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	47,631	47,631	47,631
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	54,776	54,776	54,776
Firm Capacity	MW	39,867	39,148	39,148	39,611	39,148	39,148	39,867	39,148	39,148	27,584	29,118	28,725	39,867	39,611	39,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	6,155	3,275	3,157	12,110	4,269	3,730	7,028	3,590	3,306	8,257	5,624	6,044	10,800	3,782	3,336
Variable Renewable ELCC	MW	8,187	7,827	7,687	7,905	7,815	7,683	8,269	7,860	7,682	8,187	7,836	7,808	8,439	8,112	7,972
Total Available Capacity	MW	64,100	60,141	59,883	69,517	61,122	60,452	65,056	60,489	60,027	53,920	52,468	52,468	68,998	61,396	60,347
Actual Reserve Margin	%	40%	32%	31%	52%	34%	32%	43%	33%	32%	18%	15%	15%	45%	29%	27%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75	$ 52	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		60rps_Ref_20170831	70rps_Ref_20170831	80rps_Ref_20170831	30mmt_Ref_high_exports_20	42mmt_Ref_high_exports_20	99mmt_Ref_high_exports_20	30mmt_Ref_high_carbonpric	42mmt_Ref_high_carbonpric	99mmt_Ref_high_carbonpric	30mmt_Ref_6h_ps_20170831	42mmt_Ref_6h_ps_20170831	99mmt_Ref_6h_ps_20170831	30mmt_Ref_unconstrained_o	42mmt_Ref_unconstrained_o	99mmt_Ref_unconstrained_o
How referenced in Proposed Reference System Plan slides:		Other Study_60% RPS_Reference	Other Study_70% RPS_Reference	Other Study_80% RPS_Reference	Other Study_Default 50% RPS_High Export Limit	Other Study_42 MMT_High Export Limit	Other Study_30 MMT_High Export Limit	Other Study_Default 50% RPS_High Carbon Price	Other Study_42 MMT_High Carbon Price	Other Study_30 MMT_High Carbon Price	Other Study_Default 50% RPS_Short Dur Pmpd St	Other Study_42 MMT_Short Dur Pmpd St	Other Study_30 MMT_Short Dur Pmpd St	Other Study_Default 50% RPS_Unconstrained OOS W	Other Study_42 MMT_Unconstrained OOS W	Other Study_30 MMT_Unconstrained OOS W
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 671,526	$ 679,097	$ 693,290	$ 686,906	$ 672,133	$ 668,484	$ 669,060	$ 659,622	$ 659,497	$ 687,075	$ 672,666	$ 668,656	$ 684,166	$ 672,632	$ 668,656
PV Total Resource Cost	*$MM*	$ 743,663	$ 751,233	$ 765,426	$ 759,042	$ 744,269	$ 740,620	$ 741,197	$ 731,759	$ 731,633	$ 759,211	$ 744,802	$ 740,793	$ 756,302	$ 744,768	$ 740,793
Levelized Revenue Requirement	*$MM*	$ 39,965	$ 40,416	$ 41,261	$ 40,881	$ 40,002	$ 39,784	$ 39,819	$ 39,257	$ 39,250	$ 40,891	$ 40,033	$ 39,795	$ 40,718	$ 40,031	$ 39,795
Levelized Total Resource Cost	*$MM*	$ 44,259	$ 44,709	$ 45,554	$ 45,174	$ 44,295	$ 44,078	$ 44,112	$ 43,550	$ 43,543	$ 45,184	$ 44,326	$ 44,088	$ 45,011	$ 44,324	$ 44,088
Levelized Average Rate	*cts/kWh*	19.9	20.1	20.5	20.3	19.9	19.8	19.8	19.5	19.5	20.3	19.9	19.8	20.3	19.9	19.8

Portfolio Metrics	*Unit*	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Revenue Requirement	*$MM*	$ 40,987	$ 41,873	$ 43,289	$ 42,770	$ 41,086	$ 40,821	$ 41,413	$ 40,342	$ 40,362	$ 42,772	$ 41,150	$ 40,832	$ 42,453	$ 41,157	$ 40,832
Total Resource Cost	*$MM*	$ 46,230	$ 47,117	$ 48,533	$ 48,013	$ 46,330	$ 46,065	$ 46,657	$ 45,586	$ 45,606	$ 48,016	$ 46,394	$ 46,076	$ 47,697	$ 46,401	$ 46,076
Average Rate	*cts/kWh*	20.7	21.2	21.9	21.6	20.8	20.6	20.9	20.4	20.4	21.6	20.8	20.6	21.5	20.8	20.6
Greenhouse Gas Emissions	*MMtCO2*	36.7	30.5	24.7	24.3	34.0	42.8	24.3	34.0	36.5	24.3	34.0	42.5	24.3	34.0	42.5
Effective RPS (incl. banked RECs)	*% of Retail Sales*	60%	70%	80%	75%	60%	50%	74%	61%	58%	73%	59%	50%	73%	59%	50%
Renewable Curtailment	*% of RPS Gen.*	4.4%	6.6%	8.2%	4.9%	4.7%	2.4%	6.9%	5.8%	5.0%	6.4%	5.4%	2.7%	6.6%	5.3%	2.7%

Selected Resource Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	-	1,700	2,020	2,020	-	-	2,020	-	-	2,020	202	-	1,700	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	1,145	2,533	4,775	4,775	1,165	275	4,775	1,532	1,145	3,970	1,145	299	7,911	1,747	299
Solar	*MW*	9,686	11,755	17,385	11,556	9,687	2,994	12,049	10,328	8,763	11,564	8,828	3,078	6,688	8,456	3,078
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	1,780	2,755	5,759	3,729	2,006	721	4,004	1,858	1,449	2,431	1,992	807	2,362	1,890	807
Pumped Storage	*MW*	-	-	1,381	1,229	-	-	959	-	-	2,963	-	-	-	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**7,825**	**11,594**	**18,411**	**13,281**	**7,826**	**3,270**	**13,775**	**8,466**	**6,902**	**12,486**	**7,169**	**3,356**	**7,973**	**6,595**	**3,356**
Out-Of-State Renewables	*MW*	**3,006**	**4,394**	**5,768**	**5,069**	**3,026**	**-**	**5,069**	**3,393**	**3,006**	**5,069**	**3,006**	**22**	**8,326**	**3,608**	**22**

Total Resource Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	1,220	2,920	3,240	3,240	1,220	1,220	3,240	1,220	1,220	3,240	1,422	1,220	2,920	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	9,338	10,726	12,968	12,968	9,358	8,469	12,968	9,726	9,338	12,164	9,338	8,493	16,105	9,941	8,493
Solar	*MW*	22,537	24,606	30,235	24,406	22,537	15,844	24,899	23,178	21,613	24,414	21,678	15,928	19,538	21,306	15,928
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	3,105	4,080	7,084	5,054	3,331	2,046	5,329	3,183	2,774	3,756	3,317	2,132	3,687	3,215	2,132
Pumped Storage	*MW*	1,832	1,832	3,213	3,061	1,832	1,832	2,791	1,832	1,832	4,795	1,832	1,832	1,832	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**45,157**	**48,927**	**55,744**	**50,614**	**45,158**	**40,602**	**51,108**	**45,799**	**44,234**	**49,818**	**44,501**	**40,688**	**45,306**	**43,927**	**40,688**
Out-Of-State Renewables	*MW*	**5,069**	**6,458**	**7,831**	**7,132**	**5,090**	**2,064**	**7,132**	**5,457**	**5,069**	**7,132**	**5,069**	**2,085**	**10,390**	**5,672**	**2,085**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	60rps_Ref_20170831	70rps_Ref_20170831	80rps_Ref_20170831	30mmt_Ref_high_exports_20	42mmt_Ref_high_exports_20	99mmt_Ref_high_exports_20	30mmt_Ref_high_carbonpric	42mmt_Ref_high_carbonpric	99mmt_Ref_high_carbonpric	30mmt_Ref_6h_ps_20170831	42mmt_Ref_6h_ps_20170831	99mmt_Ref_6h_ps_20170831	30mmt_Ref_unconstrained_o	42mmt_Ref_unconstrained_o	99mmt_Ref_unconstrained_o
How referenced in Proposed Reference System Plan slides:	Other Study_60% RPS_Reference	Other Study_70% RPS_Reference	Other Study_80% RPS_Reference	Other Study_Default 50% RPS_High Export Limit	Other Study_42 MMT_High Export Limit	Other Study_30 MMT_High Export Limit	Other Study_Default 50% RPS_High Carbon Price	Other Study_42 MMT_High Carbon Price	Other Study_30 MMT_High Carbon Price	Other Study_Default 50% RPS_Short Dur Pmpd St	Other Study_42 MMT_Short Dur Pmpd St	Other Study_30 MMT_Short Dur Pmpd St	Other Study_Default 50% RPS_Unconstrained OOS W	Other Study_42 MMT_Unconstrained OOS W	Other Study_30 MMT_Unconstrained OOS W

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	24,762	25,199	25,506	25,259	25,155	24,945	25,205	25,020	24,890	25,293	25,064	24,866	24,993	25,016	24,868
Gas	GWh	54,821	37,078	16,573	49,513	64,785	74,335	49,129	61,617	62,635	49,126	65,162	73,011	46,292	64,342	73,011
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	125,599	144,946	165,364	156,134	127,061	106,473	154,461	128,293	123,288	152,874	124,902	106,304	152,803	124,734	106,304
Storage Losses	GWh	(1,439)	(1,929)	(3,496)	(3,085)	(1,869)	(1,147)	(3,049)	(1,797)	(1,565)	(3,545)	(1,849)	(1,097)	(2,179)	(1,803)	(1,097)
Curtailment	GWh	(2,628)	(6,032)	(8,496)	(2,686)	(1,343)	(162)	(5,662)	(3,203)	(2,310)	(3,813)	(2,289)	(649)	(5,147)	(2,244)	(649)
Imports	GWh	31,202	32,378	36,277	7,089	16,618	28,104	7,415	19,312	24,031	7,433	16,286	28,722	9,776	16,982	28,722
Exports	GWh	(11,598)	(13,547)	(15,805)	(10,791)	(7,381)	(9,421)	(9,199)	(8,434)	(9,427)	(6,837)	(5,397)	(8,608)	(7,429)	(5,188)	(8,608)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ (1,941)	$ (1,941)	$ (1,941)	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 1,465	$ 3,346	$ 4,873	$ 4,034	$ 1,471	$ 447	$ 4,068	$ 1,633	$ 1,341	$ 3,881	$ 1,475	$ 462	$ 4,369	$ 1,495	$ 462
New Storage Fixed Costs	$MM	$ 120	$ 213	$ 1,163	$ 794	$ 140	$ 47	$ 768	$ 132	$ 95	$ 907	$ 140	$ 53	$ 169	$ 133	$ 53
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ -	$ -	$ 106	$ 83	$ -	$ -	$ 83	$ -	$ -	$ 12	$ -	$ -	$ -	$ -	$ -
Total Operating Costs	$MM	$ 5,238	$ 4,151	$ 2,984	$ 3,696	$ 5,313	$ 6,164	$ 5,235	$ 7,319	$ 7,667	$ 3,809	$ 5,373	$ 6,154	$ 3,753	$ 5,367	$ 6,154
Total Revenue Requirement	**$MM**	**$ 40,987**	**$ 41,873**	**$ 43,289**	**$ 42,770**	**$ 41,086**	**$ 40,821**	**$ 41,413**	**$ 40,342**	**$ 40,362**	**$ 42,772**	**$ 41,150**	**$ 40,832**	**$ 42,453**	**$ 41,157**	**$ 40,832**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 46,230**	**$ 47,117**	**$ 48,533**	**$ 48,013**	**$ 46,330**	**$ 46,065**	**$ 46,657**	**$ 45,586**	**$ 45,606**	**$ 48,016**	**$ 46,394**	**$ 46,076**	**$ 47,697**	**$ 46,401**	**$ 46,076**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882
Average Rate (cts/kWh)	**cts/kWh**	**20.7**	**21.2**	**21.9**	**21.6**	**20.8**	**20.6**	**20.9**	**20.4**	**20.4**	**21.6**	**20.8**	**20.6**	**21.5**	**20.8**	**20.6**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,377	$ 3,304	$ 2,020	$ 4,117	$ 5,056	$ 5,375	$ 5,497	$ 6,527	$ 6,557	$ 4,084	$ 5,074	$ 5,310	$ 3,915	$ 5,019	$ 5,310
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 1,751	$ 1,817	$ 2,025	$ 348	$ 907	$ 1,578	$ 547	$ 1,605	$ 2,018	$ 368	$ 889	$ 1,611	$ 512	$ 930	$ 1,611
Market Revenues	$MM	$ (538)	$ (620)	$ (717)	$ (431)	$ (303)	$ (437)	$ (446)	$ (441)	$ (533)	$ (299)	$ (240)	$ (414)	$ (326)	$ (231)	$ (414)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (352)	$ (351)	$ (345)	$ (338)	$ (347)	$ (351)	$ (363)	$ (373)	$ (376)	$ (343)	$ (351)	$ (353)	$ (347)	$ (351)	$ (353)
Total CAISO Operating Cost	**$MM**	**$ 5,238**	**$ 4,151**	**$ 2,984**	**$ 3,696**	**$ 5,313**	**$ 6,164**	**$ 5,235**	**$ 7,319**	**$ 7,667**	**$ 3,809**	**$ 5,373**	**$ 6,154**	**$ 3,753**	**$ 5,367**	**$ 6,154**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	60%	70%	80%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	56%	66%	76%	71%	55%	46%	70%	56%	54%	68%	54%	46%	69%	54%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	60%	70%	80%	75%	60%	50%	74%	61%	58%	73%	59%	50%	73%	59%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	3%	5%	6%	3%	3%	1%	5%	4%	4%	4%	4%	2%	5%	4%	2%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	4%	7%	8%	5%	5%	2%	7%	6%	5%	6%	5%	3%	7%	5%	3%
Marginal RPS Cost	$/MWh	$ 34	$ 62	$ 110	$ -	$ -	$ 9	$ -	$ -	$ -	$ -	$ -	$ 13	$ -	$ -	$ 13
RPS Renewables excl. Pipeline Biogas	GWh	104,853	124,327	144,856	135,256	106,204	85,617	133,564	107,416	102,414	131,997	104,046	85,448	131,925	103,878	85,448
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	60rps_Ref_20170831	70rps_Ref_20170831	80rps_Ref_20170831	30mmt_Ref_high_exports_20	42mmt_Ref_high_exports_20	99mmt_Ref_high_exports_20	30mmt_Ref_high_carbonpric	42mmt_Ref_high_carbonpric	99mmt_Ref_high_carbonpric	30mmt_Ref_6h_ps_20170831	42mmt_Ref_6h_ps_20170831	99mmt_Ref_6h_ps_20170831	30mmt_Ref_unconstrained_o	42mmt_Ref_unconstrained_o	99mmt_Ref_unconstrained_o
How referenced in Proposed Reference System Plan slides:	Other Study_60% RPS_Reference	Other Study_70% RPS_Reference	Other Study_80% RPS_Reference	Other Study_Default 50% RPS_High Export Limit	Other Study_42 MMT_High Export Limit	Other Study_30 MMT_High Export Limit	Other Study_Default 50% RPS_High Carbon Price	Other Study_42 MMT_High Carbon Price	Other Study_30 MMT_High Carbon Price	Other Study_Default 50% RPS_Short Dur Pmpd St	Other Study_42 MMT_Short Dur Pmpd St	Other Study_30 MMT_Short Dur Pmpd St	Other Study_Default 50% RPS_Unconstrained OOS W	Other Study_42 MMT_Unconstrained OOS W	Other Study_30 MMT_Unconstrained OOS W

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	-	-	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	26.1	19.5	12.0	24.1	29.7	33.5	23.9	28.6	29.0	23.9	29.9	33.0	22.9	29.6	33.0
Import Emissions	MMtCO2	10.6	11.1	12.7	0.2	4.3	9.2	0.4	5.5	7.5	0.4	4.2	9.5	1.4	4.5	9.5
Total CAISO Emissions	MMtCO2	36.7	30.5	24.7	24.3	34.0	42.8	24.3	34.0	36.5	24.3	34.0	42.5	24.3	34.0	42.5
Marginal GHG Cost	$/tCO2	$ -	$ -	$ -	$ 258	$ 121	$ -	$ 198	$ 38	$ -	$ 238	$ 121	$ -	$ 165	$ 110	$ -
Total WECC Emissions	MMtCO2	194	187	179	182	193	201	182	192	194	184	194	201	183	194	201

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468
Firm Capacity	MW	38,148	39,611	39,867	39,867	38,148	38,148	39,867	38,148	38,148	39,867	38,310	38,148	39,611	38,148	38,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	11,256	10,091	9,891
Storage	MW	3,625	4,062	8,620	6,699	3,718	3,337	6,700	3,685	3,519	7,308	3,718	3,359	3,829	3,690	3,359
Variable Renewable ELCC	MW	7,881	7,881	8,329	8,199	7,881	7,793	8,198	7,873	7,880	7,989	7,881	7,802	7,851	7,874	7,802
Total Available Capacity	MW	59,545	61,445	66,707	64,657	59,638	59,169	64,656	59,598	59,439	65,055	59,799	59,199	62,547	59,803	59,199
Actual Reserve Margin	%	31%	35%	46%	42%	31%	30%	42%	31%	30%	43%	31%	30%	37%	31%	30%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_ShiftDR_20170831	42mmt_ShiftDR_20170831	99mmt_ShiftDR_20170831	30mmt_ShiftDR_2x_aaee_20	42mmt_ShiftDR_2x_aaee_20	99mmt_ShiftDR_2x_aaee_20	30mmt_ShiftDR_mid_aaee_2	42mmt_ShiftDR_mid_aaee_2	99mmt_ShiftDR_mid_aaee_2	30mmt_ShiftDR_high_btmpv	42mmt_ShiftDR_high_btmpv	99mmt_ShiftDR_high_btmpv	30mmt_ShiftDR_low_btmpv_	42mmt_ShiftDR_low_btmpv_	99mmt_ShiftDR_low_btmpv_
How referenced in Proposed Reference System Plan slides:		Other Study_Shift DR_Default 50% RPS_Reference	Other Study_Shift DR_42 MMT_Reference	Other Study_Shift DR_30 MMT_Reference	Other Study_Shift DR_Default 50% RPS_High EE	Other Study_Shift DR_42 MMT_High EE	Other Study_Shift DR_30 MMT_High EE	Other Study_Shift DR_Default 50% RPS_Low EE	Other Study_Shift DR_42 MMT_Low EE	Other Study_Shift DR_30 MMT_Low EE	Other Study_Shift DR_Default 50% RPS_High BTM PV	Other Study_Shift DR_42 MMT_High BTM PV	Other Study_Shift DR_30 MMT_High BTM PV	Other Study_Shift DR_Default 50% RPS_Low BTM PV	Other Study_Shift DR_42 MMT_Low BTM PV	Other Study_Shift DR_30 MMT_Low BTM PV
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 685,956	$ 672,633	$ 668,656	$ 682,170	$ 670,758	$ 668,219	$ 691,946	$ 676,044	$ 670,054	$ 682,342	$ 668,958	$ 665,532	$ 692,654	$ 678,920	$ 674,047
PV Total Resource Cost	*$MM*	$ 758,092	$ 744,769	$ 740,793	$ 756,762	$ 745,350	$ 742,811	$ 761,215	$ 745,313	$ 739,323	$ 765,513	$ 752,128	$ 748,702	$ 747,070	$ 733,336	$ 728,463
Levelized Revenue Requirement	*$MM*	$ 40,824	$ 40,031	$ 39,795	$ 40,599	$ 39,920	$ 39,769	$ 41,181	$ 40,234	$ 39,878	$ 40,609	$ 39,813	$ 39,609	$ 41,223	$ 40,405	$ 40,115
Levelized Total Resource Cost	*$MM*	$ 45,117	$ 44,324	$ 44,088	$ 45,038	$ 44,359	$ 44,208	$ 45,303	$ 44,357	$ 44,000	$ 45,559	$ 44,762	$ 44,559	$ 44,461	$ 43,644	$ 43,354
Levelized Average Rate	*cts/kWh*	20.3	19.9	19.8	20.7	20.3	20.2	19.9	19.4	19.2	20.7	20.3	20.2	19.8	19.4	19.3
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 42,642	$ 41,139	$ 40,832	$ 42,252	$ 40,975	$ 40,778	$ 43,238	$ 41,488	$ 40,951	$ 42,326	$ 40,837	$ 40,549	$ 43,260	$ 41,709	$ 41,316
Total Resource Cost	*$MM*	$ 47,886	$ 46,382	$ 46,076	$ 47,708	$ 46,431	$ 46,233	$ 48,246	$ 46,497	$ 45,959	$ 48,587	$ 47,098	$ 46,810	$ 46,875	$ 45,324	$ 44,931
Average Rate	*cts/kWh*	21.5	20.8	20.6	22.1	21.5	21.4	20.9	20.1	19.8	22.2	21.4	21.2	20.7	19.9	19.8
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	42.5	24.3	34.0	40.8	24.3	34.0	44.4	24.3	34.0	41.2	24.3	34.0	44.2
Effective RPS (incl. banked RECs)	*% of Retail Sales*	73%	59%	50%	72%	57%	50%	74%	61%	50%	72%	57%	50%	75%	62%	50%
Renewable Curtailment	*% of RPS Gen.*	6.0%	5.1%	2.7%	5.6%	4.8%	3.1%	6.0%	4.9%	2.6%	6.5%	5.8%	3.7%	5.2%	4.4%	1.8%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	-	-	2,020	-	-	2,020	363	-	2,020	-	-	2,020	253	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	4,775	1,145	299	3,840	984	146	4,775	1,145	299	3,929	1,145	299	4,775	1,145	299
Solar	*MW*	10,907	9,078	3,078	8,826	6,419	2,178	14,191	11,357	4,617	9,307	6,705	2,193	14,835	12,535	4,817
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	3,145	1,858	807	2,763	1,569	752	3,670	1,889	881	3,183	1,826	955	3,162	1,852	455
Pumped Storage	*MW*	298	-	-	-	-	-	1,392	-	-	737	-	-	200	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	1,713	557	-	1,713	-	-	1,713	1,713	-	1,713	754	-	1,713	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**12,633**	**7,216**	**3,356**	**9,617**	**4,398**	**2,324**	**15,917**	**9,858**	**3,356**	**10,187**	**4,843**	**2,493**	**16,561**	**10,926**	**3,356**
Out-Of-State Renewables	*MW*	**5,069**	**3,006**	**22**	**5,069**	**3,006**	**-**	**5,069**	**3,006**	**1,561**	**5,069**	**3,006**	**-**	**5,069**	**3,006**	**1,761**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,220	1,220	3,240	1,220	1,220	3,240	1,583	1,220	3,240	1,220	1,220	3,240	1,473	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,968	9,338	8,493	12,033	9,178	8,340	12,968	9,338	8,493	12,123	9,338	8,493	12,968	9,338	8,493
Solar	*MW*	23,757	21,928	15,928	21,676	19,269	15,028	27,041	24,207	17,467	22,157	19,555	15,044	27,686	25,385	17,667
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	20,091	20,091	20,091	9,289	9,289	9,289
Battery Storage	*MW*	4,470	3,183	2,132	4,088	2,894	2,077	4,995	3,214	2,206	4,508	3,151	2,280	4,487	3,177	1,780
Pumped Storage	*MW*	2,130	1,832	1,832	1,832	1,832	1,832	3,224	1,832	1,832	2,569	1,832	1,832	2,032	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	1,713	557	-	1,713	-	-	1,713	1,713	-	1,713	754	-	1,713	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**49,965**	**44,549**	**40,688**	**46,949**	**41,730**	**39,657**	**53,250**	**47,191**	**40,688**	**51,670**	**46,326**	**43,976**	**47,242**	**41,606**	**34,036**
Out-Of-State Renewables	*MW*	**7,132**	**5,069**	**2,085**	**7,132**	**5,069**	**2,064**	**7,132**	**5,069**	**3,624**	**7,132**	**5,069**	**2,064**	**7,132**	**5,069**	**3,824**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_ShiftDR_20170831	42mmt_ShiftDR_20170831	99mmt_ShiftDR_20170831	30mmt_ShiftDR_2x_aaee_20	42mmt_ShiftDR_2x_aaee_20	99mmt_ShiftDR_2x_aaee_20	30mmt_ShiftDR_mid_aaee_2	42mmt_ShiftDR_mid_aaee_2	99mmt_ShiftDR_mid_aaee_2	30mmt_ShiftDR_high_btmpv	42mmt_ShiftDR_high_btmpv	99mmt_ShiftDR_high_btmpv	30mmt_ShiftDR_low_btmpv_	42mmt_ShiftDR_low_btmpv_	99mmt_ShiftDR_low_btmpv_
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_Reference	Other Study_Shift DR_42 MMT_Reference	Other Study_Shift DR_30 MMT_Reference	Other Study_Shift DR_Default 50% RPS_High EE	Other Study_Shift DR_42 MMT_High EE	Other Study_Shift DR_30 MMT_High EE	Other Study_Shift DR_Default 50% RPS_Low EE	Other Study_Shift DR_42 MMT_Low EE	Other Study_Shift DR_30 MMT_Low EE	Other Study_Shift DR_Default 50% RPS_High BTM PV	Other Study_Shift DR_42 MMT_High BTM PV	Other Study_Shift DR_30 MMT_High BTM PV	Other Study_Shift DR_Default 50% RPS_Low BTM PV	Other Study_Shift DR_42 MMT_Low BTM PV	Other Study_Shift DR_30 MMT_Low BTM PV

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,220	25,003	24,869	25,098	24,904	24,949	25,409	25,031	24,874	25,246	25,066	24,921	25,161	24,930	24,722
Gas	GWh	49,667	64,828	73,011	48,434	62,040	68,486	50,183	65,445	77,732	49,571	64,655	68,024	50,024	64,509	79,536
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	152,303	124,436	106,304	144,491	116,504	103,064	161,350	133,674	110,578	152,896	124,639	110,643	151,176	124,627	99,568
Storage Losses	GWh	(2,444)	(1,780)	(1,097)	(2,267)	(1,629)	(1,162)	(3,209)	(1,792)	(1,106)	(2,706)	(1,800)	(1,223)	(2,353)	(1,729)	(930)
Curtailment	GWh	(4,600)	(2,083)	(649)	(3,716)	(1,648)	(658)	(4,323)	(2,196)	(665)	(4,522)	(2,329)	(1,117)	(4,167)	(1,872)	(157)
Imports	GWh	6,949	16,574	28,722	7,980	18,968	28,724	6,547	16,066	29,016	7,079	16,741	30,017	6,631	16,833	26,856
Exports	GWh	(7,612)	(4,988)	(8,608)	(7,180)	(4,374)	(8,237)	(6,684)	(5,061)	(8,634)	(7,834)	(5,122)	(8,983)	(6,700)	(5,178)	(6,830)
Load	GWh	242,474	242,474	242,474	234,958	234,958	234,958	251,716	251,716	251,716	242,474	242,474	242,474	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 1,320	$ 1,320	$ 1,320	$ 566	$ 566	$ 566	$ 971	$ 971	$ 971	$ 950	$ 950	$ 950
New Renewables Fixed Costs	$MM	$ 3,947	$ 1,383	$ 462	$ 3,463	$ 999	$ 316	$ 4,428	$ 1,951	$ 658	$ 3,542	$ 1,063	$ 343	$ 4,556	$ 2,054	$ 683
New Storage Fixed Costs	$MM	$ 410	$ 131	$ 53	$ 239	$ 105	$ 49	$ 872	$ 134	$ 57	$ 588	$ 129	$ 62	$ 367	$ 129	$ 30
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ 257	$ 83	$ -	$ 257	$ -	$ -	$ 257	$ 257	$ -	$ 257	$ 113	$ -	$ 257	$ -	$ -
New Transmission Fixed Costs	$MM	$ 83	$ -	$ -	$ -	$ -	$ -	$ 83	$ -	$ -	$ 8	$ -	$ -	$ 83	$ -	$ -
Total Operating Costs	$MM	$ 3,783	$ 5,378	$ 6,154	$ 3,774	$ 5,352	$ 5,893	$ 3,833	$ 5,381	$ 6,470	$ 3,760	$ 5,361	$ 5,973	$ 3,847	$ 5,376	$ 6,453
Total Revenue Requirement	**$MM**	**$ 42,642**	**$ 41,139**	**$ 40,832**	**$ 42,252**	**$ 40,975**	**$ 40,778**	**$ 43,238**	**$ 41,488**	**$ 40,951**	**$ 42,326**	**$ 40,837**	**$ 40,549**	**$ 43,260**	**$ 41,709**	**$ 41,316**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,456	$ 5,456	$ 5,456	$ 5,008	$ 5,008	$ 5,008	$ 6,261	$ 6,261	$ 6,261	$ 3,615	$ 3,615	$ 3,615
Total Resource Cost	**$MM**	**$ 47,886**	**$ 46,382**	**$ 46,076**	**$ 47,708**	**$ 46,431**	**$ 46,233**	**$ 48,246**	**$ 46,497**	**$ 45,959**	**$ 48,587**	**$ 47,098**	**$ 46,810**	**$ 46,875**	**$ 45,324**	**$ 44,931**
Total Retail Sales	GWh	197,882	197,882	197,882	190,917	190,917	190,917	206,446	206,446	206,446	190,899	190,899	190,899	209,073	209,073	209,073
Average Rate (cts/kWh)	**cts/kWh**	**21.5**	**20.8**	**20.6**	**22.1**	**21.5**	**21.4**	**20.9**	**20.1**	**19.8**	**22.2**	**21.4**	**21.2**	**20.7**	**19.9**	**19.8**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,122	$ 5,047	$ 5,310	$ 4,041	$ 4,861	$ 5,033	$ 4,146	$ 5,086	$ 5,611	$ 4,110	$ 5,033	$ 5,073	$ 4,145	$ 5,030	$ 5,639
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 339	$ 904	$ 1,611	$ 393	$ 1,041	$ 1,613	$ 315	$ 871	$ 1,627	$ 346	$ 912	$ 1,680	$ 323	$ 921	$ 1,508
Market Revenues	$MM	$ (335)	$ (222)	$ (414)	$ (316)	$ (198)	$ (400)	$ (287)	$ (225)	$ (415)	$ (353)	$ (232)	$ (428)	$ (279)	$ (225)	$ (339)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (343)	$ (351)	$ (353)	$ (344)	$ (353)	$ (353)	$ (342)	$ (351)	$ (353)	$ (343)	$ (351)	$ (353)	$ (342)	$ (351)	$ (354)
Total CAISO Operating Cost	**$MM**	**$ 3,783**	**$ 5,378**	**$ 6,154**	**$ 3,774**	**$ 5,352**	**$ 5,893**	**$ 3,833**	**$ 5,381**	**$ 6,470**	**$ 3,760**	**$ 5,361**	**$ 5,973**	**$ 3,847**	**$ 5,376**	**$ 6,453**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	69%	54%	46%	67%	52%	45%	70%	57%	46%	67%	52%	45%	70%	57%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	5%	5%	5%	4%	4%	4%	5%	5%	5%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	73%	59%	50%	72%	57%	50%	74%	61%	50%	72%	57%	50%	75%	62%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	3%	2%	4%	3%	2%	4%	3%	1%	4%	4%	2%	4%	3%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	6%	5%	3%	6%	5%	3%	6%	5%	3%	6%	6%	4%	5%	4%	2%
Marginal RPS Cost	$/MWh	$ -	$ -	$ 13	$ -	$ -	$ 9	$ -	$ -	$ 14	$ -	$ -	$ 12	$ -	$ -	$ 10
RPS Renewables excl. Pipeline Biogas	GWh	131,426	103,579	85,448	123,614	95,647	82,208	140,473	112,817	89,722	124,484	96,248	82,252	142,376	115,847	90,788
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_ShiftDR_20170831	42mmt_ShiftDR_20170831	99mmt_ShiftDR_20170831	30mmt_ShiftDR_2x_aaee_20	42mmt_ShiftDR_2x_aaee_20	99mmt_ShiftDR_2x_aaee_20	30mmt_ShiftDR_mid_aaee_2	42mmt_ShiftDR_mid_aaee_2	99mmt_ShiftDR_mid_aaee_2	30mmt_ShiftDR_high_btmpv	42mmt_ShiftDR_high_btmpv	99mmt_ShiftDR_high_btmpv	30mmt_ShiftDR_low_btmpv_	42mmt_ShiftDR_low_btmpv_	99mmt_ShiftDR_low_btmpv_
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_Reference	Other Study_Shift DR_42 MMT_Reference	Other Study_Shift DR_30 MMT_Reference	Other Study_Shift DR_Default 50% RPS_High EE	Other Study_Shift DR_42 MMT_High EE	Other Study_Shift DR_30 MMT_High EE	Other Study_Shift DR_Default 50% RPS_Low EE	Other Study_Shift DR_42 MMT_Low EE	Other Study_Shift DR_30 MMT_Low EE	Other Study_Shift DR_Default 50% RPS_High BTM PV	Other Study_Shift DR_42 MMT_High BTM PV	Other Study_Shift DR_30 MMT_High BTM PV	Other Study_Shift DR_Default 50% RPS_Low BTM PV	Other Study_Shift DR_42 MMT_Low BTM PV	Other Study_Shift DR_30 MMT_Low BTM PV

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	24.1	29.7	33.0	23.7	28.7	31.3	24.3	29.9	34.7	24.1	29.7	31.1	24.3	29.6	35.5
Import Emissions	MMtCO2	0.2	4.3	9.5	0.6	5.3	9.5	-	4.1	9.6	0.2	4.4	10.0	0.0	4.4	8.7
Total CAISO Emissions	MMtCO2	24.3	34.0	42.5	24.3	34.0	40.8	24.3	34.0	44.4	24.3	34.0	41.2	24.3	34.0	44.2
Marginal GHG Cost	$/tCO2	$ 247	$ 113	$ -	$ 216	$ 80	$ -	$ 273	$ 119	$ -	$ 244	$ 107	$ -	$ 264	$ 118	$ -
Total WECC Emissions	MMtCO2	183	194	201	184	194	199	184	194	203	183	194	199	183	194	203

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	43,567	43,567	43,567	47,287	47,287	47,287	45,624	45,624	45,624	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	50,102	50,102	50,102	54,380	54,380	54,380	52,468	52,468	52,468	52,468	52,468	52,468
Firm Capacity	MW	39,867	38,148	38,148	39,867	38,148	38,148	39,867	38,438	38,148	39,867	38,148	38,148	39,867	38,350	38,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	5,040	3,682	3,359	4,232	3,569	3,345	7,076	3,694	3,377	5,846	3,676	3,396	4,838	3,674	3,271
Variable Renewable ELCC	MW	8,199	7,881	7,802	7,653	7,547	7,453	8,404	8,085	8,019	8,010	7,886	7,829	8,137	7,820	7,735
Total Available Capacity	MW	62,997	59,602	59,199	61,643	59,155	58,836	65,238	60,108	59,435	63,614	59,601	59,264	62,734	59,735	59,045
Actual Reserve Margin	%	38%	31%	30%	41%	36%	35%	38%	27%	26%	39%	31%	30%	38%	31%	29%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_ShiftDR_flexev_2017	42mmt_ShiftDR_flexev_2017	99mmt_ShiftDR_flexev_2017	30mmt_ShiftDR_high_pvcost	42mmt_ShiftDR_high_pvcost	99mmt_ShiftDR_high_pvcost	30mmt_ShiftDR_low_pvcost_	42mmt_ShiftDR_low_pvcost_	99mmt_ShiftDR_low_pvcost_	30mmt_ShiftDR_high_storag	42mmt_ShiftDR_high_storag	99mmt_ShiftDR_high_storag	30mmt_ShiftDR_low_storage	42mmt_ShiftDR_low_storage	99mmt_ShiftDR_low_storage
How referenced in Proposed Reference System Plan slides:		Other Study_Shift DR_Default 50% RPS_Flexible	Other Study_Shift DR_42 MMT_Flexible EVs	Other Study_Shift DR_30 MMT_Flexible EVs	Other Study_Shift DR_Default 50% RPS_High PV Cost	Other Study_Shift DR_42 MMT_High PV Cost	Other Study_Shift DR_30 MMT_High PV Cost	Other Study_Shift DR_Default 50% RPS_Low PV Cost	Other Study_Shift DR_42 MMT_Low PV Cost	Other Study_Shift DR_30 MMT_Low PV Cost	Other Study_Shift DR_Default 50% RPS_High Battery Cost	Other Study_Shift DR_42 MMT_High Battery Cost	Other Study_Shift DR_30 MMT_High Battery Cost	Other Study_Shift DR_Default 50% RPS_Low Battery Cost	Other Study_Shift DR_42 MMT_Low Battery Cost	Other Study_Shift DR_30 MMT_Low Battery Cost
Present Value Portfolio Metrics	*Unit*															
PV Revenue Requirement	*$MM*	$ 682,684	$ 670,870	$ 667,550	$ 686,890	$ 673,413	$ 668,884	$ 683,128	$ 670,332	$ 667,927	$ 691,415	$ 677,515	$ 673,091	$ 679,022	$ 668,503	$ 664,998
PV Total Resource Cost	*$MM*	$ 754,820	$ 743,006	$ 739,687	$ 762,827	$ 749,350	$ 744,821	$ 751,282	$ 738,487	$ 736,082	$ 763,551	$ 749,651	$ 745,228	$ 751,158	$ 740,640	$ 737,134
Levelized Revenue Requirement	*$MM*	$ 40,629	$ 39,926	$ 39,729	$ 40,880	$ 40,078	$ 39,808	$ 40,656	$ 39,894	$ 39,751	$ 41,149	$ 40,322	$ 40,059	$ 40,412	$ 39,786	$ 39,577
Levelized Total Resource Cost	*$MM*	$ 44,923	$ 44,219	$ 44,022	$ 45,399	$ 44,597	$ 44,328	$ 44,712	$ 43,951	$ 43,807	$ 45,442	$ 44,615	$ 44,352	$ 44,705	$ 44,079	$ 43,870
Levelized Average Rate	*cts/kWh*	20.2	19.9	19.8	20.3	19.9	19.8	20.2	19.8	19.8	20.5	20.1	19.9	20.1	19.8	19.7
Portfolio Metrics	*Unit*	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 42,267	$ 40,962	$ 40,717	$ 42,708	$ 41,228	$ 40,848	$ 42,428	$ 40,957	$ 40,784	$ 43,051	$ 41,481	$ 41,123	$ 42,002	$ 40,834	$ 40,569
Total Resource Cost	*$MM*	$ 47,511	$ 46,206	$ 45,961	$ 48,324	$ 46,845	$ 46,464	$ 47,299	$ 45,829	$ 45,655	$ 48,295	$ 46,725	$ 46,367	$ 47,246	$ 46,078	$ 45,813
Average Rate	*cts/kWh*	21.4	20.7	20.6	21.6	20.8	20.6	21.4	20.7	20.6	21.8	21.0	20.8	21.2	20.6	20.5
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	42.1	24.3	34.0	42.6	24.3	34.0	42.2	24.3	34.0	42.7	24.3	34.0	42.3
Effective RPS (incl. banked RECs)	*% of Retail Sales*	73%	58%	50%	73%	58%	50%	74%	60%	50%	73%	59%	50%	72%	59%	50%
Renewable Curtailment	*% of RPS Gen.*	5.2%	4.4%	2.4%	5.7%	4.9%	2.6%	6.5%	5.9%	3.5%	6.8%	5.3%	3.0%	5.5%	4.3%	2.6%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	-	-	2,020	334	-	2,020	-	-	2,020	-	-	1,700	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind	*MW*	3,840	1,145	276	4,775	1,145	299	3,398	984	-	4,775	1,145	299	1,645	1,145	299
Solar	*MW*	11,215	8,569	2,994	10,556	8,097	3,023	12,988	10,077	3,641	11,071	9,156	3,175	13,616	8,982	3,041
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	2,949	1,452	518	3,203	1,878	820	2,924	1,858	746	1,447	642	-	8,953	3,943	2,804
Pumped Storage	*MW*	6	-	-	344	-	-	817	-	-	1,145	-	-	-	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	1,713	-	-	1,713	228	-	1,713	202	-	1,713	1,224	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**12,006**	**6,708**	**3,270**	**12,282**	**6,569**	**3,322**	**13,336**	**8,055**	**3,056**	**12,797**	**7,294**	**3,356**	**13,454**	**7,121**	**3,341**
Out-Of-State Renewables	*MW*	**5,069**	**3,006**	**-**	**5,069**	**3,006**	**-**	**5,069**	**3,006**	**584**	**5,069**	**3,006**	**119**	**3,506**	**3,006**	**-**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,220	1,220	3,240	1,554	1,220	3,240	1,220	1,220	3,240	1,220	1,220	2,920	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,033	9,338	8,470	12,968	9,338	8,493	11,591	9,178	8,194	12,968	9,338	8,493	9,838	9,338	8,493
Solar	*MW*	24,065	21,419	15,844	23,406	20,947	15,873	25,838	22,927	16,491	23,921	22,006	16,026	26,466	21,832	15,892
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	4,274	2,777	1,843	4,528	3,203	2,145	4,249	3,183	2,071	2,772	1,967	1,325	10,278	5,268	4,129
Pumped Storage	*MW*	1,838	1,832	1,832	2,176	1,832	1,832	2,649	1,832	1,832	2,977	1,832	1,832	1,832	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752
Shift DR	*MW*	1,713	-	-	1,713	228	-	1,713	202	-	1,713	1,224	-	-	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**49,338**	**44,040**	**40,603**	**49,615**	**43,902**	**40,655**	**50,669**	**45,388**	**40,389**	**50,129**	**44,627**	**40,688**	**50,787**	**44,453**	**40,673**
Out-Of-State Renewables	*MW*	**7,132**	**5,069**	**2,064**	**7,132**	**5,069**	**2,064**	**7,133**	**5,069**	**2,648**	**7,132**	**5,069**	**2,183**	**5,569**	**5,069**	**2,064**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_ShiftD R_flexev_2017	42mmt_ShiftD R_flexev_2017	99mmt_ShiftD R_flexev_2017	30mmt_ShiftD R_high_pvcost	42mmt_ShiftD R_high_pvcost	99mmt_ShiftD R_high_pvcost	30mmt_ShiftD R_low_pvcost_	42mmt_ShiftD R_low_pvcost_	99mmt_ShiftD R_low_pvcost_	30mmt_ShiftD R_high_storag	42mmt_ShiftD R_high_storag	99mmt_ShiftD R_high_storag	30mmt_ShiftD R_low_storage	42mmt_ShiftD R_low_storage	99mmt_ShiftD R_low_storage
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_Flexible	Other Study_Shift DR_42 MMT_Flexible EVs	Other Study_Shift DR_30 MMT_Flexible EVs	Other Study_Shift DR_Default 50% RPS_High PV Cost	Other Study_Shift DR_42 MMT_High PV Cost	Other Study_Shift DR_30 MMT_High PV Cost	Other Study_Shift DR_Default 50% RPS_Low PV Cost	Other Study_Shift DR_42 MMT_Low PV Cost	Other Study_Shift DR_30 MMT_Low PV Cost	Other Study_Shift DR_Default 50% RPS_High Battery Cost	Other Study_Shift DR_42 MMT_High Battery Cost	Other Study_Shift DR_30 MMT_High Battery Cost	Other Study_Shift DR_Default 50% RPS_Low Battery Cost	Other Study_Shift DR_42 MMT_Low Battery Cost	Other Study_Shift DR_30 MMT_Low Battery Cost

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,306	24,890	24,735	25,203	24,996	24,751	25,270	25,077	25,008	25,116	24,678	24,718	25,432	25,419	24,860
Gas	GWh	49,635	62,899	70,746	49,891	65,018	72,856	49,016	62,941	72,881	48,677	64,183	74,879	50,032	62,793	66,501
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewables	GWh	151,515	123,406	106,292	151,679	124,011	106,156	153,912	126,374	106,941	153,147	124,654	106,453	151,369	124,174	106,340
Storage Losses	GWh	(2,267)	(1,600)	(1,038)	(2,462)	(1,756)	(1,044)	(2,698)	(1,898)	(1,268)	(2,564)	(1,540)	(918)	(4,042)	(2,064)	(1,503)
Curtailment	GWh	(3,792)	(1,595)	(344)	(4,187)	(1,920)	(637)	(5,137)	(2,701)	(732)	(4,240)	(2,098)	(774)	(2,625)	(2,061)	(509)
Imports	GWh	6,959	18,216	29,630	6,771	16,403	29,080	7,515	18,203	28,080	7,900	17,100	27,601	6,547	18,338	33,904
Exports	GWh	(7,025)	(3,930)	(7,318)	(7,018)	(4,669)	(8,752)	(8,766)	(6,402)	(8,096)	(7,458)	(4,873)	(9,383)	(5,550)	(4,986)	(7,356)
Load	GWh	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 1,248	$ 1,248	$ 1,248	$ 766	$ 766	$ 766
New Renewables Fixed Costs	$MM	$ 3,786	$ 1,315	$ 448	$ 3,947	$ 1,505	$ 473	$ 3,755	$ 1,334	$ 427	$ 3,974	$ 1,394	$ 475	$ 3,387	$ 1,370	$ 458
New Storage Fixed Costs	$MM	$ 272	$ 101	$ 34	$ 447	$ 132	$ 53	$ 531	$ 131	$ 49	$ 501	$ 75	$ -	$ 807	$ 187	$ 99
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ 257	$ -	$ -	$ 257	$ 34	$ -	$ 257	$ 30	$ -	$ 257	$ 184	$ -	$ -	$ -	$ -
New Transmission Fixed Costs	$MM	$ -	$ -	$ -	$ 83	$ -	$ -	$ -	$ -	$ -	$ 83	$ -	$ -	$ -	$ -	$ -
Total Operating Costs	$MM	$ 3,789	$ 5,384	$ 6,073	$ 3,811	$ 5,394	$ 6,159	$ 3,723	$ 5,300	$ 6,146	$ 3,789	$ 5,381	$ 6,201	$ 3,842	$ 5,313	$ 6,047
Total Revenue Requirement	**$MM**	**$ 42,267**	**$ 40,962**	**$ 40,717**	**$ 42,708**	**$ 41,228**	**$ 40,848**	**$ 42,428**	**$ 40,957**	**$ 40,784**	**$ 43,051**	**$ 41,481**	**$ 41,123**	**$ 42,002**	**$ 40,834**	**$ 40,569**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,617	$ 5,617	$ 5,617	$ 4,871	$ 4,871	$ 4,871	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 47,511**	**$ 46,206**	**$ 45,961**	**$ 48,324**	**$ 46,845**	**$ 46,464**	**$ 47,299**	**$ 45,829**	**$ 45,655**	**$ 48,295**	**$ 46,725**	**$ 46,367**	**$ 47,246**	**$ 46,078**	**$ 45,813**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882	197,882
Average Rate (cts/kWh)	**cts/kWh**	**21.4**	**20.7**	**20.6**	**21.6**	**20.8**	**20.6**	**21.4**	**20.7**	**20.6**	**21.8**	**21.0**	**20.8**	**21.2**	**20.6**	**20.5**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,106	$ 4,914	$ 5,131	$ 4,132	$ 5,057	$ 5,301	$ 4,083	$ 4,940	$ 5,317	$ 4,059	$ 5,007	$ 5,452	$ 4,124	$ 4,897	$ 4,864
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 336	$ 995	$ 1,660	$ 329	$ 896	$ 1,630	$ 371	$ 1,001	$ 1,576	$ 401	$ 942	$ 1,549	$ 309	$ 991	$ 1,903
Market Revenues	$MM	$ (309)	$ (173)	$ (365)	$ (307)	$ (208)	$ (420)	$ (388)	$ (289)	$ (394)	$ (329)	$ (217)	$ (448)	$ (241)	$ (223)	$ (365)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (344)	$ (352)	$ (353)	$ (342)	$ (351)	$ (353)	$ (344)	$ (352)	$ (353)	$ (342)	$ (351)	$ (352)	$ (349)	$ (352)	$ (354)
Total CAISO Operating Cost	**$MM**	**$ 3,789**	**$ 5,384**	**$ 6,073**	**$ 3,811**	**$ 5,394**	**$ 6,159**	**$ 3,723**	**$ 5,300**	**$ 6,146**	**$ 3,789**	**$ 5,381**	**$ 6,201**	**$ 3,842**	**$ 5,313**	**$ 6,047**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	69%	54%	46%	68%	54%	46%	69%	55%	46%	68%	54%	46%	68%	55%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	73%	58%	50%	73%	58%	50%	74%	60%	50%	73%	59%	50%	72%	59%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	3%	1%	4%	3%	1%	5%	4%	2%	5%	4%	2%	2%	2%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	5%	4%	2%	6%	5%	3%	7%	6%	4%	7%	5%	3%	5%	4%	3%
Marginal RPS Cost	$/MWh	$ -	$ -	$ 10	$ -	$ -	$ 16	$ -	$ -	$ 4	$ -	$ -	$ 14	$ -	$ -	$ 10
RPS Renewables excl. Pipeline Biogas	GWh	130,638	102,549	85,436	130,801	103,155	85,299	133,034	105,517	86,085	132,270	103,797	85,596	130,492	103,317	85,483
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_ShiftD R_flexev_2017	42mmt_ShiftD R_flexev_2017	99mmt_ShiftD R_flexev_2017	30mmt_ShiftD R_high_pvcost	42mmt_ShiftD R_high_pvcost	99mmt_ShiftD R_high_pvcost	30mmt_ShiftD R_low_pvcost_	42mmt_ShiftD R_low_pvcost_	99mmt_ShiftD R_low_pvcost_	30mmt_ShiftD R_high_storag	42mmt_ShiftD R_high_storag	99mmt_ShiftD R_high_storag	30mmt_ShiftD R_low_storage	42mmt_ShiftD R_low_storage	99mmt_ShiftD R_low_storage
	Other	Other	Other	Other	Other	Other	Other	Other	Other	Other	Other	Other	Other	Other	Other
How referenced in Proposed Reference System Plan slides:	Study_Shift DR_Default 50% RPS_Flexible	Study_Shift DR_42 MMT_Flexible EVs	Study_Shift DR_30 MMT_Flexible EVs	Study_Shift DR_Default 50% RPS_High PV Cost	Study_Shift DR_42 MMT_High PV Cost	Study_Shift DR_30 MMT_High PV Cost	Study_Shift DR_Default 50% RPS_Low PV Cost	Study_Shift DR_42 MMT_Low PV Cost	Study_Shift DR_30 MMT_Low PV Cost	Study_Shift DR_Default 50% RPS_High Battery Cost	Study_Shift DR_42 MMT_High Battery Cost	Study_Shift DR_30 MMT_High Battery Cost	Study_Shift DR_Default 50% RPS_Low Battery Cost	Study_Shift DR_42 MMT_Low Battery Cost	Study_Shift DR_30 MMT_Low Battery Cost

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-	24.3	34.0	-
CAISO Generator Emissions	MMtCO2	24.1	29.0	32.2	24.2	29.8	32.9	23.9	29.0	33.0	23.7	29.5	33.7	24.3	29.0	30.6
Import Emissions	MMtCO2	0.2	5.0	9.9	0.1	4.2	9.6	0.4	5.0	9.2	0.6	4.5	9.0	-	5.0	11.7
Total CAISO Emissions	MMtCO2	24.3	34.0	42.1	24.3	34.0	42.6	24.3	34.0	42.2	24.3	34.0	42.7	24.3	34.0	42.3
Marginal GHG Cost	$/tCO2	$ 239	$ 86	$ -	$ 258	$ 117	$ -	$ 230	$ 91	$ -	$ 248	$ 112	$ -	$ 155	$ 94	$ -
Total WECC Emissions	MMtCO2	184	195	201	183	194	201	183	194	201	183	194	201	184	194	201

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,058	45,058	45,058	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	51,816	51,816	51,816	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468	52,468
Firm Capacity	MW	39,867	38,148	38,148	39,867	38,415	38,148	39,867	38,148	38,148	39,867	38,148	38,148	39,611	38,148	38,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	4,409	3,559	3,286	5,239	3,688	3,362	5,446	3,677	3,344	4,708	3,317	3,157	12,110	4,906	3,919
Variable Renewable ELCC	MW	7,855	7,779	7,696	8,191	7,867	7,801	7,953	7,881	7,729	8,199	7,881	7,803	7,917	7,881	7,801
Total Available Capacity	MW	62,023	59,376	59,022	63,188	59,862	59,202	63,158	59,597	59,111	62,665	59,237	58,999	69,529	60,826	59,759
Actual Reserve Margin	%	38%	32%	31%	38%	31%	30%	38%	31%	30%	37%	30%	29%	52%	33%	31%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:		30mmt_ShiftDR_no_taxcredit	42mmt_ShiftDR_no_taxcredit	99mmt_ShiftDR_no_taxcredit	30mmt_ShiftDR_25yr_gasreti	42mmt_ShiftDR_25yr_gasreti	99mmt_ShiftDR_25yr_gasreti	30mmt_ShiftDR_high_buildel	42mmt_ShiftDR_high_buildel	99mmt_ShiftDR_high_buildel
How referenced in Proposed Reference System Plan slides:		Other Study_Shift DR_Default 50% RPS_No Tax Credits	Other Study_Shift DR_42 MMT_No Tax Credits	Other Study_Shift DR_30 MMT_No Tax Credits	Other Study_Shift DR_Default 50% RPS_Gas Retirements	Other Study_Shift DR_42 MMT_Gas Retirements	Other Study_Shift DR_30 MMT_Gas Retirements	Other Study_Shift DR_Default 50% RPS_High BE	Other Study_Shift DR_42 MMT_High BE	Other Study_Shift DR_30 MMT_High BE
Present Value Portfolio Metrics	***Unit***									
PV Revenue Requirement	*$MM*	$ 690,213	$ 675,052	$ 687,523	$ 676,712	$ 674,548	$ 700,356	$ 683,004	$ 675,602	$ 669,812
PV Total Resource Cost	*$MM*	$ 762,349	$ 747,189	$ 759,659	$ 748,848	$ 746,684	$ 772,492	$ 755,140	$ 747,739	$ 741,949
Levelized Revenue Requirement	*$MM*	$ 41,078	$ 40,175	$ 40,917	$ 40,274	$ 40,145	$ 41,681	$ 40,649	$ 40,208	$ 39,863
Levelized Total Resource Cost	*$MM*	$ 45,371	$ 44,468	$ 45,211	$ 44,567	$ 44,438	$ 45,974	$ 44,942	$ 44,501	$ 44,157
Levelized Average Rate	*cts/kWh*	20.4	20.0	20.4	20.0	20.0	20.1	19.6	19.4	19.8
Portfolio Metrics	***Unit***	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Revenue Requirement	*$MM*	$ 43,163	$ 41,558	$ 42,821	$ 41,641	$ 41,504	$ 44,246	$ 42,294	$ 41,566	$ 40,971
Total Resource Cost	*$MM*	$ 48,407	$ 46,802	$ 48,064	$ 46,885	$ 46,748	$ 49,490	$ 47,538	$ 46,810	$ 46,215
Average Rate	*cts/kWh*	21.8	21.0	21.6	21.0	21.0	21.1	20.2	19.8	20.7
Greenhouse Gas Emissions	*MMtCO2*	24.3	34.0	24.3	34.0	40.9	24.3	34.0	45.3	42.6
Effective RPS (incl. banked RECs)	*% of Retail Sales*	73%	59%	74%	61%	51%	75%	62%	50%	50%
Renewable Curtailment	*% of RPS Gen.*	5.9%	5.1%	5.8%	4.0%	3.1%	6.3%	4.9%	2.7%	2.5%

Selected Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	-	-	-	-	-	-	-	-	-
CHP	*MW*	-	-	-	-	-	-	-	-	-
Gas	*MW*	-	-	-	-	-	-	-	-	-
Hydro (Large)	*MW*	-	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-	-
Geothermal	*MW*	2,020	-	2,020	658	-	2,020	774	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-	-
Wind	*MW*	4,775	1,145	4,775	1,145	826	4,775	1,645	299	146
Solar	*MW*	10,886	8,991	11,556	8,452	3,532	15,830	11,098	5,258	3,149
Customer Solar	*MW*	-	-	-	-	-	-	-	-	-
Battery Storage	*MW*	3,141	1,866	4,120	7,226	8,637	3,968	1,940	938	830
Pumped Storage	*MW*	301	-	519	-	-	2,201	-	-	-
Shed DR	*MW*	-	-	-	-	-	-	-	-	-
Shift DR	*MW*	1,713	608	1,713	407	-	1,713	1,713	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**12,612**	**7,174**	**13,281**	**7,249**	**4,358**	**17,556**	**10,010**	**3,356**	**3,295**
Out-Of-State Renewables	*MW*	**5,069**	**2,961**	**5,069**	**3,006**	**-**	**5,069**	**3,506**	**2,201**	**-**

Total Resource Summary

	Unit	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**	**2030**
Nuclear	*MW*	622	622	622	622	622	622	622	622	622
CHP	*MW*	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
Gas	*MW*	25,877	25,877	13,075	13,075	13,075	25,877	25,877	25,877	25,877
Hydro (Large)	*MW*	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844	7,844
Biomass	*MW*	725	725	725	725	725	725	725	725	725
Geothermal	*MW*	3,240	1,220	3,240	1,878	1,220	3,240	1,994	1,220	1,220
Hydro (Small)	*MW*	466	466	466	466	466	466	466	466	466
Wind	*MW*	12,968	9,338	12,968	9,338	9,020	12,968	9,838	8,493	8,340
Solar	*MW*	23,736	21,841	24,406	21,303	16,382	28,680	23,948	18,108	15,999
Customer Solar	*MW*	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941	15,941
Battery Storage	*MW*	4,466	3,191	5,445	8,551	9,962	5,293	3,265	2,263	2,155
Pumped Storage	*MW*	2,133	1,832	2,351	1,832	1,832	4,033	1,832	1,832	1,832
Shed DR	*MW*	1,752	1,752	1,752	4,370	3,703	1,752	1,752	1,752	1,752
Shift DR	*MW*	1,713	608	1,713	407	-	1,713	1,713	-	-
Hydrogen Load	*MW*	-	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**49,944**	**44,507**	**50,614**	**44,582**	**41,690**	**54,888**	**47,342**	**40,688**	**40,627**
Out-Of-State Renewables	*MW*	**7,132**	**5,024**	**7,132**	**5,069**	**2,064**	**7,132**	**5,569**	**4,265**	**2,064**

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_ShiftD R_no_taxcredit	42mmt_ShiftD R_no_taxcredit	99mmt_ShiftD R_no_taxcredit	30mmt_ShiftD R_25yr_gasreti	42mmt_ShiftD R_25yr_gasreti	99mmt_ShiftD R_25yr_gasreti	30mmt_ShiftD R_high_buildel	42mmt_ShiftD R_high_buildel	99mmt_ShiftD R_high_buildel
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_No Tax Credits	Other Study_Shift DR_42 MMT_No Tax Credits	Other Study_Shift DR_30 MMT_No Tax Credits	Other Study_Shift DR_Default 50% RPS_Gas Retirements	Other Study_Shift DR_42 MMT_Gas Retirements	Other Study_Shift DR_30 MMT_Gas Retirements	Other Study_Shift DR_Default 50% RPS_High BE	Other Study_Shift DR_42 MMT_High BE	Other Study_Shift DR_30 MMT_High BE

Annuel Energy Balance

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030
CHP	GWh	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759	14,759
Nuclear	GWh	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004	5,004
Hydro	GWh	25,233	25,013	25,462	25,143	24,806	25,559	25,062	24,790	24,648
Gas	GWh	49,697	65,042	33,712	37,721	45,739	50,124	66,463	77,379	72,911
Pipeline Biogas	GWh	-	-	-	-	-	-	-	-	-
Renewables	GWh	152,257	124,248	154,706	127,701	109,398	165,575	137,500	112,297	106,067
Storage Losses	GWh	(2,435)	(1,767)	(2,871)	(2,374)	(2,405)	(3,735)	(1,854)	(1,126)	(1,006)
Curtailment	GWh	(4,583)	(2,024)	(4,113)	(1,729)	(313)	(4,434)	(2,288)	(732)	(648)
Imports	GWh	6,933	16,390	20,206	39,420	48,165	6,547	15,174	31,545	29,250
Exports	GWh	(7,575)	(4,865)	(6,975)	(4,324)	(3,168)	(6,715)	(5,263)	(8,832)	(8,965)
Load	GWh	242,474	242,474	242,474	242,474	242,474	255,366	255,366	255,366	242,474

Cost Summary

Revenue Requirement and TRC		2030	2030	2030	2030	2030	2030	2030	2030	2030
Non-Modeled Costs	$MM	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199	$ 33,199
Non-Modeled Costs (Scenario Specific)	$MM	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963	$ 963
New Renewables Fixed Costs	$MM	$ 4,462	$ 1,788	$ 4,052	$ 1,728	$ 609	$ 4,747	$ 2,349	$ 739	$ 586
New Storage Fixed Costs	$MM	$ 413	$ 131	$ 715	$ 579	$ 810	$ 1,170	$ 138	$ 61	$ 54
New Thermal Fleet Fixed Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New DR Fixed Costs	$MM	$ 257	$ 91	$ 257	$ 185	$ 74	$ 257	$ 257	$ -	$ -
New Transmission Fixed Costs	$MM	$ 83	$ -	$ 83	$ -	$ -	$ 83	$ -	$ -	$ -
Total Operating Costs	$MM	$ 3,785	$ 5,385	$ 3,552	$ 4,987	$ 5,849	$ 3,826	$ 5,387	$ 6,603	$ 6,168
Total Revenue Requirement	**$MM**	**$ 43,163**	**$ 41,558**	**$ 42,821**	**$ 41,641**	**$ 41,504**	**$ 44,246**	**$ 42,294**	**$ 41,566**	**$ 40,971**
Customer Costs (Scenario Specific)	$MM	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244	$ 5,244
Total Resource Cost	**$MM**	**$ 48,407**	**$ 46,802**	**$ 48,064**	**$ 46,885**	**$ 46,748**	**$ 49,490**	**$ 47,538**	**$ 46,810**	**$ 46,215**
Total Retail Sales	GWh	197,882	197,882	197,882	197,882	197,882	209,829	209,829	209,829	197,882
Average Rate (cts/kWh)	**cts/kWh**	**21.8**	**21.0**	**21.6**	**21.0**	**21.0**	**21.1**	**20.2**	**19.8**	**20.7**

Operating Cost Breakdown	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030
Variable Operating Costs for CAISO Resources	$MM	$ 4,123	$ 5,059	$ 3,122	$ 3,321	$ 3,651	$ 4,147	$ 5,155	$ 5,609	$ 5,309
Incremental Biogas Costs	$MM	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market Purchases (incl Carbon Allowance)	$MM	$ 338	$ 893	$ 1,085	$ 2,215	$ 2,716	$ 309	$ 816	$ 1,769	$ 1,639
Market Revenues	$MM	$ (333)	$ (217)	$ (308)	$ (195)	$ (159)	$ (288)	$ (233)	$ (423)	$ (428)
Energy Credit for OOS Renewables Contracted to CAISC	$MM	$ (343)	$ (351)	$ (347)	$ (355)	$ (359)	$ (343)	$ (350)	$ (353)	$ (352)
Total CAISO Operating Cost	**$MM**	**$ 3,785**	**$ 5,385**	**$ 3,552**	**$ 4,987**	**$ 5,849**	**$ 3,826**	**$ 5,387**	**$ 6,603**	**$ 6,168**

RPS Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030
RPS Target	% of Retail Sales	50%	50%	50%	50%	50%	50%	50%	50%	50%
Effective RPS (w/o banked RECs)	% of Retail Sales	69%	54%	70%	56%	47%	71%	57%	46%	46%
Banked RECs	% of Retail Sales	4%	4%	4%	4%	4%	4%	4%	4%	4%
Effective RPS (with banked RECs)	% of Retail Sales	73%	59%	74%	61%	51%	75%	62%	50%	50%
Renewable Curtailment (scheduled and subhourly)	% of RPS Gen.	4%	3%	4%	2%	0%	4%	3%	1%	1%
Renewable Curtailment incl. Stor. Losses	% of RPS Gen.	6%	5%	6%	4%	3%	6%	5%	3%	2%
Marginal RPS Cost	$/MWh	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15	$ 21
RPS Renewables excl. Pipeline Biogas	GWh	131,380	103,391	133,828	106,844	88,541	144,697	116,644	91,440	85,210
Pipeline Biogas Generation	GWh	-	-	-	-	-	-	-	-	-
Nonmodeled RPS Renewables	GWh	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

RESOLVE Results Viewer Key Summary Stats

Case Name RESOLVE User Interface and Results Viewer:	30mmt_ShiftDR_no_taxcredit	42mmt_ShiftDR_no_taxcredit	99mmt_ShiftDR_no_taxcredit	30mmt_ShiftDR_25yr_gasreti	42mmt_ShiftDR_25yr_gasreti	99mmt_ShiftDR_25yr_gasreti	30mmt_ShiftDR_high_buildel	42mmt_ShiftDR_high_buildel	99mmt_ShiftDR_high_buildel
How referenced in Proposed Reference System Plan slides:	Other Study_Shift DR_Default 50% RPS_No Tax Credits	Other Study_Shift DR_42 MMT_No Tax Credits	Other Study_Shift DR_30 MMT_No Tax Credits	Other Study_Shift DR_Default 50% RPS_Gas Retirements	Other Study_Shift DR_42 MMT_Gas Retirements	Other Study_Shift DR_30 MMT_Gas Retirements	Other Study_Shift DR_Default 50% RPS_High BE	Other Study_Shift DR_42 MMT_High BE	Other Study_Shift DR_30 MMT_High BE

Greenhouse Gas Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030
GHG Emission Target	MMtCO2	24.3	34.0	24.3	34.0	-	24.3	34.0	-	-
CAISO Generator Emissions	MMtCO2	24.1	29.8	18.5	20.0	23.1	24.3	30.3	34.6	32.9
Import Emissions	MMtCO2	0.2	4.2	5.8	14.1	17.8	-	3.7	10.7	9.7
Total CAISO Emissions	MMtCO2	24.3	34.0	24.3	34.0	40.9	24.3	34.0	45.3	42.6
Marginal GHG Cost	$/tCO2	$ 247	$ 115	$ 230	$ 75	$ -	$ 288	$ 130	$ -	$ -
Total WECC Emissions	MMtCO2	183	194	183	193	200	184	194	204	201

Planning Reserve Margin Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030
1-in-2 Peak Load	MW	45,624	45,624	45,624	45,624	45,624	47,631	47,631	47,631	45,624
Reserve Margin Requirement	MW	15%	15%	15%	15%	15%	15%	15%	15%	15%
Total Reserve Margin Requirement	MW	52,468	52,468	52,468	52,468	52,468	54,776	54,776	54,776	52,468
Firm Capacity	MW	39,867	38,148	27,584	29,028	27,816	39,867	38,795	38,148	38,148
Import Capacity	MW	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891	9,891
Storage	MW	5,050	3,686	6,696	5,674	6,950	8,327	3,712	3,391	3,364
Variable Renewable ELCC	MW	8,176	7,881	8,296	7,874	7,810	8,440	8,117	8,046	7,758
Total Available Capacity	MW	62,984	59,606	52,468	52,468	52,468	66,525	60,515	59,477	59,162
Actual Reserve Margin	%	38%	31%	15%	15%	15%	40%	27%	25%	30%
Marginal PRM Cost	$/kW-yr.	$ -	$ -	$ 15	$ 75	$ 75	$ -	$ -	$ -	$ -
Marginal Solar ELCC	%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Marginal Wind ELCC	%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Local Capacity Requirement Summary

	Unit	2030	2030	2030	2030	2030	2030	2030	2030	2030
Total LCR Deficiency	MW	-	-	-	-	-	-	-	-	-
Gas	MW	-	-	-	-	-	-	-	-	-
Storage	MW	-	-	-	-	-	-	-	-	-
Solar	MW	-	-	-	-	-	-	-	-	-
Total New Local Capacity	MW	-	-	-	-	-	-	-	-	-
Marginal LCR Cost	$/kW-yr.	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

(End of Attachment C)