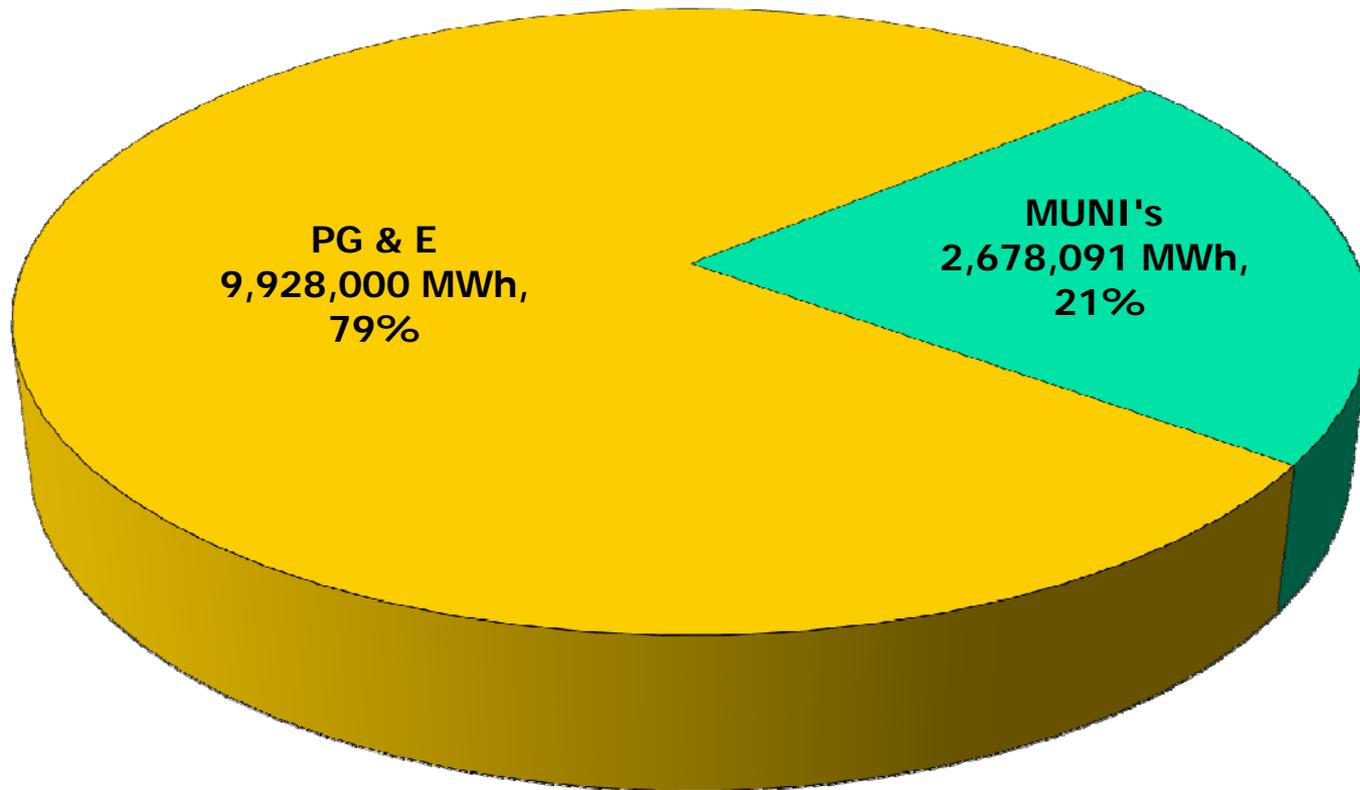


Existing Renewables

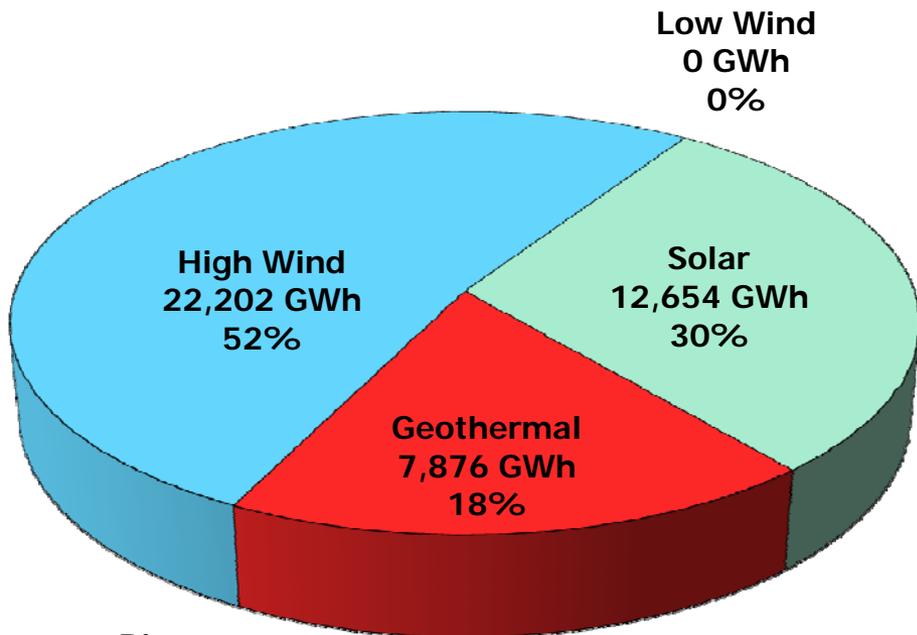
- PG&E data taken from “Accelerated Renewable Energy Development”, CEC July 2004
- Public data taken from “Scenario Analysis of California System”, CEC-200-2007-010-SD-AP
- Public power utilities can designate what renewable resources count toward meeting the renewable targets
- Existing mix between IOUs and POU can be different



Existing Renewable Summary

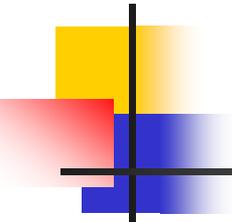


So. CA 33% Renewable Mix



33 % Mix		
Technology	GWh	% Ratio
Geothermal	7,876	18.4%
Biomass	-	0.0%
High Wind	22,202	52.0%
Low Wind	-	0.0%
Solar	12,654	29.6%
SoCal Total	42,732	100.0%





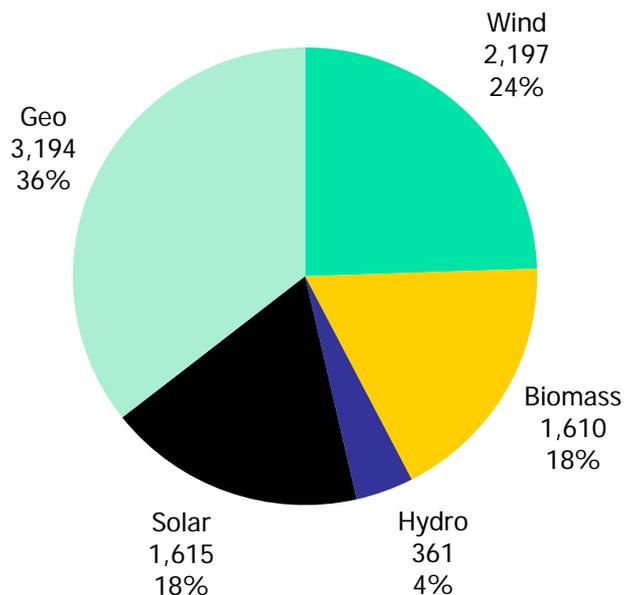
Contracted Renewable Resources

- Used the CPUC approved list of contracted renewables for inclusion into the base case
- Contracted renewables were for northern California only
- Total of 8,977 GWh



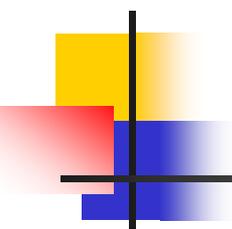
Contracted Renewables

Northern California Contracted Renewables (GWh & %)



Technology	GWh
Wind	2,197
Biomass	1,610
Hydro	361
Solar	1,615
Geo	3,194
Total	8,977





Potential Locations of Renewable Resource Installations

- Energy Commission SVA and IAP technical potentials
- Center for Resource Solutions on transmission interconnections for importing out of state power
- E3 study for the CPUC on GHG
- CAISO queue lists
- West Trans queue lists for different regions



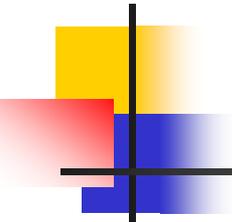
California Queue Lists

	CAISO- PG&E	CAISO- SCE	CAISO- SDGE	CAISO- Total	IID	LADWP
Bio-Mass	54	0	0	54	16	0
Geothermal	140	150	0	290	289	0
Landfill	11	0	0	11	0	0
Wind	2,576	10,660	5,727	18,963	0	1,107
Solar	1,596	19,665	1,513	22,774	302	1,640
Hydro	230	580	40	850	0	0
Total	4,607	31,055	7,280	42,942	607	2,747

Out of State Queue List

	NV	PUGET	WASHINGTON	AZ
Bio-Mass	0	0	0	0
Geothermal	213	0	0	0
Landfill	0	0	0	0
Wind	1,674	65	1,290	2,153
Solar	778	0	0	2,370
Hydro	0	0	0	0
Total	2,665	65	1,290	4,523

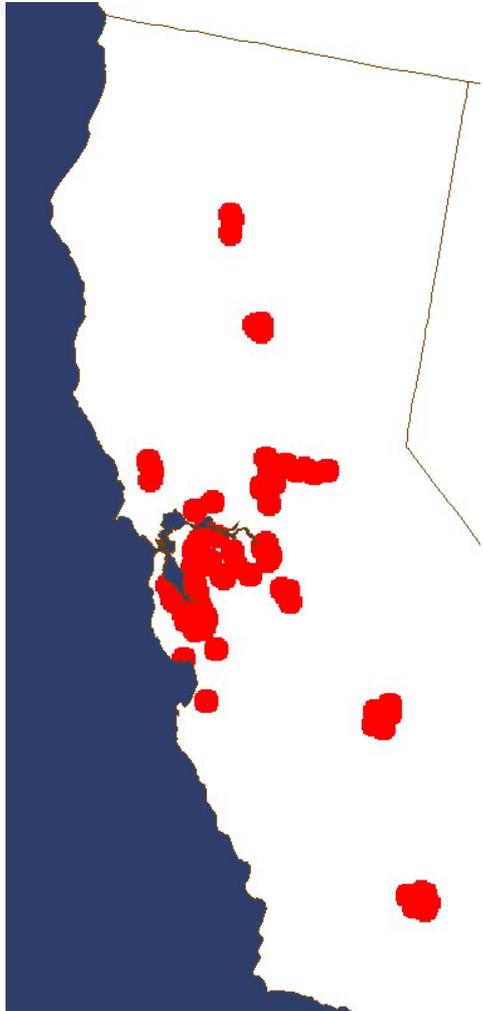




Base Cases

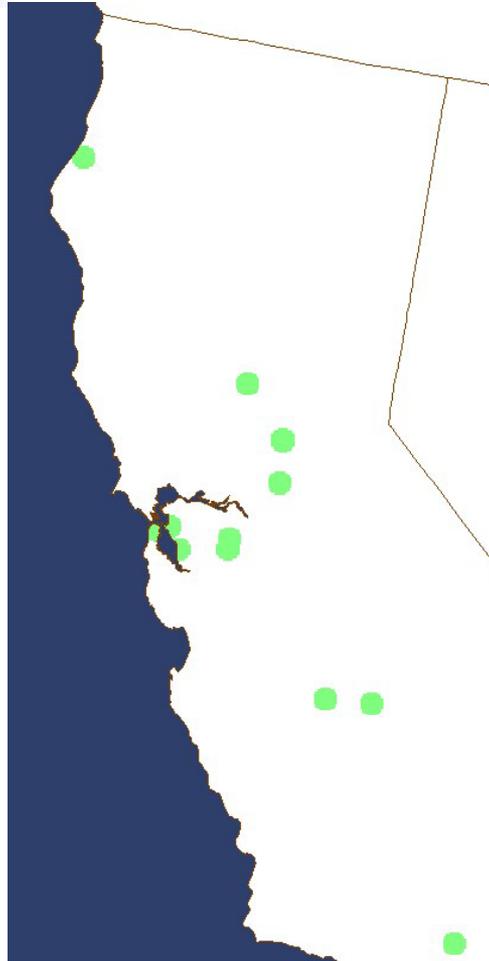
- 2020 Summer, Spring and Fall
 - Southern California at 33% for Spring, Summer, and Fall
 - All CA residential PV in at 3,000 MW at 58% Capacity at peak
 - Conventional gas units (identified by CEC in Report CEC-500-2007-081, Table 3-1) in service
- Northern California Modeling
 - Northern California contracted renewables are in service

Projected Residential PV Locations



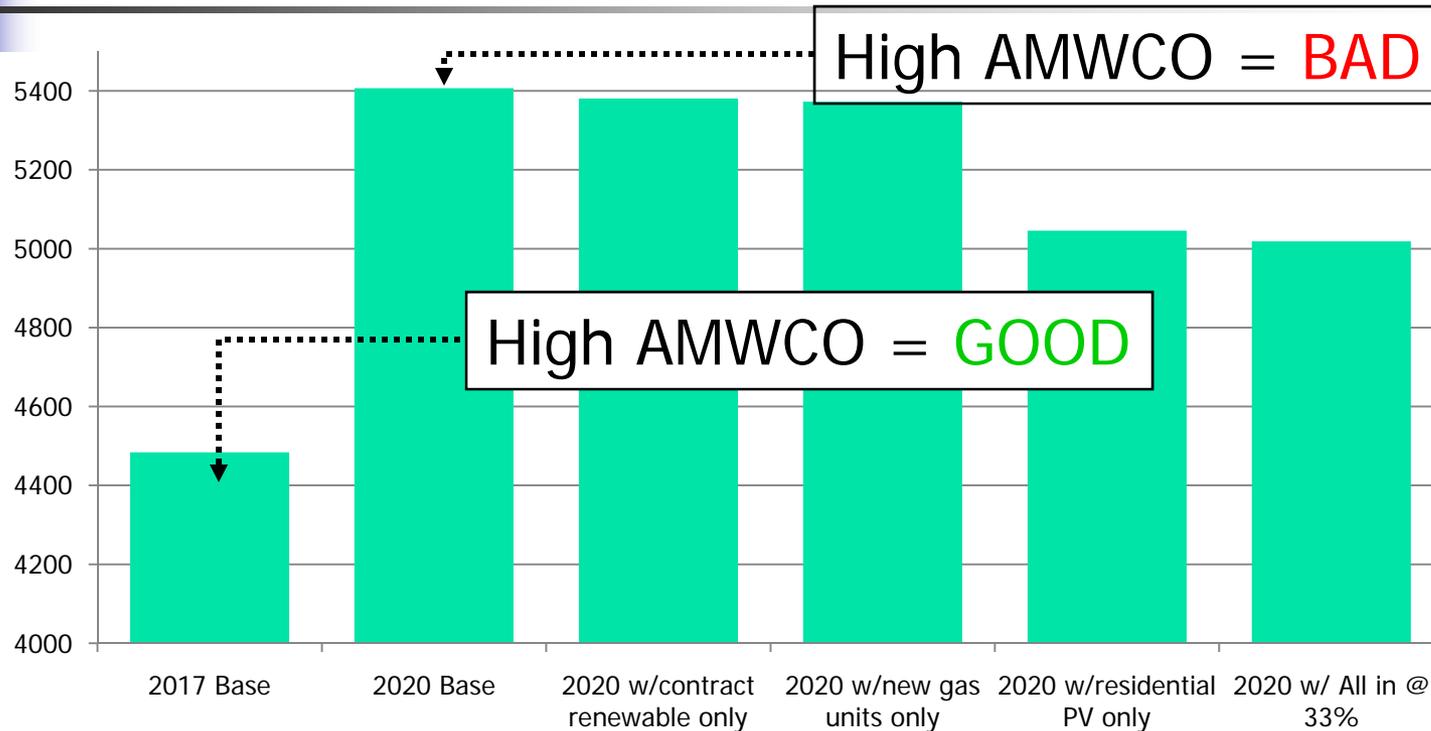
- Northern California projected penetration of new residential PV to meet state mandates is 1,060 MW
- 660 MW included in CEC load forecast
- New PV is 400 MW

New Gas Unit Locations



- Northern California new Gas Facilities total 2,730 MW of capacity (CEC Report CEC-500-2007-081)

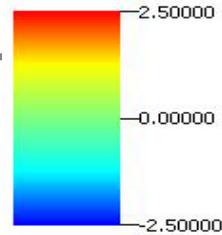
Use of Relative Reliability Indices (AMWCO) as a Measure of Transmission Benefit



As developed in the CEC SVA and applied in the IAP, the Aggregated MegaWatt Contingency Overload (AMWCO) is a relative reliability index based on the number of overloads, magnitude of the overloads and the operating voltages of the overloaded facilities under contingency analysis. For more information please see <http://www.energy.ca.gov/2005publications/CEC-500-2005-106/CEC-500-2005-106.PDF>

2020 Summer Base Case Hot Spots

Sensitivity\WTLR

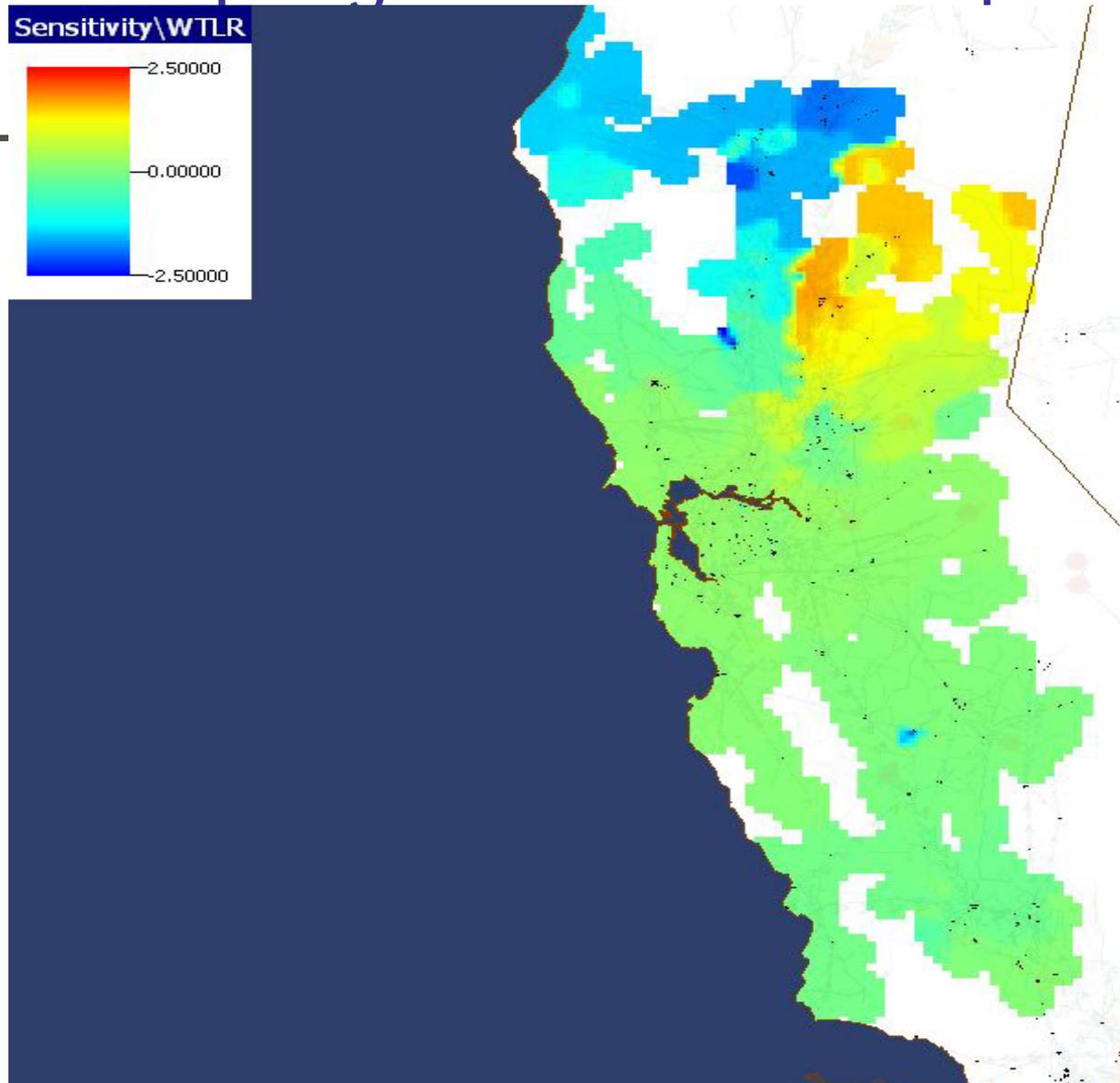


Weighted Transmission Loading Relief Factor (WTLR) is a single indicator of the effectiveness for overload mitigation at each substation bus. The WTLR represents the expected contingency megawatt overload reduction if 1 MW of new generation is injected at that bus. Please see

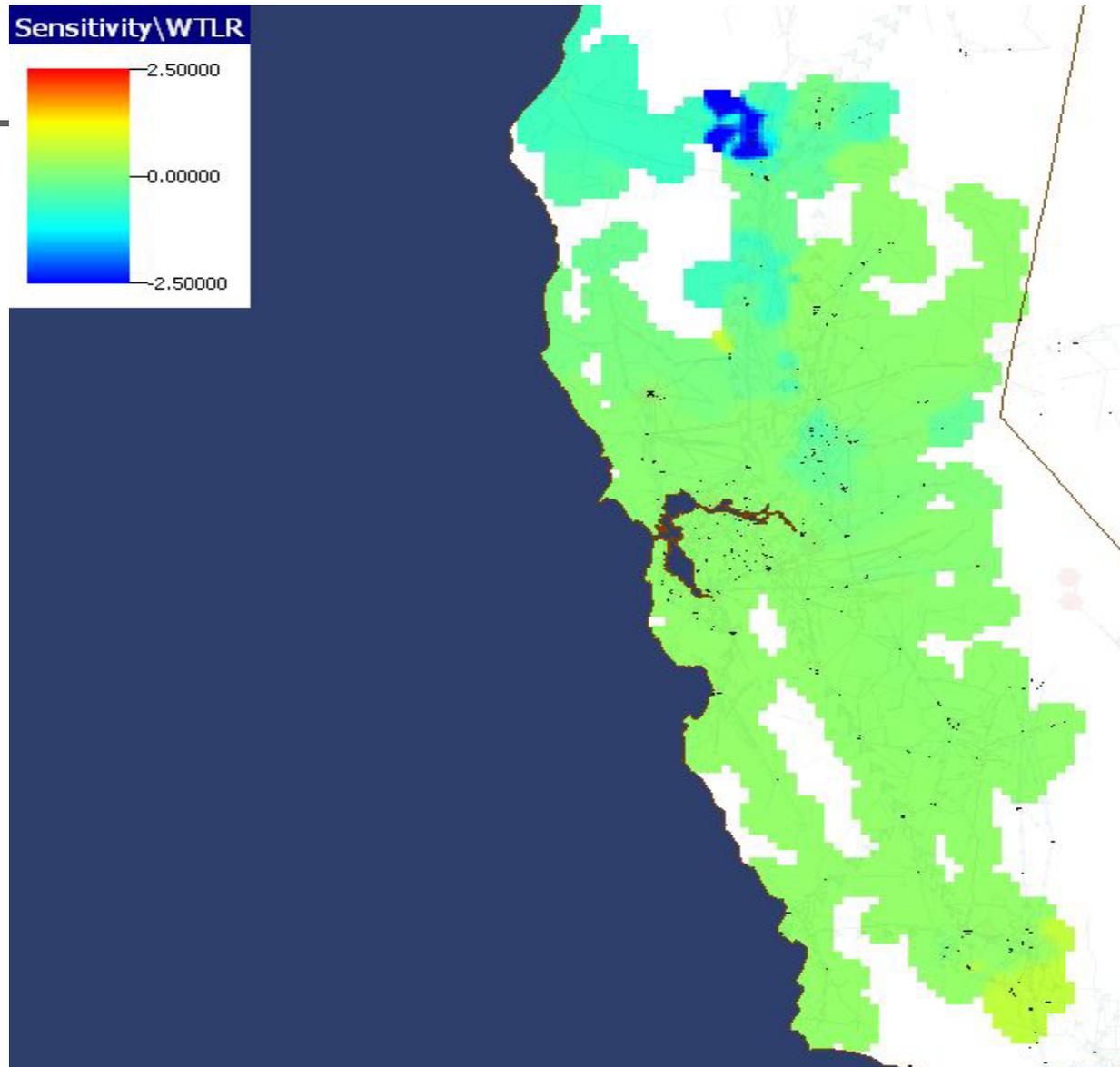
<http://www.energy.ca.gov/2005publications/CEC-500-2005-106/CEC-500-2005-106.PDF>

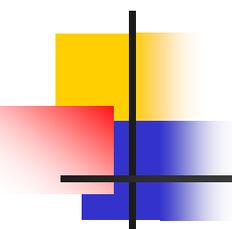


2020 Spring Base Case Hot Spots

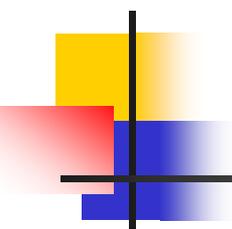


2020 Fall Base Case Hot Spots





Preliminary Renewable Scenario Development



Starting Assumptions used in Scenario Development

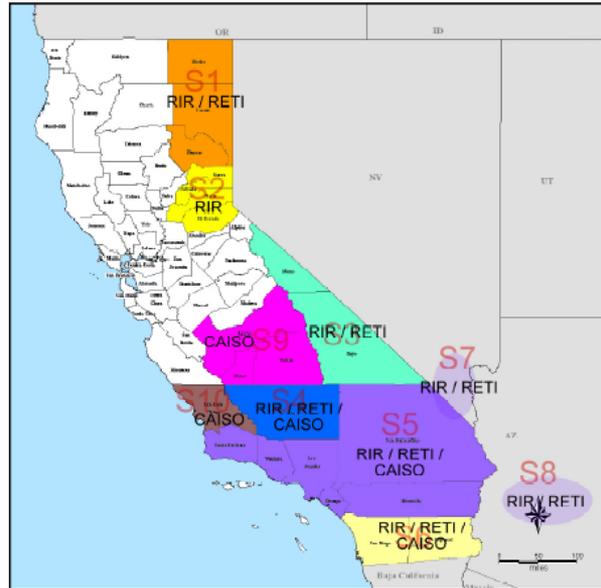
- The locations of new renewable generation are unknown and could be located anywhere in CA or in the WECC region
- Most of the new high voltage transmission expansion to major substations are unknown.
- Based on system responses to the various resource scenarios, the Transmission Owners can then develop conceptual transmission expansion plans.

CEC Forecast of Technical Potential of Renewable Resource in CA

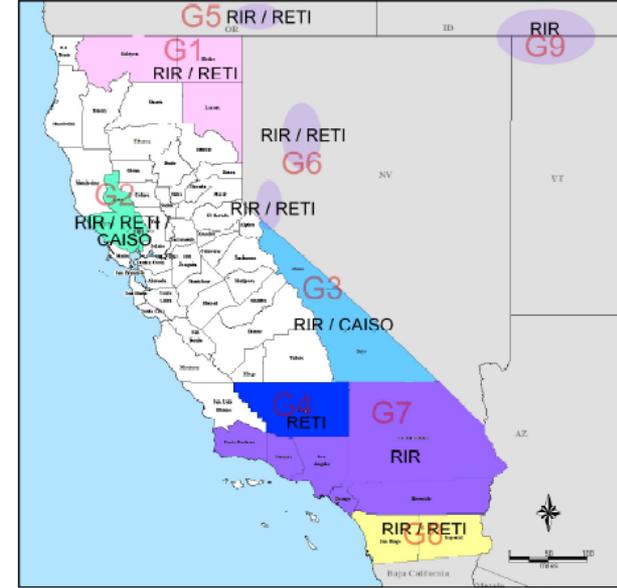
CEC Forecast on Technical Potential of High Speed Wind Generation



CEC Forecast on Technical Potential of Concentrated Solar Generation

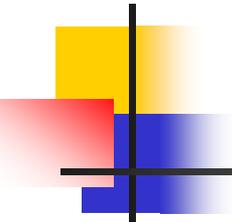


CEC Forecast on Technical Potential of Geothermal Generation



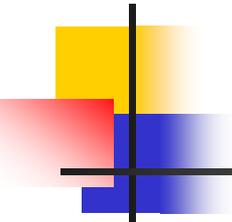
There are considerable overlaps in the locations of the potential renewable resources from the RIR, RETI and the CAISO Interconnection Queue





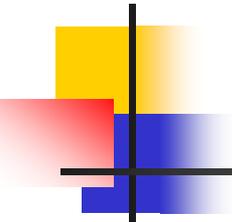
Scenario Development

- Using Energy Commission data, renewable maps are created showing potential by resource type by region
- Renewable capacities can be combined from different renewable regions for termination at specific transmission interconnections on the grid
- For example, renewable resources from W2, W4, G1, S1 and S2 areas could be combined to meet the renewable energy target and be connected to substations in the transmission system located as far south as Butte County



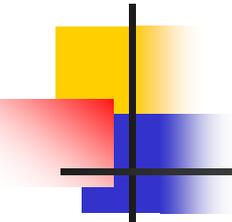
Scenario Dev Cont'd

- Many scenarios can be defined and generation can be associated with injection points to determine how significantly different or common the scenarios are.
- Since transmission power flows are only concerned with MWs and not MWhs, the resource type is not important in transmission planning as long as the total renewable energy requirement is met by considering the renewable energy generation



Scenario Dev Cont'd

- The total connected renewable capacity can be compared to the generator injections to determine transmission upgrade requirements
- This methodology allows for analysis of many scenarios while limiting the number of actual power flow simulations



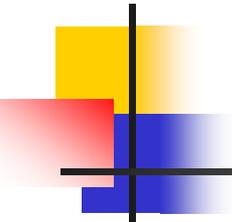
Renewable Spreadsheets

- Yellow - deliveries that can impact the COI
- Orange - deliveries that can impact Midway
- No color - deliveries from within Northern California - limited impact on COI or Midway
- Scenarios can be developed by installing generation at any of the renewable regions as long as the total generation adds up to 19,064,000 MWh (33% target)

Sample renewable scenario for High Penetration of wind and solar in Southern California

Injection Region	Technology	MW	C.F. (%)	MWh
Medicine Lake Telephone Flat	Geothermal	-	90.0%	-
Geysers	Geothermal	400	90.0%	3,153,600
G-1	Geothermal		90.0%	-
G-2	Geothermal		90.0%	-
G-3-G4	Geothermal	175	90.0%	1,379,700
G-5	Geothermal		90.0%	-
G-6	Geothermal		90.0%	-
Fire Threat	Biomass	-	85.0%	-
Urban, Agr, Veg	Biomass	-	90.0%	-
New Biomass	Biomass		90.0%	-
Solano	High Wind	275	37.0%	891,330
Altamont	High Wind	132	37.0%	427,838
W-1	High Wind		37.0%	-
W-2	High Wind		37.0%	-
W-3	High Wind		37.0%	-
W-4	High Wind		37.0%	-
W-5	High Wind		37.0%	-
W-6	High Wind		37.0%	-
W-7	High Wind	2,400	37.0%	7,778,880
W-8	High Wind		37.0%	-
W-9	High Wind		37.0%	-
Contra Costa	Low Wind	28	25.0%	61,320
Siskiyou	Low Wind	41	25.0%	89,790
Yolo	Low Wind	3	25.0%	6,570
	Low Wind		25.0%	-
S-1	CSP		27.0%	-
S-2	CSP		27.0%	-
S-3-S4	CSP	2,250	27.0%	5,321,700
Total		5,704		19,110,728
33% Target for N.CA				19,064,000





List of Scenarios

Scenario 1 - High Midway Wind and Solar with Geo

Scenario 2 - High COI Geo N CA and Nev

Scenario 3 - Dispersed through out Northern California

Scenario 4 - Minimum COI and No Midway

Scenario 5 - Majority Geothermal

Scenario 6 - Even Distribution with Geo

Scenario 7 - High Midway wind and solar; Minimum Geo

Scenario 8 - All COI

Scenario 9 - Majority COI and Midway – Stakeholder Suggestion

Scenario 10 - CAISO MIX

Scenario 11 - RETI

Preliminary results currently available for the color coded scenarios





Proposed Injection Points



Zone	Bus Number	Name	Nom kV	Zone	Bus Number	Name	Nom kV
W1	31000	Humboldt	115 (upgrade to 230)	W6 (West)	30765	Los Banos	230
	30105	Cottonwood	230		30050	Los Banos	500
W2 (North)	30245	Round Mt.	230		30790	Panoche	230
	30005	Round Mt.	500		30900	Gates	230
	30185	Pit 1	230		30055	Gates	500
	40687	Malin	500		30873	Helm	230
W2 (South)	30300	Table Mt.	230	W6 (East)	30810	Gregg	230
	30015	Table Mt.	500		30800	Wilson	230
	30250	Caribou	230		30515	Warnerville	230
W3	30450	Cortina	230	W7	34796	Carrizo Plains	115 (upgrade to 230)
	30430	Fulton	230		30915	Morro Bay	230
	30460	Vaca Dixon	230	W8/W9	30245	Round Mt.	230
	30030	Vaca Dixon	500		30005	Round Mt.	500
	30495	Stagg	230		30185	Pit 1	230
W4	30330	Rio Oso	230		40687	Malin	500
	46827	Summit Metering Station	115 (upgrade to 230)	W10/W11	30970	Midway	230
	30500	Bellota	230		30060	Midway	500
	37016	Rancho Seco	230	W12	30810	Gregg	230
W5	30624	Tesla	230		30800	Wilson	230
	30040	Tesla	500		30515	Warnerville	230
	30735	Metcalf	230				
	30042	Metcalf	500				
	30630	Newark	230				

Note: For the cases modeling TANC TTP (Zeta Project) as a potential solution, add Raven with two 500 kV lines to Round Mt. and move a subset of renewable resources modeled at Round Mt. to Raven.

Proposed Injection Points

Zone	Bus Number	Bus Name	Nom kV
S1 (North)	30245	Round Mt.	230
	30005	Round Mt.	500
	30185	Pit 1	230
	40687	Malin	500
S1 (South)	30300	Table Mt.	230
	30015	Table Mt.	500
	30250	Caribou	230
S2	30330	Rio Oso	230
	46827	Summit Metering Station	115 (upgrade to 230)
S3/S4/S5/S6/S7/S8	30970	Midway	230
	30060	Midway	500
S9 (West)	30765	Los Banos	230
	30050	Los Banos	500
	30790	Panoche	230
	30900	Gates	230
	30055	Gates	500
	30873	Helm	230
S9 (East)	30810	Gregg	230
	30800	Wilson	230
	30515	Warnerville	230
S10	34796	Carrizo Plains	115 (upgrade to 230)
	30915	Morro Bay	230



Note: For the cases modeling TANC TTP (Zeta Project) as a potential solution, add Raven with two 500 kV lines to Round Mt. and move a subset of renewable resources modeled at Round Mt. to Raven.

Proposed Injection Points

Zone	Bus Number	Bus Name	Nom kV
G1/G5/G6/G9 (North)	30245	Round Mt.	230
	30005	Round Mt.	500
	30185	Pit 1	230
	40687	Malin	500
G2	30430	Fulton	230
G3/G4 (South)	30970	Midway	230
	30060	Midway	500
G6 (South)	30300	Table Mt.	230
	30015	Table Mt.	500
	30250	Caribou	230
G7/G8/G9 (South)	30970	Midway	230
	30060	Midway	500



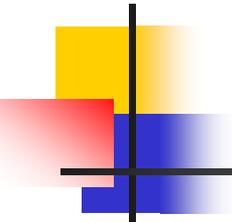
Note: For the cases modeling TANC TTP (Zeta Project) as a potential solution, add Raven with two 500 kV lines to Round Mt. and move a subset of renewable resources modeled at Round Mt. to Raven.

Installed Renewable Capacity

Scenario	Geothermal	Biomass	High and Low Wind	CSP Solar	Total
Scenario 1 - High Midway Wind and Solar with Geo	1,325	-	1,979	1,000	4,304
Scenario 2 - High COI Geo N CA and Nev	2,245	-	479	-	2,724
Scenario 3 - Dispersed through out Northern California	745	495	2,629	400	4,269
Scenario 4 - Minimum COI and No Midway	1,075	495	2,129	-	3,699
Scenario 5 - Majority Geothermal	1,775	495	479	-	2,749
Scenario 6 - Even Distribution with Geo	925	495	2,129	500	4,049
Scenario 7 - High Midway wind and solar; Minimum Geo	600	-	3,000	2,000	5,600
Scenario 8 - All COI	725	-	3,500	1,000	5,225
Scenario 9 - Majority COI and Midway – Stakeholder Suggestion	450	-	4,430	1,250	6,130
Scenario 10 - CAISO MIX	185	-	4,101	2,400	6,686
Scenario 11 - RETI	-	-	-	-	-

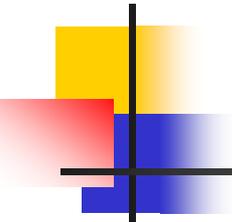
Installed MW by Impact of Injection Points

Scenario	COI	Midway	within N. CA System	Total MW
Scenario 1 - High Midway Wind and Solar with Geo	132	3,425	747	4,304
Scenario 2 - High COI Geo N CA and Nev	1,707	-	1,017	2,724
Scenario 3 - Dispersed through out Northern California	1,577	-	2,692	4,269
Scenario 4 - Minimum COI and No Midway	307	-	3,392	3,699
Scenario 5 - Majority Geothermal	857	450	1,442	2,749
Scenario 6 - Even Distribution with Geo	1,307	1,200	1,542	4,049
Scenario 7 - High Midway wind and solar; Minimum Geo	-	5,600	-	5,600
Scenario 8 - All COI	5,225	-	-	5,225
Scenario 9 - Majority COI and Midway – Stakeholder Suggestion	2,900	2,400	830	6,130
Scenario 10 - CAISO MIX	831	2,669	3,186	6,686
Scenario 11 - RETI	-	-	-	-



Scenario Development

- Each season (summer, spring & fall) has a coincident renewable generating factor
- A coincident factor is the projected MWs generating at the time of the power flow simulation
- The coincident renewable generation will always be less than the installed MWs
- The coincident factors can be changed to test the sensitivity for transmission overloads



Coincident Renewable Capacity

	Summer	Spring	Fall
Geothermal	100%	100%	100%
Biomass	100%	100%	100%
Wind	25%	60%	60%
Solar	58%	58%	0%

Coincident renewable capacity is the projected capacity to be generating at the power flow load point. For example, summer would be the system peak hour, spring would be the highest peak demand during the spring peak hour and fall would be the lowest load point during fall off-peak hour

Summer Coincident MW

Scenario	Renewable Mix Split - Geo / Bio / Wind / CSP	Geothermal	Biomass	High and Low Wind	CSP Solar	Total
Scenario 1 - High Midway Wind and Solar with Geo	55 / 0 / 21 / 24	1325	0	494.75	580	2,400
Scenario 2 - High COI Geo N CA and Nev	95 / 0 / 5 / 0	2245	0	119.75	0	2,365
Scenario 3 - Dispersed through out Northern California	35 / 23 / 31 / 11	745	495	657.25	232	2,129
Scenario 4 - Minimum COI and No Midway	51 / 24 / 25 / 0	1075	495	532.25	0	2,102
Scenario 5 - Majority Geothermal	74 / 21 / 5 / 0	1775	495	119.75	0	2,390
Scenario 6 - Even Distribution with Geo	41 / 22 / 24 / 13	925	495	532.25	290	2,242
Scenario 7 - High Midway wind and solar; Minimum Geo	24 / 0 / 30 / 46	600	0	750	1160	2,510
Scenario 8 - All COI	33 / 0 / 40 / 27	725	0	875	580	2,180
Scenario 9 - Majority COI and Midway – Stakeholder Suggestion	20 / 0 / 49 / 32	450	0	1107.5	725	2,283
Scenario 10 - CAISO MIX	7 / 0 / 39 / 53	185	0	1025.25	1392	2,602

Summer Coincident MW by Impact of Injection Points

Scenario	Split - COI/Midway/CA	COI	Midway	within N. CA System	Total MW
Scenario 1 - High Midway Wind and Solar with Geo	1 / 78 / 20	33	1,880	487	2,400
Scenario 2 - High COI Geo N CA and Nev	68 / 0 / 32	1,608	0	757	2,365
Scenario 3 - Dispersed through out Northern California	37 / 0 / 63	785	0	1,344	2,129
Scenario 4 - Minimum COI and No Midway	10 / 0 / 90	208	0	1,894	2,102
Scenario 5 - Majority Geothermal	32 / 19 / 49	758	450	1,182	2,390
Scenario 6 - Even Distribution with Geo	32 / 21 / 47	721	465	1,057	2,242
Scenario 7 - High Midway wind and solar; Minimum Geo	0 / 100 / 0	0	2,510	0	2,510
Scenario 8 - All COI	100 / 0 / 0	2,180	0	0	2,180
Scenario 9 - Majority COI and Midway – Stakeholder Suggestion	42 / 41 / 17	958	930	395	2,283
Scenario 10 - CAISO MIX	7 / 47 / 46	148	965	962	2,074

Spring Coincident MW

Scenario	Renewable Mix Split - Geo / Bio / Wind / CSP	Geothermal	Biomass	High and Low Wind	CSP Solar	Total
Scenario 1 - High Midway Wind and Solar with Geo	43 / 0 / 38 / 19	1,325	-	1,187	580	3,092
Scenario 2 - High COI Geo N CA and Nev	89 / 0 / 11 / 0	2,245	-	287	-	2,532
Scenario 3 - Dispersed through out Northern California	24 / 16 / 52 / 8	745	495	1,577	232	3,049
Scenario 4 - Minimum COI and No Midway	38 / 17 / 45 / 0	1,075	495	1,277	-	2,847
Scenario 5 - Majority Geothermal	69 / 19 / 11 / 0	1,775	495	287	-	2,557
Scenario 6 - Even Distribution with Geo	31 / 17 / 43 / 10	925	495	1,277	290	2,987
Scenario 7 - High Midway wind and solar; Minimum Geo	17 / 0 / 51 / 33	600	-	1,800	1,160	3,560
Scenario 8 - All COI	21 / 0 / 62 / 17	725	-	2,100	580	3,405
Scenario 9 - Majority COI and Midway – Stakeholder Suggestion	12 / 0 / 69 / 19	450	-	2,658	725	3,833
Scenario 10 - CAISO MIX	5 / 0 / 61 / 34	185	-	2,461	1,392	4,038

Spring Coincident MW by Impact of Injection Points

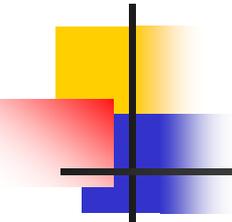
Scenario	Split - COI/Midway/CA	COI	Midway	within N. CA System	Total MW
Scenario 1 - High Midway Wind and Solar with Geo	3 / 78 / 20	79.2	2,405	608.2	3,092
Scenario 2 - High COI Geo N CA and Nev	65 / 0 / 35	1654.2	-	878.2	2,532
Scenario 3 - Dispersed through out Northern California	35 / 0 / 65	1076.2	-	1973.2	3,049
Scenario 4 - Minimum COI and No Midway	9 / 0 / 91	254.2	-	2593.2	2,847
Scenario 5 - Majority Geothermal	31 / 18 / 51	804.2	450	1303.2	2,557
Scenario 6 - Even Distribution with Geo	33 / 24 / 43	994.2	710	1,283	2,987
Scenario 7 - High Midway wind and solar; Minimum Geo	0 / 100 / 0	-	3,560	-	3,560
Scenario 8 - All COI	100 / 0 / 0	3,405	-	-	3,405
Scenario 9 - Majority COI and Midway – Stakeholder Suggestion	47 / 37 / 16	1,815	1,420	598	3,833
Scenario 10 - CAISO MIX	9 / 39 / 52	354	1,603	2,112	4,070

Fall Off-Peak Coincident MW

Scenario	Renewable Mix Split - Geo / Bio / Wind / CSP	Geothermal	Biomass	High and Low Wind	CSP Solar	Total
Scenario 1 - High Midway Wind and Solar with Geo	53 / 0 / 47 / 0	1,325	-	1,187	-	2,512
Scenario 2 - High COI Geo N CA and Nev	89 / 0 / 11 / 0	2,245	-	287	-	2,532
Scenario 3 - Dispersed through out Northern California	26 / 18 / 56 / 0	745	495	1,577	-	2,817
Scenario 4 - Minimum COI and No Midway	38 / 17 / 45 / 0	1,075	495	1,277	-	2,847
Scenario 5 - Majority Geothermal	69 / 19 / 11 / 0	1,775	495	287	-	2,557
Scenario 6 - Even Distribution with Geo	34 / 18 / 47 / 0	925	495	1,277	-	2,697
Scenario 7 - High Midway wind and solar; Minimum Geo	25 / 0 / 75 / 0	600	-	1,800	-	2,400
Scenario 8 - All COI	26 / 0 / 74 / 0	725	-	2,100	-	2,825
Scenario 9 - Majority COI and Midway – Stakeholder Suggestion	14 / 0 / 86 / 0	450	-	2,658	-	3,108
Scenario 10 - CAISO MIX	7 / 0 / 93 / 0	185	-	2,461	-	2,646

Fall Off-Peak Coincident MW by Impact of Injection Points

Scenario	Split - COI/Midway/CA	COI	Midway	within N. CA System	Total MW
Scenario 1 - High Midway Wind and Solar with Geo	3 / 73 / 24	79.2	1,825	608.2	2,512
Scenario 2 - High COI Geo N CA and Nev	65 / 0 / 35	1654.2	-	878.2	2,532
Scenario 3 - Dispersed through out Northern California	30 / 0 / 70	844.2	-	1973.2	2,817
Scenario 4 - Minimum COI and No Midway	9 / 0 / 91	254.2	-	2593.2	2,847
Scenario 5 - Majority Geothermal	31 / 18 / 51	804.2	450	1303.2	2,557
Scenario 6 - Even Distribution with Geo	37 / 16 / 48	994.2	420	1,283	2,697
Scenario 7 - High Midway wind and solar; Minimum Geo	0 / 100 / 0	-	2,400	-	2,400
Scenario 8 - All COI	100 / 0 / 0	2,825	-	-	2,825
Scenario 9 - Majority COI and Midway – Stakeholder Suggestion	54 / 27 / 19	1,670	840	598	3,108
Scenario 10 - CAISO MIX	10 / 32 / 59	354	1,139	2,112	3,606

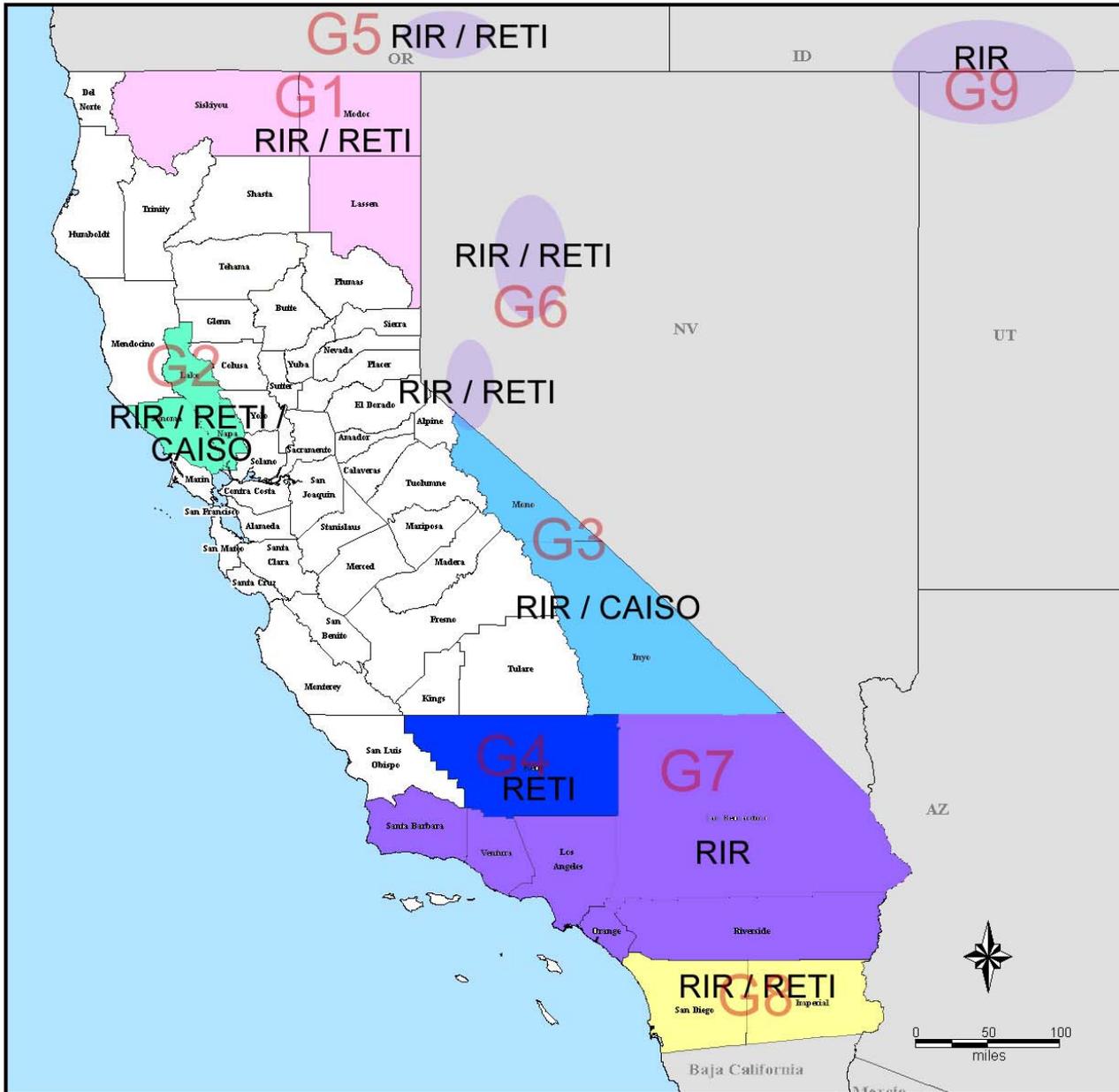


RIR – Renewable Maps

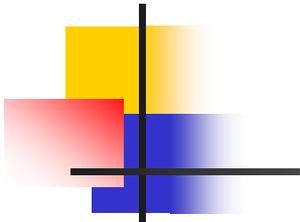
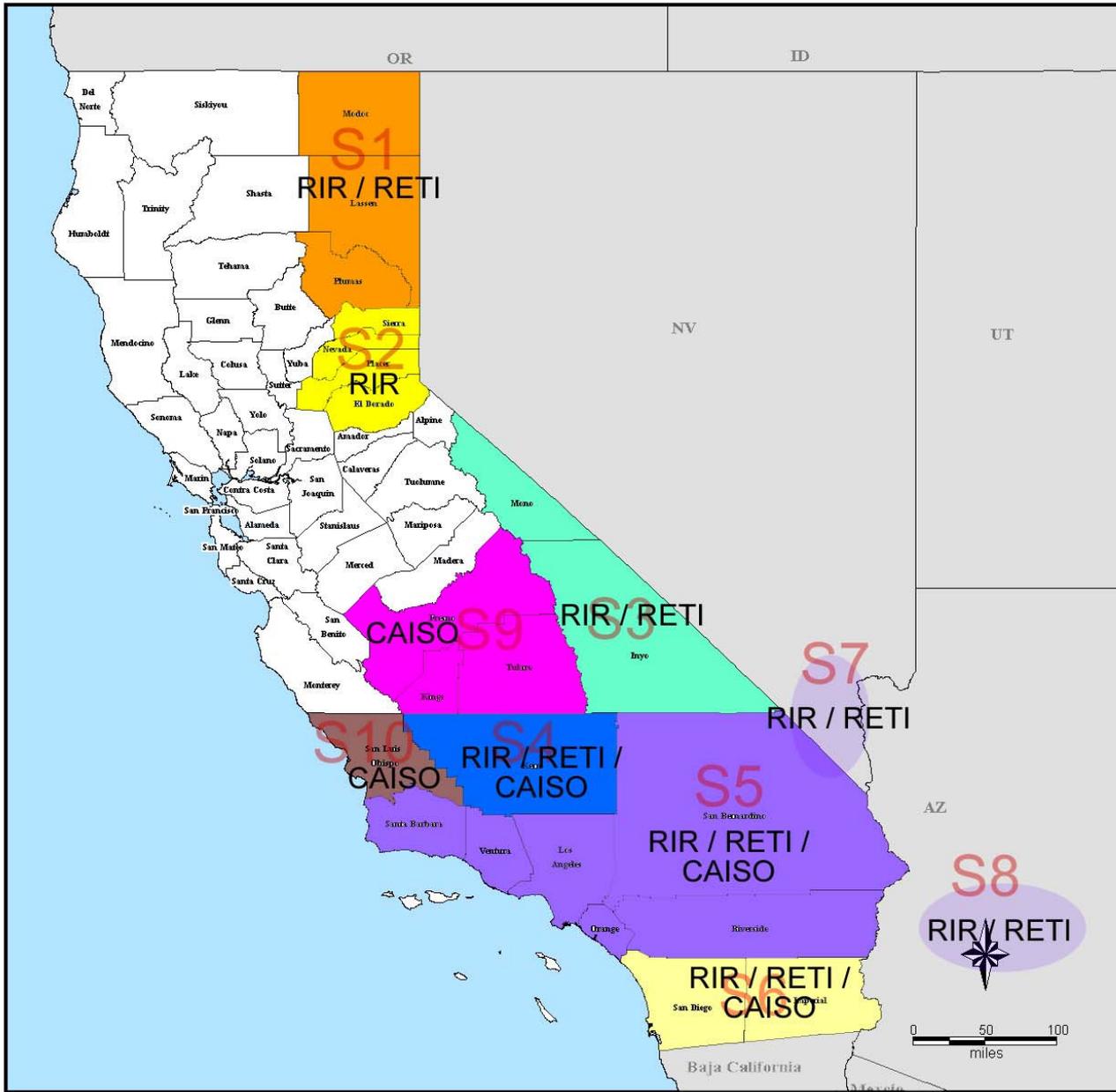
- Renewable maps were developed from RETI CREZ and CAISO queue list
 - Reviewed RETI 1B report
 - Reviewed CAISO queue lists
- Developed maps to compare renewable penetrations at the different regions
- Developed tables comparing RIR, RETI and current CAISO queue list

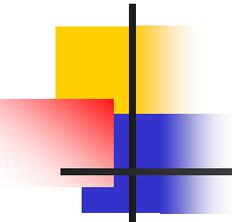


CEC Forecast on Technical Potential of Geothermal Generation



CEC Forecast on Technical Potential of Concentrated Solar Generation





Updated Renewable Scenarios

- Reviewed RETI Phase 1B and determined that RIR Scenarios 1 through 9 capture RETI renewable zones and penetrations levels in northern CA
- Scenario 10 developed to account for regions in CAISO queue list
 - Queue list included regions that were not identified by either RIR or RETI
 - Added to account for impacts from these areas



2020 Comparison of RIR and RETI Projected Renewable Capacity to Current CAISO Queue List for Northern CA

Geothermal	G1	G2	G3	G4	G5	G6	G7	G8	G9			
RIR	X	X	X		X	X	X	X	X			
RETI	X	X		X	X	X		X				
CAISO		X	X									
Solar	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10		
RIR	X	X	X	X	X	X	X	X				
RETI	X		X	X	X	X	X	X				
CAISO				X	X	X			X	X		
WIND	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
RIR	X	X	X	X	X	X	X	X	X	X	X	X
RETI	X	X	X		X		X	X		X	X	X
CAISO	X	X	X	X	X		X			X	X	

CAISO Queue List Scenario (MW)

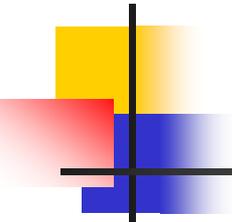
Scenario 10

Renewable regions in the CAISO queue list that was not in either the RIR or RETI list are:

G7 & S7

		MW	C.F. (%)	MWh
G-2	Geothermal	140	90.0%	1,103,760
G-3-G4	Geothermal	45	90.0%	354,780
W-1	High Wind	50	37.0%	162,060
W-2	High Wind	552	37.0%	1,789,142
W-3	High Wind	1,396	37.0%	4,524,715
W-4	High Wind	38	37.0%	123,166
W-5	High Wind	241	37.0%	781,129
W-7/10/11	High Wind	1,824	37.0%	5,911,949
S4	CSP	800	27.0%	1,892,160
S5	CSP	800	27.0%	1,892,160
S6	CSP	800	27.0%	1,892,160
S7	CSP		27.0%	-
Total		6,686		20,427,181
33% Target for N.CA				19,064,000

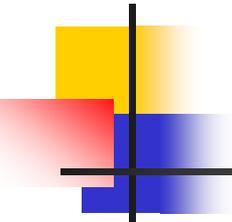




RIR – Review RIR Scenarios

- Currently there are 10 scenarios
- RETI has not submitted any scenarios
- One Stakeholder suggestion
- Any new scenarios suggestion by CAT before starting power flow simulations
- Updating the scenarios on the RIR website so that everyone has the same data sets





New Transmission Line Options

- New High Voltage Projects in various stages of planning
 - TANC high voltage transmission option
 - PG&E CNC with additional connection to Cottonwood 500 kV Substation
 - C3ET Project with future connection to SF Bay Area
- Other potential high voltage Projects based on potential overloads to Existing Facilities
 - Fourth line connecting COI to SF Bay Area
 - BEW will use injection analysis results for suggesting potential upgrades to existing line to relieve potential overloads



Summary of Renewable Scenarios

Renewable Resource Scenario	Geothermal	Biomass	High and Low Wind	CSP Solar	Total Installed (MW)	Total Expected Energy (GWh/yr)
Scenario 1	1,325	-	1,979	1,000	4,304	19,150,148
Scenario 2	2,245	-	479	-	2,724	19,176,428
Scenario 3	745	495	2,629	400	4,269	19,109,852
Scenario 4	1,075	495	2,129	-	3,699	19,144,892
Scenario 5	1,775	495	479	-	2,749	19,315,712
Scenario 6	925	495	2,129	500	4,049	19,144,892
Scenario 7	600	-	3,000	2,000	5,600	19,184,400
Scenario 8	725	-	3,500	1,000	5,225	19,425,300
Scenario 9	450	-	4,430	1,250	6,130	20,862,816
Scenario 10	185	-	4,101	2,400	6,686	20,427,181

Additional Energy to reach 33% RPS Target for N CA = 19,064 GWh/yr