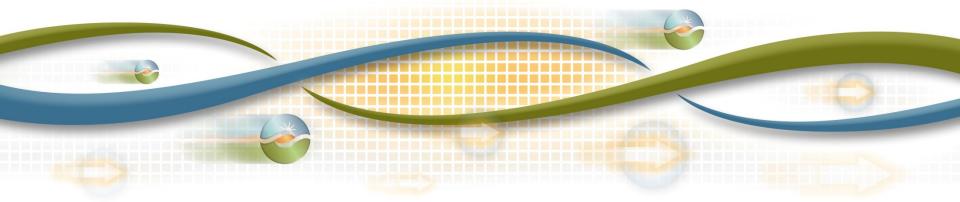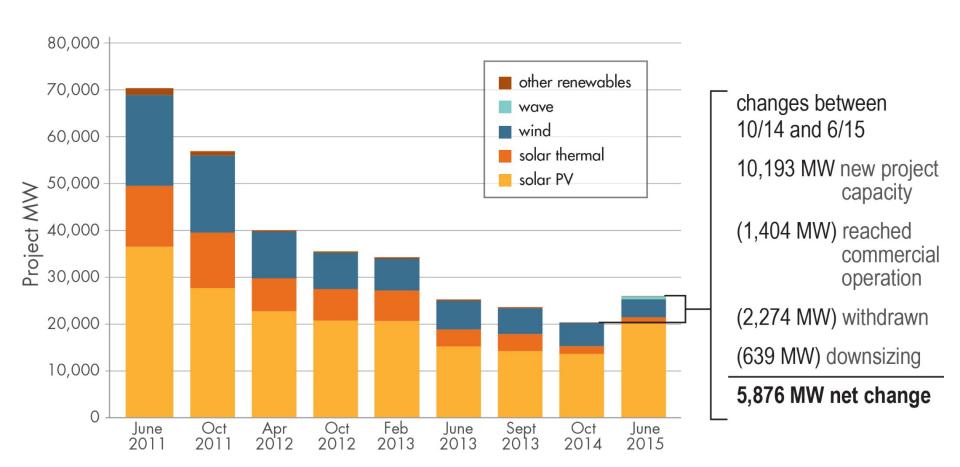# Briefing on renewable generation in the ISO generator interconnection queue

Bob Emmert

Manager, Interconnection Resources
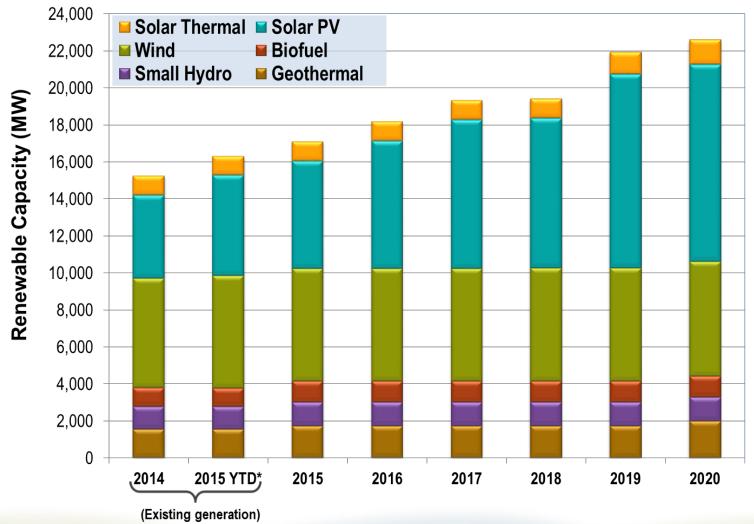
Board of Governors Meeting

General Session

July 16, 2015

Change in renewable capacity in the ISO queue

Legend:
- other renewables
- wave
- wind
- solar thermal
- solar PV

changes between 10/14 and 6/15

10,193 MW new project capacity

(1,404 MW) reached commercial operation

(2,274 MW) withdrawn

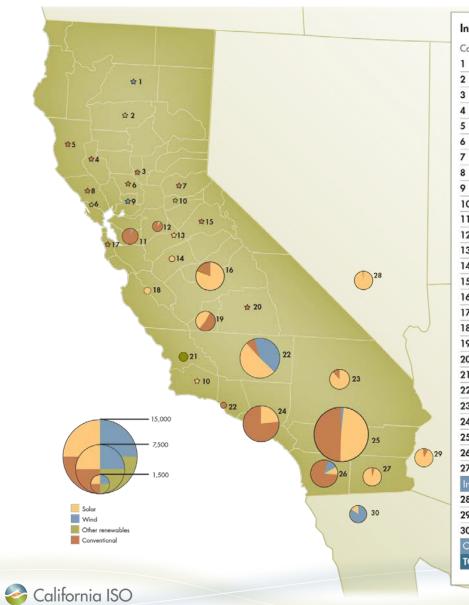(639 MW) downsizing

5,876 MW net change

Current and projected renewable generation capacity in operation within the ISO

*All online resources are included in the 2015 YTD amounts, including those yet to achieve full commercial operation.

Interconnection queue by county		Megawatts		
County	# of Projects	Renewables	Conventional	Total
1 Shasta	2	2		27
2 Tehama	2	6		6
3 Sutter	1		64	64
4 Lake	1		13	13
5 Mendocino	1		10	10
6 Yolo	2	12	25	37
7 El Dorado	1		10	10
8 Sonoma	2		10	10
9 Solano	1	2		2
10 Santa Barbara	2	99	42	141
11 Alameda, Contra Costa	14	117	1,252	1,369
12 San Joaquin	8	171	709	880
13 Stanislaus	2	320		320
14 Merced	7	570		570
15 Tuolumne	1		30	30
16 Fresno, Madera	51	2,821	805	3,626
17 San Mateo	2		432	432
18 Monterey, San Benito	2	520		520
19 Kings	20	1,190	1,093	2,202
20 Tulare	5	20	443	463
21 San Luis Obispo	2	690		690
22 Kern	57	5,666	646	6,312
23 San Bernardino	15	1,730	238	1,968
24 Los Angeles, Orange	20	1,253	4,255	5,508
25 Riverside	25	4,141	4,090	8,231
26 San Diego	47	864	3,079	3,943
27 Imperial	10	1,423	238	1,661
In-state Totals	303	21,761	17,484	39,245
28 Nevada	13	1,797	44	1,841
29 Arizona	7	1,212	300	1,512
30 Mexico	4	1,321		1,321
Out-of-state Totals	24	3,210	344	4,674
TOTAL ALL PROJECTS	327	26,091	17,828	43,919

as of June 18, 2015

California ISO

Significant amount of energy storage projects entered the ISO queue in 2014 & 2015

- CPUC procurement target for energy storage capacity by 2020
  - 1,325 MW, approximately 700 MW in transmission interconnected

- 79 projects totaling 8,076 MW currently in the ISO queue
  - 779 MW of active project capacity in Cluster 7 (originally 2,320 MW)
  - 7,297 MW of project capacity entered Cluster 8

- 5,586 MW of stand-alone energy storage

- 2,490 MW combined with other generation technologies

- Technologies include battery, pumped storage, molten salt, flywheel and rail energy storage