



## Briefing on renewable and energy storage in the ISO generator interconnection queue

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Board of Governors Meeting

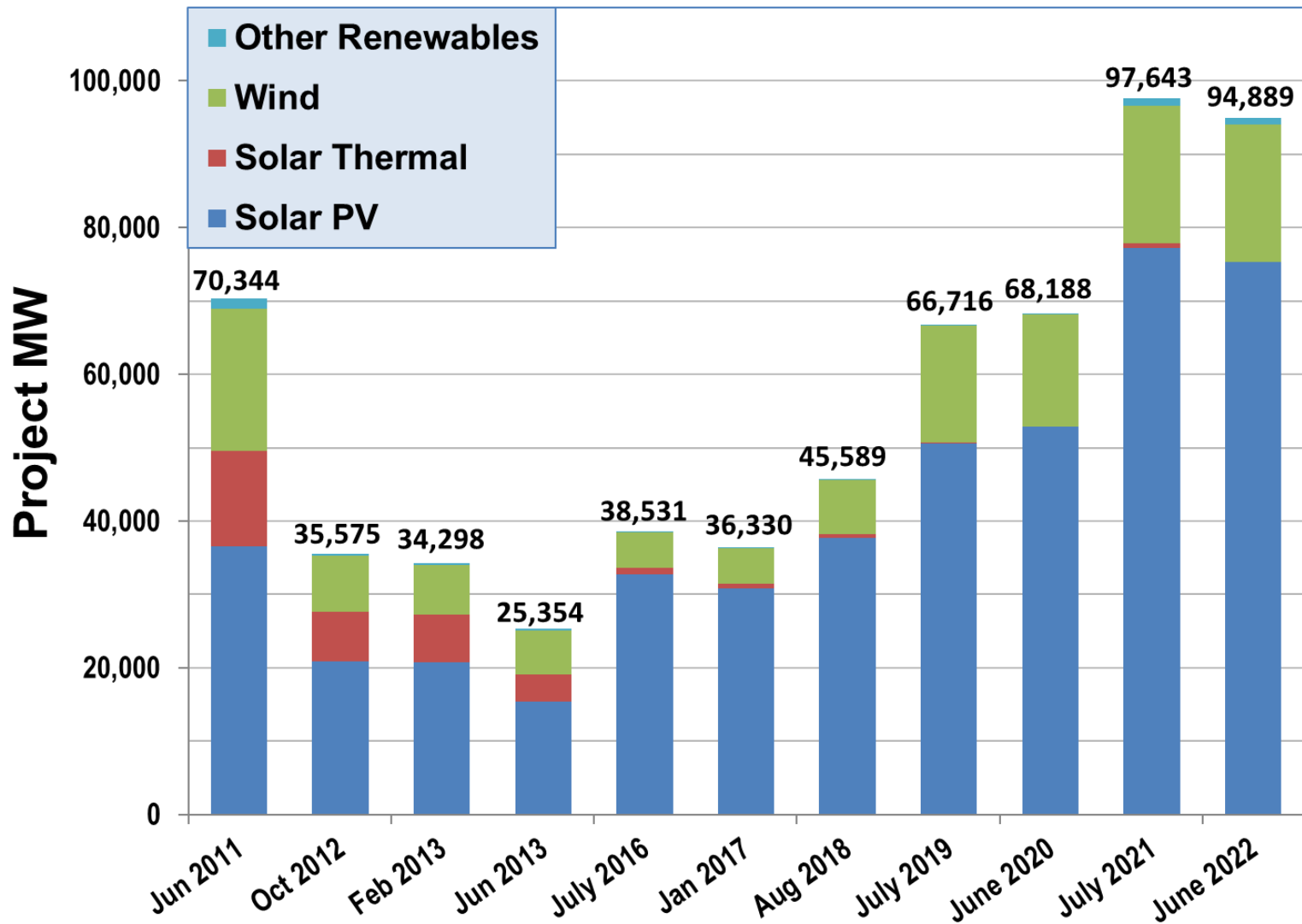
General Session

July 21, 2022

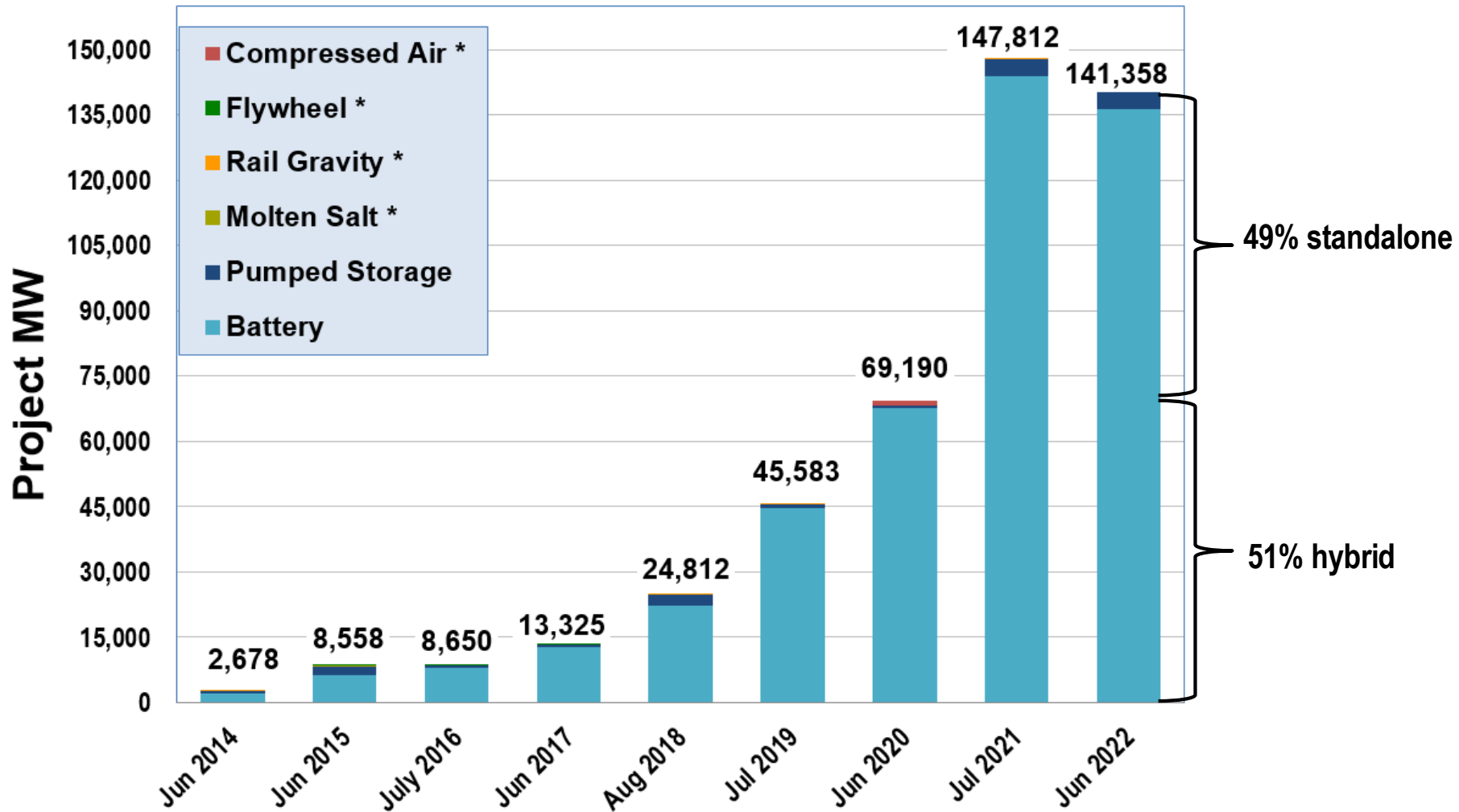
## Distinctions from prior year's presentations:

- We did not open an application window in April – the Cluster 15 application window was deferred to 2023 due to the excessive volume in Cluster 14.
- The update reflects minor changes to Cluster 14 and earlier-queued projects – still reflecting an “overheated” queue.
- New capacity is being added successfully to the grid, and the pace will need to accelerate over the next decade.
- A large volume of applications are still seeking online dates in 2023 and 2024 – indicating that procurement processes have not sufficiently advanced to resolve which projects will move forward in the near term.

# Renewable capacity in ISO queue

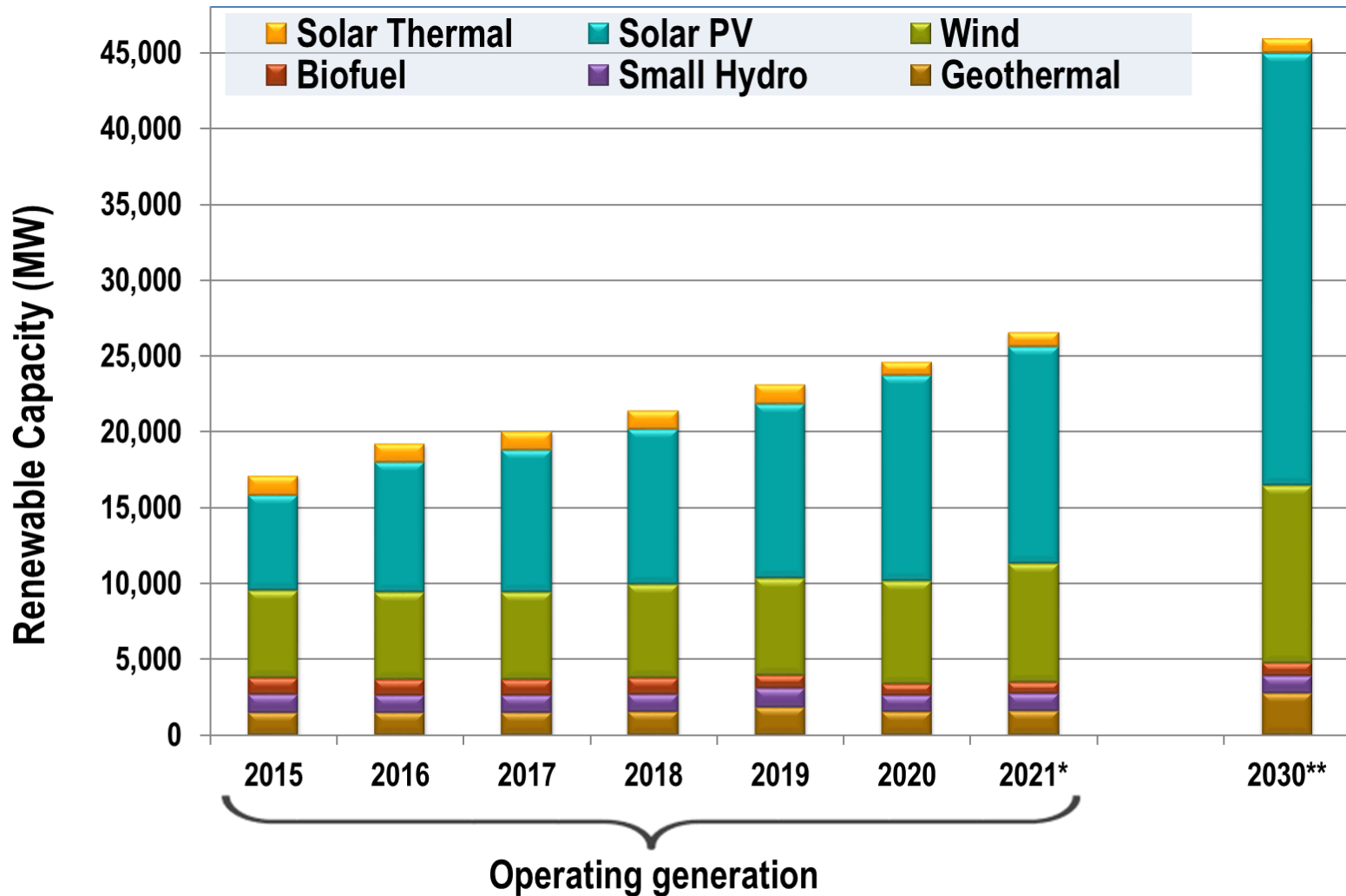


# Energy storage capacity in ISO queue



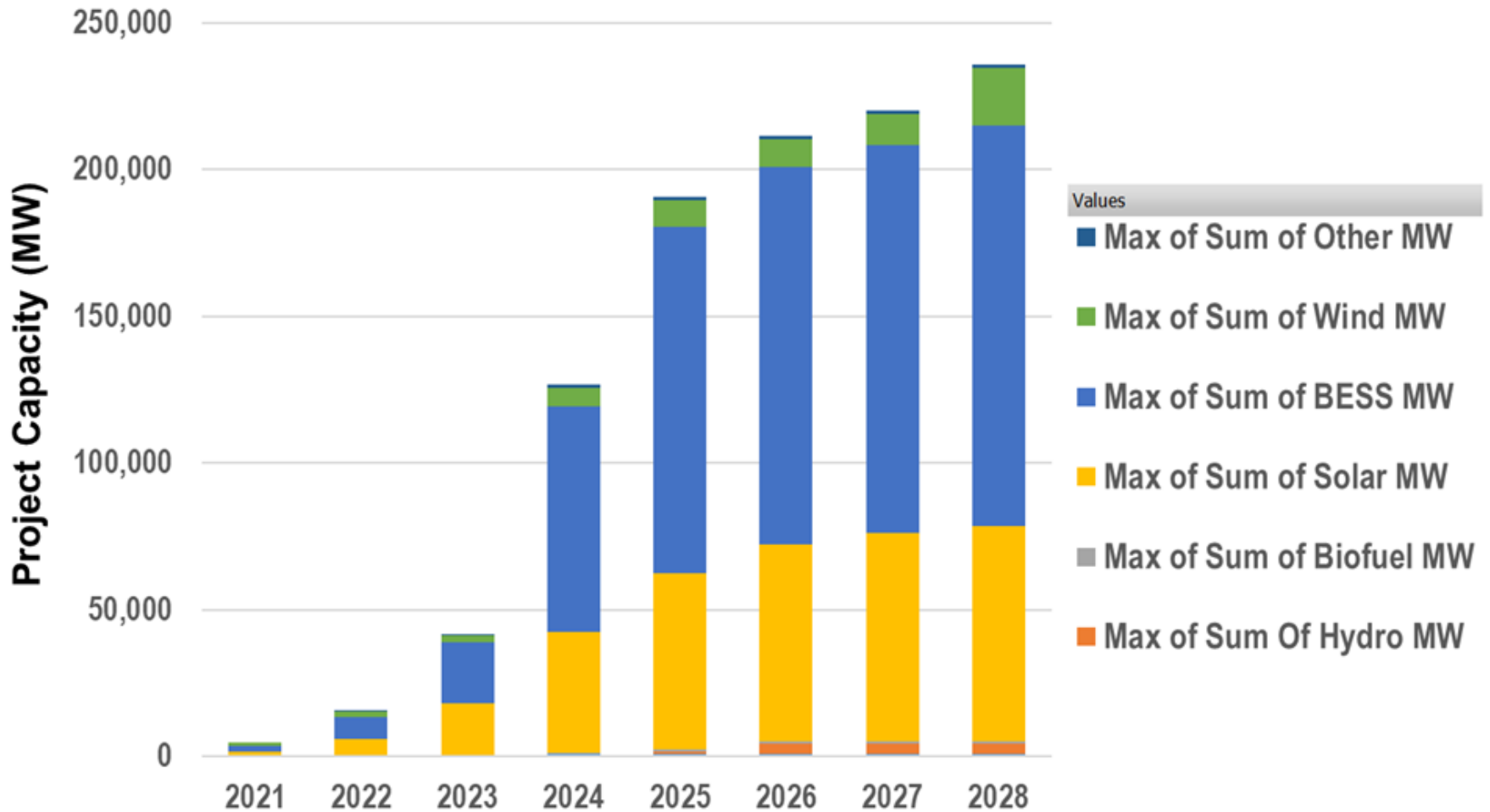
\* Difficult to see in chart due to small amounts

# Projected Renewable capacity build-out through 2030



\* All online resources that achieved COD by end of year 2021, not including those that were synced and testing  
 \*\* Estimate of renewable capacity build-out to meet the 2030 60% RPS requirement (based on CPUC 2020 Unified Resource Adequacy and Integrated Resource Plan, BASE portfolio, transmitted to CAISO for the 2021-2022 TPP).

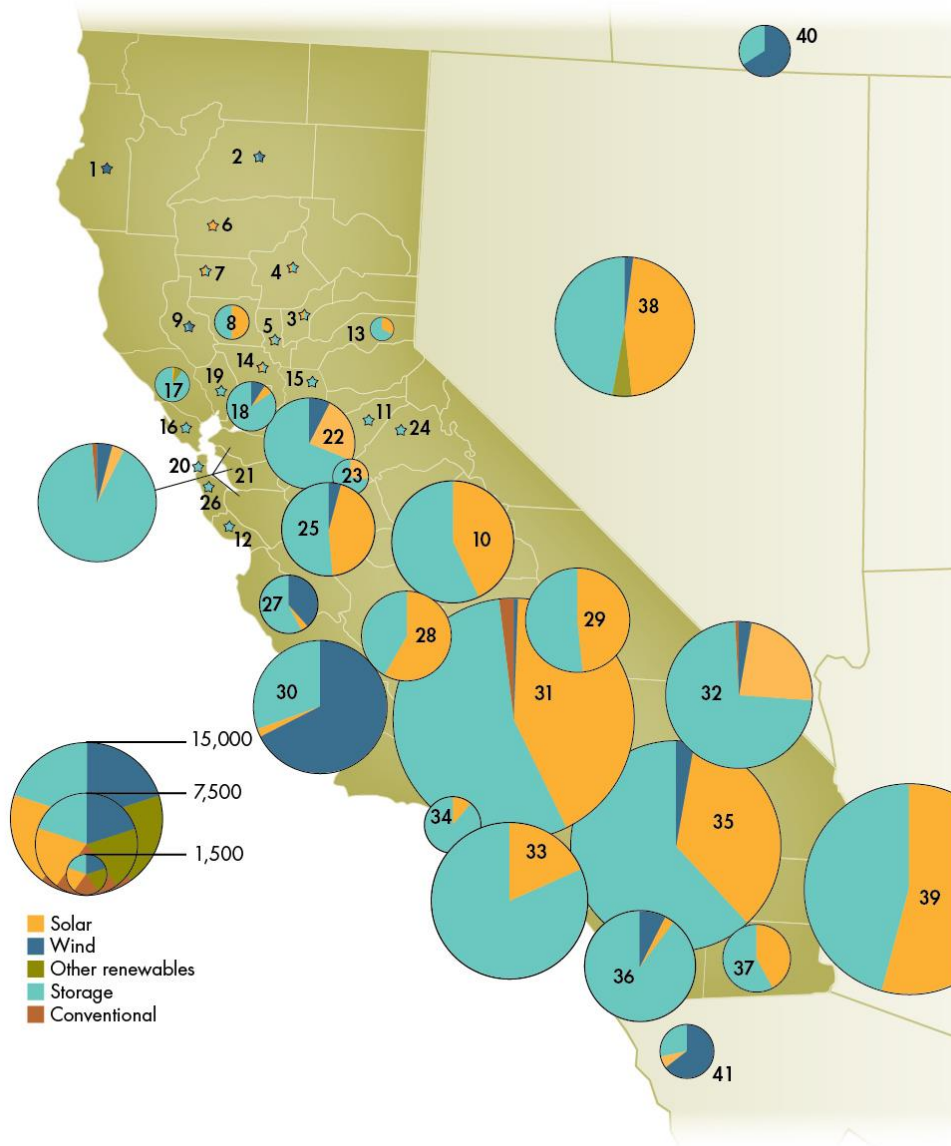
# Requested Capacity & Commercial Operation Date of Projects in the ISO Queue



# Queue statistics

- 236,247 MW of renewable and energy storage capacity
  - 62% of the project capacity is in Cluster 14 that will complete the study process by November 24, 2023
  - 38%, approximately 90,000 MW have completed the study process
  
- 94,889 MW renewable energy (stand alone & hybrid / co-located)
  - Percent by type:
    - 79% solar
    - 20% wind
    - 1% other
  
- 141,358 MW of energy storage
  - 49% stand alone, 51% as a component of a hybrid / co-located
  - Percent by type:
    - 96% battery
    - 3% pumped storage
    - 1% compressed air

# Queue map – conventional, renewable and storage



Interconnection queue by county

County	# of Projects	Megawatts			Total
		Renewables	Storage	Conventional	
1 Humboldt	1	162			162
2 Shasta	3	300	333		633
3 Yuba	1	165	90		255
4 Butte	3	232	644		876
5 Sutter	3	111	222		333
6 Tehama	4	405			405
7 Glenn	1	160	159		319
8 Colusa	3	747	740		1,487
9 Lake	4	145	80		225
10 Fresno-Madera	33	4,565	6,032	63	10,660
11 Calaveras	1		101		101
12 Santa Cruz	2		408		408
13 Placer	3	307	622		929
14 Yolo	2	97	97		194
15 Sacramento	2		273		273
16 Marin	1		314		314
17 Sonoma	8	137	1,260		1,397
18 Solano	9	505	2,744		3,249
19 Napa	2	25	252		277
20 San Francisco	1		250		250
21 Alameda, Contra Costa, Santa Clara	51	837	10,155	129	11,121
22 San Joaquin	18	1,888	4,151		6,039
23 Stanislaus	8	689	1,220		1,909
24 Tuolumne	1		10		10
25 Merced	19	3,246	3,396		6,642
26 San Mateo	4		447		447
27 San Benito-Monterey	7	1,698	2,280		3,978
28 Kings	19	3,890	2,752		6,642
29 Tulare-Inyo	19	4,029	4,214		8,243
30 San Luis Obispo	16	8,341	3,651		11,992
31 Kern	92	14,473	18,675	656	33,804
32 San Bernardino	36	3,365	9,305	100	12,770
33 Los Angeles-Orange	48	3,056	13,505		16,561
34 Ventura	8	500	3,953		4,453
35 Riverside	45	10,306	16,614		26,920
36 San Diego	52	964	8,224		9,188
37 Imperial	7	1,996	2,553		4,549
<b>In-state totals</b>	<b>537</b>	<b>67,341</b>	<b>119,726</b>	<b>948</b>	<b>188,015</b>
38 Nevada	28	8,411	7,451		15,862
39 Arizona	26	14,265	12,015		26,280
40 Idaho	2	1,992	1,030		3,022
41 Mexico	7	2,880	1,136		4,016
<b>Out-of-state totals</b>	<b>63</b>	<b>27,548</b>	<b>21,632</b>		<b>49,180</b>
<b>TOTAL ALL PROJECTS</b>	<b>600</b>	<b>94,889</b>	<b>141,358</b>	<b>948</b>	<b>237,195</b>