

# Memorandum

**To:** ISO Board of Governors

**From:** Keith Casey, Vice President, Market & Infrastructure Development

**Date:** July 8, 2014

**Re:** Update on renewables in the generator interconnection queue

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***This memorandum does not require Board action.***

## EXECUTIVE SUMMARY

The information included in this briefing represents the status of renewable generation in the California Independent System Operator Corporation's generator interconnection queue as of June 17, 2014. Key highlights include:

1. The current ISO queue contains approximately 37,500 MW (21,100 MW renewable) actively seeking to interconnect to the ISO controlled grid.
2. Changes in renewable projects in the queue since the last generator interconnection queue update include approximately 2,800 MW of new project capacity, primarily from the new projects coming in the Cluster 7 open window, 1,413 MW of projects that reached commercial operation, 3,556 MW of project withdrawals, and 467 MW of projects that switched to Southern California Edison's Wholesale Distribution Access Tariff interconnection queue.
3. Compared to the amount of new generation needed to meet the mandated 33% Renewables Portfolio Standard by 2020, the ISO queue currently contains approximately three times that amount, 78% of which has completed the study process.
4. While not considered renewable generation, interest in developing energy storage projects showed big gains as there are 39 projects totaling 2,320 MW included in Cluster 7 and the fast track processes. Of that amount, 27 are stand-alone energy storage projects and 12 are combined with other generation technologies. All but one project are battery technologies, with the one remaining being an advanced rail energy storage project.

## DISCUSSION

The following graphs illustrate the renewables in the ISO queue from several perspectives.

Figure 1 shows the amount of renewable generation in the interconnection queue over time and breaks down the types of renewable capacity. During the September 27, 2013 to June 17, 2014 period the queue experienced a reduction of 2,637 MW in renewable projects.

**Figure 1**  
**Change in renewable capacity in ISO queue since June 2011**

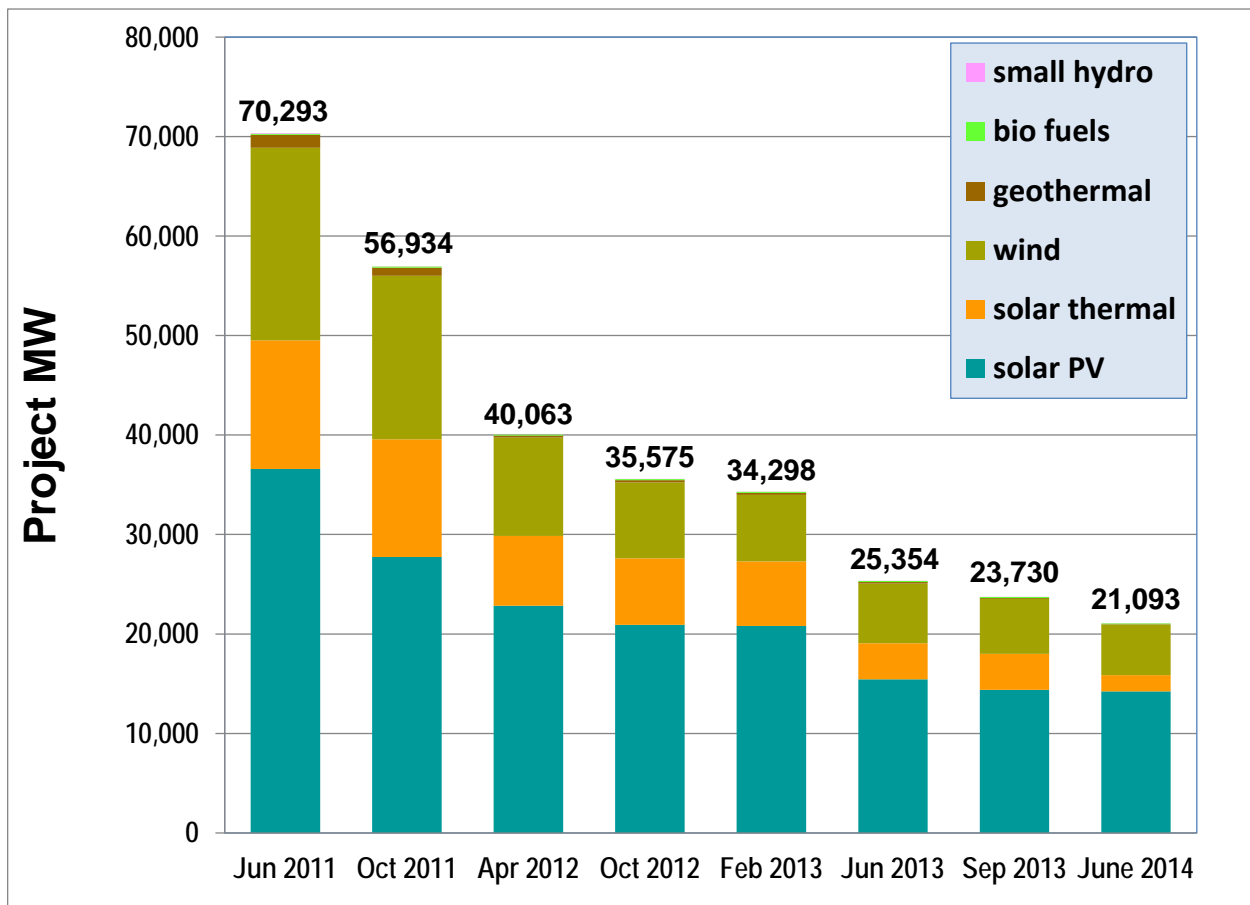


Figure 2 displays the amount of renewable capacity in the queue by study group and shows the capacity reductions within each study group. The blue portion of each bar represents the June 2014 capacity that remains in the queue. Cluster 7 is new to the chart with 2,799 MW of new renewable projects coming into the queue in the cluster 7 window that closed April 30, 2014. Since the September 2013 update, a total of 5,436 MW of renewable capacity exited the queue, 3,556 MW coming from project withdrawals, 1,413 MW from projects that reached commercial operation, and 467 MW from projects that switched to Southern California Edison's Wholesale Distribution Access Tariff interconnection queue due to transmission elements transferring from ISO to SCE control.

**Figure 2**  
**Renewable generation capacity in the ISO queue by study group**  
**(changes by study group since September 2013 update)**

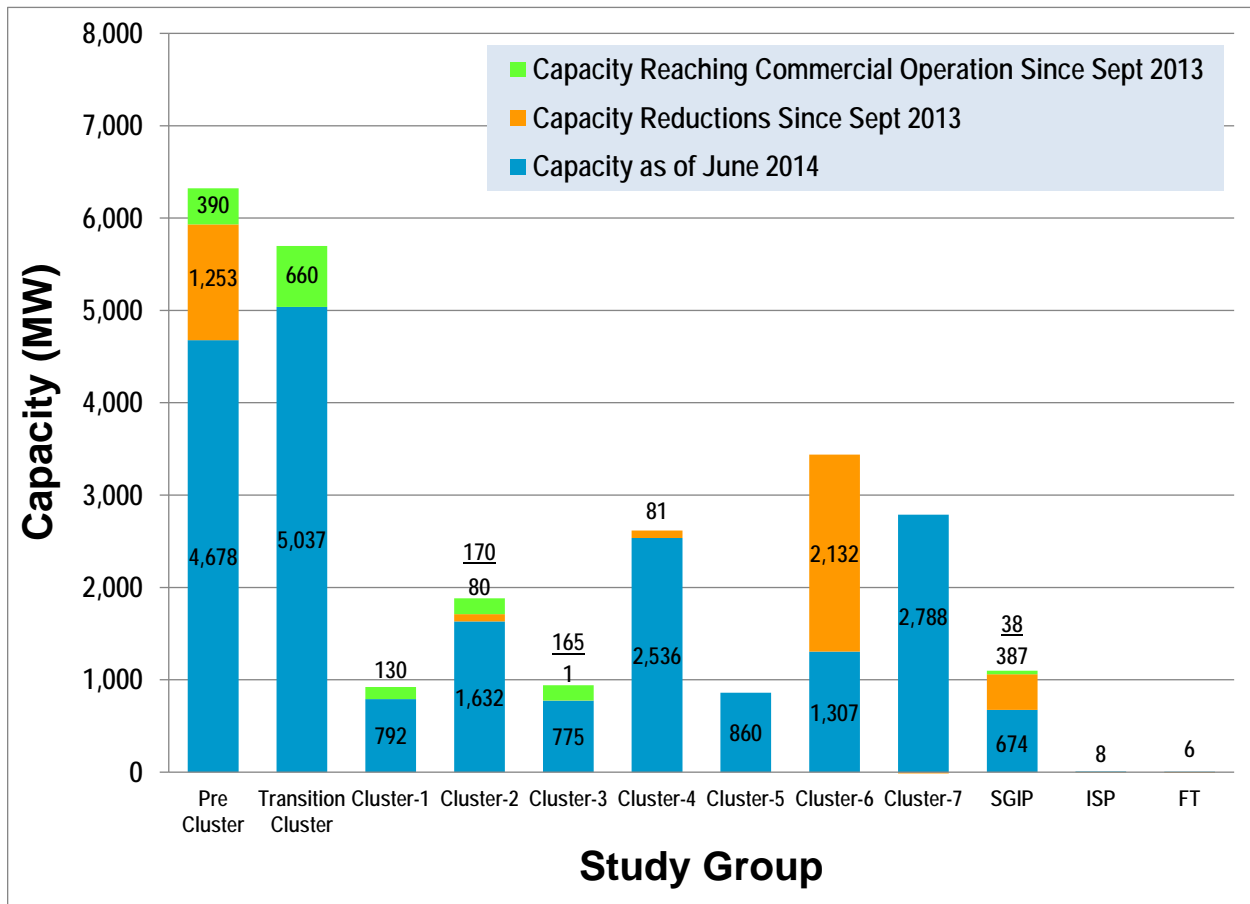


Figure 3 provides insight into the amount of generation capacity in the ISO queue by project size and type. Solar PV is the dominant generating technology for all size ranges except for the 500 to 1,000 MW category. Figure 3 also provides a breakdown of the capacity in the ISO queue by the number of projects for each project size category. Projects in the 100 to 500 MW category make up 72% of project capacity; however, the 1 to 20 MW category continues to contain the largest number of projects.

**Figure 3**  
**MW of renewable projects in ISO queue**  
**as of June 2014 by size and type**

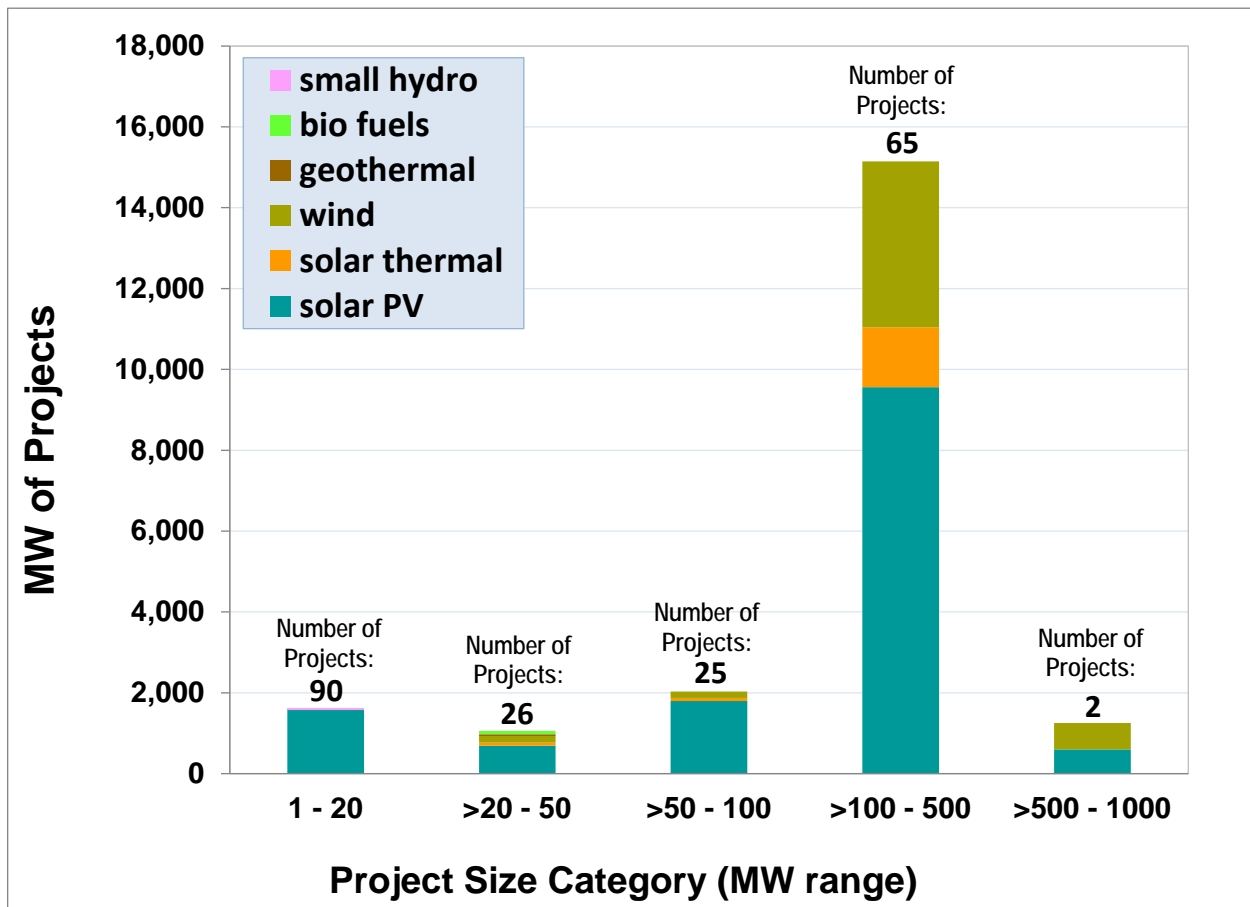
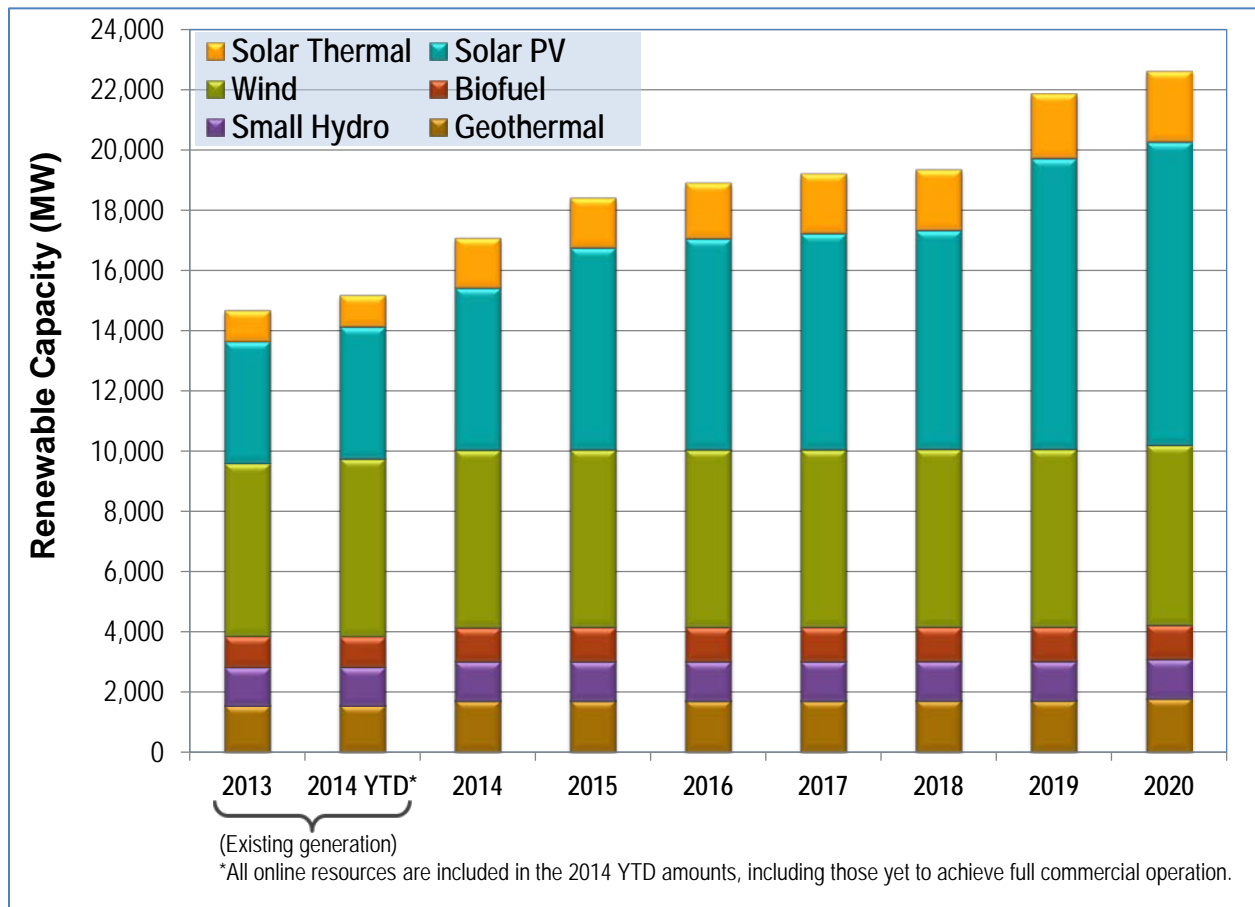


Figure 4 shows the projected build-out of renewable capacity by technology type based on projections from the investor owned utilities through 2017 and using the CPUC RPS calculator<sup>1</sup> thereafter. The 22,600 MW estimated amount shown for 2020 is the projected renewable generation to be in operation in 2020, and approximates the amount needed to reach the 33% RPS requirement for that year. The ISO currently has approximately 15,200 MW of operating renewable generation within its footprint, which leaves approximately 7,400 MW of additional renewables needed between now and 2020 to reach 33%. The majority of this need is presently under contract with the three California IOUs and expected to satisfy much of the yearly amounts depicted in the 2013 through 2020 timeframe in Figure 4.

**Figure 4**  
**Projected RPS capacity build-out through 2020**  
**(IOU data through 2017 and RPS Calculator data 2018 – 2020)**



<sup>1</sup> The 33% RPS Calculator is a model developed for the CPUC by Energy + Environmental Economics (E3) to aggregate renewable resource cost and performance data and select renewable resources needed to meet the RPS target.

Figure 5 is a map of all projects in the generation interconnection queue and shows the general location and capacity by project type, including conventional generation projects. Kern County, key code 20, represents the Tehachapi area and contains the largest amount of renewable projects in the state.

**Figure 5**  
**ISO Queue Map – Conventional & Renewables**  
**As of June 17, 2014**

