



Memorandum

To: ISO Board of Governors

From: Neil Millar, Vice President, Infrastructure & Operations Planning

Date: July 7, 2021

Re: Briefing on renewable and energy storage in the generator interconnection queue

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This briefing provides the status of renewable and energy storage capacity in the ISO's generator interconnection queue as of July 2021. These results include most notably the interconnection requests received in the April 2021 open window for study in the next cluster study process, Cluster 14¹. Key highlights include:

1. There are over 97,000 MW of renewable capacity in the queue, of which 55 percent is in Cluster 14.
2. There are over 147,000 MW of energy storage capacity in the queue, of which 68 percent is in Cluster 14.
3. Overall, the queue contains over 245,000 MW of renewable and energy storage capacity, with 37 percent in various stages of the study process and will finish by November 2021, and 63 percent, comprised of projects in Cluster 14, are in the validation and scoping process.

DISCUSSION

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

¹ The fourteenth cluster study cycle conducted since the ISO introduced the cluster study process in 2008.

Figure 1 shows the amount of renewable generation in the interconnection queue over time and breaks out the types of renewable capacity. During the June 2020 to July 2021 period, the queue experienced a net increase of 29,455 MW in renewable project capacity. The change is a result of approximately 53,300 MW of new capacity that entered in the cluster 14 window that closed on April 15, and 23,900 MW that exited the queue through project withdrawals, projects reaching commercial operation, project downsizings, and various project modifications.

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

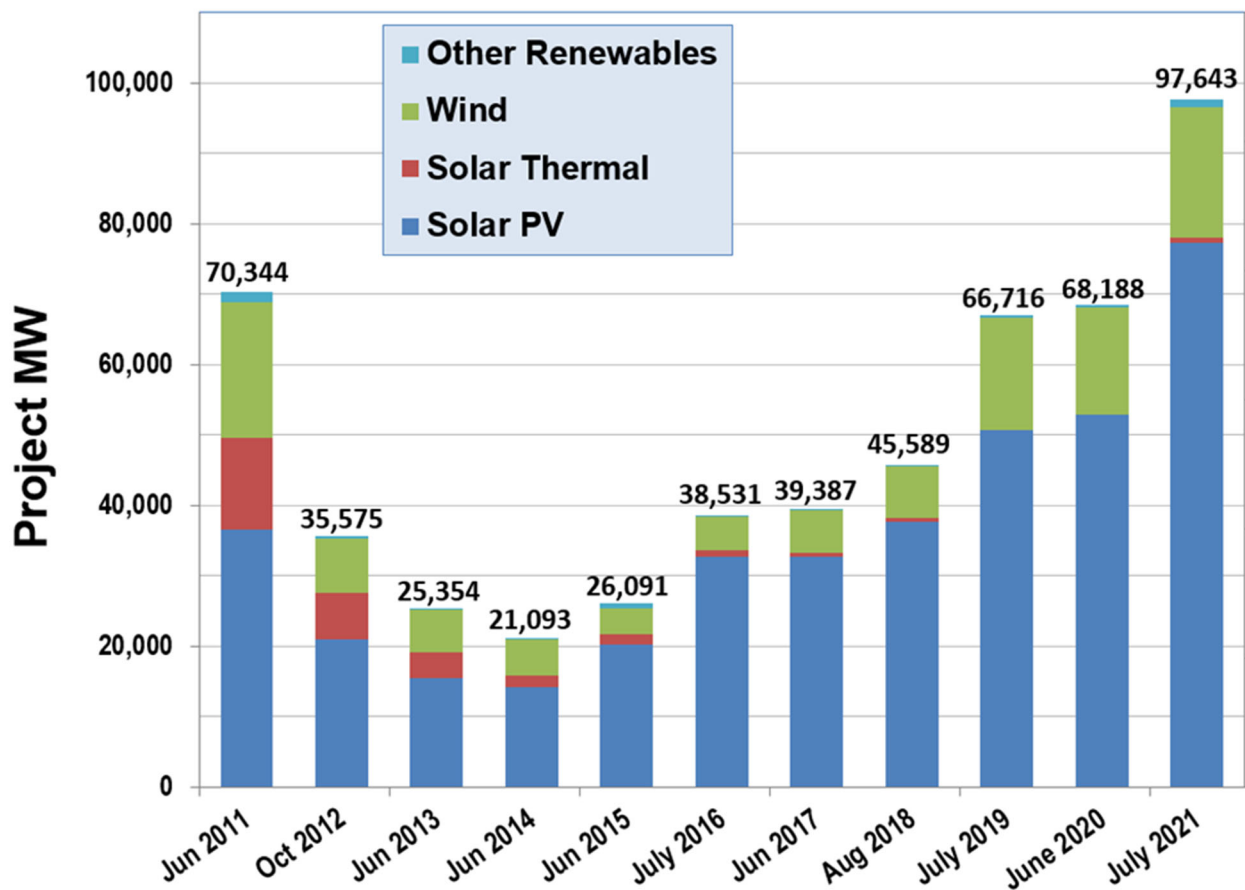
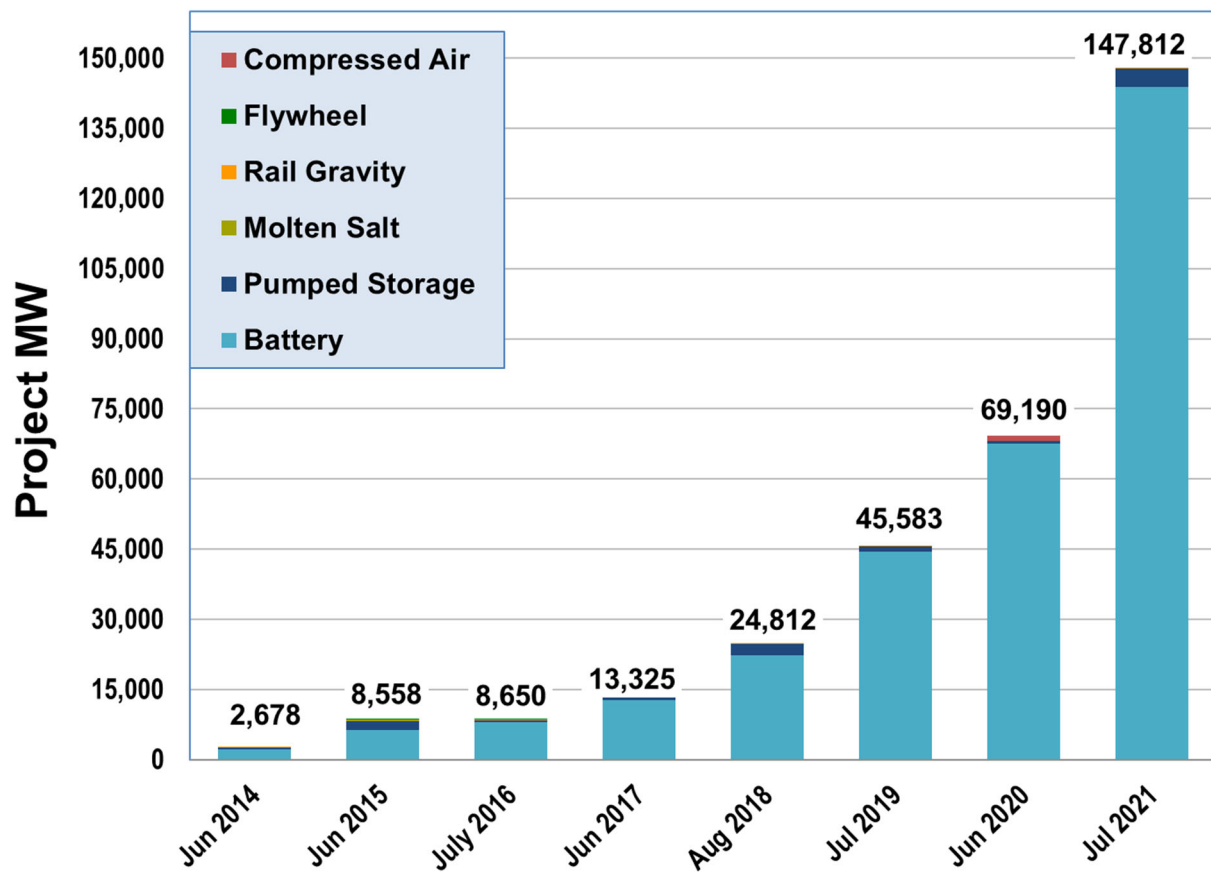


Figure 2 provides the current and historical levels of energy storage capacity in the queue. Nearly all of the storage totaling 147,812 MW are battery energy storage systems, which include stand-alone projects (51 percent) and capacity associated with hybrid projects (49 percent) where the battery energy storage system is a component of a project that includes renewable capacity, typically solar².

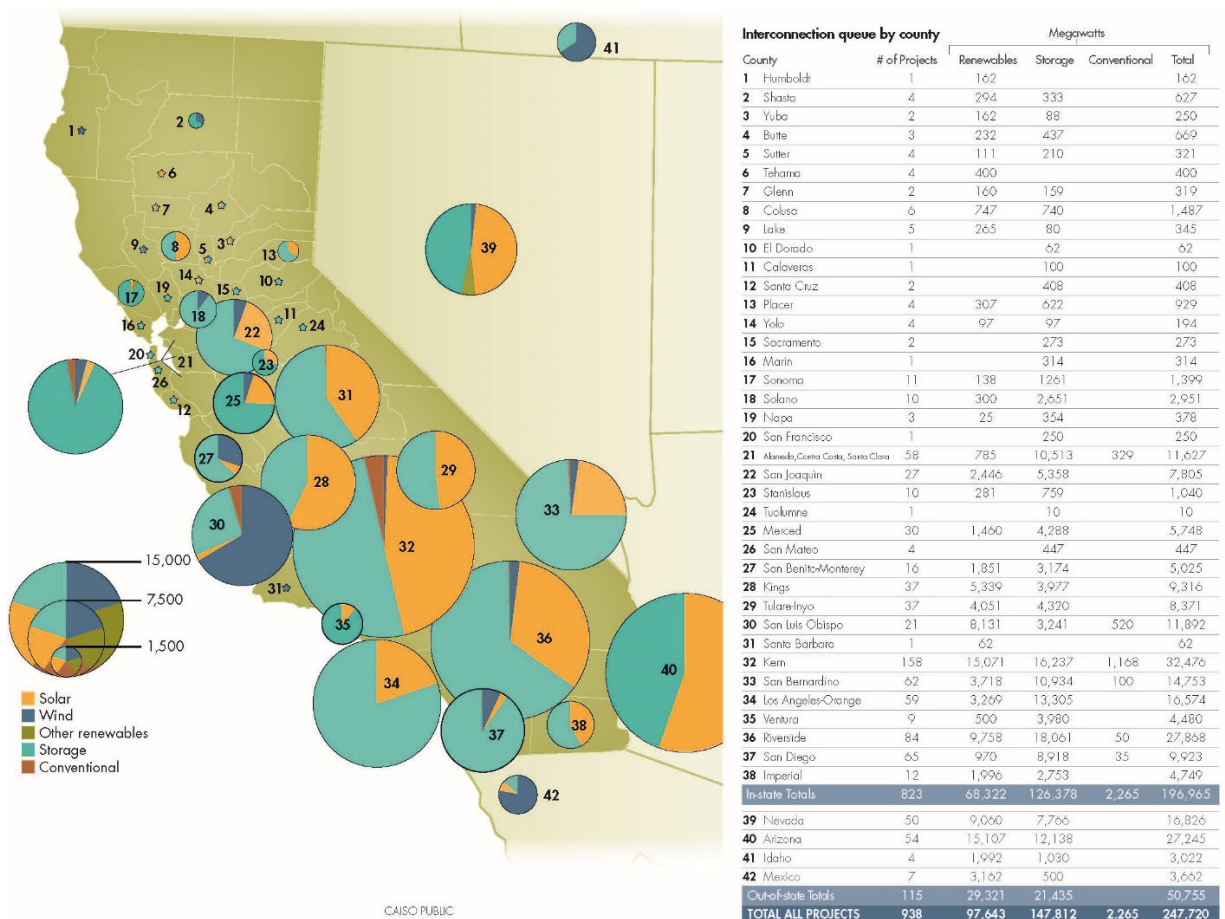
Figure 2
Change in energy storage capacity in the ISO queue since June 2014



² The majority of hybrid projects are configured such that the capacity at the point of interconnection matches the capability of the largest technology component of the facility, whether that is renewable capacity or energy storage. Therefore, the renewable capacity and the energy storage capacity are not able to operate simultaneously.

Figure 3 is a map of all projects in the generation interconnection queue as of July 2021 and shows the general location and capacity by project type, including conventional generation. Some projects have more than one generation technology within a single project. In a number of these cases, the total project capability is greater than the capacity requested at the point of interconnection. These projects are typically configured such that the capacity at the point of interconnection matches the capability of the largest technology component of the facility. However, in this figure, all technology types are provided at their full capability on a stand-alone basis³. As a result, the total capacity of all projects shown here is greater than the total project point of interconnection capacity in the ISO generation interconnection queue.

Figure 3
ISO Queue Map – Conventional & Renewables
As of July 2021



³ For example, accounting for the capacity of a combined solar / storage project, both the solar capacity and the storage capacity are shown separately even though in the majority of hybrid projects the output of the facility to the point of delivery is configured to not exceed the capability of the largest technology component of the facility.