

# Memorandum

**To:** ISO Board of Governors  
**From:** Keith Casey, Vice President, Market & Infrastructure Development  
**Date:** July 6, 2011  
**Re:** **Briefing on Renewable Generation in the ISO 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 14, 2011. Key highlights include:

1. The current ISO queue contains approximately 83,000 MW (71,000 renewable) actively seeking to interconnect to the ISO controlled grid;
2. In the most recent cluster study window (cluster 4), which closed on March 31, 2011, the ISO received 200 additional projects to the ISO queue, representing approximately 35,000 MW of proposed new generation of which over 33,000 MW are renewable generation projects;
3. The ISO queue contains over three times the renewable generation capacity needed to reach the California mandated 33% Renewable Portfolio Standard (RPS) requirement by 2020; and
4. The ISO queue will experience a natural attrition over time as projects compete for power purchase agreements with California load serving entities. Projects that secure a power purchase agreement are more likely to be built than those that do not.

## DISCUSSION

The following graphs illustrate the historical progression of renewables in the ISO, projections for reaching the 33% RPS requirement, and provide insight into the size and type of renewable projects in the ISO queue.

Figure 1 shows the current and projected renewable generation capacity in operation within the ISO footprint by technology type. Currently, the ISO has 7,662 MW of operating renewable generation, most of which has been in operation 10 years or longer. Renewable generation capacity is expected to double over the next three years with most of the gains coming from solar and wind resources. It is important to emphasize that the projections for 2012 and 2013 are based on limited historical experience on the percent of projects that advance through different stages of the ISO interconnection process to commercial operation. The ISO is developing a more comprehensive methodology for these near-term projections, which when applied in future updates may result in different projections.

**Figure 1**  
**Current and Projected Renewable Generation Capacity**  
**in Operation within the ISO**

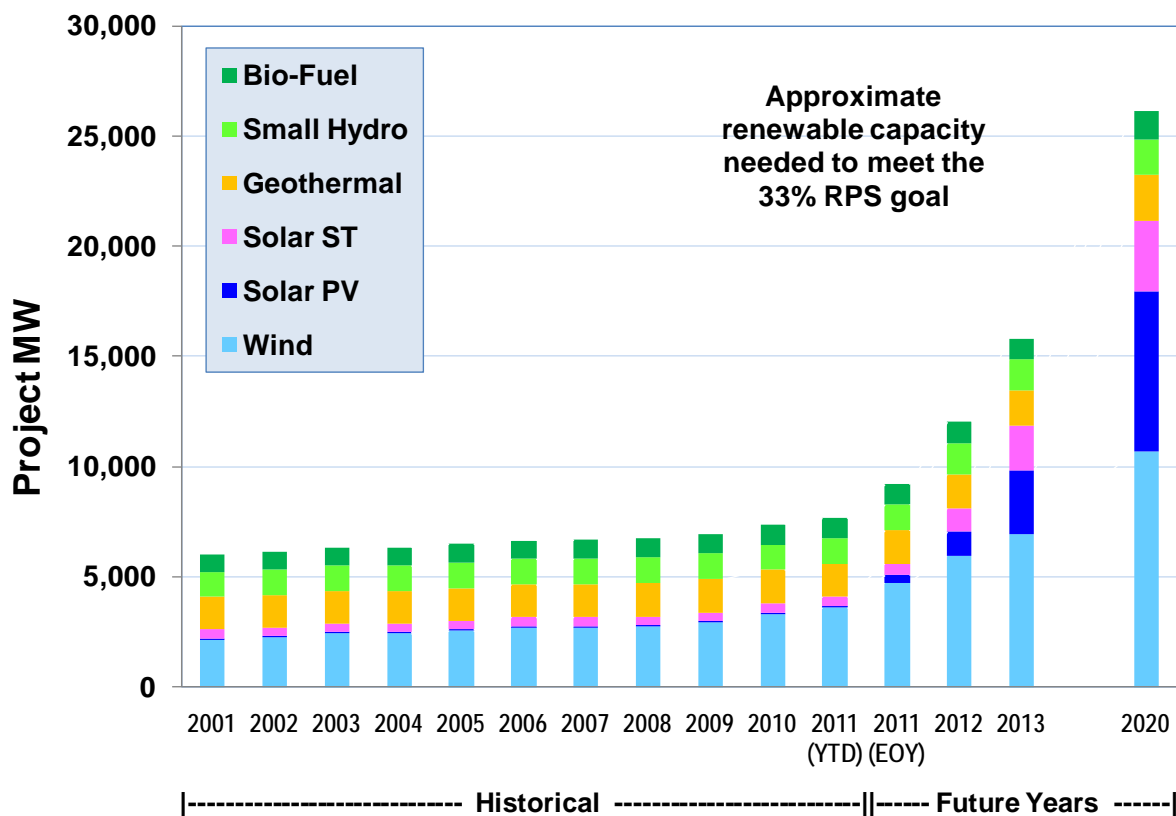


Figure 2 shows the capacity amount and study status of renewable generation projects in the ISO queue. The two-phase cluster study process identifies the transmission network upgrades required to safely and reliably interconnect to the ISO control grid and the upgrades needed to make a project fully deliverable (for those projects opting for full capacity deliverability status). Figure 2 illustrates the

amount of renewable capacity that has completed required studies and the amount that will complete required studies by the end of 2011 and 2012. By the end of 2011 the ISO will have completed interconnection studies for more than enough renewable generation to meet the 33% RPS goal.

**Figure 2**  
**Capacity Amount and Status of Renewable Projects**  
**in the ISO Queue**

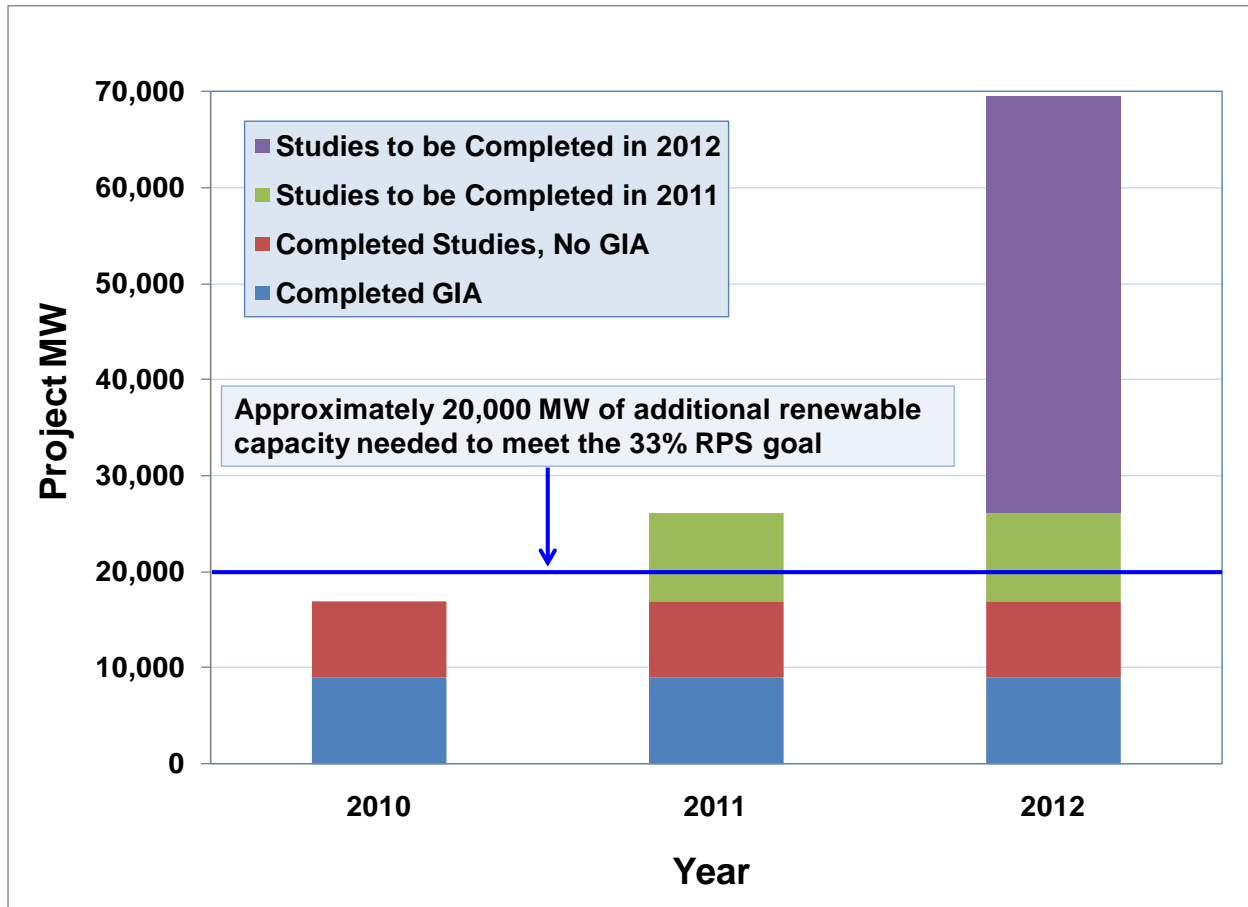
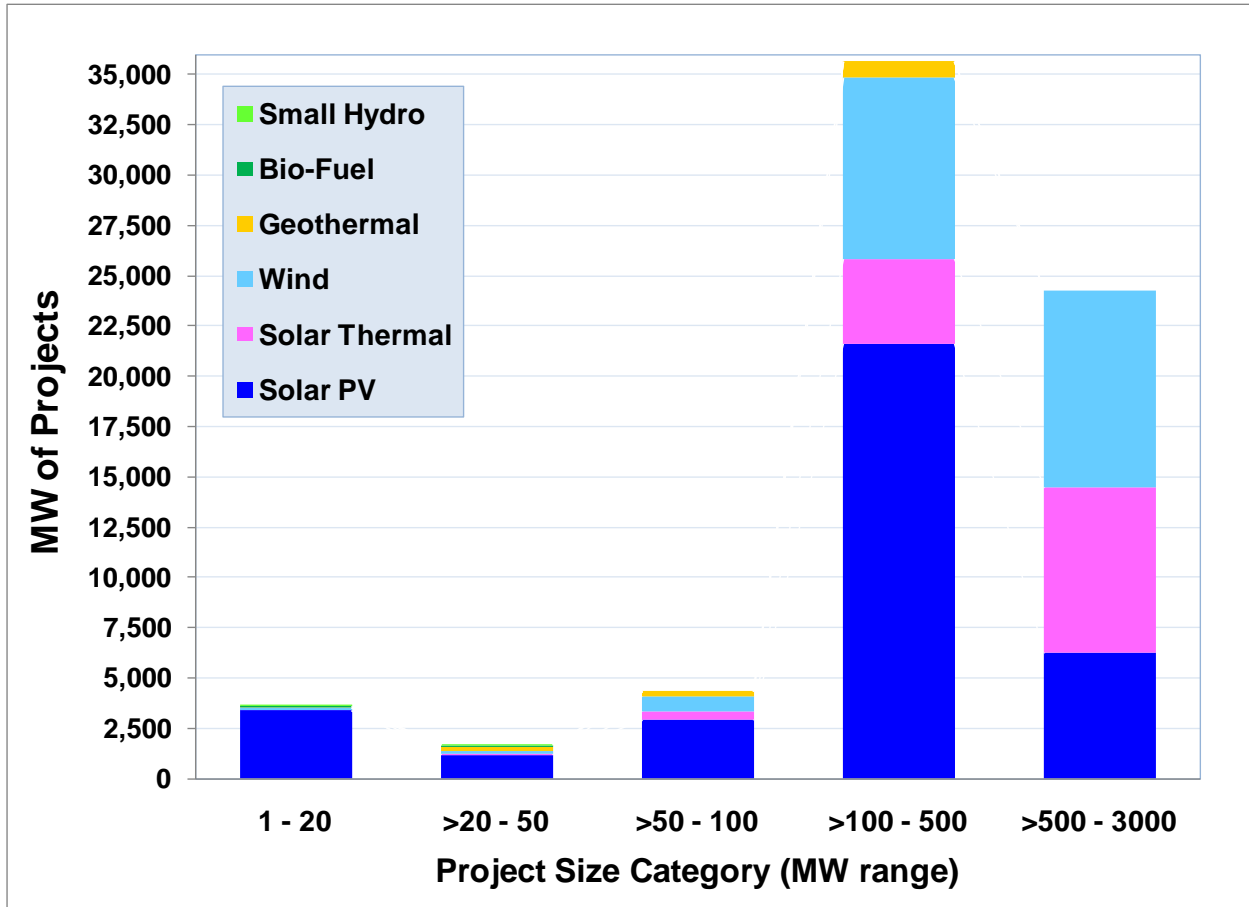


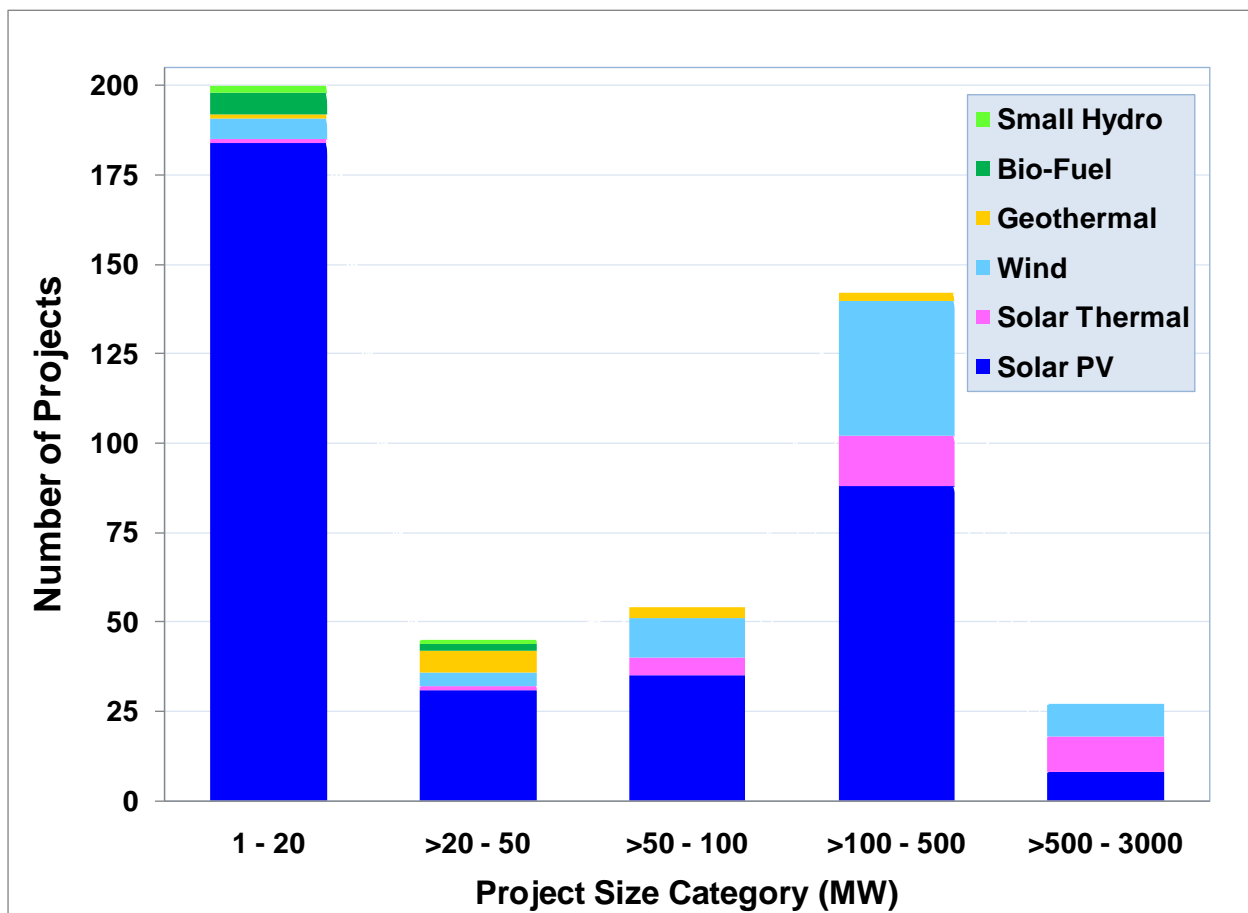
Figure 3 provides insight into the amount of generation capacity in the ISO queue by project size and type. Solar PV is the dominant generating technology for small projects and larger projects in the 100-500 MW project size range.

**Figure 3**  
**MW of Renewable Projects in ISO Queue**  
**by Size and Type**



Similar to Figure 3, Figure 4 provides a breakdown of the projects in the ISO queue by project size and type, but shows the number of projects for each project size category. One observation from these two graphs is that the smaller, but not insignificant, amount of capacity provided by the projects in the 1 – 20 MW range contains 43% of the renewable projects. Of the projects in this range, 77% are 20 MW in size. The inordinate amount of 20 MW sized projects is a result of the 20 MW size limitation on projects that came into the ISO queue using the former small generator interconnection procedures, which had a significantly lower initial deposit requirement. The small generator interconnection procedures process was rolled into the current generator interconnection procedures process in December 2010, which utilizes a graduated deposit structure that encourages developers to size projects based on issues other than deposit fees.

**Figure 4**  
**Numbers of Renewable Projects in ISO Queue**  
**by Size and Type**



Attachment A to this memo is a map providing information on the location of all projects in the ISO queue by county and by state for the out of state projects. For each location a pie chart provides the types of projects and the amount of capacity at that location. The numbers next to each pie chart corresponds to the location number key located on the back of the map. The map provides an indication of where renewable projects are choosing to locate as well as an indication of where significant network upgrades will be required to serve these projects.