

G-PST/ESIG Webinar Series: Update on Changing Role of Resources and Growth of Utility Scale Storage	
Question	Answer
April has the highest curtailment (in MWh), how much does that correspond to in terms of % of the generated renewables?	The renewable production and curtailment values are available on the CAISO website at the following link: http://www.aiso.com/informed/Pages/ManagingOversupply.aspx#dailyCurtailment Based on these reports, the April 2022 curtailment was 9% of the renewable production values.
could you say a few words about your evolving resource adequacy methodology.	The resource adequacy methodology must evolve to consider the increasing role of variable energy resources as well as policies to reduce GHG resources. The current stack analysis that is used cannot account for charging and discharging for storage. There is also no concept of accounting to make sure that the system has enough energy (MWh) across an operations horizon (i.e. a 24-hour period) to charge storage and serve load.
How much sector coupling is involved in the RA modelling? (i.e. transport and heating/cooling primarily) (edited)	The RA program models expected loads which include transportation, heating and cooling.
Regarding the Demand Response question - is the aggregated DER/DR a part of the plan? Regarding FERC 2222?	Demand Response resources are defined in the RA program and have a role in the RA plans of many Load Serving Entities (LSEs)
What is the duration of LESR on page 8?	The duration of the majority of LESR is 4 hours
Is California considering a reallocation of RA responsibility and roles between the CPUC and CAISO?	The CAISO and CPUC continue to work together on all enhancements to the RA program; however, I am not aware of any reallocation of roles and/or responsibilities.
While I know this is on utility-scale storage, is CAISO using or planning to use residential/commercial batteries (e.g. powerwall) as Demand Response?	The CAISO established aggregated demand response programs provide a platform for residential and commercial batteries to participate in demand response programs.
Could you please elaborate on the significance of the need to reform RA planning from peak-based to "Slide of the Day," especially as it relates to storage?	With the increasing market share of variable resources, such as solar, wind and batteries, there needs to be mechanisms to recognize the contributions of these technologies to the supply/demand balance throughout the day including availability of energy to charge batteries so they are able to serve load at times of need.
Forecast showed ~50 GW battery storage by 2045. Does CAISO estimate how much will be front-of-meter vs. customer-sited?	The battery capacity represented in the table and graphics are in front of the meter.

<p>Would demand side (EE & DR) be integrated in RA and supply modeling, to account for the potential to reduce or shift load before acquiring new sources?</p>	<p>EE and DR are integrated into the RA program and LSEs have the ability to include these in their future RA procurement plans.</p>
<p>10-year forward process for IRP. How often is the IRP updated? Surely more often than once a decade?</p>	<p>There is an annual process to update the resource plans of the IRP</p>
<p>Has the RA capacity been estimated by considering the potentials from distribution and BTM renewables/DER? If not, how do you think they will make difference?</p>	<p>BTM renewables are reflected in the RA program through adjustments to the load forecasts to reflect all BTM impacts of renewable/DER unless the resources are participating in an aggregated resource program in which case the resources would be able to participate directly in the RA program.</p>
<p>Could you touch on the impacts on PRMs, RA program slide "Forward planning study to determine the planning reserve margin based on an expected level of risk"?</p>	<p>According to NERC, "Planning reserve margin is designed to measure the amount of generation capacity available to meet expected demand in planning horizon." The increase of variable and limited energy resources will tend to increase the PRM required to maintain reliability.</p>
<p>It occurs to me that an RTO is a hybrid resource. Even if resources share a point of interconnection, wouldn't it be best to continue to treat them separately?</p>	<p>Not sure of the RTO reference; however, regarding shared point of interconnection for either co-located or hybrid resources and the question of separate treatment, the CAISO developed both hybrid and co-located options to enable site owners maximum ability to align with project goals.</p>