

July 15, 2019

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Subject: R.16-02-007: CESA's follow-up to July 9, 2019 hybrid resource modeling call

Re: CESA's informal comments on gas-plus-storage resource modeling as follow-up to July 9, 2019 hybrid resource modeling call

Dear CPUC IRP Staff & E3 Modeling Team:

Thank you for the opportunity to speak with Energy Division and the E3 modeling team on July 9, 2019 regarding the approach to hybrid resource modeling and analysis. This email is intended as a partial follow up to that discussion. We are still gathering responses to your questions regarding solar-plus-storage hybrids and will provide those responses by next week, but in the meantime, we wanted to provide some more immediate feedback on the gas-plus-storage component, where CESA has offered concrete and detailed recommendations on the record formally and informally.

For gas-plus-storage hybrid resource modeling, we strongly encourage you to review pages 16-21 of CESA's informal comments submitted on January 4, 2019 (attached for your convenience and linked [here](#)). In these informal comments, CESA provided information on both how to model hybrid gas-plus-storage resources correctly and why they are distinct from standalone options. Below we have provided written answers to the specific questions raised prior to the call.

As mentioned in our comments in R.16-02-007, CESA believes in the near-term value that hybrid gas-plus-storage resources can provide to ensure reliability on the system grid while advancing the state's environmental and disadvantaged community goals. Hence, CESA appreciates the Commission's consideration of hybrid gas-plus-storage resources in the IRP modeling efforts for the 2019-2020 cycle.

CESA is open to a follow-up conversation with the Commission's IRP modeling team and E3's modeling team upon further review of these responses and our previous comments. Additional follow-up calls may be needed, as the previous call did not provide sufficient time to

answer questions and/or follow-up on some of the technical modeling details. Going forward, it may be productive to have separate calls for the gas-plus-storage and solar-plus-storage modeling issues.

Responses to Questions

1. What information does IRP need to provide to stakeholders to enable hybrids to compete fairly with other resource types and assess operational implications?

In order to ensure a fair comparison, the IRP needs to provide a more accurate representation of the feasibility and cost-effectiveness of hybridizing existing gas resources (rather than just considering hybridization of new gas resources). The current method assumes that modeling new gas as a candidate resource in parallel with new storage as a candidate resource is sufficient to capture the full range of possible benefits from gas-plus-storage hybrid resources. This fails for several reasons:

- In previous IRP modeling exercises, no new gas resources were selected. As such, it is unlikely that an approach focused only on new hybrid resources will be successful in demonstrating benefits of hybridization. Hybridization of existing resources must be included as an option.
- The required storage for hybridization can be very short duration and small in size (*e.g.*, 30 min and only 20% of the Pmax). Thus, the cost for a standalone storage resource that provides the same capabilities would be grossly overstated.
- Standalone storage is not capable of un-constraining existing gas resources. By operating as a single joint resource, the added storage is able to relax the Pmin and ramp rate constraints of the gas resource. This is technically possible only if the resource is co-located and co-optimized as a single hybrid resource.

2. What improvements would you implement in modeling to fairly consider hybrid resources as a candidate?

We recommend that the modeling be improved to consider hybridization of existing gas resources. This should be the primary focus of any near-term modeling improvements regarding hybrids. Specific methodological improvements are discussed in pages 16-21 of CESA's attached comments from January 4, 2019.

3. How would you model operational constraints from hybrids and how would you expect that to affect candidate selection and operational results?

As mentioned above, pages 16-21 of CESA's January 4, 2019 comments provide more detail on how to model the operating constraints of hybrid resources, including changes to the Pmin and ramp rate constraints of traditional gas resources.

As discussed on the call, we recommend as a near-term solution that Energy Division should commit to running a hybrid case manually, which we believe can be done relatively simply. While automating the process should not be difficult, we do not think it is necessary to wait until that capability is built in. The manual process is easy enough that all stakeholders can duplicate given the simple instructions.

We expect that the outcomes of these changes will be quite meaningful. For example, CESA's own modeling efforts showed that, of all the hybrid candidates we considered, 100% were ultimately selected for hybridization under a least-cost portfolio that met other policy and operating constraints.

The inclusion of hybrids reduced both overall portfolio operating costs and GHG emissions appreciably. We would expect similar outcome if the Commission made corresponding updates. We think this will also help illuminate for stakeholders that hybridization of existing resources can be a "no regrets" strategy. To the extent that updated IRP modeling includes plant-specific information, this could help illuminate which existing resources may be best candidates for near-term action.

Conclusion

CESA appreciates the opportunity to provide these informal comments and hope these responses are helpful. Please do not hesitate to reach out if you have any follow up questions or would like to discuss further.

Sincerely,

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