

Stakeholder Comments Template

| Submitted by | Company | Date Submitted |
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Please use this template to provide your comments on the Revised Straw Proposal posted on September 17, 2015 and as supplemented by the presentation and discussion during the stakeholder web conference held on September 28, 2015.

Submit comments to InitiativeComments@caiso.com

[Comments are due October 9, 2015 by 5:00pm](#)

All documents for the energy storage and distributed energy resources (ESDER) initiative, including the September 17, 2015 Revised Straw Proposal and the presentation discussed during the September 28, 2015 stakeholder web conference, are available on the webpage for the ESDER initiative at:

http://www.caiso.com/informed/Pages/StakeholderProcesses/EnergyStorage_AggregatedDistributedEnergyResources.aspx

Non-generator resources (NGR) enhancements

Please provide your comments in each of the four areas of proposed NGR enhancement.

1. NGR documentation.
 - a. What specific NGR areas do you think require additional documentation that are not already outlined in the revised straw proposal?

Comments:

Energy Storage and Demand Response Resources have significantly different characteristics even though they are lumped together as NGR. The large number of ES resources in the ISO

queue will certainly dominate the NGR implementation for the next several years. The hope and goal is to enable demand response resources such as dispatchable PEV charging to start playing a more important role by 2017 and to become a major market participant by 2020 and beyond. Therefore the ISO market rules must provide an equal opportunity for all NGR's.

One of the challenges for new participants is to fully understand all the requirements for participating in the CAISO markets. The ISO does provide a plethora of market rules and requirements with their BPM's, tariff language, presentations and straw proposal documents. The material is truly spread over a lot of different areas on the ISO website. The ISO has provided excellent step-by-step material for generators on the interconnection and market certification process. It would be terrific to have a 'primer' for NGR – DERA/DERP participation in the ISO Energy and AS Markets.

For those interested in aggregation of demand response resources, it would be interesting to know more about the designated sub-lap areas for DERA resources and what PNODES might be good surrogates for DA Energy and AS prices. Would DERP's have to provide changes to DA energy schedules at T-75 before the start of the real-time hourly market and how could they take advantage of changes in the 15-minute real-time energy markets? DERA's could be especially useful in mitigating Congestion so would they be compensated for changing load schedules to provide congestion relief?

2. Clarification about how ISO uses state of charge (SOC) in the market optimization.
 - a. What specific NGR SOC areas do you think require additional clarity that are not already outlined in the revised straw proposal?

Comments: SOC is an important parameter for energy storage resources and the ISO should have telemetry information about an ES SOC if the device is to provide AS. If the ES is associated with a solar or wind generation facility, the ISO is probably not in a good position to manage the SOC for the ES. If the ES is providing Regulation Services, then the ISO has to manage the SOC of the facility as it can easily drive the SOC to 100% or to Zero and then the ISO loses the ability to use the facility for fully regulation service.

For aggregated resources such as DERA's, the SOC will be constantly changing as new PEV's pug-in and others leave. It will be up to the DERP to manage the SOC for the fleet of PEV's it is being managing.

We agree that the NRG managers should have the option to opt in or out for having the ISO manage the SOC for their resource.

We support the ISO's plan to add more clarity on how the SOC data will be used by the market system and how the SOC information will be used as a part of the dispatch algorithms such as Regulation Services.

3. Allow for an initial SOC value as a daily bid parameter in the day-ahead market.
 - a. Are there any further considerations for allowing for a daily initial SOC bid parameter that are not already outlined in the revised straw proposal?

Comments: The daily initial SOC bid appears to be adequately covered in the proposal. If a resource is not in the market for the entire 24 hours, then the SOC should be provided at the start of each interval that the resource is back in the market.

4. Allow an option to not provide energy limits or have the ISO co-optimize an NGR based on state of charge. Under this NGR option:

- NGRs that do not have SOC energy limits or choose to self-manage their SOC within resource energy limits, may choose to not use energy limit constraints and SOC in co-optimization or dispatch.
- NGRs that have an SOC and choose to self-manage their SOC, must provide telemetry SOC values for ISO resource monitoring.
- NGRs participating under Regulation Energy Management (REM) will not be eligible for this option.

- a. Are there any further considerations for allowing NGRs to not use SOC and energy limit constraints that are not already outlined in the straw proposal?

Comments: For a DERA resource, it is not clear what value the SOC data would have to the ISO. The SOC would be continuously changing as the aggregation of participants change on a minute-to-minute and hour-to-hour basis.

The maximum DERA limit would be fixed by the number of charging stations that would be connected in a specific area. The actual limits would vary from minute as the number of connected PEVs change but the theoretical limits would be fixed from day to day. The build out of the PEV charging network over the next ten years, however, does mean that the theoretical limits could rapidly change as many new intelligent charging stations are installed and connected to the grid. So the challenge for the ISO and the DERP will be to update the energy limit number on a frequent basis as the connected load increases.

Proxy Demand Resource (PDR)/Reliability Demand Response Resource (RDRR) enhancements

Please provide your comments in each of the two areas of proposed enhancement.

1. Consider/develop an alternative ISO Type 1 performance evaluation methodology base on metering generator output (MGO) concepts.
 - a. What is your opinion on the MGO options being considered to represent performance of load offsetting behind the meter generation?
 - b. What specific options do you believe need further evaluation in terms of its appropriate use under PDR/RDRR performance measurement methodology?
 - c. Are there additional variants, specific to configuration B, needing further consideration (i.e. baseline of directly meter generator/device). If so please provide examples of what the ISO might need to consider.
 - d. Are there concerns on the use of MGO for “frequent” use of load offsetting behind the meter generation?
 - e. What is your response to the ISO’s consideration of employing a “reservation of capacity” for load offsetting behind the meter generation to account for potential multi-use of the generator/device?

Comments: Residential utility metering is currently on hourly intervals as described in the ISO paper, but commercial/industrial metering is usually on 15-minute intervals. Work place PEV charging loads that would aggregated for participation in the ISO markets would potentially be on 15-minute intervals which could be used for settlement in the ISO systems. Intelligent PEV charging stations have built in metering systems for billing of PEV owners for their energy usage at commercial locations. The meter data from intelligent charging stations would be available on a minimum of 15-minute increments and potentially on smaller increments if required. Therefore the PEV Charging loads could be directly netted with commercial/industrial utility meters to separate utility served load from PEV charging loads.

If PEV charging loads have to pay prime time utility rates to charge during the day, there will be little incentive for them to participate in the ISO demand response programs. It is therefore critical to provide a financial incentive such as wholesale energy rates plus an adder for the utility distribution cost for this dispatchable load to participate in the ISO markets.

The installation of solar systems and PEV charging stations will probably both coexist at many locations – both residential and commercial. Both solar and PEV systems have data collection and reporting systems that can provide high quality settlement data on as small as 5 minute increments. If the utilities stay with hourly metering at these locations and NEM (Net Energy

Metering) tariff, the energy metering data from the smart PEV charging system could still be used to separate the charging load from the utility net meter load.

We recommend the ISO include a B4 meter configuration, which includes a Utility Net Meter; then normal customer load, metered PEV Charging Load, and metered customer generation (PV, wind, Co-Gen, etc.). This will allow for separate performance and billing of dispatchable PEV charging loads.

2. Develop additional detail regarding use of statistical sampling and document that in the appropriate BPMs.
 - a. What is your opinion on the statistical sampling methodology being proposed as an approved ISO Type 2?
 - b. Has enough detail been provided? If not, what additional detail is needed?
 - c. What is your opinion on the applicability currently proposed and being considered by for ISO Type 2?
 - d. What additional information can you provide the ISO that will help in understanding the need for use of ISO Type 2 in cases where Hourly Interval Metering is available? (i.e. why is the “interval meter data” unavailable to meet SQMD submission timelines) Should provisions for its use for Hourly Interval Metering cases have limitations? What might those limitations be?

Comments: No Comments as we don't think this method will apply for DERA resources. We expect settlement quality meter data will be available from DERA resources and the DERP will have a meter data collection/aggregation system that can forward the required meter and performance data to the ISO on a timely basis. The data should be auditable and verifiable by the ISO staff and regulators if requested.

Non-resource adequacy multiple use applications

1. Please comment on the ISO's proposal regarding Type 1 multiple-use scenarios.

Comments: Dispatchable distribution loads should benefit both the distribution system and the overall electric system. The increasing amount of distribution connected solar generation will present challenges to the distribution system operators such as reverse power flows, protection coordination issues, and voltage control issues unless there is a corresponding increase in daily loads from PEV charging. Afternoon peak Air Conditioning loads have been the dominant issue for distribution system designers and operators and this results in stressed distribution systems on Peak Load Days. The other 300+ days of the year, the distribution system probably has lots

of spare capacity to handle the new PEV loads. Dispatchable PEV charging loads could improve distribution system utilization by charging when distribution system capacity is available and deferring charging when the system is stressed.

We recommend the distribution system owner/operator have a performance agreement with the DERP that describes the rules and procedures to be used to mitigate distribution issues. This would include a description of the compensation to the DERP for the services it would perform for the utility and the data that would be exchanged between the two entities. The DERP would then forecast how much DERA capacity could be bid into ISPO markets and how much of its resources would be required to meet the contract obligation with the utility. The DERP would take the financial risk if it could not meet both its market obligations and its contractual obligations.

2. Please comment on the ISO's proposal regarding Type 2 multiple-use scenarios.

Comments: Type 2 is focused on DERPs providing services to End Use customers instead of to a utility. An example of an End Use customer is University of San Diego that has its own distribution system and generation and smart PEV charging stations. Again, the DERP could provide a variety of contract services for this end use customer including load management, and PV generation forecasting as well as management of the PEV charging system. We agree that it is too soon to be prescriptive on what is feasible in this area and more time is needed to see what type of business model is successful for these services.

3. Please offer any additional comments on other aspects of the ISO's proposal.

Comments:

The ISO's Straw Proposal is going in the right direction and we look forward to more specificity on DERA and DERP participation in the ISO markets. Our major concern is double billing by being charged at utility retail energy rates for PEV charging and then also paying wholesale rates for energy for resources bid into the markets. We also would like to be able to opt-out of the markets for some hours when PEV's are typically on the road going to work or going home.