Storage as a Transmission Asset

Stakeholder Comment Template

Submitted by	Company	Date Submitted
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Please use this template to provide your comments on the Storage as a Transmission Asset second revised straw proposal that was posted on October 16, 2018.

Submit comments to InitiativeComments@CAISO.com

Comments are due November 6, 2018 by 5:00pm

The second revised straw proposal, posted on October 16, 2018, as well as the presentation discussed during the October 23, 2018 stakeholder meeting, may be found on the Storage as a Transmission Asset webpage.

Please provide your comments on the second revised straw proposal topics listed below, as well as any additional comments you wish to provide using this template.

Cost Recovery Mechanism

The ISO has proposed three alternative cost recovery mechanisms in the straw proposal:

1. Full cost-of-service based cost recovery with energy market crediting
2. Partial cost-of-service based cost recovery with no energy market crediting
3. Full cost-of-service based cost recovery with partial market revenue sharing between owner and ratepayer

Additionally, the ISO envisions two potential scenarios for option 1: Direct assigned SATA projects and 2) when the project sponsor bids into TPP phase 3 competitive solicitation process, selecting this option. The ISO has proposed the rules governing SATA bidding and cost recovery eligibility would differ slightly between these two scenarios. Please provide comments on these three options, including the two scenarios under option 1 and any other options the ISO has not identified.

Comments:

CRI supports the ISO offering project sponsors the ability to bid under alternative compensation structures and supports maintaining at least bidding Options 1 and 2. CRI also supports imposing a must offer obligation (MOO) on direct assigned SATA projects, as the ISO has proposed. Further, we support expanding the must offer obligation to competitively bid projects for which the project sponsor elects Option 1, as elaborated below. If the ISO adopts MOO for such projects, this may eliminate the need for Option 3 to provide incentive for the SATA resource owner to pursue market revenues. That said, however, we believe each of these options requires further refinement and clarification to allow project sponsors to bid projects and maximize ratepayer benefits. We suggest the following clarifications.

1. **Provide recommendation for how market revenues will be estimated and used during TPP Phase 2, and determine "Base Case Market Participation" days:**

CRI recognizes that changes to TPP are out of scope of this workgroup process. However, during the last seven months of this process, numerous stakeholders have asked how TPP will estimate market revenues during TPP Phase 2. Indeed, there still is confusion about *which* cost recovery mechanisms will estimate market revenues in TPP Phase 2. CRI suggests that, at a minimum, this workgroup should provide TPP stakeholders recommendations for estimating market revenues. CRI suggests the following approach. At a minimum we recommend it be applied to Option 2, but believe it can also be applied to Option 1 with a must offer obligation.

1. CAISO would develop a "base case" estimate of the number of days per year the asset could be released to participate in the market, based on the assumptions published in Phase 1 of the transmission planning process (e.g., current year load forecast, load profile, announced retirements and scheduled system additions, etc.). CRI understands that CAISO has argued it needs to maintain reliability even when events change over the life of the asset, such as the unexpected retirement of natural gas plant or Qualifying Facility, or changes in behind-the-

meter generation,[1] and therefore wants the flexibility to be able to call on the asset if significant operational changes occur. Thus the "base case market participation days" wouldn't limit the ISO's ability to call on the resource for transmission service as needed, or require a guaranteed number of days the asset is allowed to participate in the market, but it would represent a starting point to work from to estimate the market revenues in TPP Phase 2.

2. CAISO would develop a standard revenue assumption for each base case market participation day (e.g., daily revenues per MW of power output capability or MWh of energy storage capacity). This standard revenue assumption would only be used to estimate the total market revenues during the TPP, and it could become one of the assumptions stated annually in Phase 1 of the TPP. Since it is a market-based, not technology-based, estimate of revenue, the standard revenue assumption should be technology agnostic and equally applicable to all types of energy storage.
3. CRI proposes that the ISO estimate and issue two values for the standard daily revenue assumption, one based on the resource participating in the real-time market only, and one based on day-ahead and real-time market participation.
4. Based on the above, CAISO would calculate a total expected market revenue that it would use to estimate the net cost of the SATA during the TPP, when evaluating the SATA solution versus the wires-based solution. The total expected market revenue would be calculated in the following manner:

   Total expected market revenue ($) = Number of "base case market participation days" * standard daily revenue assumption ($/day)

   and

   Standard daily revenue assumption ($/day) = Anticipated SATA size (in MW, MWh, or other unit of capacity) * Estimated revenue per capacity unit for a 24-hour period.

2. Expand Must Offer Obligation to Option 1/Competitively Procured, and Consider Deleting Option 3

As CAISO has pointed out numerous times, under the Option 1, Full Cost of Service, project sponsors are not motivated to participate in the market, thereby forgoing any potential benefit to ratepayers from market revenues reducing the cost of transmission. In the case of a CAISO-led competitive procurement (> 200 kV interconnected), project sponsors can choose to bid under Options 2 or 3 to reduce the asset cost and provide ratepayer benefit. However, under a direct-assigned scenario (< 200 kV), there isn't that option. Therefore, CRI supports CAISO's proposal to include a must-offer-obligation for these types of projects, and to include any degradation costs associated with market participation in the TRR for recovery through the TAC.

[1] Meeusen, K, et. al., Storage as a Transmission Asset, Second Revised Proposal, Section 9.2 (pages 35 – 38).

CRI proposes, in addition, to apply a MOO to competitively solicited project sponsors that elect Option 1 on those days when the SATA resource is released to participate in the market. CRI believes the MOO would be a reasonable quid pro quo for the guarantee of 100% cost recovery offered by Option 1. Moreover, because the MOO would enable the ISO to optimize the use of the resource in all hours of a market participation day, the net market revenues and hence the TRR-reduction benefit to ratepayers should be greater than or equal to the revenues that would result from discretionary market participation by the SATA resource owner. This benefit would be further enhanced if the ISO can provide notification to the SATA owner early enough to allow day-ahead market participation (which CRI also recommends, as discussed further below). In other words, the cost-reduction benefit of applying a MOO to all SATA resources that choose Option 1, combined with the ISO's ability to optimize the resource over 24 hours through the day-ahead market, should be uniformly greater than or equal to the benefit under Option 3. Therefore, the ISO could consider dropping Option 3.

3. Use "Lost Opportunity Payment" to enable aggressive bids but also maintain CAISO flexibility:

CRI continues to support CAISO offering project sponsors to bid under Option 2, partial cost-of-service with no energy market crediting. However, we also think CAISO can take additional actions to allow competitors to bid aggressively, instead of padding to account for risk, and produce a result is ultimately best for ratepayers. We suggest CAISO use a contractual tool to enable aggressive bidding, while also maintaining operational flexibility, specifically a contractually defined "lost opportunity payment."

CRI appreciates that CAISO has a responsibility to ensure reliability under changing circumstances and cannot commit itself to guaranteeing a minimum number of days that an asset will be allowed to participate in the market per year. However, it is also in the ratepayer interest to ensure that project sponsors have enough information to be able to be able to quantify risks and submit aggressive bids.

CRI suggests a compromise solution that both allows CAISO to use the asset whenever needed, and allows project sponsors to estimate market revenues with sufficient accuracy to develop competitive bids. Our approach builds on the methodology described above and uses a "lost opportunity payment" to give the ISO flexibility to hold back or release the SATA based on forecasts issued two days prior. If the project sponsor opts to submit an Option 2 bid, it would be required to also bid a "lost opportunity payment" for any day that CAISO chooses to use the asset that deviates from the annual "base case market participation days." Once the SATA resource is in service, on an annual basis an accounting review would determine if the SATA was used more, or less, than the base case number of days. Either the ISO or the SATA sponsor would use the agreed-upon, daily lost opportunity payment to compensate the other party. This compensation would either increase the TRR for the project to be recovered from ratepayers, or offset it.

This approach is not a transfer of risk from project sponsors to ratepayers in Option 2. In Option 2, the project sponsor is still responsible for revenue risk during the base case number of days that CAISO plans to release the asset into the market, and for any deviation in revenue from the lost opportunity payment. The lost opportunity payment is simply a mechanism to allow the ISO flexibility in unforeseen

cases, while not requiring project sponsors to overdesign or increases cost estimates to account for risks.

We use the following example to illustrate the concept outlined above.

- Based on assumptions stated during Phase 1 of the TPP, CAISO's analysis indicates it expects to release an asset 100 days per year to participate in markets. Therefore, the base case market participation days = 100 days/year.
- Suppose the estimated "standard daily revenue" for the asset is $1,000/day (based on clear assumption of which markets the SATA may participate in). Therefore, as CAISO compares an Option 1 or 2 SATA proposal versus a wires-based solution during Phase 2 of the TTP, CAISO would reduce the estimated SATA capital cost by $1M for a 10-year contract ($1,000/day * 100 days/year * 10 years).
- The project proceeds to a Phase 3 competitive solicitation. During the bidding process, project sponsors use CAISO's base case market participate days and assume the asset is able to participate in the market 100 days/year. Project sponsors electing Option 2 are also required to submit a lost opportunity payment for any day CAISO opts to use the asset above, or below, 265 days/year. Suppose project sponsor A submits a lost opportunity rate of $500/day, while B submits $1000/day and C submits $1500/day, all under Option 2. Sponsor D elects Option 1, therefore CAISO uses its own determined "standard daily revenue assumption" as it evaluates capital costs of Option 1 SATA/competitive bid.
- Taking all factors into consideration, CAISO chooses project sponsor C. In the first year CAISO only releases the asset 80 days a year to participate in the market. At the end of the year, CAISO compensates the asset $30,000 (20 unplanned days that CAISO chose to hold the asset back and use as a transmission asset * $1,500/day) and this amount is included in the TRR for the project. In the second year, CAISO releases the asset to participate in the market 110 days so the SATA owner must pay $15,000 which goes to reducing the TRR for the project. This annual process continues for the duration of the contract.
- Note that in this example, the winning SATA sponsor that elected Option 2 would take the risk of any deviations between its actual market earnings and the agreed upon lost opportunity rate. If the winning sponsor had elected Option 1, the CAISO would optimize the use of the resource in the market optimization under the MOO, and all market revenues would reduce the TRR.

Options in the event of insufficient qualified project sponsors

The ISO proposal would require all SATA projects sponsors to also submit a full cost-of-service bid as described in option 1, above. This bid would to be used in instances when there is fewer than three qualified project sponsors.

Please state your organization's position as described in the Second Revised Straw Proposal (support, support with caveats or oppose). If you support with caveat or oppose, please further explain your position and include examples.

Comments:

CRI supports CAISO's proposal with caveats. CRI agrees that it would not be a desirable outcome for ratepayers if the SATA sponsor seeks 99.9 percent guaranteed cost recovery as a device to gain access to a potentially large revenue stream that is not shared with ratepayers and would like to see protections put in place to ensure that doesn't occur. The three-bidder criterion does not necessarily prevent that outcome, however; it is possible that all of three qualified bidders bid TRR percentages of cost recovery in the high 90s. CRI suggests that the ISO retain the option of reverting to the transmission solution if the competitive solicitation does not yield an acceptable result, for example if all bidders propose to take insignificant downside market risk to justify the ability to retain market revenues. The ISO could also specify a bidding requirement, for example that an Option 2 bid cannot require, say, 80% or more guaranteed cost recovery through the TRR. In any event, the potential to adopt the transmission solution provides an alternative in the event that none of the bids would be beneficial to ratepayers.

Contractual Arrangement

The ISO proposes to establish defined three contract durations: 10, 20, and 40 years. Additionally, the ISO has eliminated its previously proposed TRR capital credit in favor of contractual requirements for maintenance of the resources.

Please provide comments on these two modifications to the ISO's proposal, stating your organization's position as described in the Second Revised Straw Proposal (support, support with caveats or oppose). If you support with caveat or oppose, please further explain your position and include examples.

Comments:

CRI supports CAISO's defined contractual durations, and eliminating the TRR capital credit in favor of enforceable contractual requirements.

Regarding the question about the SATA owner and ratepayers sharing costs associated with increased maintenance needs or degradation of the resource due to market participation, CRI recommends that these costs be included in the TRR for a SATA resource approved under Option 1 with a MOO, including both directly assigned and competitively procured Option 1 resources. Since Option 1 provides 100 percent cost recovery, all maintenance costs go into the TRR anyway. Under Option 2, in contrast, market participation is at the discretion if the SATA owner, so the owner should be responsible for any maintenance costs required to fulfill its commitment as a transmission asset.

Market Participation

The ISO has proposed that a SATA resource will be provided notification regarding its ability to participate in the market prior to real-time market runs, but after the day-ahead market closes. The ISO will conduct a Load based SATA notification test to determine a SATA resource's eligibility to participate in the real-time market.

Please state your organization's position as described in the Second Revised Straw Proposal (support, support with caveats or oppose), including any alternative proposals. If you support with caveat or oppose, please further explain your position and include examples (please note that any alternative proposals should be specific and detailed).

Comments:

CRI strongly opposes the decision to restrict SATA resources to just the real-time market. The potential benefit to ratepayers is much greater if the resource can participate in the day-ahead market and provide ancillary services in addition to imbalance energy, for a few reasons:

- One of the primary objectives of this SATA stakeholder process is to reduce transmission costs for ratepayers by allowing cost-of-service assets to generate revenue in markets. A study performed by Brattle of limited duration energy storage assets in CAISO showed that approximately 34% of revenue the asset can generate comes from ancillary services, and only 24% comes from energy.[2] Limiting the asset to only participate in real-time energy markets bars the asset from reducing costs to ratepayers by 34%, for the days SATA participates in markets.
- As limited duration, fast responding assets, energy storage assets are ideally suited as ancillary services assets, and their participation in these markets may drive down the cost of ancillary services for all ratepayers.

CRI supports a solution that allows SATA to participate in the day-ahead market, including the suggestion of having the Operations team use an uncertainly factor on the load. We also anticipate that CAISO Operations will become more experienced and comfortable with SATA assets over time. Therefore, instead of fixing the SATA uncertainly factor at an arbitrary value such as 13%, that Operations be allowed to annually determine the uncertainty factor required to maximize the use of SATA. In the first year, that may be as high as 14% (for example), but as the Operations team develops new tools to incorporate and monitor these assets, they may be able to reduce the uncertainly factor below 10%.

Consistent with FERC Policy Statement

The ISO believes the revised straw proposal is consistent with the FERC Policy Statement. Specifically, that the straw proposal does not inappropriately suppress market prices, impact ISO independence, nor result in double recovery of costs.

Please state your organization's position as described in the Second Revised Straw Proposal (support, support with caveats or oppose). If you support with caveat or oppose, please further explain your position and include examples. If you oppose, please clarify why and how the ISO might address this issue.

Comments:

[2] The Brattle Group, Stacked Benefits: Comprehensibly Valuing Battery Storage in California. September, 2017.

CRI supports CAISO's belief that the revised straw proposal is consistent with the FERC Policy Statement.

Draft final proposal meeting or phone call

The stakeholder meeting for the second revised straw lasted approximately 2.5 hours. As a result, the ISO requests stakeholder feedback regarding whether an in-person meeting is necessary for draft final proposal or if a stakeholder phone call will allow the ISO to adequately address the remaining issues in the draft final proposal.

Please state your organization's position as described in the Second Revised Straw Proposal (support, support with caveats or oppose). If you support with caveat or oppose, please further explain your position and include examples.

Comments:

CRI supports CAISO's decision and does not have a strong opinion with regards to the final meeting.

Other

Please provide any comments not addressed above, including any comments on process or scope of the Storage as a Transmission Asset initiative, here.

Comments:

CRI asks the ISO to clarify that a SATA resource may install additional devices behind its point of interconnection to the ISO grid, such as solar PV to enhance its ability to manage its state of charge, without having to go through the GIDAP, as long as the performance characteristics of the modified resource impose no additional impacts on the grid, i.e., comparable to a non-material modification under the GIDAP framework. CRI believes that such "hybrid" resources will be of growing interest and value to both project sponsors and ratepayers as renewable generation becomes more prevalent on the ISO system. Additionally, this is consistent with FERC Order 845, which specifically allows facilities to request interconnection below the aggregate nameplate capacity.[3]

[3] FERC Order 845, Paragraph 367, "In this Final Rule, we adopt the NOPR proposal to modify sections 3.1, 6.3, 7.3, 8.2, and Appendix 1 of the *pro forma* LGIP to allow interconnection customers to request interconnection service that is lower than full generating facility capacity, recognizing the need for proper control technologies and penalties to ensure that the generating facility does not inject energy above the requested level of service."