# 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 revised straw proposal that was posted on August 15, 2018.


Submit comments to InitiativeComments@CAISO.com

**Comments are due September 4, 2018 by 5:00pm**

The revised straw proposal, posted on August 15, 2018, as well as the presentation discussed during the August 21, 2018 stakeholder web conference, may be found on the Storage as a Transmission Asset webpage.

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

**Contractual Arrangement**

The ISO proposes to develop a new agreement with SATA resource owners that captures elements from Participating Generator Agreement (PGA), Participating Load Agreement (PLA), Reliability-Must-Run (RMR) and Transmission Control Area (TCA) agreements. Additionally, the ISO has indicated its preference to control SATAs when they operate as transmission assets. Please provide comments on this proposal.

**Comments:**

NHI has no comments on this proposal.

**Transmission Revenue Requirement Capital Credit**

The ISO has proposed a TRR capital credit to reduce a SATA resource's capital cost recovery. The objective of this credit is (1) to protect ratepayers from early degradation of SATA resources operational capabilities due to dispatches from ISO market participation and potential for reduced useful lifespan for a SATA resource's ability to meet the identified transmission need(s), and, (2) to ensure the SATA resource owner considers all marginal costs when bidding into the market. Please provide comments on the ISO's proposal and any potential alternative the ISO could consider to achieve the same objectives.

**Comments:**

It is unclear what the ISO means when it states that it envisions a "capital credit to reduce a SATA resource's capital cost recovery." It is also unclear what the ISO means when it states that the objective of revenue crediting is "to protect ratepayers from early degradation of SATA resources operational capabilities due to dispatches from ISO market participation and potential for reduced lifespan for a SATA resource's ability to meet identified transmission needs …."

Resource Degradation Concerns Are Not a Revenue Crediting Issue

Resource degradation from frequent and flexible dispatch to meet transmission or market needs is not a concern with pumped storage hydroelectric facilities which have potential 100-year service lives, but in any event, can easily remain in service for periods commensurate with transmission conductors and other facilities functionalized as transmission under FERC's Uniform System of Accounts. Resource degradation is only a concern with short-lived and less flexible battery storage facilities that, like a flashlight, degrade quickly with frequent use while also lacking the capabilities of pumped storage.

The service life, flexibility and reliability advantages of pumped storage facilities relative to battery storage must be accounted for in the ISO's transmission planning studies and project selection process. That study process should take account of the common sense principle that a single transmission asset that can serve customers for 40 years or more is better than a transmission asset that deteriorates and must be replaced every five to ten years. Non-discrimination principles dictate that the ISO study proposed transmission solutions against common transmission need horizons and evaluate the benefits of each potential solution against the same required service life. If the required life of the asset is 40 years and a battery will need to be replaced multiple times over that period, the ISO must account for that in the cost-benefit analysis (including the impacts of early degradation of a battery).

Revenue Crediting Is a Ratemaking Technique to Ensure that Rates Are Just and Reasonable

The ISO's statement that revenue crediting should be used to protect the service lives of battery storage facilities is incorrect. Revenue crediting has nothing to do with an asset's service life, which is affected by its frequency of use.

More fundamentally, revenue crediting is a ratemaking concept intended to prevent cost over-recovery, which is why FERC identified it in the Storage Policy Statement as a method to ensure that transmission customers are not over-charged. It is a well-understood ratemaking tool that has been used for decades. NHI believes that full cost of service ratemaking with full revenue crediting is the best means of obtaining FERC acceptance of cost-based rate recovery by storage-as-transmission asset owners as the just and reasonable method.

Revenue Crediting May Not Reduce Recovery of a SATA's Capital Investment

Cost-based ratemaking permits a regulated utility to recover its costs plus a reasonable return on its capital investment. When ratepayers are responsible for the full cost of service for a utility asset, just and reasonable ratemaking dictates that those customers receive the benefit of revenues obtained from other commercial uses of the asset—economy energy sales from a generating facility, for example. The revenue credit is not applied against the utility's capital investment, and does not reduce the utility's capital cost recovery, which occurs through the allowed return on equity and depreciation of the asset. The ISO's question thus proceeds from an incorrect ratemaking premise. NHI, therefore, interprets the ISO's statement to mean that it is considering revenue crediting options as a means to ensure that the SATA owner does not over-recover its FERC-approved annual revenue requirement (whether that revenue requirement applies to the totality of the asset, in which case full revenue crediting is necessary, or applies to a portion of the asset, in which case revenue crediting tied to that portion is appropriate). The CAISO may wish to think about this issue in the context of reactive power charges. A generator can obtain authorization from FERC to sell electric energy, capacity and certain ancillary services at negotiated rates. In certain regional markets (MISO and PJM) it may also seek FERC approval for cost-based rates to provide reactive power without any revenue crediting. The reactive power charge is calculated in part by isolating the VAR-producing components of the generator as a subset of the asset that is used to provide the reactive power service, and thus is eligible to collect an annual cost-based revenue requirement for the VAR-producing portion of the generator.

The same principle would apply if a SATA owner wishes to collect a cost-based revenue requirement for a portion of its storage asset while selling energy, capacity or certain ancillary services into the wholesale power markets. The SATA owner (not the ISO) would have the burden to show that the cost-based transmission service is being provided from an identifiable portion of its storage asset and how that portion differs from the portion being used to provide market services.

Theoretically, a SATA owner might postulate that it will provide cost-based transmission services from its storage asset for a defined number of hours a year (say 20% of all hours) and be available to serve the market for the remainder. Cost and market revenues would be apportioned accordingly. The problem is that this approach constrains the ISO's ability to call on the resource, and choosing the hours

of availability in advance is guesswork. The guesswork might cause FERC to decline to accept such a ratemaking concept, or at the very least to ask a lot of difficult questions.

For these reasons, NHI intends to file with FERC a full cost of service revenue requirement for its pumped hydroelectric storage asset with crediting of any and all incidental market revenues obtained either in conjunction with its transmission service (*e.g.*, energy produced while regulating up or down), or from market participation in any hours when it is not dispatched to provide transmission services.

**Market Participation**

The ISO provided two additional options it is currently considering to notify SATA resources when they would be permitted to provide market services and access market revenues: Day-ahead market option and D+2 Option. Please provide comments on these options, including any preference or alternative options.

**Comments:**

NHI has no comments or preference.

**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

Please provide comments on these three options and any other options the ISO has not identified. Please provide specific comments on (a) if the ISO should maintain option 2, above, and (b) why, if any, specific market profit threshold must be reached before the SATA resource would be permitted to retain some portion of profits and how such threshold should be determined.

**Comments:**

As explained above, NHI submits that option 1 is the preferred approach.

As FERC put succinctly in the Storage Policy Statement (at paragraph 18), "full cost recovery through cost-based rates may require full crediting of projected market revenues; no cost recovery through cost-based rates would require no crediting of projected or actual market revenues; and partial cost recovery through cost-based rates could require partial crediting of market revenues."

Option 2 does not comport with FERC's partial cost/partial crediting guidance, although it resembles FERC's treatment of cost-based reactive power sales in MISO and PJM, with the difficulty that there is no FERC-accepted method to identify the components of SATA resources used to provide transmission services as there is with reactive power charges.

Option 3 also does not comport with FERC's guidance and by definition leads to cost over-recovery, which FERC is unlikely to accept, notwithstanding the ISO's thesis that this option will encourage the SATA owner to make its resource available to the market.

In any event, Section 205 of the Federal Power Act places the burden of justifying the proposed revenue requirement and rate method on the asset owner, not the ISO, as the courts have held. If a SATA owner believes it can present a rationale to persuade FERC to accept Options 2 or 3 (notwithstanding the guidance in the Storage Policy Statement), the SATA owner has that statutory right.

When analyzing a storage project as a potential transmission solution, the ISO must estimate the net benefit to ratepayers—regardless of whether they arise from markets or from services for which the ISO has no market. Thus, since NHI has proposed to FERC that it credit all market revenues against the project cost recovery, the ISO must use the net cost to ratepayers in comparing cost and benefits of the project. While this requires forecasting of market revenues, this is no different than a myriad of variables that must be forecast as an integral part of the Transmission Planning Process (e.g., load, gas prices, congestion, etc.), which the ISO has been doing for many years under its Transmission Economic Assessment Method for selecting transmission projects.

The market revenue forecasts and valuation of benefits for which there are no markets must continue to be a key part of the transmission selection process, and must be consistently applied when storage is proposed as a transmission solution. The Storage Policy Statement (at paragraph 12) stated: "In some cases, an electric storage resource may only be cost competitive for the cost-based service if expected market revenues are considered in the evaluation of the electric storage resources. Such market revenues can be used to offset the electric storage resource's costs for providing the cost-based rate service." This makes clear that FERC envisioned that market revenue crediting as proposed by NHI is an appropriate way to account for ratepayer benefits when transmission services are priced at cost. It also shows that the ISO's interpretation at Section 4.1.2 of the August 15th straw proposal errs when it states:

> [O]ver reliance on market revenues to justify an energy storage resource as a transmission asset runs the risk of looking like a market resource and encroaching on local regulatory authority jurisdiction over resource adequacy and planning. This will require careful consideration on a case-by-case basis through the course of the annual TPP in Phase 2.

This statement, coupled with staff's accompanying power point presentation at the August 21st stakeholder conference lamenting the difficulties of market forecasting, seemed to envision the potential *exclusion* of market revenues from the benefits analysis during the evaluation process on the theory that such revenues are difficult to forecast. Such an exclusion would conflict with FERC's guidance quoted above, conflict with the ISO's practice in selecting transmission projects using the TEAM approach, and improperly disregard the various benefits to consumers that pumped hydroelectric resources provide. This last defect is the worst of all because FERC issued the Storage Policy Statement precisely because competitive markets do not fully value all of the services that storage resources can provide to the transmission grid because they provide some services simultaneously while others lack any market to price them.

**Options in the event of insufficient qualified project sponsors**

The ISO has proposed potential options for addressing SATA projects when there are insufficient qualified project sponsors. Please provide comments on these options, including preferences and/or additional alternatives that should be considered.

**Comments:**

This is a risk the ISO always faces when it identifies a transmission need and seeks sponsors for a proposed project, in which case it awards the project to the only qualified sponsor, as the ISO states at section 5.4.4 of the revised straw proposal. NHI will hold a FERC license and intends to seek full cost-of service revenue recovery from FERC with full crediting of any market revenues. Thus, NHI's proposal does not raise any of the concerns posed by the ISO.

**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 provide comments on the whether you agree or disagree with the ISO. If you disagree, please clarify why and how the ISO might address this issue.

**Comments:**

The August 15th Revised SATA Proposal is not consistent with the FERC Policy Statement in several respects, some of which we have already highlighted above. The Policy Statement allows storage to be treated on a non-discriminatory basis with other transmission solutions by receiving cost-based rate treatment under an ISO tariff and to also participate in the market provided there is no double recovery (e.g., by crediting market revenue against the cost of service rate recovery). If storage is a transmission asset, it is FERC regulated and the ISO cannot simply defer its transmission planning responsibility to the CPUC in deference to its resource procurement program.

In this regard, the ISO's revised straw proposal reverts to positions it articulated in comments that led to the FERC Storage Policy Statement, none of which were adopted by FERC. The current straw proposal misstates FERC policy in several respects and otherwise will lead to unjust, unreasonable, and unduly discriminatory results in several important respects.

The August 15 Straw Proposal Reverts to ISO Positions in the Storage Policy Statement Docket Which FERC Did Not Accept

Despite what appears to be near unanimous stakeholder support for allowing storage to be treated as transmission and its costs fully recovered in the TAC with a crediting of all market revenues to avoid any double recovery (which mirrors the support of just about everyone except the ISO for FERC's Storage Policy Statement as discussed at paragraph 11 of the order: "Most participants in the technical conference and commenters generally support multiple uses and revenue streams, including both cost-based and market-based revenues, for electric storage resources"), the latest straw proposal reverts to the position articulated by the ISO in comments opposing the guidance FERC ultimately issued in the Storage Policy Statement docket. (See Pages 9 and 10 of the August 15th Revised SATA Proposal). The Revised Proposal would limit the instances in which storage would be permitted to meet transmission needs

For example, on page 10 of the August 15th Revised Proposal, the CAISO states:

> The ISO notes that over reliance on market revenues to justify and energy storage resource as a transmission asset runs the risk of looking like a market resource and encroaching on local regulatory authority jurisdiction over resource adequacy and planning. This will require careful consideration on a case-by-case basis through the course of the annual TPP in Phase 2.

This is the same position that the CAISO took in comments to FERC that were rejected in the Storage Policy Statement, i.e., that storage should not be treated as transmission and should be relegated exclusively to the CPUC resource adequacy decisions. If storage is to be treated as transmission and receive cost based rates that are reduced by market revenues, the transmission planning process must recognize the net benefits to ratepayers as part of any selection process.

The ISO also states at page 45 in the final paragraph of its current August 15th straw proposal that:

> The ISO acknowledges there may be instances where a dedicated solution is necessary to support local transmission needs with limited or no alternatives, in which case the ISO would consider the storage (as transmission only) option in its planning process. In these instances, the ISO may need to constrain or define narrowly the operation of the electric storage resource, for example, by requiring it to abstain from market participation and remain fully charged so it is solely available to meet a potential transmission contingency need.

That statement is identical to one the ISO made in its initial "issue paper" in this stakeholder process. California Independent System Operator Corp., "Storage as a Transmission Asset: Enabling transmission connected storage assets providing regulated cost-of-service-based transmission service to also access other market revenue streams, Issue Paper," at p. 8 (Mar. 30, 2018), available at: http://www.caiso.com/Documents/IssuePaper-StorageasaTransmissionAsset.pdf.

That statement is also almost word-for-word the same argument the ISO made in its unpersuasive comments to FERC in 2016:

> The CAISO acknowledges that there may be instances where a dedicated solution is necessary to support local transmission needs with limited or no alternatives, in which case the CAISO will consider the storage (as transmission) option in its planning process. In these instances, it is likely that the CAISO may need to constrain or define narrowly the operation of the electric storage resource; for example, by requiring it to abstain from market participation and remain fully charged (virtually idle) so that it is available to meet a local contingency need.

*Utilization in the Organized Markets of Electric Storage Resources as Transmission Assets Compensated Through Transmission Rates for Grid Support Services Compensated in Other Ways, and for Multiple Services*, "Technical Conference Comments of the California Independent System Operator Corp.," at p. 4, Docket No. AD16-25-000 (filed Dec. 14, 2016).

FERC's Storage Policy Statement did not adopt the ISO's narrow view of the potential uses of storage to provide transmission service. The ISO suggests that "FERC's guidance is that transmission assets should provide transmission services, focusing on thermal loading and voltage support." Straw Proposal at 42. The Storage Policy Statement does not say that. The ISO offers no quotation to any FERC decision supporting its interpretation—except that the applicant in the *Western Grid* case proposed to use its facility in that manner. A project developer's proposal in a case-specific petition for a declaratory ruling hardly constitutes the basis for the sweeping policy pronouncement that the ISO attributes to the ruling. In any event, the ISO's interpretation has been undercut by the Storage Policy Statement and its own tariff, which includes seven transmission classifications. California Independent System Operator Corporation, Fifth Replacement FERC Electric Tariff, § 24.4.6. Thus, the ISO cannot credibly claim, for

example, that storage used as a transmission facility to meet an economic need is disqualified because alleviating transmission congestion does not solely involve thermal loading and voltage support.

The ISO also cannot credibly claim that FERC requires storage to be limited to narrow and localized transmission applications, or that it is disqualified from a transmission function if it is "providing market-based services as a competing energy resource inside a constrained area," as the ISO asserts at Section 4.1.1 (particularly with full market revenue crediting). The Storage Policy Statement provides that storage can serve transmission needs and receive cost-based transmission rates in the same way that a wires solution would. In other words, both transmission solutions must receive non-discriminatory treatment in transmission planning. That means, as the CAISO has recognized in earlier versions of its SATA Proposal that storage can meet any reliability, economic, or public policy transmission need in exactly the same way that a transmission wires solution could.

In short, the ISO's return to its narrow vision of the role for storage in providing transmission services finds no support in the Storage Policy Statement, the ISO tariff, or any FERC precedent.

Deference to CPUC Resource Procurement Violates the Policy Statement

The Storage Policy Statement announced a Federal policy that storage assets meeting certain requirements can qualify as transmission facilities and be selected as such in public utility transmission planning processes. The ISO's tariff requires it to incorporate Federal policy in its TPP. California Independent System Operator Corporation, Fifth Replacement FERC Electric Tariff, §§ 24.1 ("The comprehensive Transmission Plan will identify . . . transmission solutions needed . . . to meet state, municipal, county and federal policy requirements and directives . . . ."). This stakeholder process is the ISO's attempt at compliance.

The August 15 straw proposal asserts at page 45 that it has been complying with Federal policy on the treatment of storage as transmission all along ("the ISO has studied a number of potential electric storage projects as reliability needs solutions, ranging from transmission asset models to local resources participating in markets"), but that is not what the ISO told FERC in a recent protest: "it is simply not true that the CAISO has already commenced a study as to whether LEAPS or any other proposed project would meet a specified need under Section 24 [of the CAISO tariff], and the CAISO certainly has not made any findings along these lines." *The Nevada Hydro Company, Inc.*, Protest of the California Independent System Operation Corp., at p. 24, Docket No. EL18-131-000 (filed Apr. 9, 2018).

To the contrary, the ISO's practice has been to defer storage procurement decisions to the CPUC, and even in the only cases when it has selected storage to serve minor localized transmission needs, it has instructed the project sponsor to look to the CPUC for cost recovery rather than the ISO tariff. California Independent System Operator Corporation, 2017-2018 Final Transmission Plan at p. 129 ("the ISO is recommending PG&E to seek approval through the CPUC procurement process the additional identified preferred resources for the Oakland Clean Energy Initiative.").

In earlier versions of the straw proposal, the ISO indicated that it had shifted away from its erroneous views by expressing a willingness to consider storage to meet any reliability, economic or public policy transmission need identified in the ISO transmission planning process. In other words, the ISO led

stakeholder participants to believe that it would study storage as a transmission asset for any of those transmission function requirements.

The August 15 proposal (pages 9 and 10), however, reverts to its erroneous pre-Storage Policy Statement position that storage should be left to CPUC procurement. This view is erroneous and contrary to FERC policy because FERC has announced a Federal policy to treat storage as a transmission facility in the planning process. The ISO staff did not present nor defend that position at the August 21 stakeholder meeting. In staking out what appears to be a minority view, the ISO has not explained how the proposal faithfully implements the Storage Policy Statement, or complies with its tariff obligation to implement Federal policy in its transmission planning process.

The ISO Must State that it Will Faithfully Apply the TEAM Analysis to Storage in the TPP

The ISO seems to propose in the August 15 straw proposal that it will consider market benefits in future transmission planning cycles on a case-by-case basis when evaluating proposals to use storage as a transmission asset. A companion staff presentation at the August 21 stakeholder meeting devoted a lengthy discussion to the market forecasting difficulties for storage, thereby implying that the ISO will in future planning cycles not perform any market benefits analysis for storage as it has in the past for transmission assets using the TEAM analysis.

Utilities have long used the practice of making estimates for various ratemaking purposes, and FERC has accepted them on the understanding that the estimates were reasonable when made. That has been the entire premise of using the TEAM approach to select transmission projects in the TPP. Forecasting is an integral part of every aspect of the CAISO transmission planning process as applied to all transmission project. If forecasting uncertainty is now to become a reason for excluding the many valuable benefits that storage resources can provide, then the ISO will call into question the estimates it has used to justify its selections of transmission projects in the past and require drastic changes to how all transmission planning is done.

Further, ignoring potential benefits on the theory that the future holds uncertainty would undermine the Storage Policy Statement, which recognizes that cost-based rate recovery is an important option for storage resources, which cannot always monetize the various valuable services they can provide to the transmission grid. These services are sometimes provided simultaneously, precluding the ability to monetize the separate services in the market. And of course some of the benefits receive no market, as is the case with local capacity benefits for which the ISO has no market.

**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:**In the case where generation is needed to meet a transmission reliability need, the FERC has been quite clear that it is the ISO that must determine whether that need exists and the extent to which a Reliability Must Run (RMR) contract is needed and should be entered into by the ISO. *Order Instituting Section 206 Proceeding and Directing Filing to Establish Reliability Must Run Tariff Provisions*; 150 FERC 61,116 (February 19, 2015). The FERC has rejected the notion that an ISO should defer that

determination to the state regulator's resource procurement process. The CAISO has determined that pumped storage is needed to avoid harm to California ratepayers but has simply urged the CPUC to deal with that need. That is inconsistent with the CAISO's responsibility to address transmission needs and is certainly inconsistent with its obligation to enforce the FERC Storage Policy Statement. The CAISO must revert to earlier versions of its SATA proposal and make clear that storage can meet any transmission need as part of the CAISO Transmission Planning Process and receive cost based rate recovery through the CAISO TAC provided all market revenues are credited. And, the CAISO must confirm that the net ratemaking treatment approved by FERC for a storage project will be used to analyze the cost and benefits of the storage project in relation to other transmission solutions.

Finally, as a result of the passage of SB 100, it is clear that California will be moving to a 100% RPS either now or next year and, therefore, the CAISO must analyze storage alternatives under that assumption (at least as a scenario alternative).