



# California ISO

## **Generator Interconnection Driven Network Upgrade Cost Recovery**

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### **Second Revised Straw Proposal**

**November 21, 2016**

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# Generator Interconnection Driven Network Upgrade Cost Recovery

## Second Revised Straw Proposal

### 1. Executive Summary

Stakeholders were divided on the ISO's straw proposal to include the cost of generator-driven low-voltage facilities of all PTOs in the aggregated high-voltage TRR for recovery through the "postage stamp" high-voltage TAC. A number of stakeholders suggested that the ISO should focus on a solution that more narrowly focuses on the issue currently facing Valley Electric Association (VEA), or that could face transmission owners similar to VEA. As discussed below, the ISO agrees with stakeholders and proposes more narrowly focused solutions that are consistent with cost allocation principles and address the issue currently facing VEA and potentially future similarly-situated PTOs.

### 2. Introduction and Background

The ISO tariff requires Participating Transmission Owners (PTOs) to reimburse interconnection customers (ICs) whose generators are interconnecting to their systems for the costs of reliability<sup>1</sup> and local deliverability network upgrades necessary for the interconnection. The PTOs then include those network upgrade reimbursement costs in their FERC-approved rate bases, requiring ratepayers to pay those costs through either low- or high-voltage transmission access charges (TAC). Network upgrades 200 kV and above are considered high-voltage; their costs are recovered through the high-voltage TAC, an ISO system-wide "postage stamp" rate based on the aggregated transmission revenue requirements ("TRR") of all PTOs for all high-voltage facilities on the ISO system. In contrast, upgrades below 200 kV are considered low-voltage; their costs are recovered through PTO-specific low-voltage TAC rates charged only to customers within the service area of the PTO owning the facilities.

The ISO opened this initiative due to a concern that the current practice for low-voltage upgrades could soon negatively impact ratepayers who are not the beneficiaries of the upgrades, but who solely bear their costs. For example, if a large generator or a large number of generators with significant low-voltage network upgrade costs interconnect to a PTO with a relatively small rate base, that PTO's rate base and its low-voltage TAC rates may increase significantly under the current cost allocation framework, even though the upgrades and the associated generation capacity may not materially benefit or be needed

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<sup>1</sup> Reimbursement for reliability network upgrades (RNU) is limited to \$60,000 per installed MW of capacity; there is no limit on reimbursement for costs of local delivery network upgrades (LDNU).

by that PTO's ratepayers. This issue is currently facing the Valley Electric Association (VEA) where larger scale renewable generation is seeking to connect to the VEA low-voltage transmission system driving low-voltage network upgrades that will have a direct impact on VEA ratepayers, yet the generation is not needed by VEA's ratepayers and is wholly contracting to entities outside of the VEA service territory.

The initial concern identified through the VEA situation also led the ISO to question whether the concerns apparent in the specific circumstances warranted a broader resolution to ensure fair cost recovery across larger utilities as well. That issue was discussed in the revised straw proposal, and is revisited in this second revised straw proposal.

### 3. Stakeholder process

Based on the need to issue a second revised straw proposal, the ISO now plans to take this issue to the ISO Board in February of 2017. Timely resolution of this issue remains critical because there are generation interconnection customers, currently in the study process or generation interconnection agreement (GIA) negotiation phase, that require low-voltage network upgrades and therefore may significantly impact VEA ratepayers. The ISO thanks stakeholders for their continued participation in this effort.

Stakeholder process schedule		
Step	Date	Activity
Draft Issue Paper/Straw Proposal	August 1, 2016	Post Issue Paper/Straw Proposal
	August 8, 2016	Stakeholder web conference
	August 19, 2016	Stakeholder comments due
Revised Straw Proposal	September 6, 2016	Post Revised Straw Proposal
	September 13, 2016	Stakeholder web conference
	September 20, 2016	Stakeholder comments due
Second Revised Straw Proposal	November 21, 2016	Post Revised Straw Proposal
	December 5, 2016	Stakeholder web conference
	December 16, 2016	Stakeholder comments due

Stakeholder process schedule		
Step	Date	Activity
Draft Final Proposal	TBD	Post Draft Final Proposal
	TBD	Stakeholder web conference
	TBD	Stakeholder comments due
Board approval	February, 2017	ISO Board of Governors meeting

#### 4. Cost Allocation Principles

In considering the cost allocation principles that could inform the issues addressed in this proposal, the ISO first turned to guidance available from relevant FERC orders and decisions. Order Nos. 890 and 1000 set forth FERC’s cost allocation principles. They are based on two significant principles for FERC: (1) rates should reasonably align cost allocation for any given transmission facility or group of facilities with the distribution of benefits from the facilities; and (2) cost allocation is not an exact science. FERC recognizes the need to allow ISOs/RTOs flexibility in allocating costs for transmission facilities as long as there is reasonable cost-benefit alignment, adequate incentives to construct new transmission, and general support among the participants across the ISO territory.<sup>2</sup> In Order No. 1000, FERC specified six cost allocation principles for new transmission projects:

1. Costs must be allocated in a way that is roughly commensurate with benefits.
2. Costs may not be allocated involuntarily to those who do not benefit.
3. A benefit to cost threshold may not exceed 1.25.<sup>3</sup>
4. Costs may not be allocated involuntarily to a region outside of the facility’s location.

<sup>2</sup> See *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, FERC Stats. & Regs. ¶ 31,241 at P 559; *order on reh’g*, Order No. 890-A, FERC Stats. & Regs. ¶ 31,261 (2007), *order on reh’g*, Order No. 890-B, 123 FERC ¶ 61,299 (2008), *order on reh’g*, Order No. 890-C, 126 FERC ¶ 61,228, *order on clarification*, Order No. 890-D, 129 FERC ¶ 61,126 (2009).

<sup>3</sup> This principle refers to the threshold criterion a transmission planning entity applies to approve an economic transmission project; in effect, it says that the threshold cannot be so high as to prevent approval of projects whose benefits are shown to exceed their costs.

5. The process for determining benefits and beneficiaries must be transparent.
6. A planning region may choose to use different allocation methods for different types of projects.<sup>4</sup>

Although FERC generally was addressing transmission-planning-process driven projects in these orders, these cost allocation principles still can inform this initiative. The ISO's current cost allocation scheme for generator-interconnection-driven upgrades may not consistently satisfy the first two principles, which effectively are two sides of the same coin, because ratepayers who benefit from the upgrades may escape their costs entirely, while ratepayers who may only slightly benefit from the upgrades bear all the costs, as exemplified by the current VEA situation.

In responding to the ISO's Option 1 in the revised straw proposal (which was to include the cost of generator-driven low-voltage facilities of all PTOs in the aggregated high-voltage TRR for recovery through the "postage stamp" high-voltage TAC), some stakeholders noted that the Order No. 1000 principles apply only to transmission facilities in a regional transmission plan and therefore provide an insufficient basis on which to justify Option 1. The ISO acknowledges this point, but the fundamental problem cannot be ignored: As evinced by the VEA upgrades, the ISO's current cost allocation methodology may violate FERC's most basic tenet of cost allocation: that costs should reasonably align with benefits. These principles also mean that proposals that would merely ease the rate shock by extending the cost recovery time period but do not address the underlying misallocation of cost are not viable because they do not help to align costs with benefits. As such, the ISO must address this issue through this initiative.

## 5. Reasonableness of Existing Allocations in General

As with the original Draft Issue/Straw Proposal paper, stakeholder comments received on the September 6<sup>th</sup> Revised Straw Proposal remained divided, with PG&E, SDGE, VEA, and the generation community supporting the ISO's Option 1 and SCE, NCPA, Six Cities, and BAMx remaining opposed to Option 1.

A number of stakeholders critical of Option 1 commented that FERC has endorsed the current methodology and it has been a fundamental aspect of the CAISO's pricing structure for many years.<sup>5</sup> The ISO therefore needed to address the concern of whether the current

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<sup>4</sup> *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, Order No. 1000, FERC Stats. & Regs. ¶ 31,323 at P 612 et seq. (2011), *order on reh'g*, Order No. 1000-A, 139 FERC ¶ 61,132, *order on reh'g*, Order No. 1000-B, 141 FERC ¶ 61,044 (2012), *aff'd sub nom. S.C. Pub. Serv. Auth. v. FERC*, 762 F.3d 41 (D.C. Cir. 2014).

<sup>5</sup> NCPA stated "that the 200 kV dividing line between high-voltage and low-voltage transmission facilities has been enshrined in the CAISO Tariff and the TAC since CAISO proposed the two-tiered rate structure in 2000, after extensive stakeholder negotiations. The Commission endorsed the structure as reasonable at that time". Six Cities also noted

cost allocation methodology is generally just and reasonable based on the allocation principles discussed in Section 4 above, and revisit if the issue is widespread or in fact is contained to exceptional cases.

The ISO reviewed past generation interconnections to the low voltage transmission networks of ISO load serving PTOs and concluded the following more general observations:

- The ISO was unable to observe where GIP-driven network upgrades provided any material benefit to the local consumers - that the upgrades primarily provided for the reliable interconnection of generation and the requested deliverability where requested.
- A significant number of generators connected to the low-voltage transmission systems of each load serving PTO were under contract with that utility, or with a utility in the near vicinity.
- Among the larger PTOs, contracting has not been restricted to resources within a single utility's footprint - there has also been a reasonable balance of contracting in each other's transmission service areas.

This suggests that while the current cost allocation methodology does not allow a precise determination of costs and benefits seen by the end-use customers in each low-voltage TAC area, that a reasonable argument can be made that the resulting allocation of costs is just and reasonable.

This supports stakeholder's comments that the current cost allocation rules have been appropriate and continue to work for generator interconnections to the larger load serving entities low voltage transmission systems. However VEA's situation is significantly different. VEA is a relatively small load serving PTO in relation to the other ISO load serving PTOs, and VEA's load is relatively small in relation to the size of generation being developed in their service area due to the fact that they are located in a renewable resource rich area that is leading to elevated generation interest.

## **6. Second Revised Straw Proposal**

As mentioned above, stakeholder comments on the September 6th Revised Straw Proposal were divided. Based on this division, the ISO believes it is in everyone's best interest to continue to work together to explore additional options in an effort to gain

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that "The bifurcation between High Voltage and Low Voltage transmission facilities has been a fundamental aspect of the CAISO's transmission pricing structure for many years, and any changes that erode this long-standing bifurcation should be supported with more than generalized statements regarding the broad benefits of new generation".

stronger consensus on this issue. Moving forward and based on stakeholder input<sup>6</sup> and further analysis, the ISO agrees that it should consider a more narrowly focused solution that addresses the issue currently facing VEA that also could apply to a similarly-situated PTO in the future, consistent with principles of cost allocation. The ISO proposes two new low-voltage generator-driven network upgrade cost allocation approaches for qualified small load serving PTOs, as defined below. These options are identified as Option A and Option B so not to cause confusion with the prior proposals. Rather than allocating costs differently for a portion of all PTOs' low-voltage related costs, these options would identify which smaller PTOs are sufficiently dissimilar from other PTOs and as a result are experiencing an inequitable outcome of the existing cost allocation approach. Once selected, those specific PTOs would qualify for different treatment. Moreover, the cost allocation treatment under options A and B are the same – i.e., to include the upgrade costs in the PTO's high-voltage transmission revenue requirements. The options merely differ in the procedure for determining whether a given PTO should receive this treatment. Option A would entail a case-by-case decision for each such candidate PTO, based on principles specified in the tariff but ultimately subject to an ISO management determination for approval by the Board of Governors and FERC. Option B would incorporate a formulaic approach into the ISO tariff that would be aligned with the same principles as Option A, but would be sufficiently specific that the ISO could make a definitive determination under the tariff without requiring Board or FERC approval for each PTO. Once the determination is made for a given small PTO under either approach, the PTO would retain this classification for all future low-voltage generator-driven network upgrades.

Option A: Selection on a case-by-case basis, subject to ISO Board and FERC approval for each selected PTO

Option A is based on principles that by design apply to VEA and other potential similarly situated entities. Rather than trying to develop tariff provisions that could address every potential unique circumstance, Option A would specify guiding principles the ISO would apply on a case-by-case basis to alleviate unintended adverse impacts for each unique PTO. Upon applying the principles and determining the appropriate treatment of the PTO in question, ISO management would present its recommendation for approval to the ISO Board and, if approved by the Board, to FERC.

The primary principles that make VEA's situation unique and result in the need to alleviate the unintended adverse rate impacts on VEA are as follows:

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<sup>6</sup> NCPA stated "they would not object to the development of individualized relief for VEA if CAISO can demonstrate that the current cost allocation methodology will create unjust and unreasonable results for VEA ratepayers". The CPUC agrees that "modifying the cost recovery methodology for LV NUs could be a positive solution under proper circumstances but the proposal should be refined to limit its scope and potential for unintended ratepayer consequences."



1. Relatively Very Small PTO in relation to other load-serving PTOs.

VEA's annual gross load is only 0.3% of the ISO annual gross energy load, and only 0.6% of the largest PTO's annual gross load. The next smallest load serving PTO is 10% of the ISO annual gross load and 23% of the largest PTO's annual gross load. Clearly, VEA is in a category of its own related to the amount of its load.

2. The small PTO is in a resource rich area that is leading to elevated generator regional procurement interest within the area.

VEA's service territory and the low voltage transmission system built to serve its load is located in southern Nevada. It is an area of valuable solar capability, ample available land suitable for siting solar projects, and competitive costs for generation interconnections. This makes projects interconnecting to VEA's transmission system attractive to solar project developers and for California LSEs seeking additional renewable generation for meeting California's RPS requirements.

3. The small PTO is not under a Renewable Portfolio Standard (RPS) requirement or, if under an RPS requirement, does not have a need for the new interconnecting generation to meet that requirement.

Nevada's RPS requires electric utilities to acquire or save with portfolio energy systems or energy deficiency measures annual amounts increasing to 25% in 2025. However, as a rural electric cooperative (REA), VEA is not a defined Provider of electric service under the statute, and is not required to meet Nevada's RPS requirements. As a small REA with no RPS requirements, VEA has only developed a relatively small amount of solar on its own system.

These three principles provide the framework for justifying an alternative TAC rate methodology for VEA and any similarly situated small load serving PTOs that would align with FERC cost allocation principles. The proposed alternative methodology is that the cost of network upgrades to serve generation on VEA's low-voltage system, where the generation is not being built to serve VEA in some manner, would be put into VEA's high-voltage transmission revenue requirements. If the generation connecting to VEA's low voltage transmission is being built to serve VEA in some manner, for example is being built or sponsored by VEA or VEA is has entered into a power purchase agreement with the generator, the cost of any low-voltage network upgrades driven by this generation would be put into VEA's low-voltage TAC rates.

Option B - Selection through application of FERC-approved criteria specified in the ISO tariff

The criteria for Option B would be similar to the principles used for Option A, as discussed below. However, the Option B criteria would be incorporated into the ISO

tariff such that they would be applied to any new PTO to determine if the cost of generator interconnection driven network upgrades on the PTO's low-voltage system would be put into its high-voltage TRR, similar to VEA. The principal difference is that once the criteria are approved by the Board and FERC and incorporated into the ISO tariff, the ISO would apply the criteria and reach its determinations for new PTOs without subsequent Board and FERC approval.

The proposed Option B criteria are as follows:

1. The PTO's annual gross load is no larger than 5% of the annual gross load of the ISO's largest PTO.

Because the ISO may grow in total load amount and more PTOs may join, the ratio of small PTO size to largest PTO size would be most consistent over time. The relative size of the four PTOs of interest for generation interconnections based on the gross load of each PTO as a percentage of the largest PTO's gross load is provided in the third column of the table below. It is proposed that the Option B size criterion be that a small PTO's gross load as a percent of the ISO's largest PTO's gross load be no greater than 5%.

PTO	Filed Annual Gross Load (MWh)	Gross Load as a Percentage of Largest PTO's Gross Load
PG&E	91,500,000	100%
SCE	90,511,765	99%
SDG&E	20,824,991	23%
VEA	544,970	0.6%

2. The PTO is located in a renewable rich area that is beneficial for development of renewable resources for the entire ISO.

Consistent with Option A, the requirement that the small PTO be located in a renewable rich area is proposed as a second criterion. This criterion is intended to demonstrate that the small PTO truly needs the alternative TRR treatment proposed in Option B

3. The small PTO is not under a Renewable Portfolio Standard (RPS) requirement or, if under an RPS requirement, does not have a need for the new interconnecting generation to meet that requirement.

The third proposed criterion is also consistent with Option A, that the small PTO is not mandated to comply or have a deficiency with a mandated RPS. This is intended to ensure that a PTO that is required to build or procure new renewable resources does not pass the interconnection costs to the ISO high-voltage TAC when generator projects are built on the PTO's low-voltage system to meet its RPS requirements.

If a PTO meets all of these criteria, the cost of the network upgrades on its low-voltage system, where the generation is not being built to serve the PTO in some manner, would be put into the PTO's high-voltage TRR. If the generation is being built to serve the PTO in some manner, for example is being built by or sponsored by the PTO or the PTO has entered into a power purchase agreement with the generator, the cost of low-voltage network upgrades driven by this generation would be put into the PTO's low-voltage TAC rates.

Both Option A and B supports the ISO's position that any solution needs to retain the fundamental design and features of, the Generation Interconnection and Deliverability Allocation Procedures (GIDAP), Appendix DD of the ISO Tariff, specifically:

- Two-phase cluster-study approach with annual reassessments;
- Cost certainty to interconnection customers early in the study process through cost caps; and
- Reliability and local deliverability network upgrades would continue to be reimbursed to interconnection customers upon commercial operation in accordance with the GIDAP.

## **7. Comparison of PTO TAC Rate Impacts of Network Upgrade Costs**

As background information, it may be helpful to review the potential TAC implications of various low-voltage network upgrade cost additions. It must also be noted that the three largest utilities in the ISO footprint have different ratios of low voltage equipment under ISO operational control versus under their own operational control as distribution facilities. This is a function of different system development approaches in the past, with the bulk of PG&E's low voltage transmission being under ISO operational control (at one end of the spectrum) and SCE having retained operational control of the bulk of its less than 200 kV facilities (the other end of the spectrum).

## Comparison of PTO TAC Rate Impacts

As discussed earlier, large scale renewable generation is seeking to connect to the VEA low voltage transmission system driving low voltage network upgrades that will have a direct impact on VEA ratepayers, yet the generation is contracting its energy to entities outside of the VEA service territory. The impact on VEA ratepayers through increases in their low-voltage TAC can be significant. To illustrate the rate impacts on VEA and similarly situated small load serving PTOs due to generator interconnection driven LV-NUs, examples of the rate impacts to the ISO PTOs is provided below.

A generator driving a \$5 million dollar low-voltage network upgrade will increase VEA’s low-voltage TAC from the current \$6.26/MWH rate to approximately \$7.44/MWH<sup>7</sup>, an approximate 18.75% increase. Similar upgrades on SCE, PG&E or SDGE have a much smaller effect on their low-voltage TAC, the worst case being approximately 1.59% for SCE. The following tables illustrates the impact on the low-voltage TAC for network upgrades up to \$25 million dollars, which is a reasonable expectation over the next few years to accommodate generation interconnections to VEAs low voltage system.

Estimated LV TAC Amount (\$/MWh and % increase) vs NW Upgrade Costs								
NU Upgrade Cost	VEA		PG&E		SCE		SDGE	
\$0	\$6.26	(0.00%)	\$7.32	(0.00%)	\$0.44	(0.00%)	\$14.35	(0.00%)
\$5,000,000	\$7.44	(18.75%)	\$7.33	(0.10%)	\$0.45	(1.59%)	\$14.38	(0.21%)
\$10,000,000	\$8.61	(37.50%)	\$7.33	(0.19%)	\$0.46	(3.18%)	\$14.41	(0.43%)
\$15,000,000	\$9.79	(56.25%)	\$7.34	(0.29%)	\$0.47	(4.77%)	\$14.44	(0.64%)
\$20,000,000	\$10.96	(75.00%)	\$7.35	(0.38%)	\$0.47	(6.36%)	\$14.47	(0.86%)
\$25,000,000	\$12.14	(93.75%)	\$7.36	(0.48%)	\$0.48	(7.95%)	\$14.50	(1.07%)

Some stakeholders have questioned what the overall total impact is to VEA TAC rates taking into account both the PTO specific low-voltage TAC plus the ISO high-voltage TAC rate. Taking the same scenarios as above, a generator driving a \$5 million dollar low-voltage network upgrade will increase VEA’s cumulative TAC from the current \$16.94/MWH rate to approximately \$18.12/MWH, an approximate 6.93% increase. As above, similar upgrades on SCE, PG&E or SDGE have little effect on their cumulative TAC, the worst

<sup>7</sup> The ISO estimated the impact of a \$5 million capital expenditure utilizing the existing spreadsheet model used to estimate the impact of transmission capital expenditures on the Regional (High Voltage) Transmission Access charge and employed in the 2015-2016 Transmission Plan. The assumptions are consistent with that model, and using a 10% ROE and 5% social discount rate. The impact over the first 10 years was levelized over the 10 year period, including the mid-year impact on rate base of the first year of operation. This produced an estimate of \$640,000 annual levelized revenue requirement, or 12.8% of the capital expenditure. This provides a reasonable approximation of the impact – which varies in each year due to depreciation and other impacts. \$640,000 divided by the VEA load of 544,970 MWh is \$1.1744/MWh.

case being approximately 0.12% for SDGE. The following tables and graphs illustrate the impact on the cumulative PTO specific TAC (PTO specific Low-Voltage + ISO High-Voltage TAC of \$10.6783<sup>8</sup>) for low-voltage network upgrades up to \$25 million dollars.

Estimated Total TAC (HV + LV) Increase (\$/MWh and % increase) vs Network Upgrade costs								
	VEA		PG&E		SCE		SDGE	
\$0	\$16.94	(0.00%)	\$18.00	(0.00%)	\$11.12	(0.00%)	\$25.03	(0.00%)
\$5,000,000	\$18.12	(6.93%)	\$18.01	(0.04%)	\$11.13	(0.06%)	\$25.06	(0.12%)
\$10,000,000	\$19.29	(13.86%)	\$18.01	(0.08%)	\$11.14	(0.13%)	\$25.09	(0.25%)
\$15,000,000	\$20.46	(20.80%)	\$18.02	(0.12%)	\$11.14	(0.19%)	\$25.12	(0.37%)
\$20,000,000	\$21.64	(27.73%)	\$18.03	(0.16%)	\$11.15	(0.25%)	\$25.15	(0.49%)
\$25,000,000	\$22.81	(34.66%)	\$18.03	(0.19%)	\$11.16	(0.32%)	\$25.18	(0.61%)

These tables illustrate that while the current rate structure align with FERC cost allocation principles for the large PTOs, it is clear that the current rate structure does not for VEA or any similarly situated small PTO.

## 8. Next steps

As a next step, the ISO will conduct a conference call to discuss this revised straw proposal on December 5<sup>th</sup>. The ISO then invites stakeholders to submit comments on the ISO's revised straw proposal. Comments are due December 16<sup>th</sup> and should be submitted to [InitiativeComments@caiso.com](mailto:InitiativeComments@caiso.com).

Following review and evaluation of the comments received, the ISO will consider potential revisions to its proposal and issue a draft final proposal in January, 2017.

<sup>8</sup> Based on the September 01, 2016 TAC Rates Table as of 9/22/2016  
[http://www.caiso.com/Documents/HighVoltageAccessChargeRatesEffective1Sep\\_2016.pdf](http://www.caiso.com/Documents/HighVoltageAccessChargeRatesEffective1Sep_2016.pdf)