Stakeholder Comments Template

Submitted by	Company	Date Submitted
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The Clean Coalition is a nonprofit organization whose mission is to accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise. The Clean Coalition drives policy innovation to remove barriers to procurement and interconnection of distributed energy resources ("DER")—such as local renewables, advanced inverters, demand response, and energy storage—and we establish market mechanisms that realize the full potential of integrating these solutions. The Clean Coalition also collaborates with utilities and municipalities to create near-term deployment opportunities that prove the technical and financial viability of local renewables and other DER.

The following organizations have reviewed and endorsed these comments submitted by the Clean Coalition:

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The following organizations and individual stakeholders are in general support of the Clean Coalition's TAC campaign and proposed approach. They received these comments in advance and had the opportunity to submit individual comments, but may not have reviewed these comments or specific recommendations in detail:

SolarCity

California Solar Energy Industries Association (Cal-SEIA)

Environmental Defense Fund

Sierra Club

Local Energy Aggregation Network

350 Bay Area

Enphase

Center for Biological Diversity

Center for Climate Protection

Local Clean Energy Alliance

Sustainable Silicon Valley

3fficient

BBL Solar Design & Consulting

California Consumers Alliance

Californians for Energy Choice

Carbon Free Mountain View

Carbon-Free Palo Alto

Berkeley Climate Action Committee

Commercial Solar Design

Community Choice Partners

Community Renewable Solutions LLC

Dynamic Grid Council

East Bay Clean Power Alliance

Energy and Policy Institute

Institute for Local Self-Reliance

Integrated Resources Network

Menlo Spark

Microgrid Media

Microgrid resources Coalition

Mirasol Development LLC

Nutter Consulting

Preserve Wild Santee

Pristine Sun

San Diego Energy District

Simply SolarSLO Clean Energy

Solar Land Partners

Sustaenable

Voltaic Capital Markets LLC

Review allocation of transmission access charge to load served by DER

The CAISO is proposing to review the rules for determining load subject to the transmission access charge (TAC) to reflect the effects of utility-side distributed generation, as proposed by Clean Coalition.

The CAISO is requesting stakeholders provide comments on this topic area. In particular, please comment on the three concerns the CAISO raised in the issue paper, and if possible offer examples to help illuminate these concerns.

1. Transmission investment is mainly driven by peak load conditions, which may not be reduced by adding distributed generation (DG).
2. New DG does not offset the cost of transmission that was previously approved and is currently in service.
3. Exempting some load from TAC charges would not decrease PTO revenue requirements, so some costs would be shifted to other customers.

Comments:

Summary

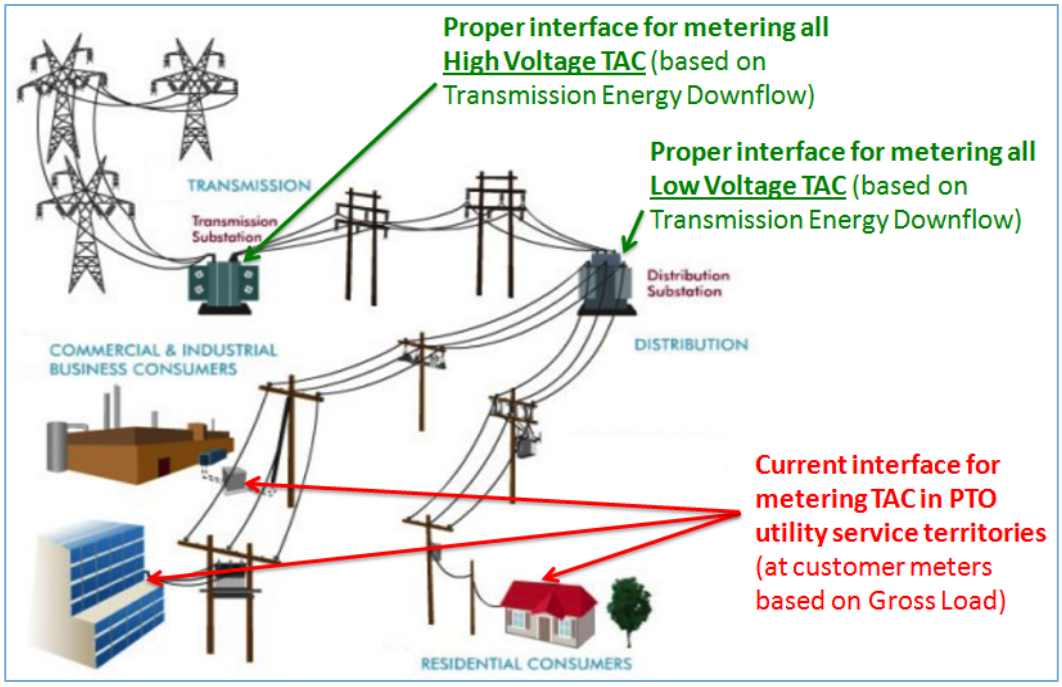
Transmission Access Charges (TAC) are per kWh fees for transmission usage assessed by the California Independent System Operator (CAISO) on Load Serving Entities (LSEs).[1] TAC pay for the CAISO-balanced transmission system, based on the Transmission Revenue Requirements (TRRs) associated with the amortization of historic transmission investments, return-on-equity for the transmission owners, and operations and maintenance of the transmission grid. These charges include a universal high voltage (HV) TAC for CAISO transmission facilities operating at or above 200 kV, and a low voltage (LV) TAC for transmission facilities operated by CAISO at

[1] A Load Serving Entity (LSE) is any entity that sells electricity to end-use customers. LSEs include utilities, Community Choice Energy (CCE) providers, Direct Access providers, and Energy Service Providers. Generally, customers served by a LSE are within a service territory of a Participating Transmission Owner (PTO) utility that operates the distribution system and delivers the energy to all LSE customers—the utility's and the other LSEs' customers, too. CAISO currently assesses TAC by PTO utility service territory, allocating TAC to each LSE based on pro-rata Gross Load data provided by the PTO utility managing the service territory.

voltages lower than 200 kV. The LV TAC rate is specific to each utility service territory based on the TRR associated with the LV transmission infrastructure serving each utility service territory.

For utilities that are not participating transmission owners (non-PTO utilities), TAC is based on the Transmission Energy Downflow (TED) measured at the transmission interface substations where energy is delivered from higher transmission voltages to lower distribution voltages; these substations mark the boundary between CAISO operations and utility distribution service areas.[2]

In PTO utility service territories, however, TAC are not measured at the transmission-distribution interface, but instead they are measured at customer meters based on Gross Load. The graphic below shows the TAC metering points for non-PTO utilities, which the Clean Coalition is proposing for all LSEs, and the market distorting metering points (customer meters) that are currently used in PTO utility service territories.



The market distorting approach to metering TAC at customer meters in PTO utility service territories causes several problems, including the following:

- Assessing TAC regardless of whether the energy is locally sourced or delivered through transmission, effectively forces Wholesale Distributed Generation (WDG) and net energy metering (NEM) exports to subsidize the transmission system through charges on locally sourced energy. This artificially makes the price of transmission-dependent energy appear cheaper and creates a major market distortion that results in more

[2] Technically, CAISO requires utilities to operate as a metered subsystem (MSS) in order to be assessed TAC based on TED. All non-PTO utilities in California operate as MSSs, and to the Clean Coalition's knowledge, no PTO utilities operate as MSSs. As such, non-PTO utilities and MMSs are synonymous.

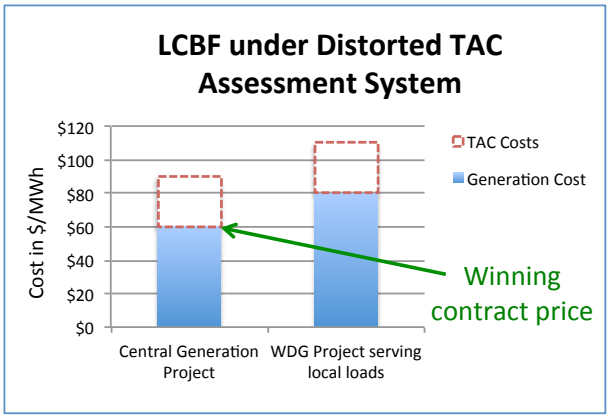
transmission-dependent energy being contracted. Furthermore, this approach exacerbates a cycle that drives transmission usage and the need for additional transmission capacity – the costs for which fall on unknowing ratepayers through increased Transmission Revenue Requirements (TRR).

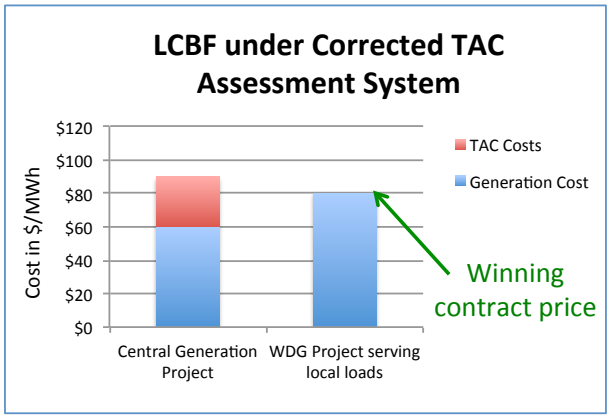
- LSEs utilizing WDG and NEM export (collectively referred to as local DG) to serve their customers are not credited with the value of reduced use of the transmission system.
- The current approach to TAC assessment results in inconsistent and disproportionate allocation of transmission costs between ratepayers of PTO and non-PTO service areas. Ratepayers in non-PTO utility service areas only pay TAC on the transmission-dependent portion of their total energy use, as all LSEs should, but the inconsistency effectively gives non-PTO utilities a lower transmission cost assessment than what is assessed on PTO utilities and on other LSE operations in the PTO utility service territories.

The Clean Coalition's proposal is to consistently assess TAC across all utility service territories, such that all ratepayers receive the same TAC treatment as the non-PTO utility service territories receive today: TAC should be assessed on Transmission Energy Downflow (TED) measured at the transmission-to-distribution substations for all LSEs, instead of using the market distorting Gross Load (measured at customer meters) as a basis for LSEs operating in PTO utility service territories.

The proposed solution would have a number of positive impacts, including increased fairness, transparency, and consistency. First, accurate valuation of WDG and NEM exports are necessary to fairly compare renewable procurement options, develop Distribution Resources Plans (DRPs) and appropriately avoid and defer transmission and distribution investments. Current valuation practices in PTO utility service territories, such as the Least Cost Best Fit (LCBF) methodology, ignore costs associated with existing transmission because CAISO assesses TAC on all energy that crosses the customer meter, whether the energy is transmission-dependent or not. However, the actual cost of using the transmission system is significant and the value of avoiding transmission usage needs to be considered when valuing WDG and NEM export.

The TAC rate is approximately $0.03/kWh when levelized over 20 years to match a typical renewables contract. Correct valuation requires that TAC are only applied to energy that is delivered through the transmission system. Correcting this distortion will support WDG and NEM investment as a cost-effective alternative to transmission-dependent generation that drives a vicious cycle that requires ever more transmission investment.





Second, changing the TAC basis to TED would create accurate alignment of TAC assessments with consumption of transmission-dependent energy, reflecting the "usage pays" principle.[3] This approach better conforms to FERC Order 1000 cost allocation principles by ensuring that parties benefitting from transmission usage incur the charges.[4] This approach also removes the existing market distortion that undervalues WDG and NEM exports, by ignoring the value of avoided transmission usage; and driving inappropriate demand for transmission-dependent generation, which subsequently drives inappropriate investments in transmission. Investments in new transmission infrastructure increases TRR and TAC. Removing TAC-related market distortions will result in proper market-based additions of WDG and NEM export resulting in lower TRR and TAC for all ratepayers over time.

Third, correcting the TAC assessment process will establish consistency between non-PTO and PTO utility service territory practices and create a bright-line distinction for cost responsibility between CAISO transmission facilities and Distribution System Operator (DSO) facilities, providing a foundation for future DSO management of local grid resources with a clean interface to CAISO.

Below, we discuss the current system and our proposal in detail, and we address each of CAISO's concerns in turn.

I. The Current TAC System

As noted above, TAC are per kWh fees for transmission usage assessed by the California Independent System Operator (CAISO) on Load Serving Entities (LSEs) on a per MWh basis. TAC pay for the CAISO-balanced transmission system, based on the Transmission Revenue Requirements (TRRs) associated with the amortization of historic transmission investments,

[3] The current TAC assessment practice in PTO utility service territories is that transmission payments are based on energy consumption regardless of transmission usage. Currently, more than 98% of energy within CAISO is sourced through the transmission system, and only energy that uses the transmission grid and only that energy should incur TAC. The proposed "usage pays" approach recoups 100% of transmission costs from energy that actually uses the transmission grid.

[4] Order No. 1000, *Transmission Planning and Cost Allocation*, 136 FERC ¶ 61,051, at p. 585 (2011).

return-on-equity for the transmission owners, and operations and maintenance of the transmission grid.

There are two distinct TAC: a universal high voltage (HV) TAC to recover costs of CAISO's high voltage transmission facilities, which operate at or above 200 kV, and a utility service territory-specific low voltage (LV) TAC to recover costs of the LV transmission facilities, with voltages lower than 200 kV, that CAISO operates within each utility service territory. Currently, the high voltage TAC is 1.05¢/kWh, and the low voltage TAC varies between utilities and is as high as 1.4¢/kWh. Both TAC rates have been rising fast and are projected to rise much further, adding about 3¢/kWh to the levelized cost of energy over a 20-year contract[5] and representing more than 30% of the wholesale cost of energy in California.

CAISO assesses the TAC in different ways, depending on whether a utility is a Participating Transmission Owner (PTO) or not. For example, all non-PTO utilities are assessed TAC based on Transmission Energy Downflow (TED), metered at the point where energy is down-converted from the transmission grid to the non-PTO utility's distribution grid. CAISO meters at all applicable substations – meaning non-PTO utilities appropriately pay TAC on each kWh of energy delivered through CAISO's transmission system.

In contrast, PTO utilities, and LSE operations in PTO utility service territories, are assessed TAC based on Gross Load, which is measured at customer meters. Gross Load is based on customer energy downflow measured at the customer meters, and includes energy that was generated on the distribution grid for local use; and importantly, Gross Load is not reversed by NEM exports. As a result, PTO utilities and their client LSEs pay TAC on every kWh delivered at the customer level, even if that energy did not use the transmission system.

Metering TAC at customer meters creates a major market distortion that disadvantages distributed generation (DG). When all energy pays TAC, DG is not recognized for avoiding transmission use, denying fair market competition, and denying communities of the many benefits of local energy development, including the economic, environmental, and resilience benefits.[6] This market distortion has led the Clean Coalition to propose a straightforward solution.

II. The Clean Coalition Proposal

To align costs and benefits, TAC should only apply to energy that is delivered through the transmission system, in the same manner as is being done today for non-PTO utilities. Therefore, the Clean Coalition proposes to assess TAC on all LSEs based on TED measured at the

[5] See CAISO Memorandum from Keith Casey, Vice President of Market & Infrastructure Development, *Briefing on Long-term Forecast of Transmission Access Charge* (October 25, 2012), available at http://www.caiso.com/Documents/BriefingLong-TermForecastTransmissionAccessCharge-Memo-Nov2012.pdf.

[6] See, e.g., *The Potential Benefits of Distributed Generation and Rate-Related Issues That May Impede Their Expansion: a study pursuant to Section 1817 of the Energy Policy Act of 2005*, U.S. Department of Energy (February 2007), available at https://www.ferc.gov/legal/fed-sta/exp-study.pdf.

transmission-to-distribution substations.[7] This approach is already in practice for all non-PTO utilities, all of which operate as a metered subsystem (MSS), and the metering infrastructure is already in place at all substations.

The treatment of all utilities in this manner would eliminate the massive TAC market distortion and align TAC treatment with FERC principles across all utility service territories, whether PTO or non-PTO. Importantly, the unified approach will also properly value wholesale distributed generation (WDG) and NEM exports that serve local loads by properly reflecting the value of avoiding costs associated with transmission.

Under the Clean Coalition's proposed approach, CAISO will always assess TAC at its interface with distribution grids where energy is delivered from CAISO transmission voltages to distribution utilities' lower distribution voltages.[8] Any energy generated by distributed energy resources (DER) and consumed on the same distribution grid would not be subject to the TAC. If local generation were to ever backfeed to the transmission grid, which would only happen if there is even more local generation being supplied than total energy consumption in an entire transmission-to-distribution substation grid area, then that energy would incur TAC when it becomes TED at a neighboring substation.

The Clean Coalition proposal would not change existing Transmission Revenue Requirements (TRRs) at all and would only change TAC rates in PTO utility service territories by adjusting the denominators in the TAC rate formulas. To establish TAC rates in PTO utility service territories, CAISO divides the PTO utility service territory-specific TRR by the total Gross Load across the service territory, which is the total number of kWh of energy delivered to customers and is not netted by NEM exports. While changing the denominator from Gross Load to TED would decrease the denominator in the TAC rate calculation resulting in a marginally increased TAC rate, the TRR remains the exactly the same and the aggregated TAC payments would remain the exactly the same; equaling the unchanged TRR. The only difference is that there is a clear market signal in the relative value of WDG and NEM export vs transmission-dependent generation. Over time, the result of the entire CAISO market operating in a manner that is fair, transparent, and consistent is that there will be a market-based boost to local renewables and other DER that will reduce the need for future transmission investments, which yields lower TRRs, TAC payments, TAC rates, and ratepayer bills.

[7] The CAISO Issue Paper mentioned that the Clean Coalition is advocating assessing TAC based on net load. Because the term "net load" has different meanings in other proceedings, we use the term Transmission Energy Downflow here to be as precise as possible. Importantly, the Clean Coalition's proposal ensures that any distribution-sourced energy that backfeeds to the transmission system will be assessed TAC when it becomes TED at a neighboring substation.

[8] The TED approach can easily be extended to assess Super High Voltage (SHV) TAC associated with CAISO expansion by metering energy flows from the separately proposed SHV transmission grid to CAISO's existing HV and LV transmission grids.

Valuation of Distributed Generation and Procurement Impacts

The purpose and most important result of the Clean Coalition proposal is that an LSE would not incur TAC on energy procured from WDG and NEM exports that serve local loads, thereby aligning and recovering all transmission costs according to transmission use. Reflecting full value of local generation, including avoided TAC, ensures that all LSE will have accurate and transparent market signals when making energy procurement decisions.

Utilities evaluate the relative value of energy projects through the Least Cost Best Fit (LCBF) methodology. However, when PTO utilities like PG&E, SCE, and SDG&E apply LCBF, they only compare the relative price of energy bids, adjusted by system losses and future transmission upgrades, all of which are borne by ratepayers that are blind to these substantial costs with multi-decade obligations.[9] As a result, LSEs in PTO utility service territories currently ignore TAC in their LCBF methodologies, because CAISO assesses TAC on Gross Load in the PTO utility service territories, regardless of whether energy is delivered through the transmission system or not.

The Clean Coalition's proposal will resolve this inappropriate and easily resolved market distortion by applying equal TAC treatment to all utilities based on the current TAC treatment for non-PTO utilities. The example depicted in the Least Cost Best Fit (LCBF) charts in the Summary section illustrates how a WDG project may have higher generation costs, but lower total delivered cost when the avoided use of the transmission system is properly considered.

Example of Shifting the TAC basis to TED from Gross Load in PTO utility service territories

To illustrate how the proposed change will impact LSEs in PTO utility service territories, we provide the following examples. In this chart, we modeled a single PTO utility service territory that has customers served by three LSEs: the PTO investor-owned utility (IOU), a Community Choice Aggregator (CCA), and an Energy Service Provider (ESP).

2016 Scenario	IOU	CCA	ESP	Total	*Notes*
LSE Gross Load (GWh)	70	30	10	110	*Current Gross Load TAC basis*
% of Gross Load	64%	27%	9%	100%	*Share of total TAC basis (now)*
TRR (in thousands)	NA	NA	NA	$1,650	*Total Transmission Revenue Required*
TAC Rate (now) per MWh	$15.00	$15.00	$15.00	$15.00	*TRR/Gross Load*
TAC payments (in thousands)	$1,050	$450	$150	$1,650	*TAC Rate x Gross Load*
WDG (GWh)	1.4	0.6	0	2	*2% is the highest percentage of wholesale DG plus NEM exports in any PTO utility*

[9] It is worth noting that upgrades associated with WDG are always paid by the project developers, unlike transmission upgrades that are associated with transmission-interconnected generation. The transmission upgrades are always paid by ratepayers, further distorting the true relative value of WDG versus central generation to ratepayers.

2016 Scenario	IOU	CCA	ESP	Total	*Notes*
					service territory today
TED (GWh)	68.6	29.4	10	108	*Proposed TAC basis*
% of TED	64%	27%	9%	100%	*Share of total TAC basis (proposed)*
TRR (in thousands)	NA	NA	NA	$1,650	*TRR is unchanged (a change in TAC basis does not affect TRR)*
New TAC Rate (per MWh)	$15.28	$15.28	$15.28	$15.28	*TRR/TED*
New TAC payments (in thousands)	$1,048	$449	$153	$1,650	*New TAC Rate x TED*
% of LSE Gross Load subject to TAC	98%	98%	100%	98%	

Immediate Impacts of the Clean Coalition Proposal

This example highlights three immediate results from the Clean Coalition proposal. First, the change in TAC basis does not affect the TRR. The Clean Coalition proposal causes no increase in the total TAC revenue recovered from all LSEs. Regardless of how usage is measured, the TAC rate will always result in recovery of the entire TRR from LSEs. The initial total aggregated TAC would still equal the same current TRR. As always, TRRs are guaranteed and will continue to be fully recovered; the difference over time, however, is that WDG and NEM exports grow faster by eliminating the market distortions that currently disadvantage them and less transmission investment leads to lower TRR and TAC for all ratepayers over time.

Importantly, changing how TAC are assessed would not cause existing transmission facilities to be underutilized. WDG and NEM exports together currently provide less than 2% of the energy provided by utilities. Increased reliance on local generation will serve load growth, but local generation is unlikely to grow fast enough to go beyond serving load growth, resulting in the continued need for central generation and transmission infrastructure at existing levels; and even higher levels but growing at a slower pace. Since total demand for electricity continues to increase, the Clean Coalition's analyses all show WDG and NEM exports growing at a rate that never exceeds CAISO load growth, leaving transmission-dependent central generation to provide for the current load and repowering requirements, and for existing transmission to continue to be robustly utilized. There is no plausible local generation growth scenario in which the change in TAC measurement would lead to stranded transmission assets or costs.

Second, the TAC rate increases, but barely. By changing the TAC basis to TED, the denominator in the TAC rate formula would decrease to the extent that there is existing WDG and NEM exports, and the TAC rate would increase accordingly, since the per kWh TAC rate is set by dividing the TRR by total kWh of usage. If usage were consistently measured via TED as the Clean Coalition proposes, the TRR numerator would remain unchanged, but initially, would be

spread across a slightly smaller (less than 2%[10]) denominator, so that the TAC rate would increase by a similarly slight amount (less than 2%). This can be seen in the example by comparing the original TAC rate of $15.00/MWh to the new TAC rate of $15.28/MWh. Given that most LSEs are meeting negligible levels of their Gross Loads from WDG and NEM exports, actual TAC rates would increase by significantly less than 2%. For example, PG&E has robust ReMAT and NEM participation, but is projecting to meet only 1.8% of its total electric load with WDG and NEM export by yearend-2016.

The change in total TAC payments between PTO utilities would be no greater than the current difference between their shares of loads served by WDG and NEM exports, which the Clean Coalition expects to be a fraction of a percent. Some LSEs will pay negligibly more or less in TAC, due to differences in portfolios of WDG and NEM exports.[11] This can be seen by comparing current TAC payments to the newly proposed TAC payments. In our example, the LSEs with WDG resources (i.e., the IOU and the CCA) each saw a decrease in payments of less than $2,000 or 0.8%, and the ESP saw an increase in total payments of $3,000 or 2%. Any adjustment, no matter how negligible, simply corrects current inaccuracies in accounting for each utility's contribution to transmission costs. In the future, all utilities will have clear market signals to procure energy based on lowest total cost of energy plus delivery – opting to either procure transmission-dependent generation and pay TAC, or to pursue WDG and avoid TAC.

Third, the TAC allocation between ratepayers within the same LSE does not change at all. In passing the TAC payment through to ratepayers, LSEs divide their total TAC liability by the LSE Gross Load to produce a transmission cost rate, which is then charged to customers based on an LSE's self-determined basis. Unless a LSE decides to allocate transmission costs differently, like providing credit for customers that participate in local renewables offerings that avoid transmission costs, then initially all of the LSE's customers will experience exact same transmission costs. It is likely that as LSEs expand procurement of local renewables, then

[10] According to Distribution Resources Planning filings, the highest percentage of Gross Load met by WDG plus NEM exports in a PTO utility service area is less than a 2% in California, so the maximum projected change in TAC rate would be less than 2%. Importantly, TRRs, which equal aggregate TAC payments, do not change at all.

[11] The major investor-owned utilities have published information citing the following contracted ReMAT capacity as of March 1, 2016:

- Pacific Gas & Electric: 41.331 MW (http://www.pge.com/en/b2b/energysupply/wholesaleelectricsuppliersolicitation/ReMAT/index.page)
- Southern California Edison: 27.851 MW (https://sceremat.accionpower.com/ReMAT/doccheck.asp?doc_link=ReMAT/docs/FIT/2013/documents/i.%20Capacity%20and%20Price%20Calculations/ReMAT%20Capacity%20Calculations%20Program%20Period%2015.pdf)
- San Diego Gas & Electric: 14.95 MW (http://www.sdge.com/regulatory-filing/654/feed-tariffs-small-renewable-generation)

Additionally, they have submitted the following progress towards meeting the NEM program limits of 5% of aggregated customer load:

- PG&E: 1,952.56 MW (http://www.pge.com/en/mybusiness/save/solar/nemtracking/index.page)
- SCE: 1,334.9 MW (SCE Advice Letter 3391-E)
- SDG&E: 547.4 MW (SDG&E Advice Letter 2879-E)

customers participating in local renewables programs will benefit from the value of those local renewables in avoiding TAC.

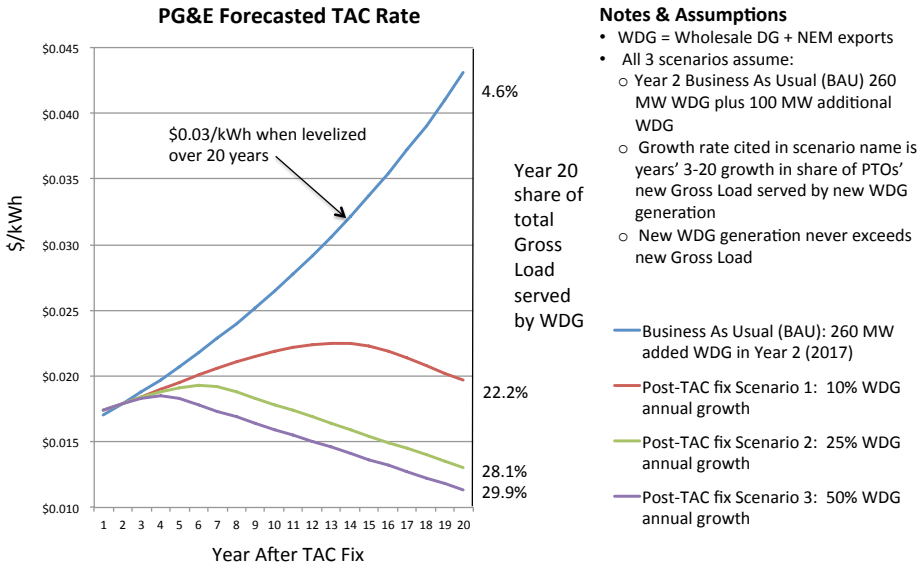
Long Term Impacts of the Clean Coalition Proposal

The next example uses projected 10% annual growth in local renewable energy generation to highlight potential impacts of the Clean Coalition proposal after ten years. Forward-looking impacts are discussed in more detail below. Note that the TRR growth is reduced due to WDG and NEM export growth under the TED approach, resulting in lower total TAC payments, allocated in proportion to each LSE's transmission use and local generation procurement. Importantly, almost all LSEs experience significant savings due to the substantially reduced TRR.

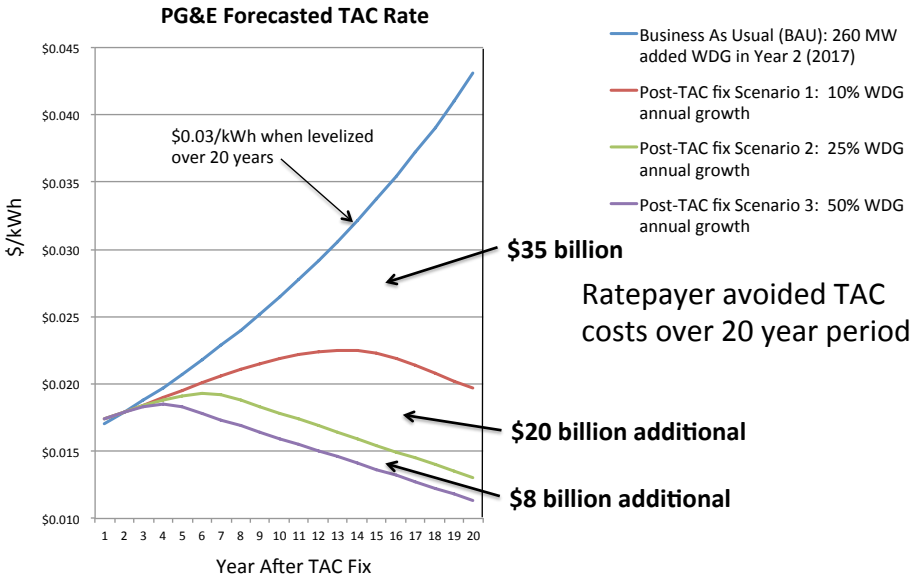
2026 Scenario	IOU	CCA	ESP	Total	*Notes*
LSE Gross Load (GWh)	70	30	10	110	*Current Gross Load TAC basis*
% of Gross Load	64%	27%	9%	100%	*Share of total TAC (now)*
TRR (in thousands)	NA	NA	NA	$2,640	*Total Transmission Revenue Required*
TAC Rate per MWh (2026 projected)	$24.00	$24.00	$24.00	$24.00	*TRR/Gross Load; reflects CAISO's projected 7% annual TAC increase*
TAC payments (in thousands)	$1,680	$720	$240	$2,640	*TAC Rate x Gross Load*
WDG (GWh)	4	6	0	10	*9% energy sourced below T-D interface (10% DG growth rate)*
TED (GWh)	66	24	10	100	*Proposed TAC basis*
% of TED	66%	24%	10%	100%	*Share of total TAC (proposed)*
TRR (in thousands)	NA	NA	NA	$2,420	*Reduced (due to deferred need for new capacity)*
TED-based TAC Rate 2026	$24.20	$24.20	$24.20	$24.20	*TRR/TED; TRR is reduced due to DG meeting share of load growth*
New TAC payments (in thousands)	$1,597	$581	$242	$2,420	*New TAC Rate x TED*
% LSE Gross Load subject to TAC	94%	80%	100%	91%	

The key long-term impact of the Clean Coalition proposal is that both the TRR and the TAC rate would decline significantly over time. Changing the TAC assessment point eliminates the TAC market distortion that currently undervalues WDG and NEM exports in PTO utility service territories and results in increased deployment of local renewables. In addition, more WDG and NEM exports slow the need for additional investments in transmission infrastructure and result in substantial avoided transmission costs for all ratepayers over time; significantly slowing the alarming growth in TAC rates and even shrinking them. Clean Coalition analyses show that California ratepayers will save at least $35 billion in avoided transmission costs over 20 years, which is illustrated in the TAC curves below. The first chart below shows the large reductions in

TAC rates achieved over 20 years by eliminating the TAC market distortion, thereby increasing use of WDG and NEM exports.



In the second chart, the area between the blue curve and the other curves represents avoided ratepayer transmission costs over the 20-year period.



Other Impacts

In addition to the ratepayer and procurement benefits, the Clean Coalition proposal would align TAC assessment with FERC Order 1000.[12] FERC Order 1000 requires all regional transmission operators to use a principles-based approach to allocating transmission costs, ensuring that costs are roughly commensurate with estimated benefits, and that costs are not allocated

[12] Order No. 1000, *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, 136 F.E.R.C. ¶ 61,051, at P 585 (2011).

involuntarily to ratepayers who do not benefit. Under these principles, it is reasonable and appropriate for shared transmission costs to be assessed in proportion to measured usage of the transmission system (i.e., the "usage pays" principle). This is especially true since the existing CAISO transmission grid and associated TRRs are anticipated to continue to serve CAISO's existing Gross Load; the growth in WDG and NEM exports is anticipated to only offset load growth over the coming 20 years, never reducing the existing CAISO Gross Load.

The Clean Coalition's proposal would align CAISO's TAC treatment with FERC Order 1000 principles by ensuring that only actual usage of the transmission system is assessed TAC. FERC Order 1000 principles are already appropriately applied in non-PTO utility service territories, but the current method of assessing TAC for in PTO utility service territories, based on Gross Load measured at the customer meter, improperly creates a TAC liability for energy produced by WDG and NEM exports that do not use the transmission system.

III. Putting the Proposal into Action: Accounting Changes and the Transmission Cost Correction

Because multiple LSEs can function beneath the same distribution substation and TED measurement, some accounting adjustments will be needed in order to ensure that each LSE is properly credited for its WDG and NEM exports contribution; paying only true pro-rata shares of transmission usage. The Clean Coalition proposes the following adjustments to manage these issues.

First, the Clean Coalition suggests changing CAISO TAC billing from the LSE to the distribution provider. CAISO currently collects TAC from the individual LSEs rather than the PTO utility distribution provider that manages billing and receives payments from all customers of LSEs connected to its distribution system. Because total TAC assessment for all LSEs in a utility distribution service area will equal the measured TED of that distribution service area, and the funds are collected from all customers by the distribution utility, the Clean Coalition suggests changing CAISO TAC billing from the LSE to the distribution utility**.** The proposed TED TAC assessment process will establish consistency between non-PTO and PTO utility area practices. It also creates a bright-line distinction for cost responsibility between CAISO transmission facilities and distribution facilities – removing CAISO responsibility for accounting for individual LSE shares of total TAC billing. This would also be consistent with, and provide a foundation for, future Distribution System Operator (DSO) management of local grid resources and provide a simple and clean interface for coordination with CAISO.

Second, the distribution provider would need to properly allocate transmission costs to each LSE within their service territory in proportion to the transmission usage of LSE energy portfolios. To do this, the Clean Coalition recommends applying a Transmission Cost Correction (TCC), an accounting adjustment that would enable distribution providers to reimburse unwarranted transmission charges to an LSE or customer class that procures WDG and/or NEM exports. The TCC for each LSE would equal that LSE's relative metered Gross Load minus WDG

and NEM exports plus distribution losses. This change is straightforward to implement because distribution utilities already have the metered data for all the components, including the TED, which is already metered at all transmission-to-distribution substations.

For example, as illustrated in the earlier 2026 Scenario table, we see 110 GWh of Gross Load, with the IOU customers consuming 64% of the Gross Load and the CCA customers consuming 27%. However, we also see that that the IOU supplied 6% (4 GWh) of its Gross Load through metered WDG (including NEM exports), whereas the CCA supplied 20% (6 GWh) of its Gross Load through WDG. Dividing the TED-based TAC between these two LSEs, we see that the IOU is responsible for 66% of the total TAC, and the CCA 24%. Each LSE would be debited or credited by the distribution utility for the difference between the proportionate customer-metered consumption compared with the share of TED after adjusting for WDG credits. In this instance, the IOU would be debited a 2% surcharge (64–66%) and the CCA credited a 3% rebate (24–27%). At each LSEs option, TCCs can be passed to customers that participate in local renewables programs, etc.

IV. Addressing CAISO Concerns

The CAISO Issue Paper highlighted three central concerns, which we address in turn below.

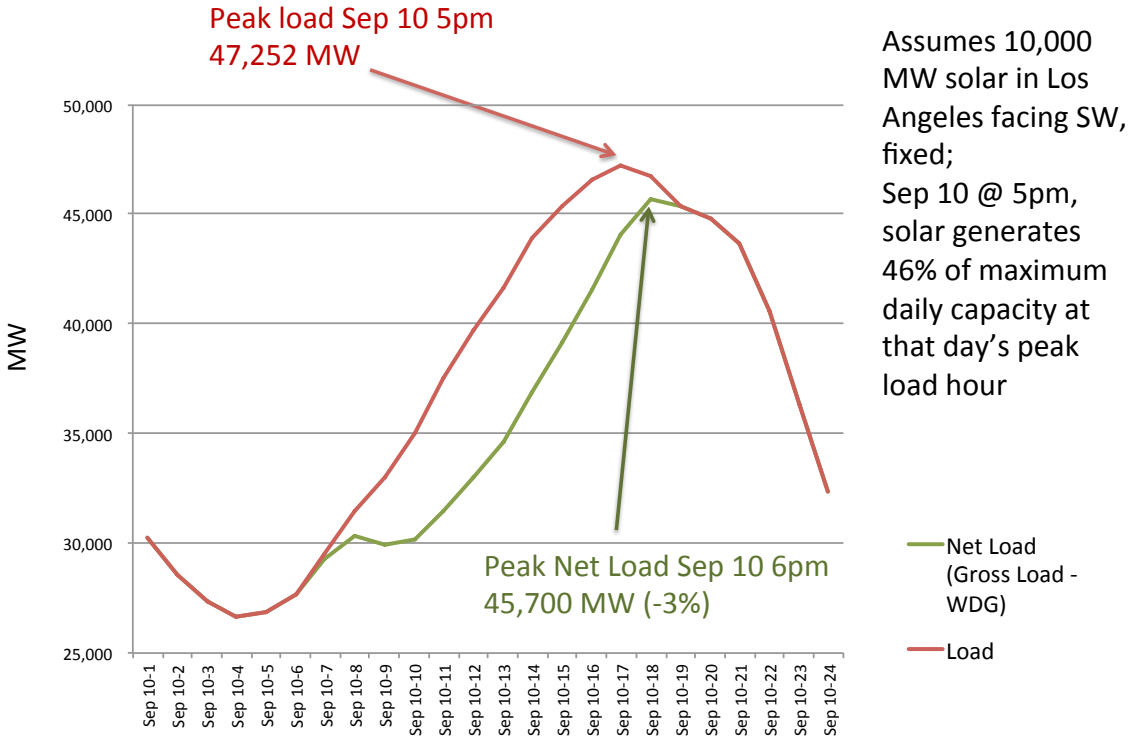
A. CAISO notes that additional DER may not offset peak load conditions, but distributed solar resources typically contribute to peak load reductions into the late evening.

The TAC rates are based on total energy consumption, not peak usage, and TAC is not intended to penalize peak usage. Congestion charges, time-of-use (TOU) rates, and other mechanisms serve the purpose of disincentivizing peak usage, and are the appropriate tools to meet this goal. TAC take no account whatsoever of peak demand, and as such, it is appropriate to differentiate between energy that is delivered through transmission from energy that is not.

Regardless, additional local renewables do reduce peak usage of the transmission grid. In the case of local solar, more than 30% of the solar nameplate power production contributes to reducing peak transmission usage, which occurs during the later part of daylight hours. Increasing deployment of local solar therefore slows or avoids the need for additional transmission capacity investment. For example, CAISO's peak load for 2015 was September 10 at 4:53pm, and though not operating at peak capacity, local solar resources were producing energy to help meet the peak Transmission Energy Downflow, or TED. For example, a typical 1 MW_{DC} west-facing rooftop solar installation in Burbank, California would still produce 354 kW_{AC}[13] at 5pm on a typical September 10th day. Peak loads typically occur during the months of July and August when solar generation would be even greater in the late evening, but WDG and NEM systems substantially reduce peak TED at all seasons in which peak TED might occur in

[13] Based on NREL System Advisor Model, standard PV Watts configuration, TMY 3 solar irradiance 8760 hourly data. Output varies by date, location, and orientation.

California. The chart below displays the relationship between the solar generation profile and the 2015 peak net load.



Hourly Load on 2015 Peak Day – September 10

As California develops a new Integrated Resources Plan, TOU customer billing, and Integrated Distributed Energy Resources (DER) programs, the state will increasingly realize opportunities to align loads with the generation profiles of solar resources. These incentives are likely to highlight west facing solar as a particularly useful tool to address peak load conditions with distributed resources. West facing solar will typically generate less electricity overall, but will generate more energy later in the day that maximizes solar production at annual peak load periods. The new TOU rates applying to NEM customers will further incentivize west-facing solar installations, as will Time-of-Delivery payment schedules for solar procurement contracts, further incentivizing local renewables to reduce peak TED.

Also, it is worth noting that the current TAC structure does not include any demand-related components associated with peak load. Rather, TAC are entirely based on per kWh fees for transmission usage, regardless of whether the usage occurs during peak demand or not. For example, two separate utilities with very different Gross Load profiles will pay the same amount of total TAC, even if one uses all its energy during off-peak hours. While changing the TAC assessment point alone does not incentivize utilities to modify their customers' load profiles, it does reduce peak TED. Of course, removing the existing TAC distortion on local renewables will make them more competitive in procurement decisions, and as local renewables deployments proliferate, there will be further reduction of peak TED.

B. Local generation does not offset the cost of transmission that is already in service, but it does reduce future transmission requirements, yielding lower TRR and TAC rates for ratepayers.

The most significant economic benefit of the proposed TAC solution is in the long-term savings for ratepayers that will be achieved through reduced transmission investment. Increased deployment of DER reduces required investments in new transmission, which reduces the TRR and slows the rate of increase of the TAC rate and possibly even yields TAC rate reductions. The TAC rate is currently projected to climb significantly over the next 20 years, meaning that the projected combined HV and LV TAC rate levelized over 20 years is nearly $0.03/kWh in PG&E territory. As noted above, additional DG reduces peak transmission usage and postpones the need for additional transmission investment. If the TAC proposal is enacted, ratepayers will save billions of dollars over the next 20 years in avoided or postponed transmission costs. (Note: this future transmission savings are covered in depth in the "*Long Term Impacts of the Clean Coalition Proposal*" section above.) If local generation is no longer subject to TAC, it will be a more cost-effective option for contributing to distribution system upgrade alternatives evaluated under Distribution Resource Plans, resulting in additional ratepayer savings because developers of WDG projects bear 100% of the distribution grid upgrades associated with WDG projects. In other words, WDG projects provide free distribution grid upgrades to ratepayers.

In addition to the long-term savings, ratepayers will benefit from local generation procurement in the form of increased local resilience, local economic investment, and reduced land use impacts. The benefits of additional appropriate local generation are significant in economic, social, and environmental analyses.[14]

It is also worth noting that a change in how TAC is assessed would not result in stranded transmission costs for transmission owners, because CAISO guarantees that transmission investments are recouped at a defined return-on-equity through the TRR. The TAC rate is set by dividing the TRR by total kWh of usage. If usage were consistently measured via Transmission Energy Downflow as the Clean Coalition proposes, the TRR numerator would remain unchanged, and the total aggregated TAC would still equal the TRR, which does not change. The TRR would therefore be fully recovered. There is no scenario in which the change in TAC measurement would lead to stranded transmission investments.

Also, changing how TAC is assessed would not cause existing transmission facilities to be abandoned or underutilized. WDG and NEM exports together currently provide less than 2% of CAISO's aggregated Gross Load. Increased reliance on local generation will reduce the rate at which new transmission investments are needed, but because total demand for electricity continues to increase, the growth in WDG and NEM exports are not expected to exceed load

[14] See, e.g., *The Potential Benefits of Distributed Generation and Rate-Related Issues That May Impede Their Expansion: a study pursuant to Section 1817 of the Energy Policy Act of 2005*, U.S. Department of Energy (February 2007), available at https://www.ferc.gov/legal/fed-sta/exp-study.pdf.

growth—leaving transmission-dependent central generation to provide for current load and repowering requirements with the existing transmission continuing to be robustly utilized. There is no plausible local generation growth scenario in which the change in TAC measurement would lead to existing transmission facilities not being utilized.

C. Exempting local generation from TAC charges would increase the TAC rate but not the TRR, which equals the total of TAC payments, and would correct an existing cost shift.

The CAISO Issue Paper highlights a concern that an increased TAC rate would result in a cost shift to LSEs that do not have significant local generation resources. Initially, basing the TAC on TED might result in a negligible adjustment in TAC payments between LSEs to the extent that they have different proportions of local generation resources, but importantly, the motivation for assessing TAC based on TED is to correct a *major, existing cost shift* from transmission-dependent energy to local generation. Currently, local generation incurs a cost to support a transmission system that it does not use. By changing the TAC assessment basis to TED, CAISO could ensure that transmission-dependent energy properly bears the full cost of the transmission grid.

TAC Rate Adjustments under the Clean Coalition Proposal

Any adjustment in TAC payments between LSEs will be negligible. Currently the major utility LSEs each have a roughly comparable share of their customer load served by local generation, and, as such, converting to a TED-based TAC will not change their relative share of total TAC payments. Because this local generation share is approximately 1.8% of annual load, an LSE with zero DG resources would not see a change in payments greater than 1.8%. Going forward, each LSE will select the portfolio of resources that provide the best value to their customers after considering the changes in TAC associated with local generation and associated DER. An LSE relying more on transmission to realize net ratepayer benefits will only contribute proportionately to recouping the cost of those transmission facilities.

The TAC rate is comprised of two parts: a high voltage (HV) TAC, as well as a low voltage (LV) TAC. Currently, the HV TAC is 1.05¢ per kWh and assessed on a “postage-stamp” basis where all LSEs pay the HV TAC rate. The LV TAC is as high as 1.4¢/kWh and varies between LSEs on a “license plate” basis, depending on the total non-depreciated LV TRR serving a utility service territory.

To illustrate how the proposal would impact the HV TAC, we see below that the total TAC payments (i.e., the TRR) remain exactly the same before and after the change in the TAC assessment point. Because local generation meets approximately 1.8% of load, the difference in the load basis for the TAC would be a reduction of 1.8%, or 3,870 GWh. This would result in an increase in the TAC rate of $.00019/kWh, or 1.8%. The total HV TAC payments would remain unchanged at $2.22 billion.

Before TAC Fix	$2.22 billion (Total 2016 PTO filings)	**211,341 GWh** (Gross Load)	**$0.01049/kWh** (HV TAC rate = CAISO HV TRR ÷ Gross Load)	$2.22 billion (HV TAC Rate × Gross Load)
After TAC Fix	**Same as above**	**207,471 GWh** (Transmission Energy Downflow) = 3,870 GWh less than Gross Load due to local WDG (1.8%)	**$0.01068/kWh** ($0.00019/kWh increase, 1.8%)	**Same as above** (New HV TAC Rate × Transmission Energy Downflow) Transmission usage now pays 100.0% of TRR, not just 98.2%

NOTE: To calculate the full TAC rate, LV TAC must also be considered. LV TAC is specific to each service territory. The total LV TAC costs to ratepayers, and within each service territory, also do not change after the TAC fix.

To the extent that PTOs serve different shares of their Gross Load with WDG and NEM exports (which is currently minor for all PTOs – 1.8% for PG&E in 2016), fixing the TAC will result in negligible cost shifts between PTOs.

To illustrate how LV TAC might adjust between LSEs, consider the example from Section II. In order to properly account for avoided transmission costs between LSEs in the same distribution utility service territory, the distribution utility will meter the consumption of each LSE and reimburse for avoided TAC costs by means of the Transmission Cost Correction. Each LSE would be debited or credited by the distribution utility to account for their proportionate transmission costs based on customer-metered consumption adjusted for local generation credits. This accounting would result in actual charges to each LSE according to its proportional TAC liability. For an example of how this would apply in practice, see the subsection titled "*Putting the Proposal into Action: Accounting Changes, and the Transmission Cost Correction*" in Section II above.

Any TAC adjustment, no matter how negligible or whether it impacts the HV TAC and/or LV TAC, simply corrects current inaccuracies in accounting for each LSE's contribution to transmission costs in PTO utility service territories.

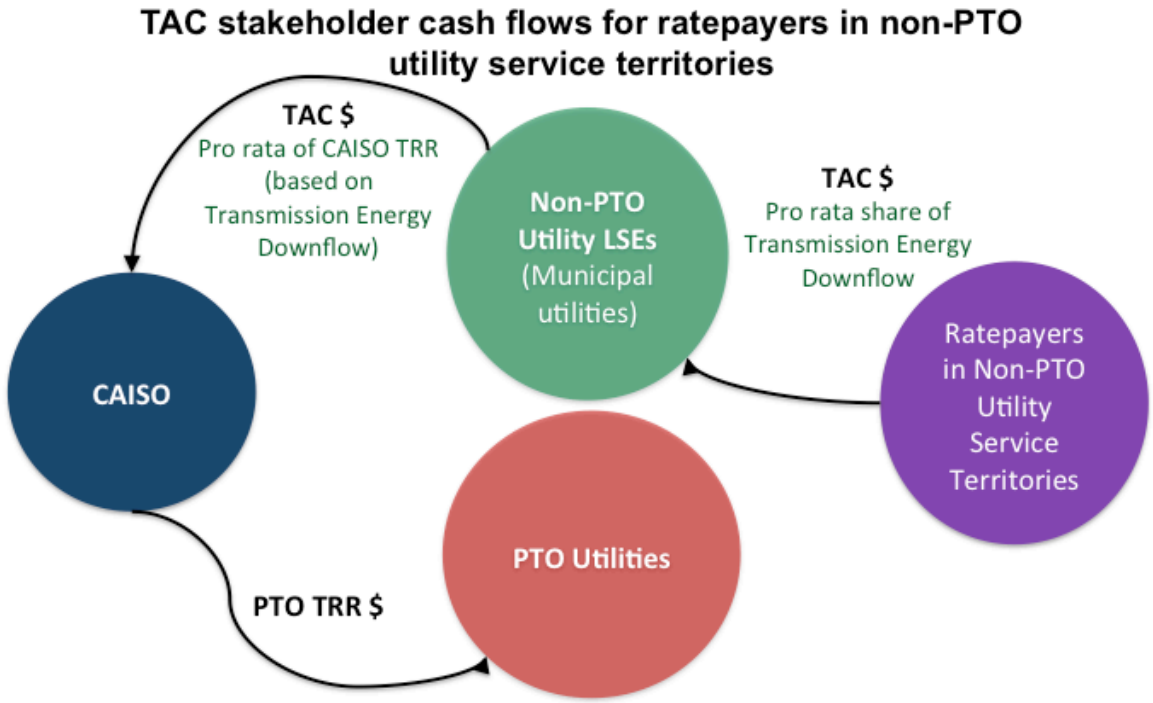
What does not change under the Clean Coalition Proposal

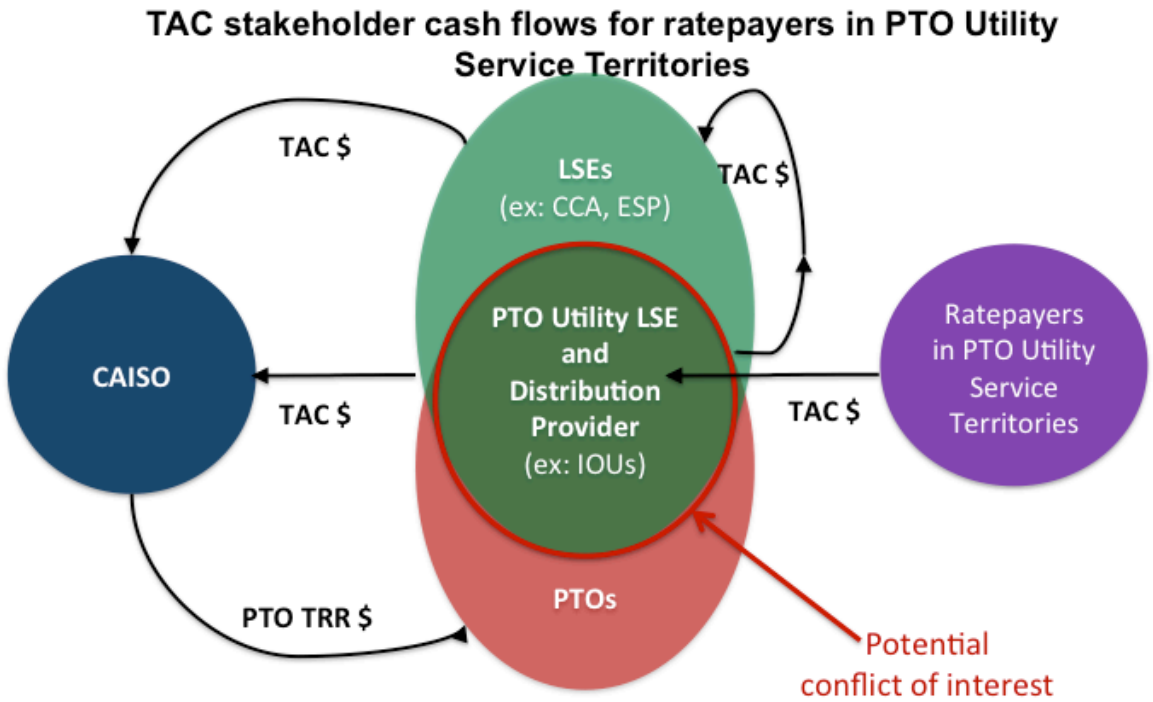
It is also important to note what does not change under the Clean Coalition proposal.

- Transmission Revenue Requirements (TRRs) will continue to be fully met.
- Total TAC payments to PTO utilities through CAISO would not increase.
- There would be no cost shift between ratepayers within an LSE.

As noted above, LSEs spread transmission costs at an equal rate among their customer base, so it currently makes no difference what type of energy an individual ratepayer is consuming. Instead, all ratepayers within one LSE benefit equally when local generation is part of the LSE's

energy portfolio. In the future, LSEs might be motivated to offer local renewables programs and share the financial benefits of avoiding transmission costs with participating ratepayers.





V. Conclusion

Assessing TAC on the basis of Transmission Energy Downflow would start a virtuous cycle of encouraging LSEs to invest in more local renewables to reduce their TAC payments. Over time, this assessment practice would lead to substantially lower TRR because less transmission investment would be required. Additionally, local generation translates to reduced transmission usage during peak load conditions. The proposal therefore results in lower TAC rates for all utilities and lower total transmission costs for all ratepayers. For these reasons, the Clean Coalition respectfully urges CAISO to adopt its proposal for assessing TAC based on Transmission Energy Downflow in PTO utility service territories, exactly as is already done in non-PTO utility service territories.