Excess BTM Production

Draft Final Proposal

Date paper published: December 12, 2018

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1 Executive Summary

The frequency and magnitude of excess behind the meter (BTM) production – periods when a customer's behind the meter resources generate output above host load – are increasing as more behind the meter resources are integrated into the system. The treatment of excess behind the meter production directly impacts downstream financial settlement allocations based on Gross Load figures that scheduling coordinators submit to the ISO. Because of these settlement impacts, it is critical that scheduling coordinators report Gross Load values to the ISO in a consistent manner.

The ISO observed inconsistencies in how scheduling coordinators report Gross Load. Sometimes scheduling coordinators report Gross Load after netting excess behind the meter production, and other times without netting excess behind the meter production. When excess behind the meter production is not netted from Gross Load, the values are captured in unaccounted for energy, and when Gross Load is reported inconsistently it results in disproportionate allocations of all load based charges, which includes the Transmission Access Charge (TAC).[1] Finally, the ISO has no visibility into how much, if any, excess behind the meter production energy is embedded in the Gross Load or unaccounted for energy currently.

Through this initiative, the ISO intends to address the following items:

1. Clarify the tariff definition of Gross Load and ensure scheduling coordinators are reporting it consistently
2. Create a clear tariff definition for excess behind the meter production
3. Specify how scheduling coordinators must report excess behind the meter production and how it is settled

This straw proposal outlines an updated definition for Gross Load. This definition specifically states that Gross Load must not have any excess behind the meter production included in the figure reported to the ISO. Gross Load values should be roughly equal to the aggregate consumption measured by retail meters.

This straw proposal also includes details on a new tariff term called "Excess Behind the Meter Production." Values for excess behind the meter production must be reported to the ISO by the applicable scheduling coordinators. This figure captures the sum of the energy sent to the grid during periods when a customer's behind the meter resource generates above the host load.

Finally, this straw proposal outlines how excess behind the meter production will be treated by the ISO. In this straw proposal, the ISO is not proposing any changes to the way the Gross Load is currently treated. Appendix A outlines the list of charge codes that will be settled on Gross Load going forward. The ISO proposes that excess behind the meter production will be reported and settled as a negative load at its respective default load aggregation point (DLAP) or custom load aggregation point (CLAP).

[1] Load based charge codes are included in Appendix A for reference.

By implementing these three proposed changes, the ISO will eliminate inconsistent reporting of Gross Load and require scheduling coordinators report excess behind the meter production values to the ISO by default or custom load aggregation point. Making these changes and including a measure for excess behind the meter production will result in more accurate settlement figures more representative of true market conditions.

2 Plan for Stakeholder Engagement

This stakeholder initiative is organized to allow time for careful consideration of issues surrounding excess behind the meter production. The ISO intends to present its draft final proposal at the May 2019 ISO Board of Governors meeting. The currently planned schedule for this initiative is shown below.

Table 1 – Stakeholder initiative schedule

Milestone	Date
Post Issue Paper	6/28/2018
Stakeholder Call	7/10/2018
Stakeholder Written Comments Due	7/18/2018
Post Straw Proposal	9/4/2018
Stakeholder Call	9/12/2018
Stakeholder Written Comments Due	9/26/2018
Revised Straw Proposal Posted	11/5/2018
Stakeholder Call	11/13/2018
Stakeholder Written Comments Due	11/27/2018
Draft Final Proposal Posted	12/12/2018
Stakeholder Call	12/19/2018
Stakeholder Written Comments Due	1/16/2019
Board of Governors Meeting	May 16-17, 2019

3 Changes and Feedback from the Revised Straw Proposal

The primary goals of the initiative and most of the implementation details remain unchanged from the revised straw proposal. In this version of the paper the ISO made some additional changes and added clarifying details in response to stakeholder comments. Changes made since the straw proposal are detailed below.

1. Clarify that the treatment of smaller POUs and MSSs is out of scope for this initiative.

The ISO's proposal for excess BTM production would not apply to certain entities that have metering arrangements negotiated and implemented before the ISO's inception, such as some smaller POUs and certain MSS entities. These entities generally have load figures that are calculated at a citygate metering point from various inputs. Further, these entities generally report Gross Load figures that account for visible distributed resource production. They also do not have requirements to install automated metering infrastructure (AMI) smart meters or other enhanced metering infrastructure to capture values for excess behind the meter production. Nor does the ISO have jurisdiction to require retail metering changes on such entities. In any case, overhauling the long-standing metering rules for these entities is out of scope for an issue that only nominally affects their metering.

2. Provide response to feedback on losses.

Pacific Gas and Electric indicated that it would like the ISO to continue consideration of the treatment of losses through this initiative:

> PG&E agrees with the characterization that if EBTMP goes to serve load in a neighboring household within the same distribution line, there should be avoided loss IF that energy would have come from the transmission-connected generator otherwise. The amount of avoided loss, however, is dependent on amount of loss that occurs traveling from one point on the distribution node to another. While that assumption still mostly holds, California's distribution grid is rapidly changing, and a one-way power flow system is increasingly not the norm.

Although there may currently be rare instances when excess behind the meter production is not offsetting energy from transmission-connected generation, this is by far the exception rather than the rule. The ISO believes that the treatment of losses outlined in this proposal is a reasonable approach for current conditions. PG&E raises a valid concern that the makeup of the grid is changing in ways that likely impact the actual accrual of losses on the grid; however, the ISO remains committed to accurately modelling losses in a manner that reflects realistic assumptions for energy flow. As conditions continue to evolve, the ISO will continue to evaluate.

4 Background and Issue

The proliferation of distributed energy resources, particularly behind the meter rooftop solar, increased rapidly throughout the ISO balancing area during the last decade. The ISO expects the continued expansion of behind the meter resources in the future. There are currently about 6,200 MW of non-utility behind the meter rooftop solar installed in the ISO balancing area, with over 2,500 MW installed since 2016.[2] Because of the recent and vigorous adoption of these resources, a number of potential issues related to their impact on various aspects of the ISO markets and operations have become more relevant and now require addressing.

The ISO observed inconsistencies in how Gross Load data was submitted to the ISO, where some data was submitted with excess behind the meter production netted from totals and some where it was not netted. In response to these findings, the ISO began this initiative to determine what parts of the tariff should be clarified, and how excess behind the meter production should be treated for resources in the ISO.

Excess behind the meter production refers to energy generated by behind the meter resources above host customers' load. This occurs during periods when a household or customer site with a behind the meter resource produces more energy than the household or customer site is consuming. Any excess behind the meter production is injected back onto the grid and consumed by other customers.

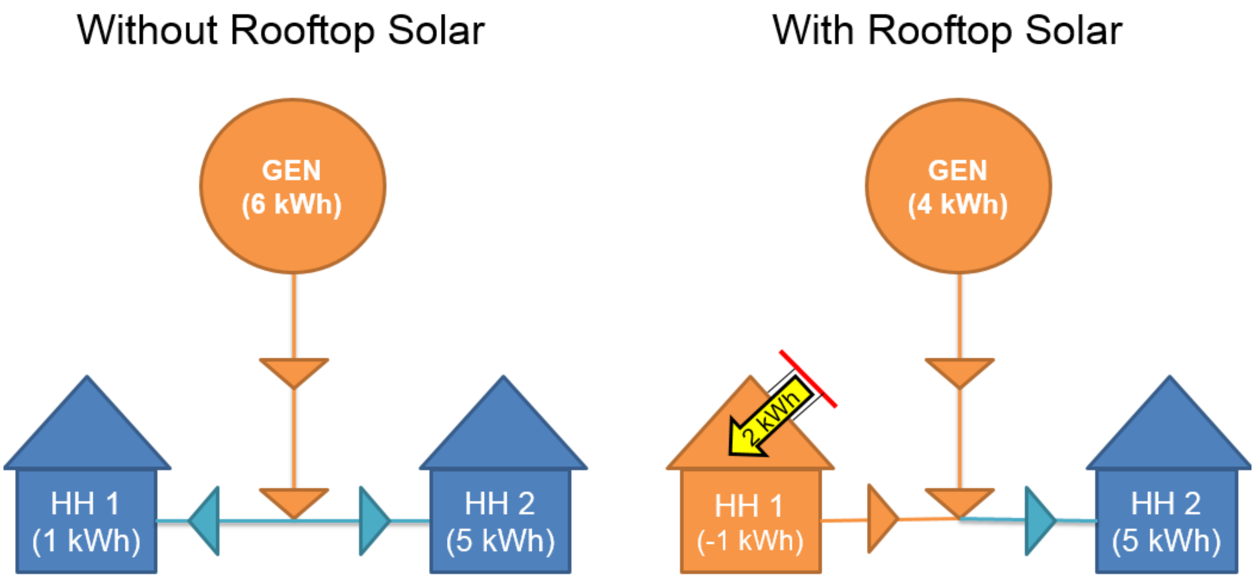
To help illustrate these concepts, the ISO provides the following example to illustrate excess behind the meter production. This example assumes a snapshot in time to demonstrate periods that display occurrences of excess behind the meter production. In this example we can imagine a set of two households. The second household consumes 5 kWh of energy, while the first household consumes 1 kWh of energy, but has a rooftop solar panel capable of generating 2 kWh of energy when the sun is shining. Figure 1 is a simplified line diagram representing the two households with the left half depicting energy flows without sun and the right half depicting energy flows when the sun is shining and household 1 is generating solar energy.

There are a few key takeaways from Figure 1 worth noting, which are listed below:

- Both households consume the same amount of energy with and without solar generation
- With solar generation household 1 injects 1 kWh of energy back onto the grid, which reduces the generation from the traditional generator from 6 kWh to 4 kWh
- **Excess behind the meter production** with solar generation is 1 kWh, or the amount of energy exported by household 1
- The **Gross Load** with solar generation is 5 kWh, or the amount of energy consumed by household 2

Figure 1 – Simple line diagram example

[2] https://www.californiadgstats.ca.gov.



The ISO also provides the following descriptions and tables to further describe and clarify these examples. Table 2 summarizes the same information outlined in Figure 1 when the sun is shining. In this table, row [A] represents the total energy consumed by each household, and row [B] represents the total amount of solar output from each of the households. Generally, for households with rooftop solar generation, these amounts may be unknown because energy measured at the household meter are reported as the summation of solar generation and host load. This means, when the sun is shining the meter on household 1 reads 1 kWh on the export channel, and 0 kWh on the load channel. Table 2 also shows these observed meter values in row [C] and row [D]. In this case, household 1 has a meter reading of 1 kWh on the export channel, while household 2 shows a meter reading of 5 kWh on the load channel of the meter.

Table 3 illustrates additional useful calculations for this example. Row [E] simply sums the actual consumption for both household 1 and 2. As mentioned above, this value may not be known, because each meter reports the summation of energy at the household level – either the total amount consumed or the total injected back onto the grid – rather than both numbers. In this example the total consumption is 6 kWh, or 1 kWh from household 1 and 5 kWh from household 2. Row [F] sums the total of the load channels from both households, in this case 5 kWh. Row [G] calculates the difference between the total consumption at each household less the total solar generation, or the net consumption at each household. In this example the total is 4 kWh.

On the lower half of Table 3, we show additional calculations including how Gross Load could be calculated and reported if excess behind the meter production was netted (row [H]) from these values, and how Gross Load could be reported if excess behind the meter production was not netted from these values (row [I]).

Table 2 – Gross Load reporting approach impacts example inputs

		Reported/observed value (kWhs)	
		Household 1	**Household 2**
Load	[A]	1 kWh	5 kWh
Rooftop Solar Output	[B]	2 kWh	0 kWh
Instantaneous Meter Read Load Channel	[C]	0 kWh	5 kWh
Instantaneous Meter Read Export Channel	[D]	1 kWh	0 kWh

When Gross Loads are reported to the ISO with excess behind the meter production netted from submissions, the ISO does not receive any data about the amount of excess behind the meter production. In the example above, if loads were reported to the ISO net of excess behind the meter production, the ISO would receive load values of 4 kWh, or the sum of all load less excess behind the meter production, without insight into the magnitude of the latter component.

If instead, loads are reported to the ISO without netting excess behind the meter production, the load values received would be 5 kWh, and 1 kWh would be captured as unaccounted for energy. In actual market scenarios, these unaccounted for energy values would be indistinguishable from other unaccounted for energy, and offer little insight into the actual amount of excess behind the meter production.

Table 3 - Gross Load reporting approach example settlement impacts outputs

			Reported/observed value (kWhs)
Σ Load	[E]	[A1 + A2]	1 kWh + 5 kWh = 6 kWh
Metered Load (Σ load channels)	[F]	[C1 + C2]	0 kWh + 5 kWh = 5 kWh
Σ of Load - Σ of Rooftop Solar Output	[G]	[(A1 + A2) - (B1 + B2)]	6 kWh – 2 kWh = 4 kWh
Gross Load with "netting excess BTM production"	[H]	[(C1 + C2) – (D1 + D2)]	5 kWh – 1 kWh = 4 kWh
Gross Load with "non-netting of excess BTM production"	[I]	[C1 + C2]	0 kWh + 5 kWh = 5 kWh

Finally, if both Gross Load (either with or without netting excess behind the meter production) and excess behind the meter production are reported to the ISO, both 5 kWh of total energy from summing the load channel energy and the 1 kWh of total excess behind the meter production from summing the generation channel energy are reported, it will provide load and excess behind the meter production visibility to the ISO.

In addition to issues of incomplete data, when some scheduling coordinators report loads that are net of excess behind the meter production and others report loads that are not net of excess behind the meter production, additional settlement issues can arise. Again, referencing the example above, suppose that two scheduling coordinators are reporting load, with the first reporting load net of excess behind the meter production, and the second reporting load without netting excess behind the meter production. The first would report a total load of 4 kWh, while the second would report a total of 5 kWh. In this simple example, charges, such as the transmission access charge, would be disproportionately allocated to load between the two entities, while actual system conditions would be identical. Additionally, the second scheduling coordinator would also incur additional charges and credits related to unaccounted for energy, where the first would not. This impact results in cost shifting among reporting areas.

The impacts of reporting load data differently as illustrated in this simple example demonstrate the need to clarify the definition of Gross Load so that it is reported consistently and uniformly to the ISO in all cases. It also highlights the need to clarify how excess behind the meter production is reported to the ISO.

5 Scope

The scope of this initiative has been carefully considered to address the issues outlined below, and does not include items addressed in other ongoing stakeholder initiatives (particularly the transmission access charge initiative) or ancillary topics.

Issues to be included in scope of this initiative:

The ISO proposes the scope of this initiative will include the following items:

1. Clarify a standard reporting practice for Gross Load
    - Specifically establish that these values should be consistently reported across the ISO and should not be reported net of excess behind the meter production
2. Establish a new tariff definition for excess behind the meter production
3. Establish how excess behind the meter production will be reported and settled
    - Excess behind the meter production will be paid the locational price where it is reported
    - Excess behind the meter production will not be 'grossed up' to include losses
    - Scheduling coordinators will report excess behind the meter production to the ISO generally using the same resource ID as load
4. Determine appropriate practice for representation of excess behind the meter production in ISO market processes
5. Explore potential impacts of reporting Gross Load and excess behind the meter production on Scheduling Coordinators that submit meter data to the ISO

Issues not in scope of this initiative:

This initiative will not address the following items:

1. Telemetry for the excess behind the meter production and the transmission access charge will not be addressed in this initiative
2. Collecting actual generation values from residential rooftop solar units, or any other residential or retail behind the meter resources. The focus of this effort is to clarify and receive accurate gross load data submissions only on those metering values currently available at household meters, such as channel 1 and channel 4.
3. Modifications to any generation or load involving distributed energy resource aggregations, demand response resources, wholesale Qualified Facilities and co-generation or combined heat and power (CHP) resources, or any other resources participating in ISO markets.
4. How excess behind the meter production impacts ISO short-term load forecasting processes or setting operating reserve requirements. The ISO notes that these processes and requirements utilize real-time data. Metering and settlements data is not utilized for the development of short term load forecasts or operating reserve requirements. However, pending the developments under this initiative, these processes may be informed by some of the resulting market changes and settlements data – *i.e.*,

this data could be used to improve some aspects of load forecasting and setting reserve requirements through other future efforts.

6 Proposal

As discussed above, it is important that load data is accurately and consistently reported to the ISO. Below, in Section 6.1, the ISO discusses the proposed clarifications to the tariff definition for Gross Load. Section 6.2 introduces an outline for the tariff term "Excess Behind the Meter Production", and Section 6.3 discusses how the reported excess behind the meter production figures will be treated in the ISO settlement process. Section 6.4 outlines changes to the determination for unaccounted for energy. Section 6.5 discusses the application of losses related to excess behind the meter production.

6.1 Clarification to the Gross Load definition

A key issue central to a number of items addressed in this initiative is the inconsistent interpretation of the Gross Load definition in the ISO tariff. As noted above, the ISO recently became aware of inconsistencies in how excess behind the meter production was being reported to the ISO in Gross Load data submittals.

The ISO will clarify the Tariff definition of Gross Load through this initiative to specify that any excess behind the meter production should not be included in Gross Load (*i.e.*, behind the meter production will not be netted from Gross Load data submittals). It is not appropriate to net excess behind the meter production from Gross Load because such treatment would ignore a portion of the customer's consumption that benefits from having access to, and use of, the transmission system. The ISO believes that distributed energy resource (DER) energy production should not be netted from the Gross Load values used for allocation of transmission access charges because the transmission system provides reliability and capacity services to all loads and supports the delivery of local generation.

The current definition of Gross Load is found in Appendix A to the ISO tariff:

> For the purposes of calculating the transmission Access Charge, Gross Load is all Energy (adjusted for distribution losses) delivered for the supply of End-Use Customer Loads directly connected to the transmission facilities or directly connected to the Distribution System of a Utility Distribution Company or MSS Operator located in a PTO Service Territory. Gross Load shall exclude (1) Load with respect to which the Wheeling Access Charge is payable; (2) Load that is exempt from the Access Charge pursuant to Section 4.1 of Appendix I; and (3) the portion of the Load of an individual retail customer of a Utility Distribution Company, Small Utility Distribution Company, or MSS Operator that is served by a Generating Unit that: (a) is located on the customer's site or provides service to the customer's site through arrangements as authorized by Section 218 of the California Public Utilities Code; (b) is a qualifying small power production facility or qualifying cogeneration facility, as those terms are defined in the FERC's

regulations implementing Section 201 of the Public Utility Regulatory Policies Act of 1978; and (c) secures Standby Service from a Participating TO under terms approved by a Local Regulatory Authority or FERC, as applicable, or can be curtailed concurrently with an Outage of the Generating Unit serving the Load. Gross Load forecasts consistent with filed Transmission Revenue Requirements will be provided by each Participating TO to the CAISO.[3]

The ISO proposes the following tariff revisions to the definition of Gross Load to help clarify the issues discussed herein:

For the purposes of calculating the transmission Access Charge, Gross Load is all Energy Demand (adjusted for distribution losses) delivered for the supply of End-Use Customer Loads directly connected to the transmission facilities or directly connected to the Distribution System of a Utility Distribution Company or MSS Operator located in a PTO Service Territory. Gross Load includes Load served by Excess Behind the Meter Production. Excess Behind the Meter Production shall not be netted against End-Use Customer Load in determining Gross Load.Excess Behind the Production is not a component of Gross Load, and shall not be netted against End-Use Customer Load in determining Gross Load. Gross Load shall excludes:

(1) Load with respect to which the Wheeling Access Charge is payable;

(2) Load that is exempt from the Access Charge pursuant to Section 4.1 of Appendix I; and

(3) the portion of the Load of an individual retail customer served by its own onsite Generating Unit or energy storage device, or as authorized by Section 218 of the California Public Utilities Code;

of a Utility Distribution Company, Small Utility Distribution Company, or MSS Operator that is served by a Generating Unit that: (a) is located on the customer's site or provides service to the customer's site through arrangements as authorized by Section 218 of the California Public Utilities Code;

(4b) Onsite Load served by is a qualifying small power production facility or qualifying cogeneration facility, as those terms are defined in the FERC's regulations implementing Section 201 of the Public Utility Regulatory Policies Act of 1978; and

(5c) Load secureds by Standby Service from a Participating TO under terms approved by a Local Regulatory Authority or FERC, as applicable, or can be curtailed concurrently with an Outage of the Generating Unit serving the Load.

[3] http://www.caiso.com/Documents/AppendixA_MasterDefinitionSupplement_asof_Mar16_2018.pdf

Gross Load forecasts consistent with filed Transmission Revenue Requirements will be provided by each Participating TO to the CAISO. For purposes of this definition, Generating Units, storage devices, and Loads will be considered onsite where they share, or are sub-metered behind, the same meter.

These revisions are intended to do the following:

- Remove the introductory clause stating that this definition is for purposes of calculating the TAC, which implies that this definition is *only* relevant to the TAC. As discussed herein, Gross Load impacts a number of settlement charges, independent of the TAC settlement calculation.
- Clarify that "Gross Load" does not actually refer to Energy, which is "the electrical energy produced, flowing or supplied by generation, transmission or distribution facilities, being the integral with respect to time of the instantaneous power," but a measured subset of Demand, which is the instantaneous amount of energy that is delivered to Loads and Scheduling Points by generation, transmission or distribution facilities. This allows the removal of additional language that is both superfluous and confusing.
- Include an express provision that Gross Load includes Load served by Excess Behind the Meter Production, as defined below. This provision provides unambiguous direction on the treatment of such load.
- Re-format the definition to list each exclusion clearly, rather than having a list of exclusions with its own list of inclusions. This also allows the removal of the reiteration of locations in the third exclusion.
- For entities in the definition outlined above, specify how loads and resources—now expressly including storage—must be co-located, or "onsite," which the ISO defines as sharing or being sub-metered behind the same meter. The Generating Unit and the load must be electrically connected at the same point provided that the Generating Unit is on-line. The ISO seeks to avoid confusion regarding sub-metered load or generation behind a customer facility meter. Such loads should continue to be treated as onsite and therefore excluded from Gross Load.

6.2 Establish and define: Excess Behind the Meter Production

A critical goal for this initiative is to establish a clear and concise standard for reporting the excess behind the meter production quantities to ensure a uniform reporting practice going forward. The ISO proposes the introduction of a new term to the tariff called: Excess Behind the Meter Production. This term will be used to represent the amount of generation that exceeds host consumption. This value will be reported to the ISO in a similar fashion, but separately, to load figures.

The ISO proposes to define Excess Behind the Meter Production as: "Energy from an End-Use Customer in excess of its onsite Demand."

6.3 Excess Behind the Meter Production Settlement

In addition to establishing the new term, Excess Behind the Meter Production, in the tariff, the ISO also proposes that these values be treated by the ISO settlement system similar to negative load. Scheduling Coordinators that currently report load to the ISO will be required to report both Gross Load and Excess Behind the Meter Production values to the ISO going forward.[4] Both values will be subject to the LMP for load at the locations where they are reported to the ISO. Like load, the ISO proposes that scheduling coordinators submit Excess Behind the Meter Production values at their load's respective default or custom load aggregation point (DLAP) level rather than the pricing node (Pnode) or connectivity node (Cnode) level. Further, the values for Gross Load and Excess Behind the Meter Production should generally be reported at a single resource ID.

Appendix A lists charge codes that will be allocated based on the updated definition of Gross Load. Other charge codes, such as those for uplift and neutrality, will continue to be allocated based on demand. Demand will be calculated as the combined values of Gross Load and Excess Behind the Meter Production. In the case that Excess Behind the Meter Production exceeds Gross Load, settlement allocation for applicable charge codes will be completed as if the demand was 0, instead of a negative value. This is similar to the way the settlement system treats generation currently.

6.4 Unaccounted for Energy determination

As described above, today excess behind the meter production is not separately reported to the ISO, but instead is incorporated within load or unaccounted for energy values. Therefore, in addition to updating the definition of Gross Load to expressly exclude excess behind the meter production, the determination for Unaccounted For Energy will also need to be updated.

Current determination for UFE BY UDC:

UFE QUANTITY = GENERATION METER + INTERTIE IMPORT METER – (LOAD METER + EXPORT INTERTIE METER + RTD LOSS MW)

Updated determination for UFE BY UDC:

[4] This proposed modification would not apply to certain entities that have preexisting metering arrangements with the ISO, such as some smaller POUs and certain MSS entities. These entities generally have load figures that are calculated at a citygate metering point from various inputs. Further, these entities generally report Gross Load figures that account for visible distributed resource production. They also do not have requirements to install automated metering infrastructure (AMI) smart meters or other enhanced metering infrastructure to capture values for excess behind the meter production. Addressing these long-standing, comprehensive metering arrangements for these entities is out of scope for this issue.

UFE QUANTITY = GENERATION METER + INTERTIE IMPORT METER – ((GROSS LOAD METER – EXCESS BTM PRODUCTION METER) + EXPORT INTERTIE METER + RTD LOSS MW)[5]

6.5 Application of losses

Currently, a distribution loss factor (DLF) may be applied to ‘gross up’ load values that are reported to the ISO. Loss factors are meant to capture the amount of energy lost between the transmission-distribution (T-D) interface and end-user’s household meters. Similarly, loss factors also may be applied to generating resources to reflect the amount of energy that is lost between the generator and the point of injection onto the transmission or distribution system. These factors are usually specific to a particular resource based upon its location and point of injection.

Excess behind the meter production is likely to travel very short distances and remain on low voltage lines after passing from a retail meter on the export channel. Energy coming from residential solar panels may be consumed by neighboring households and will generally not make it onto the transmission system or be stepped up to higher voltages, which is usually associated with losses. Because of this, losses associated with excess behind the meter production should not be considered when reporting excess behind the meter production to the ISO. The ISO believes that any losses are likely small. The ISO also believes that the energy from excess behind the meter production reduces the overall losses associated with serving load, and that this should be accounted for. This concept is explained in greater detail below.

When distribution loss factors are applied to load, they capture the losses between the transmission-distribution interface on the bulk electricity grid and the metered end-user. When there is excess behind the meter production there is likely less energy moving from the distribution grid to serve load, and thus less energy that losses should be applied to. The ISO proposes that the losses be applied on the difference between gross load and excess behind the meter production, to account for the losses that the excess behind the meter production offsets. Once losses are calculated, they may be included in the gross load figures reported to the ISO. An example of the loss calculation is illustrated in Figure 2 and Table 4 below.

Figure 2 – Simple line diagram example with a 10% loss factor

[5] GROSS LOAD METER – EXCESS BEHIND THE METER PRODCUTION METER is GROSS LOAD.

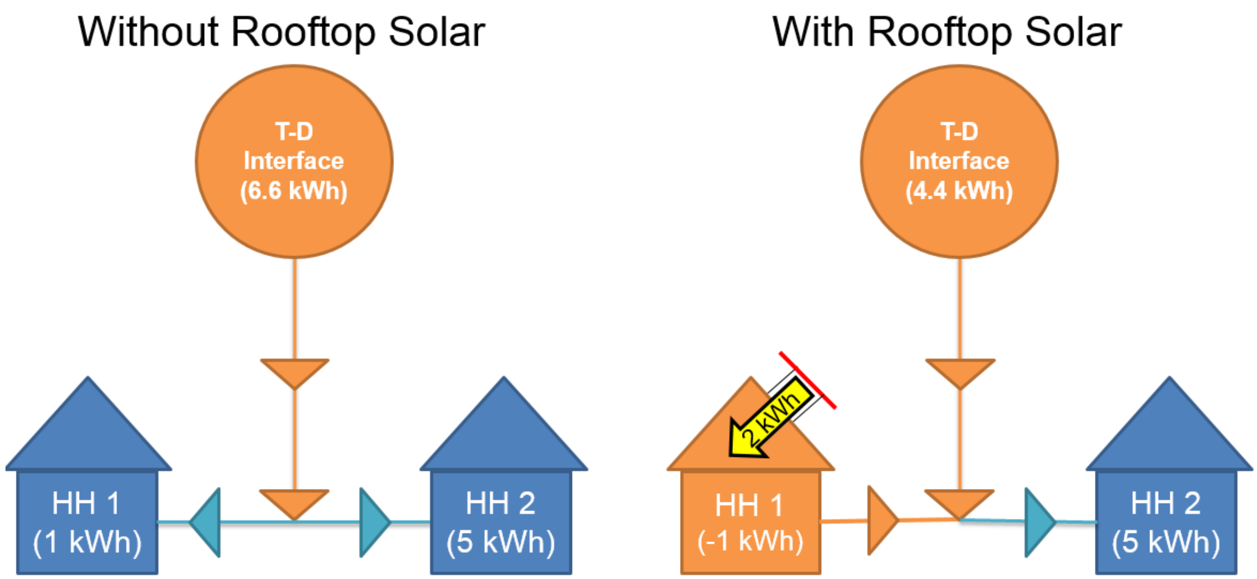


Figure 2 shows a similar example to the one already outlined earlier in this paper, but with losses applied to energy withdrawn from the transmission-distribution interface used to serve the households. In this example, losses associated with energy coming from the transmission-distribution interface to retail meters are assumed to be 10%. The left hand side of the figure shows retail consumers without solar generation, and the right hand side shows the same example with excess behind the meter production.

On the left side of Figure 2, losses are calculated as 10% of the entire metered load, or 6 kWh * .1 = .6 kWh. This results in a total amount of load 'grossed up' for losses of 6.6 kWh, corresponding to 6 kWh of actual consumption at the retail meters.

The right side of this example assumes that losses for excess behind the meter production are 0 and therefore the excess behind the meter production offsets exactly 1 kWh of consumption from household 2. An additional 4 kWh of energy is needed at the household 2 meter to make up the remaining consumption. This 4 kWh will still be subject to a 10% loss, and therefore requires 4.4 kWh of energy from the transmission-distribution interface. The right side of this example shows that the 1 kWh of energy from excess behind the meter production offsets .1 kWh of losses that would otherwise be realized.

Table 4 outlines how these calculations are carried out for the example on the right side of Figure 2. Gross Load (row [I]) and excess behind the meter production (row [J]) reflect 5kWh and 1 kWh, respectively. Losses applicable to gross load (row [K]) can be calculated by multiplying the distribution loss factor by gross load. Similarly, the losses avoided because of excess behind the meter production (row [L]) can also be calculated by multiplying the excess behind the meter production by the loss factor. Finally, Gross Load (row [M]) may be reported to the ISO, after applying both loss factors associated with the losses from the transmission-distribution interface and the avoided losses from excess behind the meter production.

An illustration of this formula for submitting losses is:

Gross Load (with Gross Up) = (Gross Load * (1 + DLF)) – (EBtMP * DLF);

where DLF is the appropriate distribution loss factor, and EBtMP is the excess behind the meter production.

Table 4 – Loss calculations and load 'gross up'

			Reported/observed value (kWhs)
Gross Load	[I]		5 kWh
Excess Behind the Meter Production	[J]		1 kWh
Distribution Loss Factor	[DLF]		.1
Losses from Gross Load	[K]	[I] * [DLF]	5 kWh * .1 = .5 kWh
Losses Avoided from Excess BTM Production	[L]	[J] * [DLF]	1 kWh * .1 = .1 kWh
Gross Load with "Gross Up"	[M]	[I] + [K] – [L]	5 kWh + .5 kWh - .1 kWh = 5.4 kWh

7 EIM Designation

The ISO plans to seek approval of the policy resulting from this initiative from the ISO Board only. This initiative falls outside the scope of the EIM Governing Body's advisory role, because the initiative does not propose changes to either real-time market rules or rules that govern all ISO markets. This proposal is limited to addressing load metering and how load-based charges are allocated to entities within the ISO BAA.

8 Next Steps

The ISO will discuss this draft final proposal with stakeholders during a call on December 19, 2018. Stakeholders are asked to submit written comments by January16, 2019 to initiativecomments@caiso.com.

9 Appendix A

Below is a table listing the proposed charge codes that will be allocated according to load. This table is included to show the downstream charge codes that are impacted by Gross Load. As indicated in this proposal, the determination – rather than the allocation – for unaccounted for energy will also be updated. These charge codes reflect charges that are related to reliability, rather than energy use, and should therefore be allocated based on gross load.

Table A1 – Proposed charge codes for allocation on Gross Load

372	High Voltage Access Charge Allocation
382	High Voltage Wheeling Allocation
383	Low Voltage Wheeling Allocation
591	Emissions Cost Recovery
1101	Black Start Capability Allocation
1302	Long Term Voltage Support Allocation
1303	Supplemental Reactive Energy Allocation
6090	Ancillary Service Upward Neutrality Allocation
6194	Spinning Reserve Obligation Settlement
6196	Spinning Reserve Neutrality Allocation
6294	Non-Spinning Reserve Obligation Settlement
6296	Non-Spinning Reserve Neutrality Allocation
6594	Regulation Up Obligation Settlement
6596	Regulation Up Neutrality Allocation
6694	Regulation Down Obligation Settlement
6696	Regulation Down Neutrality Allocation
7256	Regulation Up Mileage Allocation
7266	Regulation Down Mileage Allocation
7896	Monthly CPM Allocation