



Business Requirements Specification

Excess Behind the Meter Production

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Revision History

Date	Version	Description
2/21/2020	1.0	Initial Document Release.
4/15/2020	1.1	<p>Clarifications:</p> <p>Section 5.2: Clarified Gross Load and EBTMP are not netted, but rather two separate measurement types for meter data.</p> <p>Section 6.1: Clarified Gross Load definition (non-netted with EBTMP), values for Gross Load and EBTMP must be non-negative, and Gross Up calculation will provides for EBTMP-related avoided losses in meter data (EBTMP should not consider losses) by SCME prior to submission to ISO.</p> <p>BRQ-001, 005, 010, 015, 018, 019, 020 : Clarified that EBTMP activation occurs on 1/1/2021 to coordinate with the Settlements Timeline Transition project, when the final meter data submission transitions from T+48B to T+55B.</p> <p>BRQ-015: EBTMP-related avoided losses included in Gross Up calculation, performed by SCME prior to meter data submission to the ISO.</p> <p>BRQ-016: No negative values allowed for Gross Load or EBTMP meter data inputs. Required per Metering Rules BPM Code of Conduct for load resources IDs that are not ineligible per BRQ-011.</p> <p>BRQ-018 - 025: Load resource IDs ineligible per BRQ-011 may not submit EBTMP meter data to the ISO systems.</p> <p>Added requirements:</p> <p>BRQ-011: Identified EIM, MSS, and ISO-Polled resources would not be eligible to submit EBTMP meter data when EBTMP goes active.</p> <p>BRQ-027: ISO will include EBTMP submission for required load resources when it performs its missing meter data report. SCMEs will be notified by ISO if it is determined their meter data was not provided per Metering Rules BPM Code of Conduct.</p> <p>Appendix E: Added Sample Meter Data Calc/Submission for Gross Load (with Gross Up) and EBTMP.</p>

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1 Introduction

1.1 Purpose

The purpose of this document is to capture and record a description of what the Users and Business Stakeholders of the project wish to obtain, by providing high level business requirements. This document establishes the basis for the agreement between the initiators and implementers of the project. The information in this document serves as input to determine the scope of projects and all Business Process Modeling and System Requirements Specifications efforts.

Business requirements are what must be delivered to provide value for the Users and Business Stakeholders. Systems, software, and processes are the ways (how) to deliver, satisfy or meet the business requirements (what).

This document is for the Excess Behind the Meter Production policy project. It addresses the approach to integrating a new measurement type into Settlements and adjusting the reliability related charges.

2 Intellectual Property Ownership

Intellectual Property covers a broad array of information and materials, including written works, computer programs, software, business manuals, processes, symbols, logos and other work products. Determining ownership of Intellectual Property is very important in preserving the rights of the California ISO, and helps to avoid Intellectual Property infringement issues. In considering the business requirements or service requirements to be performed, the business owner of the project must determine Intellectual Property Ownership.

2.1 Checklist

CAISO retains intellectual property ownership of the following:

- Policy and Market Design; includes methodologies, software code, data structures, and mathematical formulation
- Related Business Practice Manuals
- Software codes to implement the RMR and CPM Enhancements initiative
- All rights reserved for works included within this BRS document

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3 Acronym and Term Definitions

Term	Definition
API	Application Programming Interface
B2B	Business-to-Business (reflects an API between ISO and market participants)
BAA	Balancing Authority Area. The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time. NERC definition.
BRS	Business Requirements Specification. BRS is a document that covers the business aspect of a requirement on a broad level.
BTM	Behind the Meter. A BTM system is a renewable energy generating facility (such as a solar PV system) that produces power intended for on-site use in a home, office building, or other commercial facility. The location of the solar PV system is literally ``Behind The Meter``, on the owner`s property, not on the side of the electric grid/utility. An example of a BTM system is where the power (from solar panels) is fed into the main electrical panel and from there, goes to the utility grid or to be used in the home/building. It is connected before the customer`s meter.
CAISO	California Independent System Operator. The operating authority responsible for monitoring and managing California`s power system. Also CISO.
CLAP	<p>Custom Load Aggregation Point. Tariff: An aggregation of Load Pricing nodes (Pnodes) created by the ISO, based on a set of custom Load Distribution Factors (LDFs) submitted by a Scheduling Coordinator, at which such Scheduling Coordinator may submit a single Bid and settle Demand consistent with the ISO Tariff rules, and for which the Scheduling Coordinator is required to submit to the ISO Meter Data for the nodal load represented in such aggregation.</p> <p>Note: Excess Behind the Meter Production will be reported at the same CLAP as its load.</p>

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Term	Definition
DLAP	<p>Default Load Aggregation Point. The ISO clears and settles all ISO load at Load Aggregation Points, which are aggregations of individual pricing nodes. The ISO clears and settles the majority of load at one of the Default LAPs (DLAPs), which correspond to the service territories of Pacific Gas and Electric Co. (PG&E), Southern California Edison Co. (SCE), San Diego Gas and Electric Co. (SDG&E), and the Valley Electric Authority (VEA). For each Default LAP, the CAISO calculates a zonal locational marginal price based on the distribution of system load at the constituent pricing nodes within the applicable Default LAP. The ISO determines the Default LAP prices by the effectiveness of the load within the default load aggregation point in relieving a transmission constraint. The ISO settles a scheduling coordinator's load at the applicable locational marginal price for the Default LAP in which that load is located.</p> <p>Note: Excess Behind the Meter Production (EBTMP) will be reported at the same Load Resource ID (e.g. DLAP) as load.</p>
DLF	<p>Distribution Loss Factor. A number multiplied by a consumer's metered energy to account for electricity losses between the transmission control point and the consumer. During the transmission of electricity, some energy is lost from the physical wires within the transmission/distribution system, usually in the form of heat. This lost energy is known as transmission or distribution losses.</p>
EBtMP	<p>See Excess Behind the Meter Production</p>
Excess Behind the Meter Production	<p>An occurrence when energy generated by behind the metered resource are above host customers' load.</p> <p>Excess BTM production (EBTMP) energy:</p> <ul style="list-style-type: none"> • will be reported at the same Resource ID as its load • will be paid the locational price where it is reported • will not be "grossed up" to include losses • is not applicable to energy currently generated and scheduled into the ISO • does not apply to certain entities with preexisting load calculation determined at a citygate
FERC	<p>Federal Energy Regulatory Commission</p>
FODD	<p>FERC Ongoing Data Delivery. FERC Order 760 requires the ISO to extract and submit market data on a regular basis. The FODD application is used to fulfill this requirement.</p>
Gross Load	<p><i>Revised tariff definition (bold font and emphasis added):</i> Demand (adjusted for distribution losses) 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. <i>Excess Behind the Meter Production shall not be netted against End-Use Customer Load in determining Gross Load...</i></p>

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Term	Definition
Gross Up Load	Adjustment or “true up” to account for the algebraic sum of losses from the raw gross load and the avoided losses due to the EBtMP, as follows: $\text{Gross Up load} = \text{Max} ([\text{Raw Gross Load} * (1+\text{DLF})] - [\text{EBtMP} * \text{DLF}], 0)$
ISO	See CAISO.
LSE	Load Serving Entity.
MRI-S	Market Results Interface - Settlements. Market Results interface(MRI) system includes all Settlements related files, including Statements, Bill Determinants (BD), Invoices, Configuration Output file etc. The files that are accessible are results of running the Settlements calculations. This Interface allows Scheduling Coordinators to retrieve read only files containing Settlements data related to market transactions specific to their resources.
MSS	Metered Subsystem. A metered subsystem is a geographically contiguous system located within a single zone which has been operating as an electric utility for a number of years prior to the ISO Operations Date as a municipal utility, water district, irrigation district, state agency or federal power marketing authority subsumed within the ISO Balancing Authority Area and encompassed by ISO certified revenue quality meters at each interface point with the ISO Controlled Grid and ISO certified revenue quality meters on all Generating Units or, if aggregated, each individual resource.
OASIS	Open Access Same Time Information System. The CAISO OASIS site is a public interactive web-based application that provides both market and transmission information.
PMO	Program Management Office (ISO business unit).
PTO	Participating Transmission Owner. An entity that owns a portion or all of a transmission facility that is operationally controlled by the ISO.
SC	Scheduling Coordinator. An SC submits balanced supply and demand energy schedules to the ISO for his/her organization.
SCME	Scheduling Coordinator Metered Entity.
SRS	System Requirements Specification. A comprehensive description of requirements for systems development. It serves as a repository for all external interface, functional, and non-functional requirements pertaining to the project. These are high-level requirements statements used to derive Use Cases or resulting in Change Requests to modify existing applications.

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Term	Definition
TAC	<p>Transmission Access Charge. The current transmission access charge is a two-part rate for each megawatt hour of internal load and exports and is used to recover transmission revenue requirements. Revenue requirements for facilities rated 200 kV and above are recovered through a system-wide rate, while requirements for facilities rated below 200 kV are recovered via specific rates for each participating transmission owner.</p> <p>Note: Gross Load will no longer be used for the purposes of calculating TAC.</p>
T-DI	Transmission-Distribution Interface
UDC	Utility Distribution Company. A distribution wires business and a regulated retailer who serves end-use customers.
UFE	<p>Unaccounted for Energy. The difference in Energy, for each utility Service Area and Settlement Period, between the net Energy delivered into the utility Service Area, adjusted for utility Service Area Transmission Losses and the total Measured Demand within the utility Service Area adjusted for distribution losses using Distribution System loss factors approved by the Local Regulatory Authority. This difference is attributable to meter measurement errors, power flow modeling errors, energy theft, statistical Load profile errors, and distribution loss deviations. For EIM Market Participants, the CAISO will calculate Unaccounted For Energy based on the EIM Entity Balancing Authority Area instead of the utility Service Area.</p> <p>Note: The definition of UFE will now account for excess behind the meter production.</p>

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4 Details of Business Need/Problem

4.1 Description

Customer on-site generation is new and rapidly growing within California ISO area. Overbuilds or surplus energy production may inject back into the distribution grid creating unexpected power flows for utility distribution companies (UDCs) to manage in real-time. Currently, schedule coordinators do not have ISO direction on how to report Gross Load or Excess Behind the Meter Production, which results in discrepancies in the ISO settlements for various SCs within the region. Additionally, this impedes the ISO's ability to accurately forecast accurate demand and maintain system reliability.

Business Opportunity/Problem Statement:	
What:	<p>As excess behind the meter production (EBtMP) increases throughout the California ISO BAA, the ISO has determined this causes discrepancies with its Settlements, Demand Forecasting, and Operations capabilities.</p> <p>The project introduces enhancements to include EBtMP along within Gross Load metering submissions by the Scheduling Coordinators, enhance ISO Settlement configurations to accommodate this added information, publish an EBTMP performance report, as well as provide a feedback loop for the demand forecast model to consider EBtMP impacts.</p>
When:	<p>Fall 2020 Release</p>
Why do we have this opportunity/problem:	<p>The current tariff does not clearly state how to report Gross Load with Excess Behind the Meter Production and has uncovered inconsistencies in the way that scheduling coordinators and utility distribution companies (UDCs) report EBtMP to the ISO.</p> <p>This tariff change will require alterations to Settlements and new reports on new Excess Behind the meter.</p>

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5 Business Practice Manual (BPM)

5.1 Business Practice Manual (BPM)

BPM	Description of Impact(s)
Definitions & Acronyms	<ul style="list-style-type: none"> - Update existing definition: "Gross Load" - Added new term: "<i>Excess Behind the Meter Production</i>"
Metering	<ul style="list-style-type: none"> - New 'EBtMP' meter measurement type - SC submission of both Gross Load and EBtMP meter data
Market Instruments	<ul style="list-style-type: none"> - New OASIS EBtMP Performance Report/API
Settlements & Billing	<ul style="list-style-type: none"> - Modified UFE calculation; - Settle gross load as measured demand for EBtMP resources
Managing Full Network Model	N/A
BPM Change Management	N/A
Candidate CRR Holder	N/A
Compliance Monitoring	N/A
Congestion Revenue Rights	N/A
Credit Management	N/A
Direct Telemetry	N/A
Distributed Generation for Deliverability	N/A
Energy Imbalance Market (EIM)	N/A
Generator Interconnection and Deliverability Allocation Procedures	N/A
Generator Interconnection Procedure (GIP)	N/A
Generator Management	N/A
Market Operations	N/A

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BPM	Description of Impact(s)
Outage Management	N/A
Reliability Requirement	N/A
Rules of Conduct Administration	N/A
Scheduling Coordinator Certification & Termination	N/A
Transmission Planning Process	N/A

5.2 Other

Impact:	Description: (optional)
Market Simulation	Yes. New meter measurement type; New OASIS Report; Settlement of load-based charges for ISO BAA entities.
Market Participant Impact	Yes. Market Participant will be required to input both Gross Load and Excess Behind the Meter Production, as separate measurement types (non-netted), under the same resource ID with respect to new tariff alterations.
External Training	Yes.
Policy Initiative	Yes.

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6 Business Requirements

The sections below describe the Business processes and the associated business requirements involved in the project. These may represent high-level functional, non-functional, reporting, and/or infrastructure requirements. These business requirements directly relate to the high-level scope items determined for the project.

6.1 Business Process: Meter Data Acquisition & Processing

The Excess Behind the Meter Production project will separately define energy measurements types as 1) Gross Load (measuring the amount of energy passing through the meter to serve retail load), and 2) Excess Behind the Meter Production (which is the amount of behind the meter production in excess of the load). In this regard, on a load resource ID meter basis, only one of the measurement types will be non-zero at a given time depending on whether energy production is injected into the grid (where EBtMP > 0) or withdrawn from the grid (where Gross Load > 0). Both Gross Load and EBtMP meter values will be non-negative.

Tariff revisions proposed by this initiative will impact the Market Results Interface – Settlements (MRI-S). Excess Behind the Meter Production is a new type of energy measurement entry required for Scheduling Coordinators submission in their settlements to MRI-S. Gross Load (with Gross-Up) calculation will include the avoided losses from occurring EBtMP and **will not be netted by the excess behind the meter production.**

The SC submits Gross Load and EBtMP under same load resource ID which must have met the following meter certification:

- Distribution Loss Factor used has been previously approved by LRA, SC for SCME, and ISO
- SC included the gross up in the meter data for Gross Load by: $\text{Gross Load (with Gross Up)} = \text{Max} [(\text{Gross Load} * (1 + \text{DLF})) - (\text{EBtMP} * \text{DLF}), 0]$;
- SC shall not include loss factor in EBtMP
- SCs are still required to follow the metering self-audit process

The expectations from the SCME is that the following are requirements are met by ISO systems:

- ISO settlement uses charge codes based on (a) Gross Load or (b) measured demand. For those charge codes based on Gross Load, settlement will be based on Gross Load, which includes demand served with EBtMP. For those charge codes based on measured demand, settlement will be based on the net of Gross Load and EBtMP at LMP. See Appendix E or the EBtMP FAQs for an example how the Gross Load (with Gross Up) and EBtMP meter data is determined and submitted by the SCME.

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- No change shall apply to smaller POU and MSS entities [which typically have load figures calculated at a citygate metering point from various inputs, and generally do not have requirements to install automated meter infrastructure (AMI) or the like required to capture EBtMP]
- Validation will be dependent on UFE as needed

MRI-S will need to alter submittal format to allow SCs submission of both gross load and EBtMP meter values reporting and then send this data to Settlement systems.

OASIS shall provide a monthly performance report for Excess Behind the Meter Production to Market Participants.

6.1.1 Business Requirements

ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-001	For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), system shall define a new measurement type called “Excess Behind the Meter Production” (“EBtMP”), wherein: <ul style="list-style-type: none"> • EBtMP shall represent the amount of energy production in excess of the customer load, and not the total energy production behind the meter • EBtMP shall be reported as zero (0) if there is no excess, or as a <i>positive generation</i> value if there is excess production • EBtMP shall not be submitted for trade dates prior to 1/1/2021 (late re-submissions included), even if the calendar is after 1/1/2021 	Core	- MRI-S
EBtMP-BRQ-005	For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), system shall continue to receive metered gross load (“Gross Load”), wherein: <ul style="list-style-type: none"> • Gross Load shall only represent the amount demand (adjusted for losses) of end-user loads, which includes the load served by excess behind the meter production (i.e. no netting of Gross Load with EBtMP) • Gross Load shall continue to be reported as zero (0) if there is no load, or as a <i>positive load</i> value if there is load consumption 	Existing	- MRI-S

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ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-010	<p>For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), system shall identify those Load Resources required to submit EBtMP meter data, as these resources' Scheduling Coordinator Metering Entities (SCMEs) have the same compliance obligations for EBtMP meter data submission as currently apply for Gross Load under the BPM Meter Rules of Conduct (in accordance with Section 37.5 of the ISO Tariff).</p> <p>Load resources with metering arrangements negotiated and implemented prior to ISO's inception may optionally provide EBtMP meter data. <i>These are typically smaller POU (Privately Owned Utility) or MSS (Metered Sub-System) entities with calculated load figures at a citygate from various inputs.</i></p>	Informational	- MasterFile (ISO Internal)
EBtMP-BRQ-011	<p>For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), MasterFile shall identify the following Load Resource types as ineligible to submit EBtMP meter data to the ISO systems:</p> <ul style="list-style-type: none"> • EIM load resource • Metered Subsystem (MSS) • ISO Polled 	Core	- MasterFile (ISO Internal)

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ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-015	<p>For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), Scheduling Coordinator Metering Entities (SCMEs) may account for EBtMP-related avoided losses occurring between the meter location and the transmission-distribution interface in their Gross Load meter data submissions (but must not with EBtMP meter data submissions) by using the following <i>Gross Load (with Gross Up)</i> calculation prior to submission to the ISO:</p> $Gross\ Load\ (with\ Gross\ Up) = Max\ [[Raw\ Gross\ Load * (1 + DLF)] - (EBtMP * DLF), 0]$ <p>Where,</p> <p style="padding-left: 40px;"><i>Raw Gross Load</i> = Unadjusted Gross Load value, includes the amount of load served by EBtMP</p> <p style="padding-left: 40px;"><i>DLF</i> = the appropriate Distributed Loss Factor</p> <p style="padding-left: 40px;"><i>EBtMP</i> = Excess Behind the Meter Production</p> <p>Note: Appendix E (and Appendix A of the Excess Behind the Meter Production Frequently Asked Questions) provide an example of this calculation.</p>	Inform-ational	- N/A

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ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-016	<p>Under the Metering BPM Rules of Conduct (in accordance with Section 37.5 of ISO Tariff), system shall require SCMEs submit for EBtMP-required load resource IDs:</p> <ul style="list-style-type: none"> • Zero (0) values for EBtMP interval meter data when no excess behind the meter production occurs (ensuring a complete and accurate Settlement Quality Meter Data for each Trading Hour). • Otherwise, positive excess behind the meter production meter values should be submitted for each relevant interval • Negative or Null EBtMP load meter values will not be accepted by system • EBtMP shall not be submitted for trade dates prior to 1/1/2021 (late re-submissions included), even if the calendar is after 1/1/2021 	<p>Informational</p> <p><i>See Core Req in BRQ-020</i></p>	<p>- MRI-S (both UI and API)</p>
EBtMP-BRQ-018	<p>For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), system user-interface (UI) shall allow SCMEs to additionally submit and retrieve EBtMP meter values under the same EBtMP-required load resource IDs as its associated Gross Load meter data.</p> <p>Load resource IDs that are ineligible (IsEBtMPRequired = N) shall not be allowed to submit EBtMP meter data to ISO systems.</p> <p>EBtMP shall not be submitted for trade dates prior to 1/1/2021 (late re-submissions included), even if the calendar is after 1/1/2021</p>	<p>Core (EBtMP)</p> <p>Existing (Load)</p>	<p>- MRI-S (UI)</p>

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ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-019	<p>For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), system API shall allow SCMEs to additionally submit and retrieve EBtMP meter values under the same EBtMP-required load resource IDs as its associated Gross Load meter data.</p> <p>Load resource IDs that are ineligible (IsEBTMPRequired = N) shall not be allowed to submit EBtMP meter data to ISO systems.</p> <p>EBTMP shall not be submitted for trade dates prior to 1/1/2021 (late re-submissions included), even if the calendar is after 1/1/2021</p>	<p>Core (EBtMP)</p> <p>Existing (Load)</p>	<p>- MRI-S (API)</p>
EBtMP-BRQ-020	<p>For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), system user-interface (UI) shall perform the following validations for load resource submissions of EBtMP interval load meter data:</p> <ul style="list-style-type: none"> • Load Resources identified as requiring EBtMP submissions by the MasterFile (IsEBTMPRequired = Y) must submit EBtMP meter values for each interval of the trade date T to be considered a valid submission for that trade date, applied in the same manner for Gross Load meter submissions; <i>Load resources not identified as requiring EBtMP meter data submission shall not be allowed to submit EBTMP meter data to ISO</i> • EBtMP interval meter data must be complete and accurate for each trade hour of trade date T prior to the meter data submission deadline • All submitted EBtMP interval meter values must be either a <i>positive value</i> (if excess production exists) or <i>zero value</i> (if no excess production exists); Negative or NULL values will not be accepted • Each Load Resource ID's EBtMP interval meter data submission must have the same time interval length (e.g. 5-min, 15-min, or 60-min) as defined by MasterFile 	<p>Core</p>	<p>- MRI-S (UI)</p>

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ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-025	<p>For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), system API shall perform the following validations for load resource submissions of EBtMP interval load meter data:</p> <ul style="list-style-type: none"> • Load Resources identified as requiring EBtMP submissions by the MasterFile (IsEBTMPRequired = Y) must submit EBtMP meter values for each interval of the trade date T to be considered a valid submission for that trade date, applied in the same manner for Gross Load meter submissions; <i>Load resources identified as ineligible for EBtMP meter data submission (IsEBTMPRequired = N) may not submit</i> • EBtMP interval meter data must be complete and accurate for each trade hour of trade date T prior to the meter data submission deadline • All submitted EBtMP interval meter values must be either a <i>positive value</i> (if excess production exists) or <i>zero value</i> (if no excess production exists); Negative or NULL values will not be accepted • Each Load Resource ID's EBtMP interval meter data submission must have the same time interval length (e.g. 5-min, 15-min, or 60-min) as defined by MasterFile 	Core	- MRI-S (API)
EBtMP-BRQ-026	<p>Since EBtMP meter data values will not be estimated, system will not produce estimate values for missing EBtMP meter interval data (which shall remain as NULL until meter submission is received).</p>	Core	- MRI-S
EBtMP-BRQ-027	<p>For trade dates on or after the Excess Behind the Meter Production activation (1/1/2021), system shall modify existing Missing Meter Data report to identify and list missing meter data for load resources with IsEBTMPRequired = Y flag prior to or on the configurable meter submission deadline date.</p> <p>SCMEs will be notified by ISO if it is determined their meter data was not provided per Metering Rules BPM Code of Conduct.</p>	Core	- MRI-S (Internal ISO)

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6.2 Business Process: Manage Market Billing & Settlement (MOS)

6.2.1 Business Requirements

ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-031	On a daily basis, if applicable, ISO Settlement systems shall receive EBtMP meter interval values submitted by the SCME. All EBtMP meter values will associate with the Gross Load meter data for the same intervals by the same Load Resource ID.	Core (EBtMP) Existing (Load)	- Settlements
EBtMP-BRQ-035	ISO Settlement systems shall allocate those reliability-based charge codes like those listed in Appendix C under the updated definition of Gross Load as described in BRQ-005.	Core	- Settlements
EBtMP-BRQ-036	ISO Settlement systems shall apply the hourly weighted average LAP LMP for net load for UIE (uninstructed imbalance energy) settlement.	Core	- Settlements
EBtMP-BRQ-040	ISO Settlement systems will continue to allocate those charge codes involving Gross Load (which includes Demand served by EBtMP), as applicable. Energy settlement uplift, neutrality, and other charge codes will be settled based on metered demand (net load meter) or measured demand (net load plus export), as applicable. Where, NET LOAD METER = GROSS LOAD METER - EXCESS BEHIND THE METER PRODUCTION METER	Core	- Settlements
EBtMP-BRQ-041	If the EBtMP exceeds Gross Load, settlement shall cap the demand to zero.	Core	- Settlements

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ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-045	<p>ISO Settlement systems shall calculate Unaccounted for Energy (UFE) by UDC based upon net load meter.</p> <p><i>Current:</i></p> <p>UFE QUANTITY = GENERATION METER + INTERTIE IMPORT METER – (LOAD METER + EXPORT INTERTIE METER + RTD LOSS MW)</p> <p><i>New:</i></p> <p>UFE QUANTITY = GENERATION METER + INTERTIE IMPORT METER – (<i>NET LOAD METER</i> + EXPORT INTERTIE METER + RTD LOSS MW)</p> <p>Where,</p> <p>NET LOAD METER = GROSS LOAD METER - EXCESS BEHIND THE METER PRODUCTION METER</p>	Core	- Settlements
EBtMP-BRQ-046	<p>A new settlement bill determinant shall be created for the EBtMP meter data measurement type. Definition of the data (value format, units, granularity, and intervals) shall align with the existing Load meter bill determinant.</p>	Core	- Settlements
EBtMP-BRQ-047	<p>System shall transmit the new EBtMP meter data bill determinant to FERC through the existing Settlements transmittal process, the new EBtMP meter data bill determinant shall be transmitted to FERC.</p>	Core	- Settlements
EBtMP-BRQ-048	<p>Since EBtMP meter data values will not be estimated, system will not receive or produce estimate values for missing EBtMP meter interval data (which shall remain as NULL until meter submission is received).</p>	Core	- Settlements

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6.3 Business Process: Publish Meter Performance Results

6.3.1 Business Requirements

ISO shall publish, as aggregated by TAC Area at an hourly time interval, Excess Behind the Meter Production performance in an OASIS report. This report will fulfill the ISO’s commitment to provide transparency of EBtMP performance to market stakeholders, in addition to fulfilling its reporting requirement to FERC, and shall be described by the following verbiage:

The Excess Behind the Meter Production (EBtMP) report provides market participants with hourly aggregate performance, by associated TAC Area, of the excess energy production measured at the meter wherein energy was injected onto the transmission grid. EBtMP measurements values, in MWh, shall be published and identified as "preliminary" following the Initial Settlement Statement's meter data submission deadline. On a daily basis, the preliminary EBtMP performance data will be updated to include subsequent changes or new submissions until the second ReCalc Settlement Statement's meter submission deadline passes. At which time, the performance data will be identified as "final" and no further changes will be published.

ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-155	<p>On a daily basis, system shall aggregate its received meter data such that:</p> <ul style="list-style-type: none"> - Interval meter values for each Load Resource shall aggregate on the basis of its associated TAC Area, as defined by MasterFile - Interval meter values for each TAC Area of differentiated interval lengths (e.g. 5, 15, or 60 minutes) shall aggregate on the basis of its associated operating hour - Only the EBtMP measurement type values shall be reported - Only EBtMP hourly aggregated meter values effective <i>after the meter submission deadline</i> (e.g. "Final" status) shall be reported <p><i>See Appendix D for example payload results.</i></p>	Core	- OASIS

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ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-160	<p>For payload EBtMP meter data received after T+48B (e.g. "Final"), system shall publicly display each TAC Area's aggregated hourly EBtMP meter values in the "Excess Behind the Meter Production" Report (located in the "System Demand" OASIS menu) with the following fields defined:</p> <ul style="list-style-type: none"> • Trade Date • Trade Hour (1-24, 23/25 for DST transition dates) • TAC Area • Measurement Type ('EBtMP') • Hourly Meter Value (in MWh, four decimal precision) • Status ('Final' only) <p>Where,</p> <ul style="list-style-type: none"> • Report results may be filtered by TAC Area, Trade Date (by user-defined "to" and "from" dates), and Status. • Report results may be sorted by TAC Area, Trade Date, Trade Hour Results, or Status • Report results must update all 24-hours of a given trade date (no partial-day updates), applies during both PST and PDT time periods • Report results will only publish meter results effective after the meter submission deadline is provided (e.g. report status = 'Final'); subsequent resubmissions/corrections will not publish 	Core	- OASIS (UI)

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ID#	Business Feature	Req Type	Potential Application(s) Impacted
EBtMP-BRQ-161	System shall all publicly available Excess Behind the Meter Production Report data through an API service: <ul style="list-style-type: none"> • Trade Date • Trade Hour (1-24, 23/25 for DST transition dates) • TAC Area • Measurement Type ('EBtMP') • Hourly Meter Value (in MWh) • Status ('Final') 	Core	- OASIS (API)

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6.4 Business Process: Market Simulation

6.4.1 Business Requirements

ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Structured Scenario
EBtMP-MSIM-01	<p>EBtMP and Gross Load Meter Data Submission by Scheduling Coordinator</p> <p>By the designated trade date deadline, load-serving entity scheduling coordinators shall submit both Gross Load and EBtMP energy meter data for all twenty-four (24) operating hours for their respective load resource ID to the MRI-S application.</p>	Scheduling Coordinator	MRI-S	<ol style="list-style-type: none"> 1. Interface Changes 2. New/Modified Data Model
EBtMP-MSIM-02	<p>Unaccounted for Energy (UFE) Settlement with revised quantity calculation.</p> <p>For the designated trade date with both Gross Load and EBtMP measurement types submitted as settlement meter data, load serving entity shall receive allocations on the basis of the net load meter quantity for the UFE amount calculation.</p>	Settlements	Scheduling Coordinator	<ol style="list-style-type: none"> 1. Rule Impacts 2. New System Process 3. New/Modified Data Model
EBtMP-MSIM-03	<p>OASIS Monthly EBtMP Performance Data Report</p> <p>OASIS shall provide a new monthly performance report for EBtMP meter data per its associated TAC Area on an hourly basis.</p>	OASIS	Scheduling Coordinator	<ol style="list-style-type: none"> 1. Rule Impacts 2. New System Process 3. New/Modified Data Model

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Appendix A: [Intentionally Left Blank]

Appendix B: [Intentionally Left Blank]

Appendix C: Settlement Charge Codes Applying the Updated Gross Load Definition

Charge Code	Charge Code Description
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

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Appendix D: Sample Calculation of Meter Data Aggregation for OASIS Report

Each TAC Area shall have all 5-min, 15-min, and 60-min meter energy values aggregated/summed into a single hourly value for the EBtMP each measurement type.

Where the aggregate hourly meter value in MWh,

$$EBtMP\ MWh_{TAC1, Hr\ 2} = \sum EBtMP\ MWh_{TAC1, 5-min, Hr\ 2} + \sum EBtMP\ MWh_{TAC1, 15-min, Hr\ 2} + \sum EBtMP\ MWh_{TAC1, 60-min, Hr\ 2}$$

$$EBtMP\ MWh_{TAC2, Hr\ 2} = \sum EBtMP\ MWh_{TAC2, 5-min, Hr\ 2} + \sum EBtMP\ MWh_{TAC2, 15-min, Hr\ 2} + \sum EBtMP\ MWh_{TAC2, 60-min, Hr\ 2}$$

...

$$EBtMP\ MWh_{TACn, Hr\ 2} = \sum EBtMP\ MWh_{TACn\ 5-min, Hr\ 2} + \sum EBtMP\ MWh_{TACn, 15-min, Hr\ 2} + \sum EBtMP\ MWh_{TACn, 60-min, Hr\ 2}$$

Sample OASIS Excess Behind the Meter Production Performance Report

STATUS	Trade Date	Measurement Type	TAC Area	Hour 1 (MWh)	Hour 2 (MWh)	Hour 3 (MWh)	...	Hour 23 (MWh)	Hour 24 (MWh)
Final	1/11/2020	EBtMP	TAC Area 1	123.431	0	231.184	..	14.352	10.433
Final	1/11/2020	EBtMP	TAC Area 2	0	125.34	0	..	0	155.132
Final	1/11/2020	EBtMP
Final	1/11/2020	EBtMP	TAC Area N	124.53	235.32	0	..	32.333	123.132
Final	1/12/2020	EBtMP	TAC Area 1	123.7	0	231.302	..	14.133	10.333
Final	1/12/2020	EBtMP	TAC Area 2	0	125.472	0	..	0	155.132
Final	1/12/2020	EBtMP
Final	1/12/2020	EBtMP	TAC Area N	124.43	235.22	0	..	32.152	123.123

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Appendix E: Gross Load (with Gross Up), EBTMP Meter Data Submission Example

In the example below, assume a simple DLAP (or similar load resource ID) has three separate meter locations. Each location has its own distribution location (i.e. its own distribution loss factor), both behind the meter load and production are present, and metering polling at 5-min intervals (simplified for the example, may be different in actual practice).

Behind the meter, conditions for both actual load and production is shown in the table below. A common example would be a house or facility pulling energy from the grid, but simultaneously producing energy from locally installed solar panels. Full load represents the total energy consumption of the customer.

At the meter, however, load is now defined as “gross load” under the tariff and considers only the energy that passes through the meter from the grid (full load – production). In cases where behind the meter production exceeds the full load, gross load is reported as zero and the excess amount (production – full load) is reported to MRI-S under a new EBTMP measurement type. Otherwise, EBTMP is reported as zero. The load and meter production are not “netted” in this sense. Both measurement types are reported separately at all times.

For Gross Load, a gross up calculation may be performed using the DLF (distribution loss factor) to consider losses between from the transmission to distribution interface, as well as the avoided losses due to any excess production at the meter. The formula establishes Gross Load (with Gross Up) = $\text{Max} [(\text{Gross Load} * (1+\text{DLF})) - (\text{EBtMP} * \text{DLF}), 0]$ for the hourly meter values. The Max() function ensures negative gross load is not reported. In this example, hour-ending 13’s Gross Load (with Gross Up) and EBTMP is determined. No loss calculations should be performed for the EBTMP measurement value.

Within the meter data submission deadline, the DLAP meter data is aggregated for the settlement hour, and submitted to MRI-S under the respective “LOAD” and “EBTMP” measurement types by the SCME. The EBTMP data snapshot at the meter data submission deadline is reported in OASIS. If meter data corrections are subsequently performed, the OASIS report will not be updated. Therefore, this report is not settlement quality data.

Also, please note that ISO-pollled metering does not apply to this example or the excess behind the meter production initiative.

Figure E.1 Example of Gross Load (with Gross Up), Excess Behind the Meter Production Meter Data Calculation, Submission.

Meter Location	Meter Polling Time Interval	Behind the Meter		Gross Load (MWh)	At the Meter Excess Behind the Meter Production (MWh)	Hourly Meter Value		Distribution Loss Factor (DLF)	Losses from Gross Load (ie. Gross Load * DLF)	Avoided Losses from EBtMP (ie. EBtMP * DLF)	MEASUREMENT TYPE (MRI-S)	
		Full Load (MWh)	Production, e.g. Solar (MWh)			Gross Load (MWh)	EBTMP (MWh)				LOAD (MWh)	EBTMP (MWh)
1	12:05	5	2	3	0	25	3	0.10	2.5	0.30	27.2	3
	12:10	5	2	3	0							
	12:15	5	2	3	0							
	12:20	5	2	3	0							
	12:25	5	2	3	0							
	12:30	5	6	0	1							
	12:35	5	6	0	1							
	12:40	5	6	0	1							
	12:45	5	4	1	0							
	12:50	5	2	3	0							
	12:55	5	2	3	0							
13:00	5	2	3	0								
2	12:05	1	2	0	1	0	22	0.03	0	0.66	0	22
	12:10	1	2	0	1							
	12:15	1	2	0	1							
	12:20	1	2	0	1							
	12:25	0	2	0	2							
	12:30	0	2	0	2							
	12:35	0	3	0	3							
	12:40	0	3	0	3							
	12:45	0	3	0	3							
	12:50	0	3	0	3							
	12:55	1	2	0	1							
13:00	1	2	0	1								
3	12:05	6	0	6	0	75	5	0.02	1.5	0.1	76.4	5
	12:10	6	0	6	0							
	12:15	7	0	7	0							
	12:20	8	0	8	0							
	12:25	9	0	9	0							
	12:30	10	0	10	0							
	12:35	10	0	10	0							
	12:40	10	0	10	0							
	12:45	9	0	9	0							
	12:50	0	1	0	1							
	12:55	0	2	0	2							
	13:00	1	3	0	2							
	DLAP TOTAL, HE-13											