

# BPA Policy 483-1

## Revenue Quality Meter Data Management

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## 1. Purpose & Background

This policy establishes requirements for the management of Bonneville Power Administration's (BPA) Revenue Quality Meter Data (RQMD). The objectives of this policy are to ensure the proper and timely retrieval, collection, storage, validation, editing and estimation of RQMD, as well as availability of that data for internal and external use. RQMD is a critical data resource essential to BPA's operations and is managed within BPA's Metering Services organization.

## 2. Policy Owner

This policy is owned by the Customer Support Services (CSS) Director. Metering Services is responsible for monitoring, reporting, evaluating, and interpreting this policy and for soliciting internal feedback and implementing revisions as outlined under Responsibilities (section 7) in this policy.

## 3. Applicability

This policy applies to meter data from metering that is of revenue quality in accordance with BPA Standards STD-N-000001, *Technical Requirements for Interconnection to the BPA Transmission Grid*, and STD-DC-000005, *Metering Application Guide*, and is for use in the Customer Bill. This policy also covers RQMD received via meter slips and data transfers.

## 4. Terms & Definitions

- A. **Agency Metering System (AMS):** Metering Services' Agency Critical Business System (CBS) that consists of the vendor-supplied Itron Enterprise Edition (IEE) and the customer-created Meter Application Page (MAP). Together these systems store BPA's RQMD, including meter profile information, event information, and net meter usage calculations according to each unique Service Point Profile (SPP) key. The RQMD information is made available in the Agency Metering Service web service which multiple systems, such as Customer Billing Center, Meter Data Management Reporting 2, and Agency Load Forecasting systems, use as the source of record.
- B. **Customer Bill:** A monthly invoice and statement along with customer reports prepared by Customer Billing and sent to BPA's customers for BPA product service charges and credits. Examples include Power bills, Transmission bills, or Combined Power & Transmission bills.
- C. **Data Transfer:** A process in which BPA receives RQMD through means other than IEE, or for which no device is directly associated with the meters and the RQMD is a virtual meter used to represent a totalized set of customer meter points. These data transfer meter points bring in both hourly and sub-hourly interval values.

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<b>Author</b> D. Bicknell/K. Baker	<b>Approved by</b> Karen Graves Pyrch, Director, Customer Support Services	<b>Date</b> 10/4/2018	<b>Version</b> 1.0	Page 2

- D. **DB239:** An interval data reporting tool used to view and graph data for individual meter points as well as totaled sets of meter points that represent customers. It contains data from the 1970s up to September 1, 2016. While the DB239 interface was decommissioned in February 2018, it is available indefinitely for historical purposes and is owned by Metering Services.
- E. **Transfer Service Agreement:** Agreement for acquisition from third party transmission providers, by Power Services, of transmission service necessary for the delivery of power to serve preference customer loads that are not directly connected to BPA transmission, i.e. to the Federal Columbia River Transmission System (FCRTS). This agreement type encompasses the General Transfer Agreements.
- F. **Itron Enterprise Edition (IEE):** A system used for the storage and management of RQMD at BPA.
- G. **Metering Applications Page (MAP):** The system used to store and track auxiliary meter information, including meter events and customer contact information.
- H. **Meter Data:** kWh and kVARh intervals taken at a point or points of electrical connection to measure demand and energy delivered to or from BPA's customers.
- I. **Meter Data Management Reporting 2 (MDMR2):** A reporting tool used by both internal and external customers to export profile and usage data. It is located in the Customer Portal as the Metering tab; MDMR2 is a free service provided by BPA to its metered customers.
- J. **Meter Slip:** The method of reporting a total amount of kWh used per month for a specific meter when the data cannot be retrieved electronically. Meter amounts are spread across the impacted month for all intervals.
- K. **Metering Systems:** AMS (IEE and MAP), SPP, and MDMR2.
- L. **Multi-Vendor 90 (MV-90):** The original name of a multi-vendor (MV) translation system which interprets a variety of metering communication protocols used for data collection and analysis. MV-90 can poll interval pulse counts from recorders or meters, perform validation, editing, reporting, and historical database functions. MV-90 is an Itron product and included in IEE.
- M. **Revenue Quality:** Meter Data quantities that are measured with a 0.2 accuracy class revenue meter, as defined by the American National Standards Institute (ANSI) C12.20.
- N. **Service Point Profile (SPP):** A data entry system created to store SPP information. This system organizes information in unique SPP keys, which are a combination of the Customer Account Number, Customer Contract Number, Contract Point Name, and Meter Number. This allows users to tailor contributing information specific to each unique SPP key, such as loss adjusters. SPP key information is applied to AMS information to flow to all downstream systems.

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- O. **Settlement Quality Meter Data (SQMD):** RQMD that has been validated and released for the Customer Bill.
- P. **Trouble Log:** A log in MAP that maintains a current list of meters that have failed automatic communication or automatic data validation. It is used in troubleshooting and communication with Transmission Field Services.
- Q. **Virtual Service Point (VSP):** A unique identifier for an aggregation of a set of meter points. A VSP may be used for loss adjuster applications, Customer Bills, or other applications.

## 5. Policy

It is BPA’s policy that RQMD be managed according to the requirements in this policy and any referenced procedures and standards. The referenced requirements in this policy are intended to be consistent with BPA’s Transmission Tariff, transmission contracts, and power sales contracts. In the event of a conflict between the provisions of this policy and any power or transmission contract, the provisions of the contract shall prevail.

### 5.1 General Requirements

The following general requirements are applicable throughout all phases of the RQMD management lifecycle.

#### A. Metering Standards

##### 1. Owner of the metering standards

BPA’s metering standards are owned and maintained by Transmission Services. All meters for use in the Customer Bill are required to be Revenue Quality in accordance with BPA Standards STD-N-000001, *Technical Requirements for Interconnection to the BPA Transmission Grid*, and STD-DC-000005, *Metering Application Guide*. Such requirements apply to the entire metering system, which includes the meters, current transformers and potential transformers, and associated wiring and equipment. The BPA technical standard requires the overall accuracy of the meter data from the metering system to be accurate within + or – one percent of actual value.

##### 2. Data received from meters

The meter is required to record bidirectional kilowatt-hours (kWh) and kilovolt-ampere reactive hours (kVARh) load profile meter data. Meter data from a revenue meter is considered revenue quality.

##### 3. Meter Data measurement interval

The interval (5, 15, 30 or 60 minutes) of meter data measured and received is determined by the meter’s configuration. The BPA standard requirement for new meters is to record five-minute interval data.

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**4. Communication Method**

For RQMD retrieval, BPA’s standard communication method is Transmission Control Protocol/Internet Protocol (TCP/IP) using a cellular modem. Other communication methods are acceptable under BPA Standards STD-N-000001, *Technical Requirements for Interconnection to the BPA Transmission Grid*, and STD-DC-000005, *Metering Application Guide*, on a case-by-case basis as determined by Transmission Services Planning and Engineering organizations.

**5. Data Transfers and Meter Slips**

BPA receives and uses meter data for the Customer Bill in the form of data transfers and meter slips on a case-by-case basis. This meter data is also considered to be revenue quality.

**B. Customer-owned metering and processing customer deviations**

1. Any deviation, such as customer access to a BPA-owned meter or customer installation in lieu of a BPA-owned meter as a method to receive RQMD, must be requested in writing to BPA and approved by the Customer Service Engineer or the Transmission Customer Account Executive.
2. If BPA requires RQMD from a customer-owned meter, but is not given access to directly communicate with that meter, a pulse recorder may be installed so that retrieval using MV-90 protocol is possible via BPA-owned devices.
3. Use of a customer-owned meter is acceptable for new generation under 3 MW, and New Large Single Loads within BPA’s balancing authority is acceptable if that generation or load has no BPA system impact requiring further study, is not a direct interconnection to BPA, and is behind an existing Point of Delivery measured by an existing meter. This customer-owned metering and associated equipment is required to meet BPA’s technical standards.

**C. Meter Point naming conventions**

1. For the downstream application of RQMD, *IN* is defined as energy flowing into the BPA transmission system either from a customer, generating station, or other balancing authority area. *OUT* is defined as energy flowing out of the BPA transmission system to a customer load, generating station service, or other balancing authority area.

**D. Metering Data Systems**

1. Metering Services is responsible for maintaining the Agency Metering System (AMS), Itron Enterprise Edition (IEE), the Metering Applications Page (MAP), Service Point Profile (SPP), and the Meter Data Management Reporting 2 (MDMR2) systems. AMS is an Agency Critical Business System, while SPP and MDMR2 are not.

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2. RQMD flows from AMS to MDMR2 with customer profile information applied based on information in SPP.
3. MAP events are available in MDMR2 for viewing.

**E. Meter Data Systems Retention and Format**

RQMD is preserved in all applicable systems by Metering Services in accordance with the Information Governance & Lifecycle Management retention schedules.

For example, RQMD must be retained for the active period (defined as the period that RQMD may be revised under BPA Policy 481-1, *Customer Billing*) which is currently six years, plus an additional ten years. Per the Regional Dialogue Contracts, RQMD that begins on October 1, 2004, must be retained and made available to Power Account Services for purposes of calculating Contract Demand Quantities for new customers through fiscal year 2028. RQMD older than the active period plus ten years will be purged only if it was created prior to October 1, 2004.

**F. Revenue Quality Meter Data Availability**

**1. Meter Data availability for viewing in MDMR2**

BPA’s RQMD is available to all internal and external parties through MDMR2, with the exception of BPA Market Function Employees who do not have access to MDMR2 per BPA Policy 233-1, *FERC Standards of Conduct*. MDMR2 is located within the BPA Customer Portal site and access is managed by the Customer Contracts - Systems organization. To obtain access to MDMR2, external parties are required to have a Customer Portal agreement in place, and must contact their assigned BPA Account Executive.

**2. Third Party Access to MDMR2**

MDMR2 data access for third-party representatives or contractors of external primary customers, who are not the primary customer associated with the meter, is limited according to business need. In accordance with its Customer Portal Agreement, the primary customer tracks written permissions for third-party access. The primary customer may approve permissions for third party access to their meter data by submitting the required forms to BPA Metering Services, who first validates the request for access, then sends the request to the BPA Customer Portal (CP) Team within Customer Contracts – Systems organization for programming. The primary customer manages their own RQMD in determining who has a need-to-know basis within their organization.

**3. Accuracy and availability of Meter Data to customers and how it is provided**

RQMD information is available in MDMR2 on an hourly or daily basis, depending on call frequency, but is not considered Settlement Quality until it has been validated

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and released (Release of Revenue Quality Metering Data in section 5.2.C of this policy).

**4. Flow of Meter Data from Metering Services systems to other BPA systems**

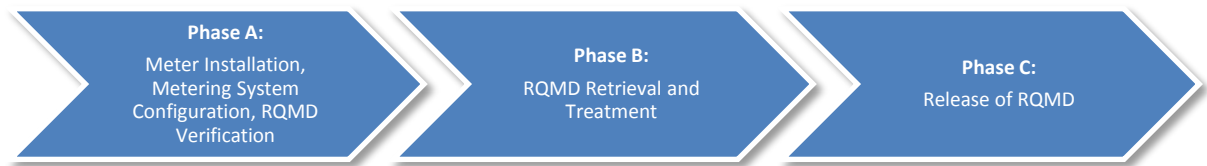
RQMD is also pulled from AMS by other BPA internal systems, such as Integrated Scheduling, Accounting, After-the-Fact Calculator (ISAAC), Meter Data Management Reporting 2(MDMR2), and the Customer Billing Center (CBC). The only exception is that RQMD is not pulled from AMS for Agency Load Forecasting (ALF). The frequency of that automatic pull from downstream systems from AMS varies.

**5.2 Lifecycle Requirements**

RQMD Management is the process of managing Meter Data by implementing key requirements during the following three major phases of the RQMD lifecycle:

- A. Meter Installation, Metering System Configuration, and RQMD Verification;
- B. RQMD Retrieval and Treatment; and
- C. Release of RQMD.

**Figure 1: Three Major Phases of RQMD Management**



The following requirements are applicable to the specific phase of the lifecycle that is indicated below.

**D. Phase A: Meter Installation, Meter Systems Configuration, and RQMD Verification**

Meter Data enters the Meter Installation, Meter Systems Configuration, and RQMD Verification phase of the lifecycle once a need for RQMD has been identified and a revenue quality meter installed.

**1. New meter installation requests**

- a) All new meter installation requests must be processed through Transmission Services as the asset owner and the Balancing Authority, in coordination with the Customer Service Engineer and the Transmission Account Executive. In the case of Transfer Service Customers, meters can be requested through a Power Services Customer Account Executive in coordination with the Customer Service Engineer.
- b) Metering Services generates new meter point numbers and associated profiles using SPP upon request from Transmission Services (Transmission Engineering

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for BPA-owned meters, or Customer Service Engineering for customer owned meters and any BPA/customer combination of ownership of the metering system). Metering Services will coordinate with the appropriate parties to update information in BPA’s Metering Systems no later than ninety days prior to meter hardware installation or energization.

**2. Timelines and requirements for new meter configuration in Metering Services systems**

- a) For customer-owned meters, at least one week prior to a new meter’s scheduled energization date, Metering Services will contact the customer to coordinate data retrieval information. For BPA-owned meters, Transmission Field Services will notify Metering Services of data retrieval information. Metering Services and Transmission Field Services will document the data retrieval information transaction in MAP.
- b) BPA requires the meter system to be configured according to the Metering Services Meter/Service Point Configuration Procedure. The meter hardware configuration is specified in the Transmission standards.

**3. Verifying the flow of RQMD**

- a) For RQMD to be retrieved and flow to downstream systems, Metering Services must complete the system setup work required in BPA’s Metering Systems (IEE and SPP). This sync with downstream systems takes place overnight.
- b) Metering Services or the Meter Data Analyst will verify that BPA systems can retrieve RQMD and verify the accuracy of that data after meter installation, testing, and energization as the activity is performed.

**E. Phase B: Revenue Quality Meter Data Retrieval and Treatment**

Meter Data enters the Retrieval and Treatment phase of the lifecycle once the meter has been energized, tested, and flow of RQMD to BPA’s Metering Systems has been confirmed.

**1. Revenue Quality Meter Data Retrieval**

**a) Meter data receipt**

Metering Services is responsible for the retrieval of RQMD. The meter is queried for Revenue Quality Meter Data using MV-90 protocol over communication paths.

**b) Frequency of data retrieval**

RQMD is retrieved using MV-90 protocol on a daily basis.

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For a subset of meters related to BPA’s customers whose load is served through Transfer Service agreements, meters are queried on an hourly basis for Power Services’ use in scheduling.

**c) Data Transfers and Meter Slips**

For RQMD not received using MV-90 protocol, Metering Services will establish an arrangement with Transmission Field Services or the customer to receive meter slip or data transfer information and manually input the RQMD on a monthly basis.

**d) Protocol and timelines for instances of meter data retrieval failure**

For meter communication failures lasting more than three days, Metering Services will contact Transmission Field Services personnel to resolve the issue. Queries and responses are logged in the Trouble Log or an event is created in MAP.

**2. Revenue Quality Meter Data Validation, Editing, and Estimation**

**a) Validation**

Automatic validation is performed by IEE on the new RQMD as it is retrieved from the meter in order to detect conditions such as missing data, data that could be invalid, hardware failure, or communication failure. These conditions may result in missing or erroneous values. A Meter Data Analyst addresses any anomalies in missing or erroneous data as they arise.

Meter Data Analysts conduct validations of RQMD, including RQMD provided by meter slip and data transfer, throughout the month using visual analysis and documents any anomalies in MAP.

**b) Estimations and Editing**

When interval data is missing or erroneous, meter data is estimated using the Meter Usage Data Estimations Provision of BPA’s customer power sale agreements which are the basis of Metering Services’ internal procedures for editing and estimation. Currently, the estimation and editing process is performed manually by the Meter Data Analyst based on the available information and the issue or condition causing the need for estimation.

All estimated intervals are tagged as an edited interval in IEE and MDMR2, with supporting documents stored in MAP.

**c) Loss Adjustments**

Loss Adjustments calculated by Customer Service Engineering are applied to the Meter Data from AMS before flowing data to MDMR2, and all downstream systems requiring net meter data. The calculation is based on the losses on the physical electrical system between the Point-of-Delivery and the Point-of-

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Metering. The loss adjustment values are stored in SPP and the calculation documents are stored by Customer Service Engineering. Both the raw meter data and the meter data with losses can be displayed in MDMR2. BPA does not program any loss adjustments directly into the meter.

### 3. Meter Testing

- a) Upon notification from Transmission Field Services personnel or Customer Service Engineering of a removed or replaced meter, Metering Services will coordinate with the appropriate parties to update the applicable Metering Data System information.
- b) The procedure for estimating RQMD during meter testing is the same as the standard estimation procedures described in section 5.2.B.2.b of this policy.
- c) For meters that are BPA-owned, Transmission Field Services is responsible for maintenance of those meters every two years per STD-DC-000005, *Metering Application Guide*.

### F. Phase C: RQMD Release

Meter Data enters the Release phase of the lifecycle once RQMD has been validated by Metering Services.

#### 1. Release of RQMD for Billing

RQMD is released for use in the Customer Bill by Metering Services on a monthly basis via email with Customer Billing. Upon validation and release, the RQMD is considered to be Settlement Quality Meter Data (SQMD).

#### 2. Prior Period Meter Data Change

If a correction to RQMD is identified and necessitates a change to RQMD that has been released, Metering Services will take corrective action upon discovery or notification. An email notification is sent to Customer Billing, Load Forecasting, Customer Service Engineering, and the appropriate Account Executives when RQMD changes for a prior month that has been previously released. A change to RQMD that necessitates revisions to the Customer Bill follows the BPA Procedures 481-1-3, *Billing Adjustments* and 481-1-4, *Retroactive Billing Adjustment Six-Year Limit*.

## 6. Policy Exceptions

This policy does not apply to the following:

- A. Indication from Supervisory Control and Data Acquisition (SCADA) that does not originate from a Revenue Quality meter;
- B. Data from Inter-Control Center Communications Protocol (ICCP), including both Generation ICCP and SCADA ICCP;

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- C. Meter data from Interchange Meters or Tie-line Meters not used on the Customer Bill;
- D. Management of meter data that are for purposes other than Power or Transmission Customer Bill, including tracking for potential triggering of New Large Single Load status; and
- E. Virtual Service Point Meters are not subject to normal practices of RQMD retrieval and estimations; however, those practices are applied to the RQMD from the contributing meter points in the Virtual Service Point.

## 7. Responsibilities

- A. Customer Support Services Director: Pursuant to BPA Policy 130-6, *Functional Statement for Office of the Chief Operating Officer*, the Customer Support Services Director is the policy owner for BPA internal policies in the areas of Customer Billing, Customer Contracts, Metering Services, Load Forecasting, and related systems managed by Customer Support Services.
- B. Metering Services Organization
  - 1. Coordinates, manages, and oversees all activities related to RQMD.
  - 2. Monitors, reports on, evaluates, and interprets this policy and related procedures. Solicits feedback, proposes and deploys revisions, and provides training to affected staff.
  - 3. Serves as the custodial Source of Record for RQMD and maintains and operates the Metering Data Systems AMS, SPP, MDMR2, and historical information housed in the retired DB239.
- C. Transmission Services
  - 1. Transmission Engineering
    - Certifies meter standards (for BPA or Customer owned meters).
  - 2. Transmission Field Services
    - a) Installation, testing, maintenance, replacement, or removal of meters.
    - b) Support in researching and correcting meter hardware or software failures.
  - 3. Customer Service Engineering
    - Calculation of loss adjusters for application to RQMD.

## 8. Standards & Procedures

Standards and procedures to execute this policy will be created, maintained, and updated by Metering Services with the exception of the standards and procedures listed below:

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- A. Measurement of the Meter Usage Data Estimations Provision of BPA Customer Power Sale Agreements;
- B. BPA Standard STD-N-000001: *Technical Requirements for Interconnection to the BPA Transmission Grid*; and
- C. BPA Standard STD-DC-000005: *Metering Application Guide*.

**9. Performance & Monitoring**

Key tracking indicators are currently in place to measure the effectiveness of this policy through the Customer Support Services Quality Program’s Quality Bill Initiative metrics, as well as, Metering Services organizational monthly metrics.

**10. Authorities & References**

This policy is established in accordance with the authorities outlined in BPA Policy 130-6, *Functional Statement for Office of the Chief Operating Officer*.

**11. Review**

This policy is subject to an automatic sunset review to be conducted no later than five years after the policy effective date.

**12. Revision History**

Version Number	Issue Date	Brief Description of Change or Review
1.0	10/4/2018	New Policy

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