

This guide shares BPA's expectations of utilities that are interested in installing new or replacement customer owned meters to meter new or existing loads and resources.

The intent of this document is to improve clarity regarding the roles and responsibilities of the key parties involved in the customer owned meter process, in an effort to decrease the number of issues associated with: 1) the customer owned meter installation and coordination process, and 2) the lack of notification to BPA when there are changes to customer owned meter configurations, both of which have resulted in a number of BPA bill revisions for multiple customers. These issues are costly and administratively burdensome for all involved and to avoid these issues, early and ongoing communication between all parties is key.

Utilities and Transmission Providers – Expectations and Commitments

A. BPA's Communication Expectations of Utility Customers

➤ **STEP 1 - Identify Need & Make Request**

- **For New Meters:**

- Notify your BPA Customer Service Engineer (CSE) immediately to research options for installing a customer owned meter. This will begin the process for vetting metering options and gaining approval for the customer owned meter solution from BPA's Customer Service Engineering organization (TPC).
- Execute a General Agreement that covers the metering requirements for construction.

- **For Replacement Meters:**

- Contact the BPA Meter Data Analyst (MDA) you routinely work with via phone or email or send an email to MDM@bpa.gov with notification that you will be replacing a meter.

➤ **STEP 2 – Fill Out and Return the Customer Meter Setup Form (the Form)**

- Complete the Form when you receive it from the MDA or the CSE. Some initial information will be provided by BPA. Review and complete the remainder of the *New Customer Meter Set Up* tab as well as the Customer CT/PT **Input** section of the *PT and CT Information* tab.
 - An example of the Form is included in Appendix A of this document.
 - **Note:** *Please use the version of the Form sent to you at the time of meter set up. There may have been revisions made since you last received the Form.*
- Attach the completed form to the original email and **Reply All** to return the Form to BPA. This will ensure the entire BPA team supporting the meter is notified.
 - **For EIM meters:** Return no less than 90 days prior to energization to meet CAISO filing requirements.
 - **For all other meters:** Return no less than 45 days prior to energization to allow BPA to calibrate MV-90 communications to the new meter(s).

➤ **STEP 3 – Schedule Meter Witnessing, Install Meter & Confirm Testing**

- Work with BPA District Field Staff when they contact you to schedule on-site witnessing and provide requested testing information.
 - **If on-site witnessing is not possible:**
 - Complete the Customer Revenue Meter Activity Form (the Activity Form) when you receive it via email from BPA District Field Staff.
 - An example of the Activity Form is included in Appendix B of this document.
 - **Note:** *Please use the version of the Activity Form sent to you at the time of meter set up. There may have been revisions made since you last received the Activity Form.*
 - Return the Activity Form via email as soon as possible to the BPA District Field Staff contact and MDM@bpa.gov.
- Work with BPA Metering Services to test meter communication prior to, or at, the time of meter energization.

➤ **STEP 4 – Provide Interval Data**

- Confirm meter energization and data validity using BPA's MDMR2 once the meter is online.

➤ **STEP 5 – Receive Confirmation**

- When complete, a BPA MDA will send you confirmation of successful meter set up in BPA's systems.

B. BPA Utility Customer Technical Requirements

Note: High level requirements are noted below with some additional information provided in the FAQ section on next page. Please see BPA's [Metering Application Requirements STD-DC-000005](#) for full, detailed requirements.

- Meter or recorder must be MV90 compatible.
- Meter or recorder must be able to store 5 minute interval data for 45 days or more in a system that will not lose data when power to the meter is lost.
- BPA must be provided remote access to the meter via modem-compatible telephone line, TCP/IP, access through firewall, cellular device, etc.
- BPA would prefer the ability to update the time in the meter or recorder.

C. Utilities with Transfer Service

- If the transmission provider is willing to share meter information with BPA, BPA requests that pulse outputs (KYZ) are provided and recorders installed compatible with the specifications in this document. BPA also requests transmission provider staff works with BPA Metering Services to assure proper data sharing.
- If the transmission provider is not willing to share meter information, the utility will need to secure another form of metering compatible with the specifications in this document.

BPA – Expectations and Commitments

A. Customer Service Engineers (CSEs) are responsible for:

- **For new meters only:**
 - Beginning the customer-owned meter process.
 - Working with the Customer to ensure the Customer-Owned Meter Setup form is completed within timing requirements.
 - Creating, or requesting of Metering Services, documentation of the new meter in BPA systems, and notifying Metering Services of the expected meter installation date.
 - Drafting the agreement, coordinating review by the customer, and executing the agreement.
- **For all meters:**
 - Providing verification of interval accuracy and meter setup data in BPA's internal metering system.

B. Meter Data Analysts (MDA) in Metering Services are responsible for:

- **For new meters only:**
 - Documenting the new meter in BPA systems as requested by the CSE.
- **For all meters:**
 - Sending the Customer-Owned Meter Setup form to the utility metering contact no less than three months prior to the expected meter installation date.
 - Working with the Customer to ensure the Customer-Owned Meter Setup form is completed within timing requirements.
 - Starting internal BPA processes to correctly account for the meter no less than three months prior to the expected meter installation date. Includes ensuring all related systems have been updated to ensure proper billing of the meter.
 - If the utility involved has transfer service, ensuring the correct PST (Transfer Services) representative is on all correspondence regarding this meter.
 - Finalizing and confirming completion of the setup of Customer Owned Meters.

C. BPA District Field Staff are responsible for:

- **For all meters:**
 - Scheduling and witnessing meter calibration/in service check or requesting the Customer complete the Customer Revenue Meter Activity Form.
 - Reviewing Customer install and testing information for high level conformance and quality assurance.
 - Establishing the Customer maintenance schedule in BPA's systems in order to track and coordinate maintenance witnessing with the Customer.

Frequently Asked Questions (FAQ)

What type of meter projects does this guide apply to?

This is for utilities that are interested in installing customer owned meters to meter new loads or new generation connecting to their distribution facilities; meter swaps; adding the In meter; and customer installed meters where BPA will take ownership after installation.

What qualifies as an MV90 compatible meter or recorder?

The specifications for the meter should specifically say the meter is MV90 compatible. The utility can also ask the BPA Customer Service Engineer, Meter Data Analyst, or System Protection Control (SPC) District Engineer if the meter or recorder they are expecting BPA to read is MV90 compatible prior to purchasing.

What should I know about meter communication using a telephone line, TCP/IP, access through firewall, or cellular device?

- The telephone line could be an analog line or digital line as long as a modem will communicate over that phone system.
- Communication using TCP/IP (Transmissions Control Protocol/Internet Protocol) through a utility's firewall is also an acceptable option. BPA is well-versed in working through a utility's private networks and accessing information through the firewall.
- Cellular devices are also an acceptable communication option. BPA has subject matter experts on metering cellular applications as well as cell coverage areas and testing for signal strength. These individuals can help utilities configure a reliable cell device if needed. The assigned MDA can work with the SMEs as needed.

Why does BPA want the ability to update time in a utility's meter or recorder?

- Since BPA holds a very small time tolerance threshold (30 seconds), permission to update the time in the meter/recorder is needed to keep the time within system tolerance.
- If a utility also uses MV90 to read their meter, the same 30 second time tolerance policy should be programmed on meters shared with BPA.
- BPA only needs read/write abilities to the meter in order to write/update the time within tolerance in the meter/recorder and does not need the ability to write anything else.
- BPA requests written passwords to store in the metering system and have easy access to update the time within tolerance as needed.

Why does Metering Services need a Customer Owned Meter Setup form when the customer already fills out the Metering Letter Agreement from the CSEs?

- The Metering Agreement from the CSEs is reviewed and executed early in the meter process and contains basic meter requirements. It does not go into explicit detail regarding the customer's actual meter setup.
- The Customer Owned Meter Setup form provides additional, more detailed, configuration information that is not part of the Metering Agreement, such as multipliers, phone numbers, interval lengths, and meter energization.

Would BPA need a customer to fill out the Customer Meter Set Up Form at the time of maintenance, as well as during install or replacement of equipment?

- No. However, per your contractual agreement with BPA, we would like to be notified in advance when maintenance on the meters will be occurring so our Field folks can make arrangements to perform on-site witnessing. There have been instances of changes made on equipment during maintenance that have caused significant billing errors resulting in high dollar credits or charges to customers. This financial risk is of even more concern now that some meters are used for EIM purposes. Getting concurrence on meter configuration in our metering system at the time of changes or maintenance will save headaches for both BPA and customers! Note that if BPA Field Staff are unable to be on-site for maintenance witnessing, they will send you a copy of the Revenue Meter Activity Form to complete and return so we can still ensure meter configuration concurrence.

Who should a customer contact if they collect data from BPA Owned meters and, say, the meter has failed or the customer wants to witness BPA's meter testing?

- Customers can contact either BPA's Metering Services organization or the Field Maintenance District Office (a.k.a. Transmission Services Regional and District Offices) where the meter is located:
 - Metering Services can be contacted via email at MDM@bpa.gov.

- A list of Field Offices, with contact information, can be found at the bottom of the [Transmission – Contact Information](#) page located on bpa.gov under About>Who We Are.

APPENDIX A: Customer Meter Set Up Form Example – New Customer Meter Set Up Tab

BPA Metering Services Customer Meter Setup Form		To be filled out by MDA or CSE	
Email this form to: mdm@bpa.gov or fax to Metering Services 603-230-3688 Metering Hotline Telephone Number: 603-230-3689 Monday-Friday 0700 -1600 (Pacific)		Device used for Revenue Billing or EIM? How many Devices to be installed? (Send form for each device, A and B meter)	Have questions or need more information when it comes to customer owned metering? Please click the link below for technical requirements and responsibilities. Responsibility and Technical Requirements for Customer Owned metering
EIM meters need to be completed 90 days Prior to Energization per CAISO. All other meters need to be 45 days Prior to Energization		Is this meter part of an EIGI calculation?	
BPA MDA/CSE Supplied Information <small>(please note blue cells have drop down with options: click in the cell itself and then click the dropdown)</small>			
BPA Assigned Meter Point Numbers (OutIn) BPA Assigned MP Names New Meter Install or Meter Swap? TRESH/REF BPA Maintenance District Cascade ID (Original being replaced) Cascade ID (New to be created by Cascade) Cascade Equipment # (WH#) Assigned Customer Service Engineer (CSE) Assigned District Engineer (DE) Assigned Meter Data Analyst (MDA) Is this meter EIM only Expected Installation Date: Is this Meter/Install expedited? Expected Energized Date: Actual Energization Date and Time: Meter Make & Function			
Customer Information <small>Customer to fill out all fields below this point</small>			
Utility Name: Metering Contract Name: Contact Phone Number: Utility Address:			
Customer Metering Site Information <small>(please note blue cells have drop down with options: click in the cell itself and then click the dropdown)</small>			
Site Name: Site Address: Site Description: State: Load Profile Type:			
Communications Information <small>(please note blue cells have drop down with options: click in the cell itself and then click the dropdown)</small>			
Meter Phone #: (or) Phone Type: Meter IP Address and port number: Is IP on a private network? (VPN Tunnel) Will cellular modem be BPA owned? <small>If Yes, notify MDC team so they can start the process.</small> Does this use a Line Sharing Switch? <small>CSE or SPC approval in place for a BPA supplied and owned cellular modem/gateway? If Yes, notify MDC team so they can start the process.</small> LSS Port: Meter Modem Baud Rate: Does this meter follow C12 22 protocols? Call Frequency: Is this meter busy Chained? <small>If yes, please indicate Master/Slave assignment in the Field Notes section below.</small> Desired Call Time (BPA to call meter):			
Meter - Recorder Information <small>(please note blue cells have drop down with options: click in the cell itself and then click the dropdown)</small>			
Device ID: Manufacturer: Model: Phase: Metering Voltage: Meter Serial #: Meter Memory Size: Meter Program Time Zone: Meter Password 1: Meter Password 2: Meter Password 3: (not common) Unit Address or User ID (ION Meters): Does this meter use a TMI Config File? <small>If yes, Please email the config file to the Meter Data Analyst that you are working with at BPA.</small>			
Channel Information <small>(please note blue cells have drop down with options: click in the cell itself and then click the dropdown)</small>			
Meter Channel Assignment BPA Meterpoint # (to be assigned by BPA) Meter Interval Channel ID Unit of Measure Flow Description kWh Pulse Multiplier kWh Pulse Multiplier Intervals/hr			
Field Notes:			

**EXAMPLE ONLY –
PLEASE USE CURRENT FORM SENT BY
BPA AT TIME OF METER SET UP**

APPENDIX A: Customer Meter Set Up Form Example – PT and CT Information Tab

Customer CT/PT Input: (prior to Energization and BPA witnessing)	Current Transformers			Potential Transformers		
	A Phase	B Phase	C Phase	A Phase	B Phase	C Phase
Installation Date						
Ratio(s) Available						
Ratio used						
Serial Numbers						
Manufacturer						
Model Number						
Accuracy Class						
Thermal Rating Factor						
Burden Rating						
Voltage Rating or Class (KV)						
Supply BPA with manufacturers accuracy test data						
Procedures (in addition to gathering the data above):				Check:		
Check Polarity				Customer signature here Customer Sign off		
Power Factor testing (115kV and above)				Customer signature here Customer Sign off		
Insulation testing / resistance testing				Customer signature here Customer Sign off		
Measure and Record Direct Current CT wire and winding loop resistance; 3 phases				Customer signature here Customer Sign off		
Measure and Record Direct Current PT wire and winding loop resistance; 3 phases				Customer signature here Customer Sign off		
Customer to supply BPA District Engineer/SPC and Meter Data Analyst (if SPC not onsite to witness)				Check:		
Energization Procedures:				MDA Signature here MDA confirms DE/SPC review		
Measure and Provide Records of the following (when position is carrying load)				MDA Signature here MDA confirms DE/SPC review		
Voltage (amplitude and phase angle)				MDA Signature here MDA confirms DE/SPC review		
Current (amplitude and phase angle)				MDA Signature here MDA confirms DE/SPC review		
Calculated Load (Sum V * I * PTR * CTR)				MDA Signature here MDA confirms DE/SPC review		
"In-service testing": comparing to meter indication of load to measured values.				SPC Signature here SPC Name		
BPA Field Staff on site for witnessing				MDA Signature here MDA confirms DE/SPC review		
Verify BPA's MV-90 is receiving data that matches the measured load by communication with BPA Metering Services in real-time				MDA Signature here MDA confirms DE/SPC review		
Meter Calibration Date (triggers Cascade maintenance cycle)				MDA Signature here MDA confirms DE/SPC review		
Customer maintenance schedule (every 2,3,5 years?)				MDA Signature here MDA confirms DE/SPC review		
Field Notes: Please fill out any info that will help with this site, hardware, location, etc....				SPC Review:		
Completed information to be received by BPA District Engineer no later than 14 days after energization				KSM Review		Date:
				SPC signs here	MDA signs here	

**EXAMPLE ONLY –
PLEASE USE CURRENT FORM SENT BY
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APPENDIX B: Revenue Meter Activity Form Example

EXAMPLE ONLY –
PLEASE USE CURRENT FORM SENT BY
BPA AT TIME OF METER SET UP

U.S. DEPARTMENT OF ENERGY
 BONNEVILLE POWER ADMINISTRATION

Customer Owned Meter: Revenue Meter Activity Form
 (Installation, Change, and Outage Report)

STATION		UTILITY NAME				DATE			
BPA ASSIGNED METER POINT NAME						BPA ASSIGNED METER POINT NUMBERS			
						OUT		IN	
CTR		PTR				DEVICE ID			
TYPE OF WORK <input type="checkbox"/> INSTALLATION <input type="checkbox"/> CHANGE <input type="checkbox"/> MAINTENANCE						ENERGIZATION DATE (IF APPLICABLE)			
LOAD CUT IN		WHM		WHM		VHM		VHM	
		in	out	in	out	in	out	in	out
O U T	DATE								
	TIME								
	MULTIPLIER								
I N	DATE								
	TIME								
	MULTIPLIER								
WAS POWER FLOWING?				<input type="checkbox"/> YES		<input checked="" type="checkbox"/> NO			
ANY ENERGY UNMETERED?				<input type="checkbox"/> YES		<input checked="" type="checkbox"/> NO			
WAS LOAD SHIFTED?				<input type="checkbox"/> YES		<input checked="" type="checkbox"/> NO			
IF YES, WHERE?									
DATE/TIME LOAD SHIFTED				DATE/TIME LOAD SHIFTED BACK					
AVERAGE LOAD SHIFTED		Kw		Kvar		OTHER			
TOTAL LOAD SHIFTED		Kw		Kvar		OTHER			
WAS A METER FOUND OUT OF TOLERANCE?		<input type="checkbox"/> YES		<input type="checkbox"/> NO					
WHICH METER? (Meter number)									
HOW LONG WAS THE METER OUT OF TOLERANCE? (if known)									
WHAT WAS THE "AS FOUND" PERCENTAGE REGISTRATION?									
WHEN WAS THE METER PREVIOUSLY MAINTAINED?									
COMMENTS:									

TO BE COMPLETED BY BPA CUSTOMER:

WORK COMPLETED BY	COMPANY NAME	PHONE NO.
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TO BE COMPLETED BY BPA REP:

WORK CHECKED BY	ORG. CODE	PHONE NO.
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MAIL TO: District SPC contact **AND** **E-MAIL TO: mdm@bpa.gov**