

# UPPER GREAT PLAINS METER POLICY

SUBJECT: Meter Policy

PURPOSE: Establish a policy for the Upper Great Plains Region (UGPR) meter responsibilities and requirements. Western Area Power Administration (Western) recognizes it does not currently own all the revenue meters used for our billing purposes and that specific circumstances may require deviating from this policy statement; however, the UGPR prefers these arrangements and conditions and will work with our customers to achieve them.

## A. TECHNICAL REQUIREMENTS

1. All meters, whether owned and maintained by Western, its customers, or a third party, shall comply with the requirements in this policy, with those listed in the General Requirements for Interconnection and, if applicable, shall comply with the latest revision of section 6 (Metering) of the General Power Contract Provisions (GPCP). In the event the requirements stated in this policy differ from the requirements stated in the GPCP or an executed Contract, the GPCP or Contract requirements shall prevail.
2. All meters shall meet an accuracy of  $\pm 0.3$  percent at unity power factor with 100 percent, 50 percent, and 10 percent current and  $\pm 0.7$  percent at 50 percent power factor with 100 percent current. Any new meters or replacement meters will have multi-level password protection; this will allow access to the meter readings while protecting the meter setting parameters with a different password.
3. All meters and instrument transformers will be installed to correctly measure power (kW) and energy (kWh) for all unbalances and will not be bypassed without approval by Western. Meters at all deliveries shall be 3-element. It is recognized there are several locations that employ 2-element metering. Those locations that are 2-element metering and are on a delta or ungrounded wye connected delivery, may remain in service until they are scheduled to be replaced.
4. Current Transformers (CT) shall be a wound or bushing type that meets the ANSI standard C57.13 of 0.3 percent at burdens B-0.1, B-0.2, B-0.5, B-0.9, and B-1.8. The CTs shall have a continuous thermal rating factor of at least 1.5. Multi-ratio CTs are required to meet the accuracy stated on the ratio being used. The CT will be loaded to at least 10 percent of the winding ratio unless differences are specifically allowed in a contract or agreement with Western.
5. Potential Transformers shall meet ANSI standard C57.13 of 0.3 percent accuracy class at the following burdens:

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- a. At system voltages below 25-kV with burdens of W, X, and Y.
  - b. At system voltages 25-kV and above with burdens W, X, Y, Z, and ZZ.
6. Load control boundary meters shall provide the analog and digital outputs compatible with Western's load control system and shall comply with the following:
- a. Instantaneous telemetering to the Watertown Operations Office (WOO) from all load control boundary interconnections.
  - b. Hourly watt-hour telemetering, preferably digital watt-hour telemetering, to the WOO from all load control boundary interconnections.
  - c. All 345-kV and higher interconnections shall be individually telemetered to the WOO. Quantities metered at 230-kV and 161-kV will normally require individual telemetering unless the Manager, System Reliability and Transmission Operations, concurs in a specific totalizing arrangement.
  - d. Totalizing of multiple deliveries to each separate load control area at one substation will normally be permitted. Remote totalizing of quantities from more than one foreign load control area shall be avoided.
  - e. To the extent possible, the same meter and transmitter should be used to provide the analog and digital metering information.
7. All meters shall be solid state models from which Western can collect data by:
- a. Remote interrogation using Utility Translation System MV-90 translation program.
  - b. Local interrogation - the data can be collected at the meter sites:
    - 1) by using a PC and then uploading the data to the translator over a normal telephone line.
    - 2) by removing the recorder cartridge and mailing it to the translator operator where applicable.
    - 3) by using a portable meter reader and then uploading data from the portable reader to the translator over a normal telephone line.
  - c. The make and model of the meters used in the UGPR will be approved by

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the State Maintenance Managers and the Maintenance Engineering Manager.

8. All customer supplied meters must be compatible with existing Western equipment (hardware, software, test equipment) and approved by the State Maintenance Manager responsible for the delivery point.
9. Location of metering PTs and CTs shall be designed and installed so that it is possible to maintain power to the meter during breaker bypass configurations.
10. A properly designed space that meets appropriate State and Federal Safety and Health Regulations shall be provided to protect meters and other communication equipment from the environment.

### B. REVENUE AND LOAD CONTROL BOUNDARY METERS

1. Western will be responsible for reading, testing, calibrating, maintaining, and replacing Western-owned meters.
2. Western will continue its policy to own all revenue meters on deliveries to Western customers. Ownership of load control boundary points meters are determined during contractual negotiations with the interested parties.
  - a. Revenue: Metering associated with an existing customer's desire to establish a new delivery point will be the financial responsibility of the customer. Generally, Western will own, maintain, and replace the meter, at the expense of the customer. It is preferable the meters, for any new delivery, be furnished by Western at the customer's expense. If a meter is furnished by the customer, it must be approved by the State Maintenance Office ultimately responsible for its installation and maintenance. When new delivery points are established, the customer will also be responsible for the communications necessary to facilitate remote interrogation.
  - b. Load Control: Financial responsibility for the metering system at new load control boundary points will be determined during negotiations for the new interconnections. This will include ownership, maintenance, replacement, and modification (MRM) responsibilities for the meter, instrument transformers, and communications and telemetering needed for remote interrogation of the meter.
3. The meter points will be reviewed by the Power Billing/Energy Accounting and Dispatch functions annually to ensure any changes have been accounted for properly. Any requests for load control metering changes will be coordinated

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with WOO and ample time given to review and respond to the effects of the change. The Maintenance organization will review load control boundary meters, within Western facilities, and all revenue metering systems to ensure accurate readings are being provided at the same interval as required for testing the meter. The following test intervals shall be used:

- a. Revenue Meters: All revenue meters that serve loads less than 100 kVA and single-phase meters shall be tested and calibrated once every 5 years. All solid state 3-phase meters shall be tested at least once every 3 years.
  - b. Load Control Boundary Meters: All single-phase load control boundary meters shall be tested and calibrated once every 5 years. All solid state 3-phase meters shall be tested at least once every 3 years.
4. Any meter above 120 volts that is not instrument rated shall be provided with a disconnect device on the line side of the meter to facilitate the safe maintenance and repair of the meter. Using a socket type meter in place of the disconnect device is not acceptable. If delivery can sustain short outages while the disconnect device is open for maintenance and testing, the 480-volt meters are acceptable. If these conditions cannot be met, the customer will be responsible for all costs to change to a 120-volt meter when Western takes over responsibilities for 480-volt meters.
  5. At points of delivery, points of input, or load control boundary points where another entity owns the meter, Western requires the right to be notified, in advance, of the date and time for the meter test and will be present for testing. The supplemental power supplier will provide Western with two copies of the meter test report. The meter data will be made available each month to Western's billing department. Western also reserves the right to request that a meter be tested.

Also, if the meter owner modifies meter facilities, Western reserves the right to review and approve meter facility modifications prior to implementation, and be present at the site when the modifications are accomplished.

6. When a request is made for a meter function that is not currently available with the existing meter, the entity making the request will be financially responsible for any modifications needed to meet the request.
  - a. If the meter is not owned by Western, the requester will obtain approval to make the modification from all parties associated with the meter.
  - b. If the original meter was owned by Western, ownership of the new meter

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will transfer to Western, at no cost, after the installation is complete. Responsibility for maintenance and replacement for the new meter will be the same as for the meter being replaced.

### C. GENERATION METERS

1. Meters shall meet the technical requirements of Section A, Technical Requirements. These requirements apply to generation operating inside the UGPR control area even if not directly connected to Western transmission facilities.
2. Generating meters will be owned, maintained, and replaced by the owner of the generation.
3. Instantaneous megawatt and hourly MWH data and generation status indication will be remotely provided to our WOO.
4. The customer will provide a communication circuit needed to transmit the data from the generating facility to WOO.
5. The customer will be responsible for providing an interface that is compatible with the equipment at WOO and to ensure that no MWH data is lost in hourly reporting.
6. Western requires the right to be notified, in advance, of the date and time for the meter test and will be present for testing. Western will be provided with two copies of the meter test report. Western also reserves the right to request that a meter be tested.

### D. NEW INTERCONNECTIONS AND NEW REVENUE METER DELIVERY POINTS

The party requesting the interconnection will be responsible for providing:

1. Instrument transformers that meet Western's engineering standards and the technical requirements in Section A.
2. Communication and telemetering equipment for a load control boundary point if necessary.
3. A reliable communication circuit for remote interrogation of the meter if the metered quantities are needed for billing calculations or if information from the meter is needed by Western to fulfill requests for information from customers.

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4. Meters according to the technical standards detailed in Section A. If the meter serves a load of 100-kVA or greater ownership of the meter will transfer to Western. For meters serving loads less than 100-kVA, ownership will remain with the customer.
5. Maintenance, replacement or modifications (MRM) of equipment listed in Sections D1, D2, D3, and meters serving a load of less than 100-kVA installed in a customer's facility.
6. Monies to Western for Western to perform MRM of equipment listed in Sections D1, D2, D3, and D4. Installed in a Western substation and for meters serving a load of 100-kVA or greater installed in a customer facility.
7. Appropriate set of drawings for the delivery point. An "A" size 1-line diagram and full-size 3-line diagrams of the CT, PT, and panel layout drawings are required for approval prior to installation of the meter. Nameplate data on the CT and PT shall be included with the approval drawings. Western shall be notified prior to any modifications to the CT and PT circuits. The design will include the following:
  - a. The use of shorting terminal blocks on CT installations. The shorting blocks will be ahead of any metering test blocks, preferably at the CT location, to allow the safe installation and modification of the metering circuits.
  - b. A means of disconnecting PT circuits ahead of the metering test block. Western prefers the use of potential fuses for this purpose.

### E. REPLACEMENT OF EXISTING INSTRUMENT TRANSFORMERS (ITs)

The instrument transformer's location, reason for change, and ownership determine the responsibility for maintenance and replacement. As a general rule, the customer will be responsible for any instrument transformer costs resulting from load growth or other modifications or improvements to their system. This would include the replacement of instrument transformers resulting from a delivery voltage change by the customer's supplemental power supplier or wheeling agent.

Customers shall notify their Power Marketing representative and the Power Billing department located at the WOO in Watertown, SD, of any equipment failures immediately upon discovery so all necessary adjustments can be made and arrangements can be made for repair or replacement.

Except in an emergency, a customer shall not replace any failed instrument transformers or change CT ratios without first notifying Western. Notification should be in writing at least 10

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working days prior to the scheduled transformer change.

Every effort will be made to complete the replacement of failed equipment as soon as possible after its discovery.

Any failed instrument transformers owned by Western must be returned to Western for proper environmental disposal.

Western will use multi-level password protected meters when installing new meters and when existing meters warrant replacement.

The following situations further illustrate how responsibilities will be determined:

### 1. FINANCIAL RESPONSIBILITY FOR INSTRUMENT TRANSFORMERS

- a. Western-owned instrument transformers will be purchased or furnished by Western.
- b. Customer-owned instrument transformers will be purchased or furnished by the Customer.
- c. Any changes resulting from the customers load growth will be the responsibility of the customer.
- d. Any new or additional metering point requested or required by the customer will be the responsibility of the customer.
- e. Any changes resulting from a change by the customer's supplemental supplier or a third party wheeling agent will be the responsibility of the customer.

### 2. REPLACEMENT RESPONSIBILITY FOR INSTRUMENT TRANSFORMERS

- a. Customer-owned instrument transformers installed in Western facilities will be replaced by Western personnel.
- b. Customer-owned instrument transformers installed in customer facilities will be the responsibility of the customer.
- c. Customer-owned instrument transformers installed in a supplemental supplier or wheeling agent's facility will be the responsibility of the customer.

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- d. Western-owned instrument transformers installed in Western facilities will be replaced by Western personnel.
- e. Western-owned instrument transformers installed in customer facilities will be furnished by Western for replacement by the customer.
- f. Western-owned instrument transformers installed in third party facilities will be replaced under a negotiated agreement with the third party.

### F. TRANSFORMER/LINE LOSS COMPENSATION

The choices listed below are available for adjusting the energy (kWh) delivered to or received from the customer when the points of delivery and measurement are different. The customer, with Western's concurrence, can choose to either:

1. Use the standard 2 percent transformer loss adjustment factor plus a line loss if applicable, in preparation of the power bill.
2. Use a negotiated transformer loss factor plus a line loss, if applicable, in the preparation of the power bill. The customer must obtain a written agreement from supplemental power supplier(s) and/or wheeling agent(s) stating the mutually agreed value. The choices in Sections F1 and F2 would have the power bill's delivered value increased by the appropriate loss factor for Western supplying power to the customer, and if applicable, decreased by the same loss factor for the received value when Western receives power from the customer.
3. Use a transformer and/or line loss compensating meter. The customer, with Western's concurrence, must obtain written agreement from the supplemental power supplier(s) and/or wheeling agent(s) to use a loss compensating meter, for the values used in the meter formula to calculate the percent kWh's loss compensation, and for a value of transformer and/or line loss in the event the meter fails. The application of the transformer loss compensating meter is technically correct ONLY when:
  - a. A certified copy of the transformer test report either from the transformer manufacturer or a third party transformer test shop is available from which to obtain the appropriate losses necessary to program the meter.
  - b. Only one transformer serves the metered load.
  - c. And only one delivery is served from the transformer.

If the above conditions are not met, Western recommends either Section F1 or

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F2 be chosen.

If the customer requires transformer and/or line loss compensation and the existing meter does not have transformer loss compensation ability, the customer will bear the financial responsibility to either replace or modify the existing meter for providing transformer and/or line loss compensation, including the cost of installing the meter. The new meter with transformer and/or line loss compensation will meet the technical specification of this policy and Western will accept ownership of the meter. Financial responsibility for future calibration, maintenance, repair, and replacement of the new meter will belong to the entity that had this responsibility prior to the replacement. The customer shall not be credited for providing Western with a loss compensating meter. At existing deliveries where Western's meter is replaced, the old meter will be returned to Western.

### G. REMOTE ACCESS TO METERS

Western will allow access to Western-owned meters under the conditions defined below. The requesting party is responsible for providing communications to the meter and compensating Western for any additions equipment needed to communicate with the meter. The requestor can either provide their own communications path to the meter or negotiate with Western or another entity providing a communications path to the meter site.

1. The existing meter has multiple levels of password protected access that would allow the requester to access through a level of control that would not allow them to alter the meters parameters. In addition it would be acceptable, if the meter and the software used to access the meter allows access and prevents the alteration of the meters parameters without needing a password.
2. The meter does not meet the conditions in section G.1.
  - a. Access would not be granted unless the requestor assumes responsibility for all costs associated with obtaining a multi-level password protected meter that meets the technical requirements of this policy.
    - 1) If the meter is used by Western for revenue/load control purposes, the new meter would be installed by Western and the requestor would compensate Western for the installation cost.
    - 2) Ownership of the new meter would transfer, at no cost, to Western after the installation is completed. Responsibility for Maintenance, replacement, or modifications (MRM) of the meter would be the same as the meter being replaced.

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When remote access privileges are granted to another entity, Western will reserve the right to immediately revoke the access privilege if the meter's security has been breached and meter equipment parameters and/or billing data has been changed or corrupted by the customer or their representative.

APPROVED: \_\_\_\_\_

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Regional Manager

DATE: \_\_\_\_\_