

## **ROCKY MOUNTAIN REGION METERING POLICY**

### **I. PURPOSE:**

To establish guidelines for the Rocky Mountain Region (RMR) concerning revenue and load control metering responsibilities and requirements. Western recognizes that existing conditions may differ from the requirements stated in this policy statement, however, these are the arrangements and conditions which the RMR will be working toward with our customers.

### **II. SCOPE:**

This policy applies to all RMR customer contracts and arrangements.

### **III. DEFINITIONS**

- A. Metering: This term refers to the entire equipment package used to perform metering functions, including instrument transformers, meter, data recorder, analog and digital outputs of the meter, modem, etc.
- B. Revenue Meter: Energy meter used for the purpose of billing for energy and demand exchanged between Western and a customer. This meter may also provide analog or digital data to the RMR for real-time load control.
- C. Load Control Meter: Energy meter with a primary function of providing watt and VAR demand data to the RMR for the purpose of accounting for loads on a real-time basis, whether within the RMR control area or at the control area boundary.
- D. Interchange Meter: Energy meter with a primary function of providing watt and VAR demand data to the RMR for the purpose of accounting for loads on a real-time basis for Automatic Generation Control (AGC). Interchange meters are located at Western's control area boundaries.
- E. Point of Delivery: The point at which firm electric service is delivered to the customer.
- F. Point of Interconnection: Physical connections of power system facilities that permit a flow of system energy between Western's and another party's power systems.

### **IV. ENGINEERING STANDARDS**

- A. Metering and associated equipment shall be properly installed; shall meet certain accuracy standards in order to accomplish a  $\pm 1$  percent accuracy of the entire metering system, and outputs shall be compatible with Western's billing and load management systems.
- B. Meters and instrument transformers shall be installed to correctly measure power (kW) and energy (kWh) for all unbalances and shall not be bypassed without approval by Western. Meters located at grounded wye-connected facilities shall be 3-element meters. Meters located at delta-connected or ungrounded wye-connected facilities may be 2-element meters.

- C. Current transformers for metering shall be of the wound-type meeting the requirements under American National Standard C57.13 for an accuracy classification of 0.3 percent at the burden applied. The highest available CT ratio shall match or exceed all equipment ratings, which are in-line with the metering current transformer. The highest CT ratio shall also match or exceed the maximum expected emergency loading of the circuit. All CT's shall be provided with a RF of 1.5 or greater.
- D. Either wound-type potential transformers or metering accuracy coupling capacitor voltage transformers may be used for metering provided they meet the requirements under American National Standard C57.13 for the following accuracy classifications:
  - 1. At system voltages below 5 kilovolts, 0.3 percent at burden W, X, and Y and 1.2 percent at burden Z.
  - 2. At system voltages of 5 kilovolts and higher, 0.3 percent at all burdens W, X, Y, and Z.
- E. To preserve the accuracy of the waveforms and signals, manufacturer recommended burdens for current and potential transformers shall not be exceeded.
- F. New meters shall be solid-state or microprocessor type which allow Western to collect data by:
  - 1. Remote interrogation using the MV-90 Utility Translation System to directly access the meter or any intermediate storage or access device on site.
  - 2. Local interrogation at the meter site:
    - a) Using a PC and then uploading the data to the translator over a normal telephone line, RS232 direct connection, or optical interface connection.
    - b) Using a portable meter reader and then uploading data from the portable reader to the translator over a normal telephone line.
    - c) Note: local interrogation, as a data collection method, will be allowed only when remote access is impossible or cost-prohibitive.
- G. Meters shall be installed with a disconnect device on the line side of the meter to facilitate the safe maintenance and repair of the meter. Disconnecting devices will open the potential voltage signals and re-route the current signals around the meter. Suggested devices are Westinghouse, model FT test switches or States brand switches of similar style. 480-volt meters are unacceptable for revenue metering. The customer will be responsible for all costs to change to a 120-volt meter when Western takes maintenance responsibility for a 480 volt meter.
- H. A properly designed space shall be provided to protect meters and other communication equipment from the environment and that meets appropriate State and Federal Safety and Health regulations. Western requires unsupervised access to meters it maintains.

**V. POLICY AND OBJECTIVES**

**A. OWNERSHIP**

1. Ownership of metering shall be negotiated on a case by case basis.
2. Western will continue ownership of existing meters within Western facilities. If the contract or the billing agreement changes and Western no longer needs the meter, the responsibility for reading and maintaining the revenue meter will be transferred to the customer.

**B. INSTALLATION, OPERATION and MAINTENANCE REQUIREMENTS**

1. Western is responsible for installing, reading, testing, calibrating, maintaining, and replacing Western owned meters, unless otherwise specified.
2. To ensure compatibility with Western's interrogation or data translation system, Western may specify a specific type or brand of metering equipment being installed at customer meter sites. In addition, Western reserves the right to witness the installation, inspection, testing, and calibration of metering equipment owned by the customer or a third party and to be present when such metering facilities are modified. Western shall be able to access and remotely interrogate customer-owned or third-party-owned meters through which Western, the customer's, or a third party's power flows and the power has been wheeled on Western's transmission system.
3. At customer owned metering facilities, Western must be notified, in advance, of the date and time of meter testing and may witness the test. The party responsible for the meter test will provide Western with a copy of the meter test report. The meter data shall be made available to Western's billing department. Western reserves the right to review and approve any modifications involving metering equipment and be present at the site when the modifications are accomplished.
4. In cases where a power transformer is located between the contract point of delivery and the actual location of the metering instrument transformers, transformer loss metering may be installed. Measured power and energy losses may then be used in lieu of the transformer loss adjustment, as specified in the power sales contract. The party requesting installation of transformer loss metering shall assume the entire installation cost.
5. Meters with loads less than 100 kVA shall be tested and calibrated once every five years. Solid state and microprocessor-based meters shall be inspected annually and tested and calibrated at least once every three years. Electromechanical meters shall remain on an annual meter test and calibration schedule. It is Western's intent to replace electromechanical meters with solid-state or microprocessor meters as soon as possible unless the meter point does not justify the expenditures involved with replacement.

6. When a customer requests an additional point of delivery, the customer will be responsible for all costs associated with the installation of the additional meter.
  - a) If the meter is in the customer's substation, the customer will be responsible for Operation, Maintenance, and Replacement (OM&R), and associated expenses.
  - b) If the meter is in a Western substation, Western will perform OM&R at the customer's expense.
  - c) The following drawings must be provided to Western for approval prior to installation of metering: an "A" size one line diagram and "D" size three line diagrams of the CT, and PT circuits, and panel layout.
7. At interconnections within Western's RMR control area, the interconnecting utility will be responsible for installing interchange metering, telemetering and communications equipment to interface with the RMR Operations Office. Western will perform the OM&R and the customer will be responsible for all of Western's associated OM&R costs.
8. There shall be one "official" meter associated with each interconnection, to ensure that the same quantity is provided to all entities. This will prevent disagreements in energy measurements.

#### C. DATA REQUIREMENTS

1. All points of load control will utilize analog metering of kilowatts, kilovars, and digital telemetering of kilowatt-hours. These meters shall be equipped with remote interrogation capability.
2. All customer points of delivery for revenue metering will be equipped with digital demand and energy metering with local memory and remote interrogation capability.
3. Customer points of delivery which are internal to Western's control area and are also points of load control will be equipped with digital demand and energy metering as specified in Items 1 and 2 above.
4. Load control meters shall provide analog and digital outputs compatible with Western's load control system.
5. Metering shall provide continuous analog telemetering to the RMR from all load control meter points. Some installations may require a meter supporting DNP or similar protocol to interface directly with the station RTU.
6. Hourly energy (kWh) telemetering shall be provided to the RMR from all load control meter points.
7. All 115-kV and higher interconnections shall be individually telemetered to the RMR.
8. Remote totalizing of quantities from foreign load control areas shall be avoided.

9. Common meters shall be used to provide the analog and digital metering information. Common transmitters should be used to the extent possible.

D. GENERATION METERS

1. Meters shall meet the technical requirements of revenue and interchange meters in accordance with this policy.
2. Generating meters will be owned, maintained and replaced by the customer or Co-power supplier.

E. SMALL LOADS (Less than 100 kVA)

1. Unless it is cost prohibitive, metering for loads smaller than 100 kVA or for loads only in service part of the year will be in accordance with the technical standards detailed above. In the event that it is cost prohibitive to meet the standards detailed above, Western and the customer may agree to manually read the meter once or twice per year and bill from these meter-reads.

F. INSTRUMENT TRANSFORMERS

Responsibility for capital costs as well as OM&R costs relative to instrument transformers (IT's) depends upon whether equipment replacement is due to (1) load growth, and power is from an auxiliary supplier other than Western or up-rated voltage on a transmission line, or (2) obsolescence or failure. As a general rule, the customer will be responsible for the cost of IT's changed due to load growth or a line up-rating and Western will normally be responsible for, or participate in, the cost of IT's owned by Western. The following examples illustrate how cost responsibilities would be apportioned.

1. If Western-owned current transformers (CT's) have adequate capacity to serve Western loads and the customer (or auxiliary supplier) desires higher-ratio CT's due to anticipated load growth, the customer would be responsible for the cost of the new CT's. Ownership and replacement will be determined as follows:
  - a) If the CT's are located in Western's substation, Western gains ownership. Future replacement will be charged to the customer.
  - b) The customer gains ownership if the new CT's are in the customer's substation. Future replacements will be charged to the customer.
  - c) Operation, Maintenance and Repair (OM&R) responsibilities:
    1. Western will maintain CT's located in Western's stations at Western's expense.
    2. The customer will maintain CT's located in their stations at their own expense.
2. If Western-owned CT's fail or become obsolete but have adequate capacity to serve Western-loads, Western will replace them. If they fail or become obsolete and, at the same time, the customer (or auxiliary supplier) has need of larger CT's, Western will share in the replacement cost based on the ratio of the capacity in the existing Western-owned

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CT's to the capacity of the new CT's. OM&R responsibilities would be addressed as identified in Section 1.c. above.

3. The party supplying the metering will be responsible for installing and performing OM&R for the IT's.

Questions concerning specific metering arrangements may be directed to the following RMR Office:

Operations Office (J4000) (970) 461-7566

Maintenance Office (J5000) (970) 461-7261

Eastern Colorado Field Office:

Loveland (970) 461-7364

Brush (970) 461-7364

Cheyenne (970) 461-7364

Nebraska/Wyoming Field Office:

Casper (307) 261-5775

Cody (307) 587-6286

Gering (308) 436-2889

Western Colorado Field Office:

Montrose (970) 240-6226

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