#### EPS Metering Design Proposal

Purpose

The EPS Metering Design Proposal is the initial document required from a Transmission and/or Distribution Provider (TDSP) to obtain ERCOT approval of a proposed EPS Metering Facility design. The EPS metering design proposal includes general facility information, contact information, metering facility details, and a one line drawing showing an overview of the metering facility design. The Resource owner (if the design proposal is for a generation site) must agree with the design proposal submitted by the TDSP.

The following forms are provided to document the EPS metering design proposal with a description of each field in pages 7 through 9:

A. Facility Information and Contact Information (page 2)

1. Metering Facility Details (page 3 or 4). Add more pages if necessary. Utilize page 4 for parallel CTs and throw-over VT schemes. Complete one Section B for each metering point.
2. TDSP one line drawing (page 5)
3. Auxiliary Load Telemetry Details (page 6). Add more pages if necessary. Complete one Section D for each metering point that has an auxiliary load telemetered.

When completing the forms, please provide all requested information and use the comments section to provide any additional information to clarify the facility metering design. Please feel free to attach other documents that are needed to facilitate the understanding of the EPS Metering Design Proposal. Completed design proposals should be submitted to EPSMetering@ercot.com

Revisions to the EPS Metering Design Proposal shall be made according to the approval process as prescribed in the Settlement Metering Operating Guide Section 3.4, EPS Metering Facility Processes and Forms.

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| A. Facility Information and Contact Information |
| 1. Facility Name |  |
| 2. Facility Address |  |
| 3. TDSP |  | 7. Total Metered Loads (MW) |  |
| 4. TDSP Design Contact |  | 8. Power Generation Co. |  |
| 5. Design Contact Phone # |  | 9. TDSP Project # |  |
| 6. Design Contact E-Mail  |  | 10. Facility Gross Capacity (MW) |  |
| 11. TDSP Substation Name |  |
| 12. Total # Gen. Meters |  | Total # Gen. Primary Meters |  | Total # Gen. Back-up Meters |  |
| 13. Total # Load Meters |  | Total # Load Primary Meters |  | Total # Load Back-up Meters |  |
| 14. Metering Purpose |  |
| 15. Netting Information | Describe any netting requirements for this installation. (e.g. Auxiliary loads fed from a common switchyard, load netting behind the metering point, etc.) Include these circuits on the one-line drawings. Specify under which section of Protocol 10.3.2.3 netting is being requested. |
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| 16. Facility Comments | Please include any clarifying information. |
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| **17. Resource Owner Agreement with the EPS Metering Design Proposal** |
| 18. Resource contact  |  | 19. Resource contact E-mail |  |
| 20. Resource contact phone # |  | 21. Resource owner agreement with design proposal |  |

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| B. Metering Facility Details |
| 22. Unit or Load Name |  | 24. TDSP Project # |  |
| 23. Unit Capacity |  | 25. Meter ID as shown on one-line |  |
| 26. Meter Form Designation |  |
| 27. Load description and size |  |
| 28. Metering Purpose |  |
| 29. Loss Compensation Information | Please describe any loss compensation that will be required at the installation. Include whether the compensation will be calculated in the meter (preferred) or if ERCOT will need to perform this calculation in the data aggregation system. State if loss compensation will not be programmed per SMOG 8.4(3) and provide a clarifying statement and/or supporting calculation. |
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| 30. Voltage Transformer Information | 31. Current Transformer Information |
| **Name Plate** | **A ∅** | **B ∅** | **C ∅** | **Name Plate** | **A ∅** | **B ∅** | **C ∅** |
| Manufacturer |  |  |  | Manufacturer |  |  |  |
| Type |  |  |  | Type |  |  |  |
| Ratio |  |  |  | Ratio/Rating factor |  |  |  |
| Burden Rating |  |  |  | Burden Rating |  |  |  |
| Acc. Class |  |  |  | Acc. Class |  |  |  |
| 32. Meter Point Comments |
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| B. Metering Facility Details  |
| 22. Unit or Load Name |  | 24. TDSP Project # |  |
| 23. Unit Capacity |  | 25. Meter ID as shown on one-line |  |
| 26. Meter Form Designation |  |
| 27. Load description and size |  |
| 28. Metering Purpose |  |
| 29. Loss Compensation Information | Please describe any loss compensation that will be required at the installation. Include whether the compensation will be calculated in the meter (preferred) or if ERCOT will need to perform this calculation in the data aggregation system. State if loss compensation will not be programmed per SMOG 8.4(3) and provide a clarifying statement and/or supporting calculation. |
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| 30(A). Voltage Transformer Information | 31(A). Current Transformer Information |
| **Name Plate** | **A ∅** | **B ∅** | **C ∅** | **Name Plate** | **A ∅** | **B ∅** | **C ∅** |
| Manufacturer |  |  |  | Manufacturer |  |  |  |
| Type |  |  |  | Type |  |  |  |
| Ratio |  |  |  | Ratio/Rating factor |  |  |  |
| Burden Rating |  |  |  | Burden Rating |  |  |  |
| Acc. Class |  |  |  | Acc. Class |  |  |  |
| **30(B). Voltage Transformer Information** | **31(B). Current Transformer Information** |
| **Name Plate** | **A ∅** | **B ∅** | **C ∅** | **Name Plate** | **A ∅** | **B ∅** | **C ∅** |
| Manufacturer |  |  |  | Manufacturer |  |  |  |
| Type |  |  |  | Type |  |  |  |
| Ratio |  |  |  | Ratio/Rating factor |  |  |  |
| Burden Rating |  |  |  | Burden Rating |  |  |  |
| Acc. Class |  |  |  | Acc. Class |  |  |  |
| 32. Meter Point Comments |
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| C. TDSP ONE LINE DRAWING |
| 33. Drawing Number(s) |  |
| 34. TDSP Project # |  | 35. TDSP |  |
| **TDSP** | **ERCOT** |
| **Approved By** | **Date Approved** | **Approved By** | **Date Approved** |
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| D. Auxiliary LOAD Telemetry DETAILS |
| 36. Unit or Load Name |  |
| 37. TDSP Project # |  |
| 38. Meter ID as shown on TDSP one-line |  |
| 39. ESR Auxiliary Load Max Expected Value |  |
| 40. WSL Calculation Location: Meter or Data Aggregation |  | If WSL Calculation will be performed in the meter, supporting documents must be provided. List any supporting documents under Additional Comments\Documents in D48. |
| Resource Entity Provided Supporting Documents | Please provide the name of the documents/drawings provided by the Resource Entity and submitted to support the auxiliary load calculation.  |
| 41. Confirmation that ESR Auxiliary Load Cannot be Separately Metered |  |
| 42. Load calculation equipment and methodology |  |
| 43. Description of performed or planned testing to support accuracy |  |
| Resource Entity Contact | Name(s) of Resource Entity contact(s) providing the supporting documents. |
| 44. Provided By |  | 45. Date Provided  |  |
| 46. Contact Email Address(es) |  | 47. Contact Phone Number(s) |  |
| 48. Additional Comments\Documents |
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| A. Facility Information and Contact Information |

**Facility Information and Contact Information**

Specific information for the entire facility covered by the EPS Metering Design Proposal. Only one Facility Information and Contact Information section should be completed for each design proposal.

1. **Facility name:**

The name the Resource Entity lists as the “Resource Site Name” in the Resource Registration information (currently located on RARF) used to register the Resource with ERCOT. When Resource Registration information is not available, it should be the name the TDSP uses to describe the NOIE meter point or DC Tie facility.

1. **Facility address (physical):**

This should be the physical address or location by description of the EPS metering facility. PO Box # or other type of address that does not define the geographical or physical location is unacceptable.

1. **TDSP:**

The **T**ransmission and/or **D**istribution **S**ervice **P**rovider that is responsible for the installation and maintenance of this EPS Metering Facility.

1. **TDSP Design contact:**

The individual that will be assigned to this project and can answer questions about the proposed design and installation.

1. **TDSP design contact phone number:**

The phone number at which the TDSP design contact can be reached during business hours.

1. **TDSP design contact e-mail address:**

TDSP design contact E-mail address

1. **Total metered Loads** (MW)**:**

The total MW of Loads served by EPS Meters for the EPS Metering Design Proposal.

Note: For Bi-directional metering points, the total metered Loads is the sum of the estimated peak loads that will flow for this site as recorded be channel 1 of the EPS meters.

1. **Power Generation Company:**

The company name registered with ERCOT of the Market Participant (Resource owner) that owns/operates the generation facility.

1. **TDSP project number:**

A unique tracking number created by the TDSP for each EPS Metering Design Proposal package submitted to ERCOT.

\*Note: a dash 1, 2, 3, or a dash A, B, C etc.… after the “base” project number is allowable for the metering facility details and one line drawings.

1. **Facility gross capacity** (MW)**:**

The total rated **M**ega **W**att capacity of the facility. In the case of generation facilities with multiple generating units, this would be the sum of all the units included in the EPS Metering Design Proposal and should match the total generation capacity listed in the Resource Registration information (currently located on RARF).

\*Note: For Bi-directional metering points, the gross capacity is the sum of the estimated peak generation that will flow into the ERCOT System for this site as recorded by channel 4 of the EPS meters.

**11. TDSP substation name:**

The name the TDSP will use to identify the substation in which the EPS Meter is physically located.

1. **Total number of generation meters:**

Count of EPS Meters metering the generation output at the facility. This shall be the total count of all primary and back-up generation meters.

\*Note: Bi-directional metering points shall be listed as generation meters.

1. **Total number of Load meters:**

Count of EPS Meters metering only Loads at the facility. This shall be the total count of all primary and back-up load meters.

1. **Metering purpose:**

Why is this facility being metered? (i.e. Market Participant generation, radial load point, Bi-directional NOIE metering Point, DC Tie between ERCOT and Non-ERCOT transmission system, Elected optional NOIE lateral feed meter point, etc.)

1. **Netting Information:**

Netting information that ERCOT will use to determine the “Net Generation” or “Load” of the facilities, represented by the EPS Metering Design Proposal, for settlement purposes. TDSP to provide a statement specifying the section of Protocols 10.3.2.3 netting is being requested under. The statement shall confirm that the resource site meets the requirements in the specified section of Protocol 10.3.2.3.

1. **Facility Comments:**

Any information that further describes a unique EPS metering arrangement that the TDSP needs to convey to help clarify the installation for settlement purposes as it applies to the whole facility.

1. **Resource owner agreement with the EPS Metering Design Proposal:**

For a design proposal connecting a generation unit, the Resource owner needs to review and be in agreement with the EPS Metering Design Proposal. The TDSP is responsible to communicate the EPS Metering Facility design to the Resource owner and that the Resource owner is in agreement with all aspects of the design proposal.

1. **Resource Owner Contact:**

For a design proposal connecting a generation unit, the representative for the Resource owner that is in agreement with the EPS Metering Design Proposal.

1. **Resource contact e-mail address:**

For a design proposal connecting a generation unit, the Resource owner’s contact E-mail address.

1. **Resource contact phone number:**

For a design proposal connecting a generation unit, the telephone-number where the Resource owner’s contact can be reached during business hours.

1. **Resource owner agreement with design proposal:**

For a design proposal connecting generation unit the Resource owner’s agreement with the design proposal is indicated with a “yes” or “Y”.

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| B. Metering Facility Details |

**Metering Facility Details Form:**

Specific information for each metering point included in the EPS Metering Design Proposal. A “Metering Facility Details” form will need to be completed for each EPS meter point. Please use the appropriate version of Part B throw-over voltage transformers and/or parallel current transformers are utilized. This section should be duplicated and additional copies of Section B should be used for each meter point of the facility.

1. **Unit or Load Name:**

This field refers to the individual Resource or Load being metered by the EPS metering installation. For Resources, this is the name the Generation Unit used to register the Resource. For Loads this is a name describing the metering point.

1. **Unit Capacity:**

This is the rated gross generation unit capacity in MW for the EPS Metering point as recorded in the meter by channel 4.

\*Note: For Bi-directional metering points, the unit capacity is the estimated peak generation that will flow through this point.

1. **TDSP Project #:**

A number assigned by the TDSP to each EPS Metering Design Proposal. This number should be limited to ten (10) alphanumeric characters and should match the number assigned in box A10.

1. **Meter ID as shown on one-line:**

All one-line diagrams submitted to ERCOT showing EPS metering installation locations shall have an ID designated by the TDSP to label each meter point shown with a unique identifier designated by the TDSP.

1. **Meter Form Designation:**

The form designation identifies a meter for a particular application.

1. **Load:**

Describe the type and size (in Mega watts) of the Load served by the EPS Meter for the EPS Metering point as recorded in the meter by channel 1.

\*Note: For Bi-directional metering points, the Load is the estimated peak consumption that will flow through this point.

1. **Metering purpose:**

Why is this facility being metered? (i.e. Market participant generation, radial load point, Bi-directional NOIE metering Point, DC Tie between ERCOT and Non-ERCOT transmission system, Elected optional NOIE lateral feed meter point, etc.…)

1. **Loss Compensation:**

Describe any loss compensation that will be required at the installation. Include whether the compensation will be calculated in the meter or if ERCOT is being requested to perform this calculation. If ERCOT is being request to perform the calculation, please provide the fixed loss compensation value indicating the value for load and/or generation channels. If using a fixed value, please submit additional documentation along with the design proposal indicating how the values were derived.

If the meter is not located at the POI and line loss compensation will not be programmed per SMOG 8.4(3), a statement regarding connections per 8.4(3)(a) or the calculation required per SMOG 8.4(3)(b) must be provided.

1. **Voltage Transformer Information:**

This is industry standard nameplate information available on instrument transformers.

1. **Current Transformer Information:**

This is industry standard nameplate information available on instrument transformers.

1. **Meter Point Comments:**

Provide any clarifying comments specific to the meter point. Examples include manufacture statements regarding CT accuracy, elaborations on instrument transformer selection or any other supporting information for the meter point.

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| C. TDSP ONE LINE DRAWING |

A one line drawing should be of sufficient detail to allow verification of the accurate settlement metering of Resources and Loads at EPS Metering Facilities. The drawing should allow the design philosophy, instrument transformer locations, netting scheme, compensation scheme and any breakers isolating loads from generation to be understood.

For current transformer (CT), indicate CT ratio, accuracy, and rating factor on the one-line drawing. The CT polarity should also be shown along with the meter connections to the CT to allow for verification that energy will be recorded in the correct channels. For voltage transformer (VT), indicate VT ratio and accuracy. Meter ID(s) must also be on the one-line drawing

## D. Auxiliary load telemetry DETAILS

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| D. Auxiliary load telemetry DETAILS |

**Telemetry Details Form:**

Specific information for each ESR Auxiliary Load Telemetry being supplied to an EPS meter included in the EPS Metering Design Proposal. A “Auxiliary Load Telemetry Details” form will need to be completed for each EPS meter point that has ESR Auxiliary Load Telemetry supplied. This section should be duplicated and additional copies of Section D should be used for each ESR Auxiliary Load Telemetry provided to an EPS meter. The information in this section should be provided by the resource owner to the TDSP.

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1. **Unit or Load Name:**

This field refers to the individual meter point that the ESR Auxiliary Load Telemetry is being supplied to. This name should match the TDSP supplied name from B22.

1. **TDSP Project #:**

A number assigned by the TDSP to each EPS Metering Design Proposal. This number should be limited to ten (10) alphanumeric characters and should match the number assigned in box A10.

1. **Meter ID as shown on TDSP one-line:**

This should be the name of the meter that will be supplied ESR Auxiliary Load Telemetry as listed on the TDSP one-line diagrams supplied with the Design Proposal. This name should match the TDSP supplied name from B25.

1. **ESR Auxiliary Load Max Expected Value**

The maximum of load value that the resource entity expects the ESR auxiliary load to draw while the ESR is charging.

1. **WSL Calculation Location: Meter or Data Aggregation**

Indicate if the wholesale storage load value will be calculated in the EPS meter or if it will be performed in the ERCOT Data Aggregation system. If the WSL will be calculated in the meter, include supporting documents showing how the calculations will be performed in compliance with Protocol 11.1.6(3)(a) and SMOG 4.1(1)(d). Supporting documents should be listed in box D48 “Additional Comments\Documents”.

1. **Confirmation that ESR Auxiliary Load Cannot be Separately Metered**

Documentation describing the reason that the auxiliary load meets the requirement of Protocol 10.2.4(1) and cannot be separately metered and must be calculated. This shall include a one-line drawing that includes facility details necessary to understand the calculation and data flow.

1. **Load calculation Equipment and Methodology**

A description of the equipment and method used to determine the auxiliary load value and telemeter the auxiliary load value to the appropriate EPS meter shall be provided. This description shall include how the calculated auxiliary load will always be equal to or greater than the true auxiliary load, the equipment used in determining the auxiliary load calculation, and the accuracy of equipment used. If a zero load value will be telemetered while the ESR is discharging, the methodology for determining when zero will be telemetered must be included in the description.

1. **Description of performed or planned testing to support accuracy**

A description of the anticipated annual certification process, and any laboratory or field testing that has already been performed. Documentation will describe what actions have been taken and will be taken on an ongoing basis, to ensure that the overall initial correction factor applied to the calculated auxiliary AC load of each battery system component will not understate the load value reported via site telemetry. This includes confirmation by the Texas Professional Engineer that laboratory testing and/or field testing has been or will be conducted on the specified sensor models used at the site, to establish the long-term accuracy of the sensor as a result of long-term degradation which may occur naturally in the field. Such documentation may reference utilization of sensor OEM test data, sensor OEM specifications, and/or analysis of the materials and design of the sensor. It may also include the results of accelerated life cycling conducted to represent the intended life of the deployed system on the sensor suite, a proposal to remove a sample of sensors to test their accuracy using NIST-traceable test equipment under anticipated field conditions, or, other actions required by a Texas Professional Engineer.

1. **Provided By**

Name of the Resource Entity representative that is providing the supporting documents. This may be multiple contacts.

1. **Date Provided**

Date the Resource Entity contact in D45 provided the supporting documents.

1. **Contact Email Address(es)**

Contact email address for the Resource Entity representative(s) listed in D44.

1. **Contact Phone Number(s)**

 Contact phone number(s) for the Resource Entity representative(s) listed in D44.

1. **Additional Comments\Documents**

Provide any clarifying comments or names of additional supporting documents.