

Dakota Electric Responses – Prep Materials for 3/23/18 Webinar

- 1) If you do not support the Regulated Utilities' Draft Proposal, a proposed discussion topic outline or red-lined/track changes draft of Regulated Utilities' TIIR proposal;
 - a. Include a description of the purpose/role of the statewide technical requirements

N/A – We support the TIIR.

- 2) Rationale and list of topics with summary/examples of content considered in scope of a utility TSM

Overall – DEA prefers to have as much of the requirements common to all across MN utilities in the TIIR. The goal and scope of the TSM should be to provide more specific background and educational information to applicants on how the TIIR and TSM are to be applied to DER interconnection. The TSM would include the utility specific requirements and provides further detail in areas where no common industry standards exist. Below is a list areas which are utility specific to be included in the TSM.

- Interconnection Coordinator Contact Information
 - DEA's currently has three people that coordinate generation interconnection
 - The TSM would have the ability to provide a single point of contact based on utility staffing, applicable interconnection path, or some other method to provide the most efficient interconnection process.
 - Example – if residential see Energy Services at ... , if commercial or larger than 20 kW see Engineering at ...
- Notifications/Communication expectations after DER interconnection completed
 - When/Why/How
 - Hardware failures/replacement/firmware updates
 - Preventive Maintenance scheduling (what needs to be communicated to DEA)
- Non-parallel or short term parallel generation interconnection (About Half of DEA's DER is non-parallel or short term parallel interconnection)
 - Process, documentation, notification, Technical Requirements (proposed MN DIP only includes parallel generation)
 - Standby generation, Interruptible loads with generation backup
 - Screening and Requirements for block loading or soft loading transfer
 - Metering and Telemetry required for non-parallel generation
 - Testing and approval
- DER Protection
 - Protection elements required and when

- Relay Battery backup or UPS requirements
- Protection Coordination with DEA's protection scheme
- Islanding / anti-islanding
- Transfer trip
- Verification/witness test of functional relay tests
- One-Line Diagram Examples (all types of generation)
 - Similar to existing diagrams in Technical Standards
 - Addition of utility specific communication information and labeling information
- Equipment labeling and location requirements
 - DER specific (visible disconnect, utility breaker, etc)
 - Utility specific (G sticker on transformer)
- DER Specific settings
 - Voltage reference
 - Default settings
 - Power Factor
 - Performance category assignment - Dynamic Voltage/Var, etc.
 - Ramp rates
 - Operational delay timers (standby, load shed, etc)
- DER Specific Testing (initial and on-going)
 - Initial Testing requirements (implementation and verification of 1547.1 testing)
 - In-service Testing requirements (how many years between relay testing)
 - Firmware updates (inverters and relays)
- Communication & Monitoring Methods
 - Protocol
 - RS232 / Ethernet etc.
 - Speed of response and speed of communication
 - When required – what size and for what types of DER
 - Methods (WiFi / utility device (AMI Mesh) / SCADA)
 - Equipment required to be used
 - Points required to be monitored (hardwired vs. communication)
 - Control required by utility – Inverter vs non-inverter generation, load shed
 - Cyber security
- Metering
 - Methods and equipment (bi-directional, multiple meters, etc)
 - Primary metering standards (for DERs that interconnect at primary voltage)
 - Secondary metering standards (CT/PT ownership and installation)
 - GRE Rate implications (non-net metering, standby)
 - Communication to meter (DID phone, cell, other..)
 - Each utility has unique rates and incentives
 - Net metering (different levels Public Utilities vs Coops and Munis)

3) List of definitions that need to be discussed

The definitions from the MN DIP, MN DIA, TIIR, and TSM must be consistent with the definitions listed in the latest version IEEE 1547 and other relevant national standards. As mentioned several times by presenters from EPRI and NERC during the IEEE 1547 workshop, definitions are key to successful implementation of DER interconnection standards. Here are some of the definitions which may deviate from industry or Minnesota standards and should be topics of discussion.

- Area EPS operator technical specification manual (TSM)
- Customers
- energy storage system (ESS)
- inadvertent export
- inverter (based on note added in TIIR)
- non-export, non-exporting
- parallel operation
- non-parallel operation
- regional transmission operator (RTO)
- secondary network
- Technical Interconnection and Interoperability Requirements (TIIR)
- transmission power system

4) Review the proposed Phase II Agenda/Topics for 7 meetings (attached)

DEA doesn't have any additional comments on the agenda.