MINNESOTA
PUBLIC UTILITIES COMMISSION

**PREP WORK for TSG #6, Aug. 10th from 9:30-12:30**
**Interoperability (Monitor and Control Criteria); Metering; Cyber security**

Subgroup members review agenda and provide the following to staff by 8/3/18 COB.

1) **Propose edits to the Regulated Utilities' TIIR Draft Proposal and/or flag topics for discussion. Send as red-lines and comments using track changes to the 7-26-18 Draft TIIR.**
   a. Definitions in Section 3B
   b. Metering; Section 8
   c. Interoperability; Section 9
2) **Review and be prepared to reference IEEE 1547-2018**
   a. Definitions in Clause 3.1
   b. Interoperability, information exchange, information models, and protocols; Clause 10 (pages 69-76)
   c. Annex D (informative) DER communication and information concepts and guidelines (pages 109-114)
3) **Please provide input to the topics below, slides are encouraged**
   a. How is your organization using and planning to use communications to DER (monitoring, control, alarms, etc) and for what application or purpose?
   b. What is your organization currently utilizing or planning to use for each of the following?
      i. Communication protocols: such as IEEE 2030.5, DNP3, SunSpec Modbus or other protocols?
      ii. Information models: such as 61850-7-420, schemas in IEEE 2030.5, SunSpec's Modbus implementation or DNP3 Application Notes?
      iii. Are different protocol(s) used based on the scale/type of DER? (Our understanding is DNP3 has been used for large DER and for storage. SunSpec for PV or smaller systems)
      iv. Between what entities is a certain protocol used? (Our understanding is 2030.5 has been primarily applied between utilities and aggregators, DNP3 and Sunspec at the devices)
   c. Please share any first-hand strengths or challenges that stand out with regards to communication protocols or information models.
   d. How can statewide uniformity in communication protocols and information models be achieved and what would be the concerns and challenges in doing so?
   e. What metering functions are required in the technical standards and why? What changes should be made to the TIIR to appropriately describe functional metering requirements and needs while allowing specific information in the TSM? (See: Section 5 (pages 13-16) of Minnesota's existing Distributed Generation Interconnection Requirements)

f. How should the cyber security responsibilities be allotted and communicated between utility, interconnection customers and developers address before installation, during installation and commissioning, and on-going operations?
g. How do utilities envision roll out Draft TIIR Section 9D, Cyber Security? What types of responsibilities will the DER operators have?

----------End Of Prep Work ----------

**Technical Subgroup Meeting 6 DRAFT AGENDA**
**Friday, August 10th**
**9:30am – 12:30pm Central Time**

https://global.gotomeeting.com/join/432598661
Phone: (571) 317-3112; Access Code: 432-598-661

**Proposed Agenda**

| Time | Topic |
|---|---|
| 9:30 – 9:40 | Welcome, Introductions, Overview of Agenda, Expectations, Recap |
| 9:40 – 10:25 | Metering |
| 10:25 – 11:45 | Interoperability, including communication protocols |
| 11:45 – 12:10 | Cyber security |
| 12:10-12:20 | Meeting Evaluation |
| 12:20 – 12:30 | Next Steps |

**Phase II Technical Subgroup Roster**

| | | |
|---|---|---|
| Craig Turner, Dakota Electric | Robert Jagusch, MMUA | Patrick Dalton/John Harlander/Alan Urban, Xcel Energy |
| Lise Trudeau, Dept of Commerce | Kevin McLean/Jenna Warmuth, MN Power | |
| ~~Kevin Joyce~~/Katie Bell, EFCA | Kristi Robinson, MREA | John Dunlop/Chris Jarosch, MNSEIA |
| Brian Lydic/Sky Stanfield/Laura Hannah – Joint Movants | Dean Pawlowski, Otter Tail Power | Commissioner Matt Schuerger; Michelle Rosier; Cezar Panait |
| Professor Mahmoud Kabalan, St. Thomas Affiliation | | Technical Assistance*: Michael Coddington and Michael Ingram, National Renewable Energy Laboratory<br>Tom Key, Jens Boemer, Nadav Enbar; Electric Power Research Institute<br>Pam Johnson, DOE Solar Energy Innovator Fellow |

*****Technical assistance is not a participant or party to the docket and does not advocate for specific outcomes in the proceeding. The role of technical assistance is to support Commission staff in the process for these proceedings, and to provide an objective source of information or data, as requested, by Commission staff to understand areas of disagreement amongst participants.

**Draft Meeting Topics Proposal**

| **Date** | **Topic** |
|---|---|
| 3/23/18 | Meeting 1<br>Scope/Overview** (Walk-through with explanations: Red-lined TIIR; List of topics in scope of TSMs; Definitions |
| 4/13/18 | Meeting 2<br>Performance Categories**; Response to abnormal conditions; MISO Bulk Power System |
| 5/18/18 | No Meeting |
| 6/1/18 | Full DGWG Meeting<br>Technical Subgroup update; Phase I Update/Next Steps |
| 6/8/18 | Meeting 3<br>Reactive Power and Voltage/Power Control Performance**; Protection Requirements |
| 7/20/18 | Meeting 4<br>Energy Storage**; Non-Export and Inadvertent Export**; Capacity** |
| 8/3/18 | Meeting 5<br>Meeting 4 topics continued |
| 8/10/18 | Meeting 6<br>Interoperability** (Monitor and Control Criteria); Metering**; Cyber security |
| 9/14/18 | Meeting 7<br>Test and Verification**; Witness Test Protocol |
| 9/21/18 | Full Day, In Person TSG Meeting – Power Quality; Follow up items; Review/Reconcile edits in the draft TIIR |
| 10/19/18 | Meeting 8<br>References; Definitions*; 1-line diagram requirements; Agreements*, Frequency Ride-through |
| 11/9/18 | Full DGWG Meeting 7 |