



Phase II Technical Subgroup Meeting #1  
November 3, 2017  
(Docket No. 16-521)

# Agenda

| Time          | Topic  |
|---------------|--|
| 9:30 - 9:45   | Welcome, Introductions, Overview of Agenda, Expectations         |
| 9:45 – 10:05  | Check in on Phase II Outline & Feedback on IEEE 1547 Workshop    |
| 10:05 – 10:20 | Discussion: Purpose/role of statewide technical requirements     |
| 10:20 – 12:15 | Scope of the Statewide TIIR & Role of Technical Standards Manual |
| 12:15 – 12:20 | Inventory of Definitions to Discuss                              |
| 12:20 – 12:30 | Meeting Evaluation & Next Steps                                  |

# Commission Order

January 24, 2017

- The Commission hereby delegates authority to the Executive Secretary to issue Notice(s), set schedules, and designate comment periods for the scope outlined in paragraphs 2 – 3 below. The Executive Secretary will, in cooperation with the Department of Commerce, convene a work group of appropriate size and composition, and may select a facilitator, to develop the record more fully.
- The Commission will transition the Minnesota Interconnection Process to one based on the FERC SGIP and SGIA. The Executive Secretary will set schedules and take comments. It is anticipated that the Commission will consider the record and comments within 18 months of this order, to replace Attachments 1, 3, 4, and 5 to its 2004 Interconnection Standards in this Docket. The Executive Secretary will use the Joint Movants' May 12, 2016 filing, generally, as the starting point for comments.
- **In the longer-term (nine to twenty-two months), the Executive Secretary will set schedules and take comments on updating the Minnesota interconnection technical standards. It is anticipated that the Commission will consider the record and comments within 24 months of this Order, to replace Attachment 2 to the Commission's 2004 Interconnection Standards. This stage of work would incorporate newly revised national technical standards, and other issues identified as areas in need of updating.**
- The Commission hereby designates Commissioner Matthew Schuerger as lead commissioner pursuant to Minn. Stat. § 216A.03, Subd. 9, with authority to help develop the record necessary for resolution of the issues, and to develop recommendations to the Commission in this docket.

# DG Workgroup Charge & Process

- 1) Prepare for and attend the meetings and conference calls consistently throughout each phase;
- 2) Engage actively and respectfully in constructive dialogue during the issue discussions;
- 3) Review in a timely manner workgroup materials distributed by Commission staff provided via workgroup listserv or e-dockets;
- 4) Develop, when invited, as an organization or a member of an ad hoc subgroup, presentations and/or subtopic materials for consideration by the workgroup at upcoming meetings; and,
- 5) Work toward agreement where possible and, where not possible, clearly articulate differences.

(February 14, 2017 Notice, Docket No. 16-521)

# DG Workgroup Charge & Process

- Treat each other, the organizations represented on the workgroup, the staff, and the workgroup itself with respect and consideration;
- Express fundamental interests rather than fixed positions. Be honest and tactful. Avoid surprises. Encourage candid, frank discussions.
- Ask if you don't understand.
- Openly express any disagreement or concern you have with all workgroup members.
- Offer mutually beneficial solutions. Actively strive to see other's point of view.
- Share information discussed in the meetings with the organization you represent, and relay to the workgroup the viewpoints of your organization.
- Speak one at a time in meetings, as recognized by the facilitator.
- Acknowledge that everyone will participate and no one will dominate.
- Agree that it is okay to disagree and disagree without being disagreeable.
- Do your homework. Read and review materials provided. Be familiar with the discussion topics.
- Stick to the topics on the meeting agenda. Be concise and not repetitive.
- Make every attempt to attend all meetings, to be on time and to stay to the end, and to review all documents prior to the meeting. In the event the primary workgroup member is unable to attend, that member is responsible for notifying commission staff prior to the meeting regarding alternate arrangements.

# Phase II Meetings: Topics and Timeline

|                 |  |
|-----------------|--|
| <b>March 23</b> | Scope/Overview; Inventory of Definitions to Discuss  |
| <b>April 13</b> | Performance Categories; Response in Normal and Abnormal Conditions; MISO Bulk Power System |
| <b>May 18</b>   | Reactive Power and Voltage/Power Control Performance; Protection Requirements              |
| <b>June 8</b>   | Energy Storage; Non-export; Inadvertent export; Limited export                             |
| <b>July 20</b>  | Interoperability (Monitor and Control Criteria); Metering; Cyber security                  |
| <b>Aug 10</b>   | Test and Verification; Witness Test Protocol   |
| <b>Sept 14</b>  | References; Definitions; 1-line diagram requirements; Agreements                           |

# What is the purpose/role of statewide technical requirements?

Minn. Stat. 216B.1611; Subd. 1 Purpose.

- (1) establish the terms and conditions that govern the interconnection and parallel operation of on-site distributed generation;
- (2) provide cost savings and reliability benefits to customers;
- (3) establish technical requirements that will promote the safe and reliable parallel operation of on-site distributed generation resources;
- (4) enhance both the reliability of electric service and economic efficiency in the production and consumption of electricity; and
- (5) promote the use of distributed resources in order to provide electric system benefits during periods of capacity constraints.

# What is the purpose/role of statewide technical requirements?

Minn. Stat. 216B.1611; Subd. 2 **Distributed Generation; generic proceeding.**

At a minimum these tariff standards must:

- (1) to the extent possible, be consistent with industry and other federal and state operational and safety standards;
- (2) provide for the low-cost, safe, and standardized interconnection of facilities;
- (3) take into account differing system requirements and hardware, as well as the overall demand load requirements of individual utilities;
- (4) allow for reasonable terms and conditions, consistent with the cost and operating characteristics of the various technologies, so that a utility can reasonably be assured of the reliable, safe, and efficient operation of the interconnected equipment; and
- (5) establish (i) a standard interconnection agreement that sets forth the contractual conditions under which a company and a customer agree that one or more facilities may be interconnected with the company's utility system, and (ii) a standard application for interconnection and parallel operation with the utility system.



# What is the purpose/role of statewide technical requirements?

Minn. Stat. 216B.1611; Subd. 3 **Distributed Generation tariff.**

Within 90 days of the issuance of an order under subdivision 2:

- (1) each public utility providing electric service at retail shall file a distributed generation tariff consistent with that order, for commission approval or approval with modification; and
- (2) each municipal utility and cooperative electric association shall adopt a distributed generation tariff that addresses the issues included in the commission's order.

# Discussion: Scope for Statewide Technical Requirements

These topics have been proposed as **in scope**.  
Bold have been flagged for discussion.

1. Scope/Overview
2. References
3. Definitions
4. **Performance Category Assignments**
5. **Reactive Power Capability and Voltage/Power Control (volt-var & volt-watt) Performance**
6. **Response to Abnormal Conditions (Ride-through)**
7. **Protection Requirements**
8. **Metering**
9. **Interoperability (Monitoring, Control, Info Exchange, Cyber security)**
10. **Energy Storage**
11. Non-Export; Inadvertent Export
12. **Test and Verification Requirements**
13. **Agreements**
14. **Consumer Protection (IREC)**
15. **Reporting (IREC)**

(Source: "Regulated Utilities" TIIR Draft Proposal)

# Discussion: Scope for Statewide Technical Requirements

1. Process requirements
2. Cost allocation
3. Interconnection to transmission system
4. **Protection system details of Area EPS or DER**
5. **Requirements or specification of system impact or facilities studies**
6. **Application of real and reactive power control functions**
7. **Details of communication networks; including architecture, technology and protocols, or other specifications related to interoperability**
8. **Details of metering requirements or specifications**
9. **Planning or operational considerations associated with Affected Systems, Regional Transmission Operator or Transmission Owners**
10. **Intentional Area EPS islanding**

These topics have been proposed as **out of scope** by some participants. Bold are flagged for additional discussion.

(Source: TIIR Draft Proposal, p. 9)

# Discussion: Utility Technical Specification Manual Proposal

## Scope Identified by Some Participants:

1. Interconnection Coordinator Contact Information
2. Notification/Communication expectations after DER interconnection completed
3. Non-parallel or short-term parallel interconnections
4. DER Protection
5. Protection System requirement details
6. 1-line Diagram Examples
7. Equipment labeling and location requirements
8. DER Specific Settings (Default Settings, Voltage Reference, Reactive and real power control function)
9. Details on implementing DER real and reactive control functions, if applicable.
10. Reactive power constraints related to the bulk power system
11. Interoperability technologies (Communication protocol, Communication & Monitoring Methods)
12. Details on process for determining use of the DER interoperability interface
13. Metering requirements
14. Performance category assignment, or assignment process, for unique technologies
15. Evolving energy storage requirements
16. Cybersecurity requirements
17. Details for implementing IEEE 1547 testing and verification requirements
18. DER Specific Testing (Initial and Ongoing)

(Source: Prep materials)

# Inventory of Definitions to Discuss

|  |  |
|--|--|
| Area EPS Operator Technical Specification Manual | Non-Export; Non-Exporting  |
| Authority Having Jurisdiction (AHJ)              | Non-Parallel Operation   |
| Customers  | Parallel Operation   |
| Energy Storage System (ESS)                      | Regional Transmission Operator (RTO)                               |
| Inadvertent Export                               | Secondary Network  |
| Inverter   | Technical Interconnection and Interoperability Requirements (TIIR) |
| Limited Export                                   | Transmission Power System (Bulk Power System?)                     |
| Microgrids                                       | Unintentional Island   |

## Next Steps

|                 |  |
|-----------------|--|
| <b>March 29</b> | Phase I Draft Staff Recommendations Comments Due   |
| <b>April 6</b>  | Prep work for TSG Mtg #2 Due   |
| <b>April 13</b> | TSG Mtg #2: Performance Categories; Response in Normal and Abnormal Conditions; MISO Bulk Power System |
| <b>April 13</b> | Phase I Reply Comments Due   |
| <b>May 11</b>   | Prep work for TSG Mtg #3 Due   |
| <b>May 18</b>   | TSG Mtg #3: Reactive Power and Voltage/Power Control Performance; Protection Requirements              |
| <b>May 2018</b> | Agenda Meeting re: Phase I   |

# Thank You!