

System Planning Impacts of Distributed Energy Resources Working Group (SPIDERWG)

Website: SPIDERWG

Hierarchy: Reports to RSTC

Chair: Kun Zhu (September 2019)

Vice-Chair: Bill Quaintance (July 2018)

NERC Lead: Ryan Quint, JP Skeath

Scope Approved: December 2018

#	Task Description	Risk Profile(s)	Strategic Focus Area(s)	Target Completion	Requested Action	Status
Modeling Subgroup (Co-Leads: Irina Green, CAISO; Mohab Elnashar, IESO)						
M1	DER Modeling Survey <i>Perform industry survey of SPIDERWG members regarding use of DER planning models in BPS studies, dynamic load models and DER modeling guidelines.</i>	1, 2	2, 3	Q2-2021	No	Survey white paper near completion; being reviewed by entire SPIDERWG; plans to share informationally with RSTC later this year.
M6	Modeling Distributed Energy Storage and Multiple Types of DERs <i>SPIDERWG will dig into technical considerations of modeling distributed energy storage, specifically distributed battery energy storage (D-BESS). The group will also consider how to model multiple types of DERs, including D-BESS and distributed solar PV (D-PV). Lastly, the group will focus on forecasting and dispatch assumptions for D-BESS. SPIDERWG will determine the level of guidance or reference materials needed once discussions begin. Task to be coordinated with Studies sub-group.</i> <i>**Joint effort across all sub-groups**</i>	1, 2	2, 3	Q1-2022	Yes	Deadline bumped back to Q1 2022; sub-group set up. <i>(High priority task for SPIDERWG)</i>
Verification Subgroup (Co-Leads: Michael Lombardi, NPCC; Mike Tabrizi, DNV-GL)						
V2	Reliability Guideline: DER Forecasting Practices and Relationship to DER Modeling for Reliability Studies <i>Guidance providing how forecasting practices are linked to DER modeling for reliability studies. DER forecasting practices are important for accurately representing the correct amount and type of DER, particularly at an aggregate level representation for BPS studies.</i>	1, 2	2, 3	Q3-2021	Yes	On track.
Studies Subgroup (Co-Leads: Pengwei Du, ERCOT; Mohab Elnashar, IESO)						
S1	Reliability Guideline: Bulk Power System Planning under Increasing Penetration of Distributed Energy Resources <i>Reliability Guideline providing recommended practices for performing planning studies considering the impacts of aggregate DER behavior – study approaches, analyzing BPS performance criteria incorporating DER models into studies, developing study assumptions, etc.</i>	1, 2	2, 3	Q4-2021	Yes	Deadline bumped back to Q4; sub-group nearing completion of initial draft. <i>(High priority task for SPIDERWG)</i>

S2a	SAR: Updates to TPL-001 Regarding DER Considerations <i>Sub-team is developing a SAR that incorporates the recommendations put forth in the approved white paper, considering the items that need standards revisions to improve reliability. This activity will also be coordinated with IRPWG to address the issues identified in their recently approved white paper identifying issues with TPL-001.</i>	1, 2	2, 3, 4	Q3-2021	Yes	RSTC did not approve SAR presented at March 2021 meeting; sub-group responding to comments from RSTC members with plan of bring back updated draft. <i>(High priority task for SPIDERWG)</i>
S3	Recommended Simulation Improvements and Techniques <i>Guidance (white paper) to software vendors on tools enhancements for improved accounting and study of aggregate DER.</i>	1, 2	2, 3	Q4-2021	Information	Deadline bumped back to Q4; white paper nearing completion; vendor engagement in near future.
S4a	Reliability Guideline: Recommended Approaches for Developing Underfrequency Load Shedding Programs with Increasing DER Penetration <i>Guidance on how to study UFLS programs and ensure their effectiveness with increasing penetration of DER represented.</i>	1, 2	2, 3	Q3-2021	Yes	Deadline bumped back to Q3; full SPIDERWG review complete; going to RSTC in June.
S4b	White Paper: DER Impacts to UVLS Programs <i>Short white paper on potential impacts of DERs on UVLS program design; leverage work of PRC-010 standards review (C6 task).</i>	1, 2	2, 3	Q4-2021	Yes	Deadline bumped back to Q4.
S5	White Paper: Beyond Positive Sequence RMS Simulations for High DER Penetration Conditions <i>Considerations for high penetration DER systems and the need for more advanced tools (e.g., co-simulation tools) for studying DER impacts on the BPS.</i>	1, 2	2, 3	Q1-2022	Yes	Deadline bumped back to Q1 2022.
Coordination Subgroup (Co-Leads: Clayton Stice, ERCOT; Jimmy Zhang, AESO)						
C2	Reliability Guideline: Communication and Coordination Strategies for Transmission Entities and Distribution Entities regarding Distributed Energy Resources <i>Develop recommended strategies to encourage coordination between Transmission and Distribution entities on issues related to DER such as information sharing, performance requirements, DER settings, etc.</i>	1, 2	2, 3	Tabled	Yes	Tabled to align with standards review (C6 activity) activity; will start later 2020.
C5	SPIDERWG Terminology: Working Definitions Document <i>Review of existing definitions and terminology and development and coordination of new terms, for consistent reference across sub-groups.</i>	1, 2	2, 3	Ongoing	Information	Initial draft complete; will update RSTC as necessary. Subsequent revisions will be explored by team, as needed.
C6	NERC Reliability Standards Review <i>White Paper reviewing NERC Reliability Standards and impacts of DER.</i>	1, 2	2, 3, 4	Q4-2021	Yes	Deadline bumped back to Q4; sub-group nearing completion of white paper; full SPIDERWG review in near future. <i>(High priority task for SPIDERWG)</i>

C7	Tracking and Reporting DER Growth <i>Coordinated review of information regarding DER growth, including types of DER, size of DER, etc. Consideration for useful tracking techniques for modeling and reliability studies.</i>	1, 2	2, 3	Ongoing	No	In monitoring and data collection stage.
Other / Sub-group Leadership (Co-Leads: SPIDERWG Leadership; Dan Kopin, Utility Services)						
O1	White Paper: FERC Order 2222 and BPS Reliability Perspectives <i>Short white paper identifying key BPS reliability perspectives with the recently released FERC Order 2222. Being developed by SPIDERG sub-group leadership and Dan Kopin, and will get full review and input from overall SPIDERWG once initial draft complete.</i>	1, 2	2, 3, 4	Q3-2021	Yes	Deadline bumped back to Q3; task underway. <i>(High priority task for SPIDERWG)</i>

Completed and Cancelled Tasks (for Tracking Purposes Only)

#	Task Description	Risk Profile(s)	Strategic Focus Area(s)	Target Completion	Requested Action	Status
Completed Tasks						
M2	Reliability Guideline: DER Data Collection for Modeling <i>Guideline providing recommendations and industry practices for the mandatory and optional DER data to be collected by the Reliability Coordinator as well as on how, where, and when to gather such data.</i> <ul style="list-style-type: none"> Review the documentation of existing data collection techniques and processes that has been developed by the industry. Recommendations for DER data collection technique suitable for various study types. <i>Recommendations for the DER data complexity requirements based on DER penetration levels</i>	1, 2	2, 3	Q3 2020	Yes	Approved by RSTC at October 2020 meeting. <i>(High priority task for SPIDERWG)</i>
M3	Reliability Guideline: DER_A Model Parameterization <i>Guideline providing recommendation for DER modeling practices.</i>	1, 2	2, 3	Q3-2019 (Complete)	Yes	Complete. <i>(High priority task for SPIDERWG)</i>
M4	Review of MOD-032-1 for DER Data Collection <i>(In coordination with activity C4) Proposing MOD-032-1 SAR to address modifications to the standard to facilitate data collection for DERs for interconnection-wide modeling.</i>	1, 2	2, 3, 4	Q4-2019	Yes	Complete. PC endorsed at December 2019 PC meeting. Provided to NERC Standards staff December 2019.
M5	Modeling Notification: Dispatching DER off Pmax in Case Creation <i>Modeling notification on recommended practices and considerations for DER modeling when dispatching DER at output levels other than Pmax in the powerflow and dynamics data. Practices to ensure expected response from DER in these modeled conditions.</i>	1, 2	2, 3	Q3-2019 (Complete)	Information	Complete; approved by SAMS and posted to SAMS webpage.
V1	Reliability Guideline: DER Performance and Model Verification <i>Reliability Guideline covering aggregate DER model verification, including recommended measurement practices, executing model verification activities, model benchmarking, relation to MOD-033 activities, and conversion of data sources for verification.</i>	1, 2	2, 3	Q1-2021	Yes	Complete. <i>(High priority task for SPIDERWG)</i>

C1	Reliability Guideline: BPS Reliability Perspectives on the Adoption of IEEE Std. 1547-2018 <i>Reliability Guideline of BPS perspectives for adopting and implementing IEEE 1547-2018.</i>	1, 2	2, 3	Q1-2020	Yes	Complete. Approved March 2020, and posted. (High priority task for SPIDERWG)
C4	Review of MOD-032-1 for DER Data Collection see M4 activity.	1, 2	2, 3, 4	Q4-2019 (Complete)	Yes	Complete.
S2	White Paper: Review of TPL-001 Standards for Incorporation of DER <i>White paper discussing technical review of NERC TPL-001-5, and development of any recommendations pertaining to consideration and study of DER impacts to the BPS.</i>	1, 2	2, 3, 4	Q2-2020	Yes	Complete. Approved by RSTC at October 2020 meeting. (High priority task for SPIDERWG)
Cancelled Tasks						
C3	Educational Material to Support Information Sharing between Industry Stakeholders <i>Develop material to educate industry stakeholders on practices, recommendations and technical work developed by other industry organizations.</i>	1, 2	2, 3	Ongoing	No	Task cancelled; references to industry materials and SPIDERWG materials will be provided in other work products. Ongoing industry outreach and engagement by SPIDERWG members.