Interconnection Updates Part 2

WIDRC Quarterly Meeting

April 17, 2020

Available Resources

- NREL – Guidebook for DER Interconnection
  - https://www.nrel.gov/docs/fy19osti/72102.pdf
- IREC – “Making the Grid Smarter” Adopting IEEE 1547-2018
  - https://irecusa.org/publications/making-the-grid-smarter-state-primer-on-adopting-the-new-ieee-standard-1547-2018-for-distributed-energy-resources/
- IREC – Model Interconnection Procedures 2019
  - https://irecusa.org/publications/irec-model-interconnection-procedures-2019/

Resources -NREL – Guidebook for DER Interconnection

- From Distributed Generation Interconnection Collaborative
- Interconnection Application Procedures and Management
- Technical Screens
  - Reviews FERC Order 792 and its SGIP Screens
- Advance Inverters
  - Reviews old anti-islanding (IEEE1547-2003, UL 1741) against the need for states to update rules to align with IEEE 1547-2018, UL 1741 SA
- IEEE 1547-2018
  - Think of this as the “high-penetration level” standard
- Cost Allocation
- Solar + Storage Interconnection
- Does **not** cover EE, DR or EV

NREL – Guidebook for DER Interconnection

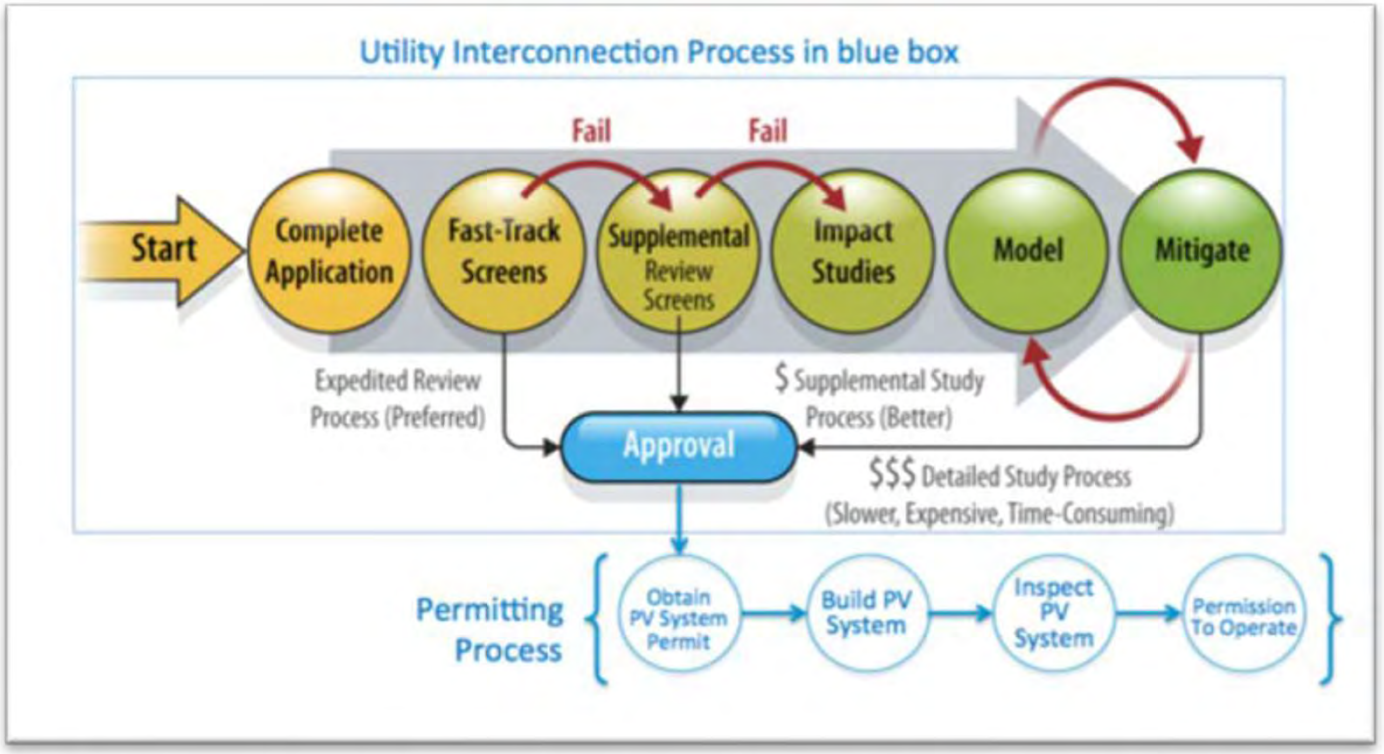


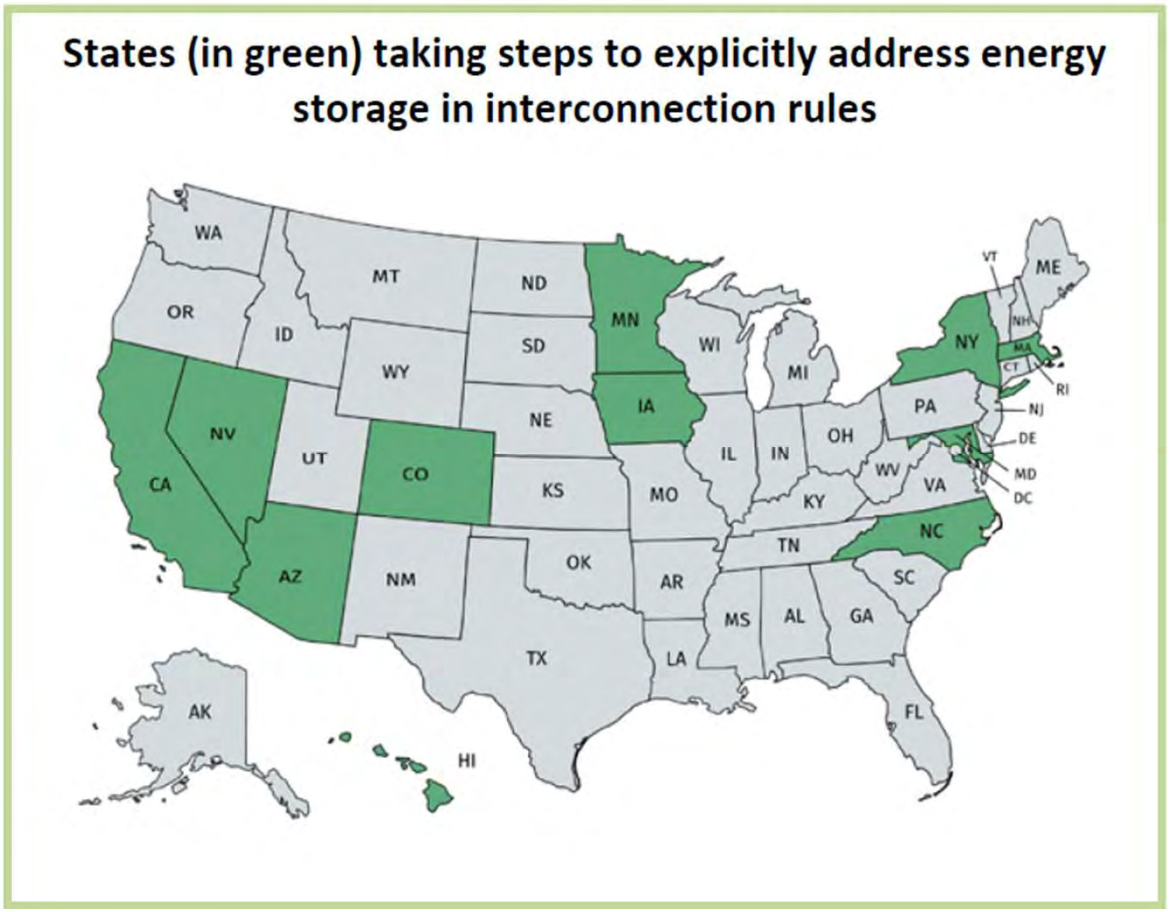
Figure 2. Typical utility interconnection process; systems above a certain size may skip the Fast Track Screening Process and go straight to more detailed impact studies

NREL – Guidebook for DER Interconnection
IEEE 1547-2018 Changes

- DER size limitations removed
- Reactive power support
- Ride-through requirements
- Bulk system support
- Protection coordination
- Power quality
- Interoperability requirements
- Communication standards
- Minnesota PUC formed DER group in 2016 (*more later*)

NREL – Guidebook for DER Interconnection

Energy Storage



NREL – Guidebook for DER Interconnection
Storage and Solar + Storage

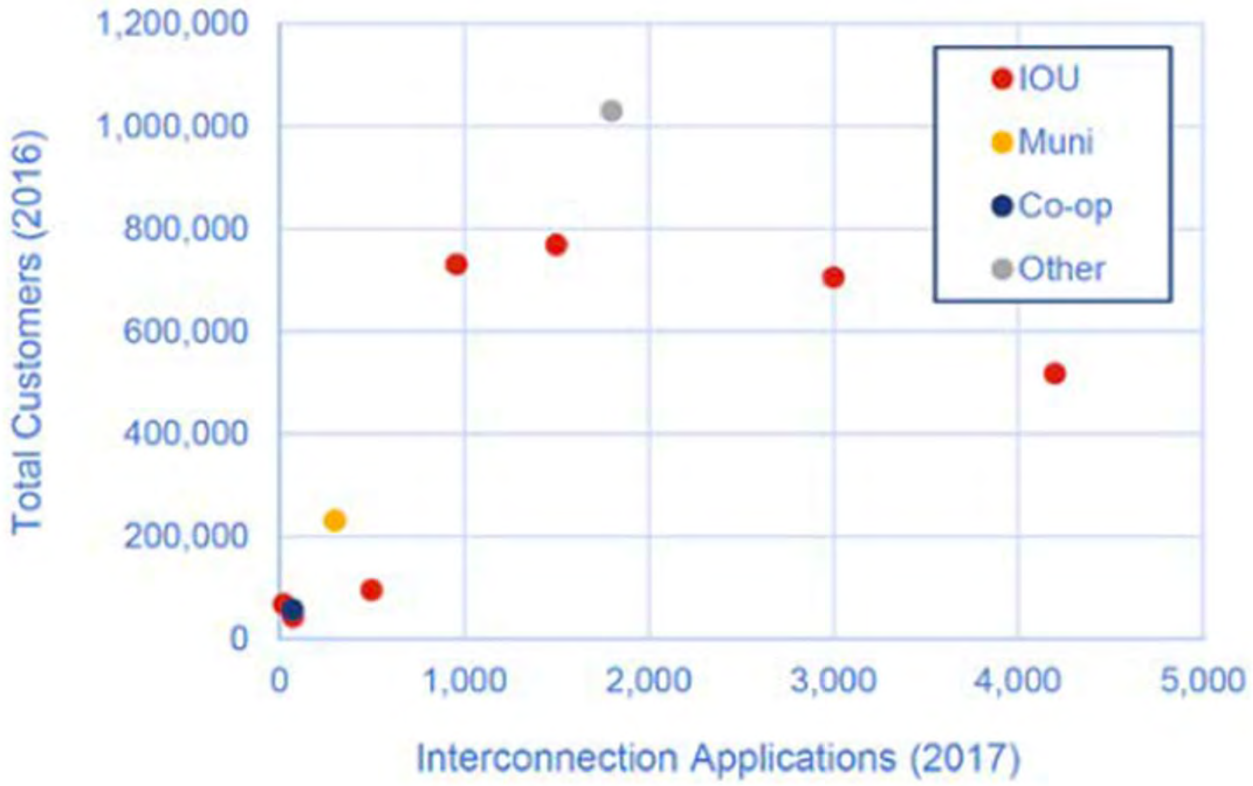
- Key considerations
  - Include energy storage as part of state interconnection standards
    - FERC SGIP 2013 included ES
  - Include provisions to address different energy storage configurations and clarify what level of review each type of system will undergo
    - Addressing non-exporting and limited-exporting systems
    - Addressing what generating capacity will be evaluated
    - Addressing inadvertent export
    - Specifying the most appropriate level of review, based on system design configuration and operational controls
    - Providing transparent screen and study results to allow for reasonable system modifications to address technical concerns, if needed

NREL – Guidebook for DER Interconnection
Storage and Solar + Storage

- Key considerations (cont.)
  - Clarify rules to account for the generation and load aspects of energy storage
  - Revise interconnection applications, agreements, and associated documents to correctly obtain information about storage systems
  - Ensure appropriateness of charging and discharging for BTM solar + storage systems for other renewable energy policy compliance

NREL – Guidebook for DER Interconnection

Interconnection Maturity Models



NREL – Guidebook for DER Interconnection
Interconnection Maturity Models

- **Interconnection Approaches at Low DER Penetrations**
  - Adopt the IEEE 1547-2018
  - Use application templates (Done)
  - Designate a point of contact (Done)
  - Coordinate inspection
  - Collect and maintain data sets
  - Provide system information to applicants as possible during the interconnection process
  - Provide vendor outreach and training
  - Implement online application platforms
  - Improve cost allocation

NREL – Guidebook for DER Interconnection
Interconnection Maturity Models

- **Interconnection Approaches at Moderate to High DER Penetrations**
  - More sophisticated and accurate technical screens
  - More forward-looking and proactive interconnection approaches
    - DER integration mindset
  - Use application templates

IREC – “Adopting IEEE 1547-2018”

I. Introduction to the IEEE 1547TM-2018 Standard
II. Anticipated Timeline for Full Rollout of IEEE Std 1547TM-2018 (2022)
III. Integration of IEEE Std 1547TM-2018 into Interconnection Rules
IV. Reference Point of Applicability and Evaluation, Commissioning and Verification of DERs
V. IEEE Std 1547TM-2018 Categories, Functions and Issues for Consideration
VI. Other Key Issues for Consideration
VII. Conclusion: State Leadership to Implement IEEE Std 1547TM-2018
VIII. Key Acronyms
IX. Key Codes & Standards
X. Key Terms
XI. Additional Resources

IREC – Model Interconnection 2019

- Significant updates
  - Interconnection of Energy Storage Systems
  - Requirements for Publishing a Public Queue and Reporting
    - Ensures key data is publicly available
  - Updated Dispute Resolution Process
    - Neutral third party to help resolve and mitigate disputes
  - Clarification to the Material Modifications Provisions
    - Clarifies what level of change requires resubmittal for existing and queued projects

IREC – Model Interconnection 2019 Guiding Questions

APPLICABILITY & ELIGIBILITY

1. Does the state have interconnection standards that apply uniformly to all utilities within the state's jurisdiction?

2. Are the interconnection standards applicable to all projects or are there size or design limitations that may prevent state jurisdictional projects from having a clear path to interconnection?

3. What DERs are covered by the interconnection standards?

4. Is energy storage explicitly addressed, defined, and given a clear path to proceed through the interconnection review process?

IREC – Model Interconnection 2019 Guiding Questions (cont.)

SYSTEM SIZE & REVIEW PROCESS

5. What are the size limits for the different levels of review?

6. Is there an option to have expedited review process for small, inverter-based systems unlikely to trigger adverse system impacts? (e.g., under 25 kW)

7. Is there an option for a Fast Track review process for larger DERs (e.g., up to 5 MW) that utilizes a set of technical screens to determine whether projects are unlikely to require system upgrades and/or negatively impact the safety and reliability of the grid?

8. What technical screens are applied for the Fast Track review process?

9. Is there a transparent Supplemental Review Process for interconnection applications that fail the Fast Track screens?

IREC – Model Interconnection 2019 Guiding Questions (cont.)

TIMELINES

10. Are both the utility and the interconnection customer meeting established timelines?

11. What methods, approaches and tools are in place to improve the timeliness of the interconnection process (e.g., electronic application submittal, tracking and signatures)?

12. Is there an explicit process to clear projects from the interconnection queue if they do not progress?

13. Are there clear timelines for construction of upgrades or meter installs?

IREC – Model Interconnection 2019 Guiding Questions (cont.)

DISPUTE RESOLUTION

14. Is there a clear, efficient and fair dispute resolution process?

IREC – Model Interconnection 2019 Guiding Questions (cont.)

INFORMATION SHARING & TRANSPARENCY

15. Is there a Pre-Application report that allows DER customers to obtain (for a reasonable fee) basic information about their proposed point of interconnection prior to submitting a full interconnection application?

16. Is there a transparent reporting process and publication of the interconnection queue to allow customers and regulators to see how projects in the queue are progressing?

Minnesota Case Study - Timeline

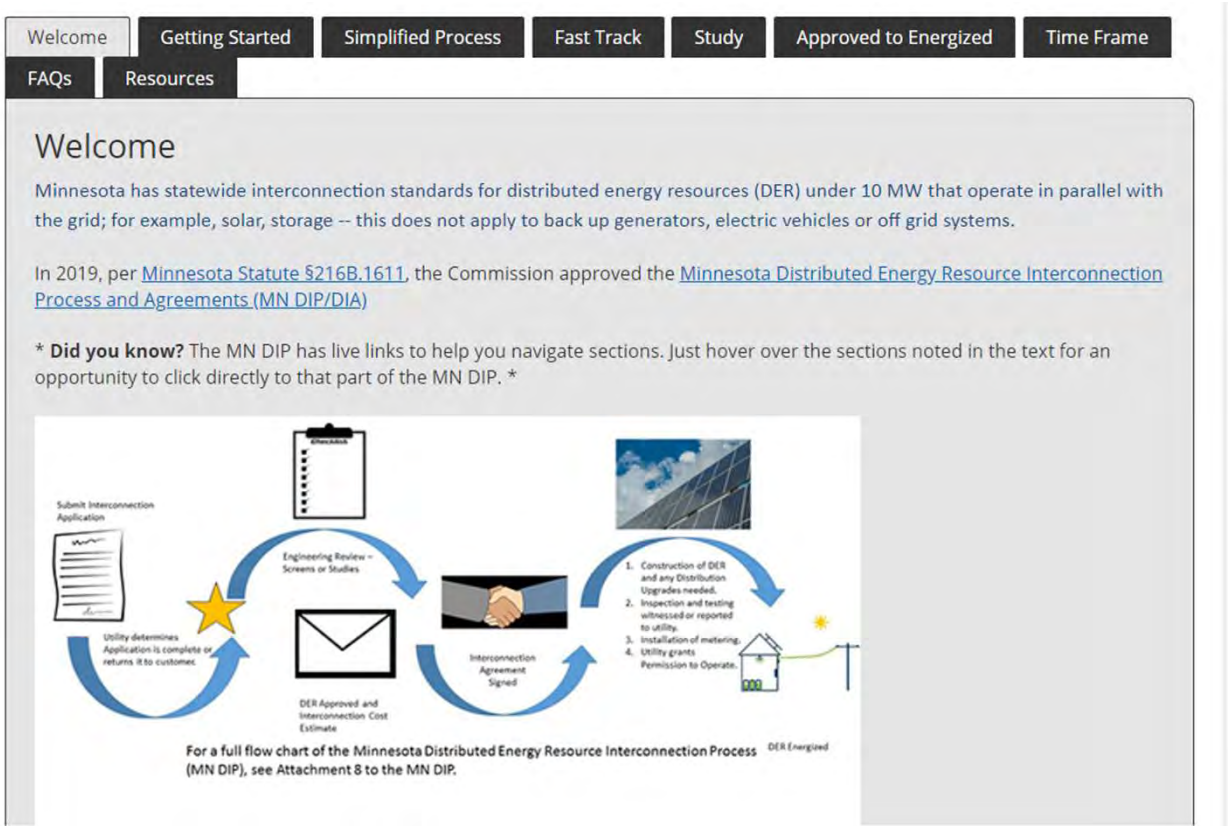
- Jan 2017 – DG Workgroup formed to update 2004 Standards
  - Ph I - Update Interconnection Standards based on FERC SGIP and SGIA
  - Ph II – Update MN DG Technical Interconnection & Interoperability Requirements (TIIR) and incorporate newly revised national technical standards
- 2018 and 2019 - Ph II TIIR WG
  - Rate regulated utilities, coops, munis and clean-energy advocacy groups
- Aug. 2018 – Phase I completed and yields revised MN DIP and MN DIA (Agreement)
  - Goes into effect June 2019
- Aug 2019 – Request comments on draft TIIR
  - Nov 2019 Commission meets to consider matter

Minnesota Case Study

- MN PUC – Order Jan. 22, 2020
  - https://mn.gov/puc/assets/Jan 22, 2020 Order_tcm14-418492.pdf
  - TIIR and Technical Specification Manual (TSM) effective July 1, 2020
- DG Workgroup effort continues
  - Work to do until July 1 reviewing TSMs and then annually (or more frequently)
  - Review feedback on DIP, DIA, TIIR or emerging technology
- MN PUC – DER Interconnection Process (MN DIP)
  - https://mn.gov/puc/assets/MN DIP and DIA_tcm14-381183.pdf

MN PUC Website

- https://mn.gov/puc/energy/distributed-energy/interconnection/



PSC 119 Revisions

- Original Process and Makeup
  - Regulatory
  - Utilities – IOU, Muni, Coop
  - Transmission & ISO
  - Advocacy – CUB, MREA, RENEW WI, SOUL
  - Trades - IBEW
  - Equipment manufacturers and installers
- Original Sub-committees (same for Revision?)
  - Business & Legal
  - Technical
  - Revision Drafting

PSC 119 Revisions – Original Timeline

Tentative Schedule	Action
August 8, 2001	Open docket 1-AC-207
October 11, 2001	Commission approval of Statement of Scope
January 2002	Establish Advisory Committee
February to June 2002	Hold meetings of Advisory Committee
August 2002	Submit draft rules to Legislative Council
August 2002	Prepare Notice of Investigation and Hearing on proposed rules and environmental review
August 29, 2002	Issue Notice of Investigation and Hearing on proposed rules
September 1, 2002	Hearing noticed in the Wis. Admin. Register (at least 10 days before hearing)
Sept. / Oct. 2002	Hold Public Hearing (one day in Madison)
October 2002	Close record; summarize comments. Prepare final draft to submit to legislature
November 2002	PSC order adopting final rules
January 2003	Review by Legislative committee (30 days)
February 2003	Rules filed
March 2003	Publication in Wis. Admin. Register
April 15, 2003	New rules become effective

PSC 119 Revisions - Considerations

- What is our proposed deadline?
- Is workload bigger than WIDRC capacity?
- What authority to pull committees/working groups together?