

Interconnection Standards

Description:

Interconnection is the process of “plugging into” the grid. For renewable energy, interconnection standards apply to both customer-sited and utility-scale systems, however, the focus of most interconnection standards are customer-sited systems. Generally, customers want a clear, streamlined, affordable and predictable system for getting connected to the grid. Without clear interconnection standards, the process customers must follow can be burdensome and expensive.

Discussion of the Policy:

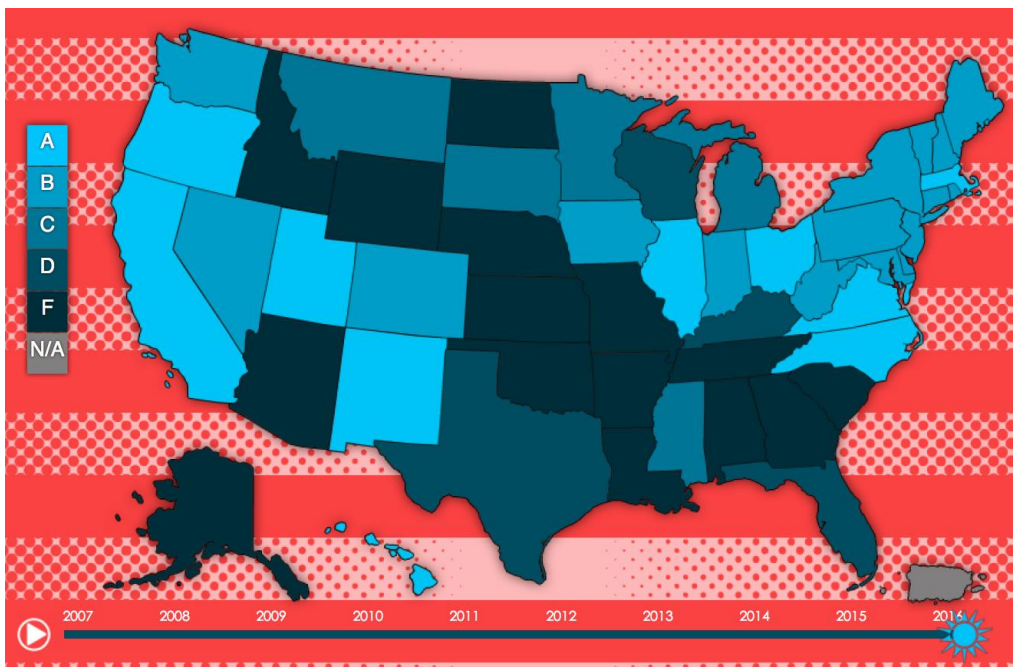
Interconnection standards must address both technical and procedural requirements. Many of the technical concerns associated with interconnection have been resolved through the development of national standards like the [Institute of Electrical and Electronics Engineers \(IEEE\) 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems](#) and the [Underwriters Laboratories \(UL\) Standard 1741](#).

Both state and federal policy govern interconnection. While the Federal Energy Regulatory Commission (FERC) has jurisdiction over transmission-level interconnection, state utility commissions, with some exceptions, have jurisdiction over distribution-level interconnections.

A significant challenge for the adoption of customer-sited distributed generation is the variation among state interconnection standards and procedures. A positive trend, states are increasingly relying on model standards created by the [International Renewable Energy Council \(IREC\)](#), the [Mid-Atlantic Distributed Resources Initiative \(MADRI\)](#), the [Federal Energy Regulatory Commission \(FERC\)](#), or by individual states like [California](#).

Example State Programs:

To date, 36 states and the District of Columbia have adopted statewide interconnection standards.



Source: [Freeing the Grid](#)

- California Rule 21 Governing Generation Facilities Connection to the Distribution Grid:
<http://www.cpuc.ca.gov/General.aspx?id=3962>
- Massachusetts' Interconnection Standards:
<http://programs.dsireusa.org/system/program/detail/986>
- Ohio's Interconnection Standards:
<http://programs.dsireusa.org/system/program/detail/801>

Key Components:

- Legislative declaration of the objective to provide a robust marketplace for energy through open access to the grid.
- Direction to the Utility Commission to develop an interconnection policy that follows best practices similar to those listed by [Freeing the Grid](#):
 - All utilities (including municipal utilities and electric cooperatives) should be subject to state policy.
 - All customer classes should be eligible.
 - There should be three or four separate levels of review to accommodate systems based on system capacity, complexity, and level of certification.
 - There should be no individual system capacity limit. The state standard should apply to all state-jurisdictional interconnections.
 - Application costs should be kept to a minimum, especially for smaller systems.
 - Reasonable, punctual procedural timelines should be adopted and enforced.
 - A standard form agreement that is easy to understand and free of burdensome terms should be used.
 - Clear, transparent technical screens should be established.
 - Utilities should not be permitted to require an external disconnect switch for smaller, inverter-based systems.
 - Utilities should not be permitted to require customers to purchase liability insurance (in addition to the coverage provided by a typical insurance policy), and utilities should not be permitted to require customers to add the utility as an additional insured.
 - Interconnection to area networks should generally be permitted, with reasonable limitations where appropriate.
 - There should be a dispute resolution process.

More Information:

- Freeing the Grid:
<http://freeingthegrid.org/>
- Interstate Renewable Energy Council (IREC), Interconnection:
<http://www.irecusa.org/regulatory-reform/interconnection/>
- IREC's Model Interconnection Procedures:
<http://www.irecusa.org/wp-content/uploads/2014/11/2013-IREC-Interconnection-Model-Procedures-3.pdf>

- Regulatory Assistance Project, Interconnection of Distributed Generation to Utility Systems:
<http://www.raonline.org/document/download/id/4572>
- Federal Energy Regulatory Commission Standard Interconnection Agreements and Procedures for Small Generators:
<http://www.ferc.gov/industries/electric/indus-act/gi/small-gen.asp>
- American Council for An Energy-Efficient Economy, Interconnection Standards:
<http://www.aceee.org/topics/interconnection-standards>