Grading of Model Interconnection Standards

Jason B. Keyes

on behalf of the

Interstate Renewable Energy Council

December 14, 2007

Overview

- Analyze IREC, NARUC, MADRI and FERC's SGIP model interconnection standards
- Use grading criteria developed by coalition of industry experts and published in "Freeing the Grid – 2007"
- Explain the approaches taken in each model for each criterion
- Propose refinements to the IREC model and the "Freeing the Grid" grading methodology
- Provide a useful document for state utility commissioners and staff developing interconnection standards

About the Models

- Interstate Renewable Energy Council (IREC) funded by U.S. DOE to participate in state utility commission rulemakings regarding interconnection standards; current model established in late 2005 (www.irecusa.org, “IREC Programs”, “Connecting to the Grid”)
- National Association of Regulatory Commissioners (NARUC) model developed in 2002 and referenced by EPAct 2005 (www.naruc.org/resolutions/interconnection.pdf)
- Mid-Atlantic Distributed Resources Initiative (MADRI) model developed by PJM (DE, DC, MD, NJ, PA), PJM utilities, PJM state utility regulators and other parties in late 2005 with extensive comments. Improved upon in MD and OR in 2007 (www.energetics.com/madri/pdfs/inter_modelsmallgen.pdf)
- Federal Energy Regulatory Commission (FERC) Small Generator Interconnection Procedure (SGIP) most thoroughly vetted by all industry participants and codified in FERC Order 2006 in May, 2005 and 2006-A and 2006-B in the subsequent year (www.ferc.gov, “Legal Resources”, “Major Orders – Electric”, and see current rule and agreement links at www.ferc.gov/industries/electric/indus-act/small-gen.asp)

About “Freeing the Grid - 2007”

- Grading of state net metering rules and interconnection standards
- Developed by interconnection experts at IREC, Network for New Energy Choices, Solar Alliance and Vote Solar Initiative
- 13 major criteria used for interconnection standard grading, plus miscellaneous category (*used for rest of slides here*)
- Highest state interconnection score is a “B”, with that grade only given to NJ and AZ
- All criterion scores based on a zero for the FERC SGIP, with that model given a mid-“C”
- Evolving methodology with considerable refinement in 2007
- Difficult to track all state programs
- Released on Dec. 3, 2007 at www.newenergychoices.org

1. Eligible Technologies

- SGIP applies to all technologies, renewable and non-renewable
- Theory that interconnection standards should be based on operational and safety impacts rather than policy, with one standard for all small energy systems
- Negative point for only permitting renewable generators
- All models get a zero – the maximum score

2. Individual System Capacity

- FERC jurisdiction for transmission lines
- State jurisdiction for distribution lines
- SGIP covers systems up to 20 MW to assure no gap in rule coverage
- IEEE 1547 covers systems up to 10 MW, which is highest likely distribution interconnection
- Negative scores if standards only provide for systems under 2 MW
- All models score a zero – maximum score

3. Process “Breakpoints”

- Concept to create separate tracks based on capacity and export capability
- Simplifies the process for simple interconnections by not requiring application of certain technical screens
- Typical breaks at 10 kW, 2 MW, 10 MW (non-export), and 20 MW
- SGIP and NARUC models do not provide for non-export and get a zero; IREC and MADRI models have a non-export class and earn a +1 (*plus a bonus point*)
- Grading could reflect growing consensus that lowest breakpoint be raised to at least 20 kW

4. Timelines

- SGIP establishes timelines for every step in application, study, testing, and approval processes
- SGIP steps generally provide considerable cushion and are often reduced
- NARUC was basis for most SGIP timelines and gets a zero
- MADRI reflects utility desire for more time and industry discretion and gets a -1
- IREC reflects industry desire for faster processing and gets a +1

5. Interconnection Fees

- Application fees and study fees vary widely from one utility to the next
- Utilities seek discretion to set fees by tariff
- Divide exists regarding whether fees should be based on cost of analyzing the first system or the hundredth system
- SGIP sets reasonable fees and gets a zero
- NARUC and MADRI provide utility discretion lose a point
- IREC provides slightly lower fees and gets a +1

6. Engineering Charges

- Estimates of cost of engineering review and modifications determines whether applicant proceeds
- If no estimate is required before utility costs are incurred or utilities have broad discretion, fewer applications for large systems are submitted due to uncertainty
- SGIP, MADRI and NARUC require good faith estimates of study costs and get a zero
- IREC puts 25% collar on modification cost estimates and gets a +1

7. External Disconnect Switch

- See discussion in companion Solar ABCS study by IREC
- Utility experience - EDS does not get used
- Not requiring EDS for small inverter-based systems is clear first step taken by PG&E and SMUD
- No injuries or problems in NJ, which does not allow utilities to require EDS
- Often not a major expense, but a needless annoyance
- SGIP and NARUC do not address EDS and get a zero
- MADRI requires a “visible break isolation device” if required by utility practices, and gets a -2
- IREC prohibits an EDS requirement and gets a +1

8. Certification

- UL 1741 and IEEE 1547 provide equipment and interconnection standards
- Alternate or modified versions of these standards creates uncertainty - such standards are heavily discounted
- Self-certification based on similar prior installations can speed review (none of the models allow it, but some states have adopted the approach and get a point)
- Laundry list of additional standards creates confusion (all models have the laundry list, but states are simplifying the list to 1741, 1547, and 1547.1)
- NARUC preceded IEEE 1547 and gets a -1
- SGIP, MADRI and IREC use 1741 and 1547 and get a zero

9. Technical Screens

- SGIP provides a detailed set of screens that, if passed, assure the applicant that no payment for studies shall be required
- Industry knows the screens well; adding new screens is bad and using no screens is worse
- Dropping or liberalizing SGIP screens without compromising safety is good
- SGIP set at zero, NARUC and MADRI scoring uncertain, IREC earns a point

10. Spot and Area Networks

- Multiple sources of electricity at a site create complexity for interconnection of small generators
- Area networks are rare in smaller states
- IEEE 1547.6 will provide rules for network interconnections in several years, if ever
- NARUC and SGIP don't address area networks and allow only 50 kW systems on spot networks, earning a zero
- MADRI allows small systems on both, which earns a zero
- IREC gets +4 including bonus points, which may be excessive

11. Standard Agreements

- Cost of negotiating agreements reduces profit, making standard agreements critical
- Complex and hostile clauses in standard agreements discourage potential applicants
- Standard agreement by conforming tariff is better than a tariff based on standard elements of an agreement
- IREC gets a point for friendly clauses in standard agreements
- Rest have standard agreements with standard clauses, worth zero points

12. Insurance Requirements

- No injuries or damages to date
- Limited ability to insure small systems if provisions require applicant to name utility as an additional insured
- SGIP requires adequate insurance
- the rest explicitly do not require additional insurance, earning those models 0.5 to 1 point

13. Dispute Resolution

- Mediation or arbitration will drain profit from a system
- Technical master with low costs and fast decision making required, which can earn +2
- SGIP approach found to be administratively burdensome; this level of dispute resolution is set at zero
- Utility discretion in dispute resolution is inappropriate and get a -1
- IREC scores a +2 based on its expedited review procedures

14. Miscellaneous

- Other standards referenced shoud impact score negatively, such as MADRI reference to the PJM Small Generator Technical Requirements
- A process significantly harmonized with the SGIP process is considered an attribute because the SGIP is familiar
- Review of miscellaneous scores being reviewed

Thoughts?

- Scoring emphasis
- New criteria
- Study end-product
- IREC model revision

Jason B. Keyes

Wilson Sonsini Goodrich & Rosati

Seattle, WA

(206) 883-2577

jkeyes@wsgr.com