RAP | Energy solutions for a changing world

MADRI Interconnection Rule circa 2005

MADRI Meeting #26
At PEPCO, Washington DC

Presented by Richard Sedano

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The Regulatory Assistance Project

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Introducing RAP and Rich

- RAP is a non-profit organization providing technical and educational assistance to government officials on energy and environmental issues. RAP Principals all have extensive utility regulatory experience.
  - Richard Sedano directs RAP's US Program. He was commissioner of the Vermont Department of Public Service from 1991-2001 and is an engineer.

Origins of the MADRI Interconnection Rule

- As a forum to address distributed generation issues, MADRI was an apt forum to bring some order to the interconnection conversation in 2004.
  - State PUCs drove interest
- Six special meetings of the "interconnection subgroup" in 2004 and 2005
  - Self-selected participants

Motivations

- Encourage customer generation
  - Potential from DG evident
  - Minimize hurdles to applicant
  - Engineering and culture issues
- Protect utility and broad consumer interests
  - Reliability, fault protection, power quality, equipment protection, safety, liability

Inspirations: IEEE 1547, UL 1741

- IEEE 1547 - Standard for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems
  - Principally designed to assure DG units operate safely and harmoniously with existing system
  - Focuses exclusively on "the interconnection" itself and not on other issues such as legal/contractual relationships of parties, tariffs, etc.
- UL 1741 Equipment for Use with Distributed Energy Resources
  - Covers inverters, converters, charge controllers, and interconnection system equipment (ISE) intended for use in stand-alone (not grid-connected) or utility-interactive (grid-connected) power systems. Utility-interactive inverters, converters, and ISE are intended to be operated in parallel with an electric power system (EPS) to supply power to common loads.

FERC Small Generator Interconnection Rule

- http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US06R&re=1&ee=0
  - Order 2006 (May 2005) (tech conf this year)
- A model for states for interconnections 20 MW and smaller interconnecting to distribution
  - Directly applicable to interconnections to transmission

Rule Details

- Size levels
- Inverter or not?
- “parallel” service
- “area”/”spot” net.
- Isolation practice
  - Utility access**
- Dealing with faults, etc.

- Process issues
  - Fielding Int. request
    - Standing to apply
  - Cost, Forms to apply
  - Time to evaluate
  - Time to process
  - Queue
  - Utility records
  - Utility contact
    - PSC may want a contact

Application Processes in MADRI Model Rule

- Level 1: Certified, inverter-based systems <= 10 kVA.
- Level 2: Certified, inverter-based systems that are <= 2 MVA or systems that did not pass a Level 1 review.
- Level 3: Systems <= 10 MVA which do not qualify for or did not pass the Level 1 or Level 2 reviews
- Level 3A: Systems that do not qualify for Level 1 or Level 2 review and do not export power to the system.

Rule Details

- Total Mva
  - On site
  - On a circuit
  - On a system
- Large Units
  - Meetings
  - Feasibility study
  - Facilities study

- Terms and Conditions
  - Construction
  - Interconnection
  - Operation
  - Testing
  - Access
  - Routine Disconnection
  - Indemnification
  - Insurance, Liability
  - Disputes
  - Etc. typical for contacts

Mid-Atlantic Distributed Resources Initiative Model Interconnection

- http://sites.energetics.com/MADRI/pdfs/inter_modelsmallgen.pdf
  - Annotated with comments to give prospective users the opportunity to make choices based on priorities or concerns
  - Credit to Brad Johnson
- Used as a basis for rules in several other states
  - including MD, PA, NJ, OR

Goals for best practice

- Transparency – Requirements fully stated
- Consistency – With consensus industry technical standards
- Certainty – System can be interconnected if standards are met and procedures are followed
- Uniformity – Requirements are the same across utilities (at least all regulated utilities)
- Timely interconnection – Standard timeframes that enable an estimate of expected on-line date and mitigate delays
- Reasonable fees – Uniform and cost-based

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

Please me contact with follow up questions: rsedano@raponline.org

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