Small Generator Interconnection & Net Metering

Colorado Workshop for Municipal and Cooperative Electric Utilities

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courtesy of Sun Edison

What Makes a Solar Program Successful?

- Key elements:
  - Sustainable, orderly incentives for sizeable program
  - Net Metering (simple w/ customer protections)
  - Interconnection (streamlined -low/no cost)
    - Standardized Interconnection Procedures
    - Standardized Interconnection Agreement

Interconnection - Overview

- Needed to operate generator in synch with electric utility grid
- Critical for renewable energy generators & net metering
- Most efficient method for on-site generators

Net Metering – Overview

- Economic arrangement to account for on-site customer generators
- Critical to non-dispatchable (renewable generators)
- Keeps cost low *(small economic transaction for R customers and many large C's)*
- KEY: treat as if simple single register meter spinning forward and reverse

Federal Activities

- Interconnection
  - FERC NOPR on standardized interconnection for small generators: Orders 2006 and 2006-A
  - EPACT Section 1254
- Net Metering
  - Swecker v. Midland
  - EPACT Section 1251

FERC Rulemaking

- Final Small Generator Interconnection Rules issued May 2005 (Order 2006)
  - Revised Nov. 2005 (Order 2006-A)
- Utility OATT filings Dec. 2005

FERC Rules Development

- Original NOPR based on Texas & PJM rules
- Consensus filing in Dec. 2002
- States used consensus filing (MA, NJ) and made improvements
- FERC reconvened parties for addition consensus - included MA and NJ work – filed Feb. 2005

FERC APPROACH

- Remove simple generators from the complex/costly interconn study process
- Identify keys to “simple” interconnection
  - Smaller size (e.g. <2MW)
  - Certified generators under IEEE 1547/UL 1741
  - Only located at customer's site – use existing utility facilities

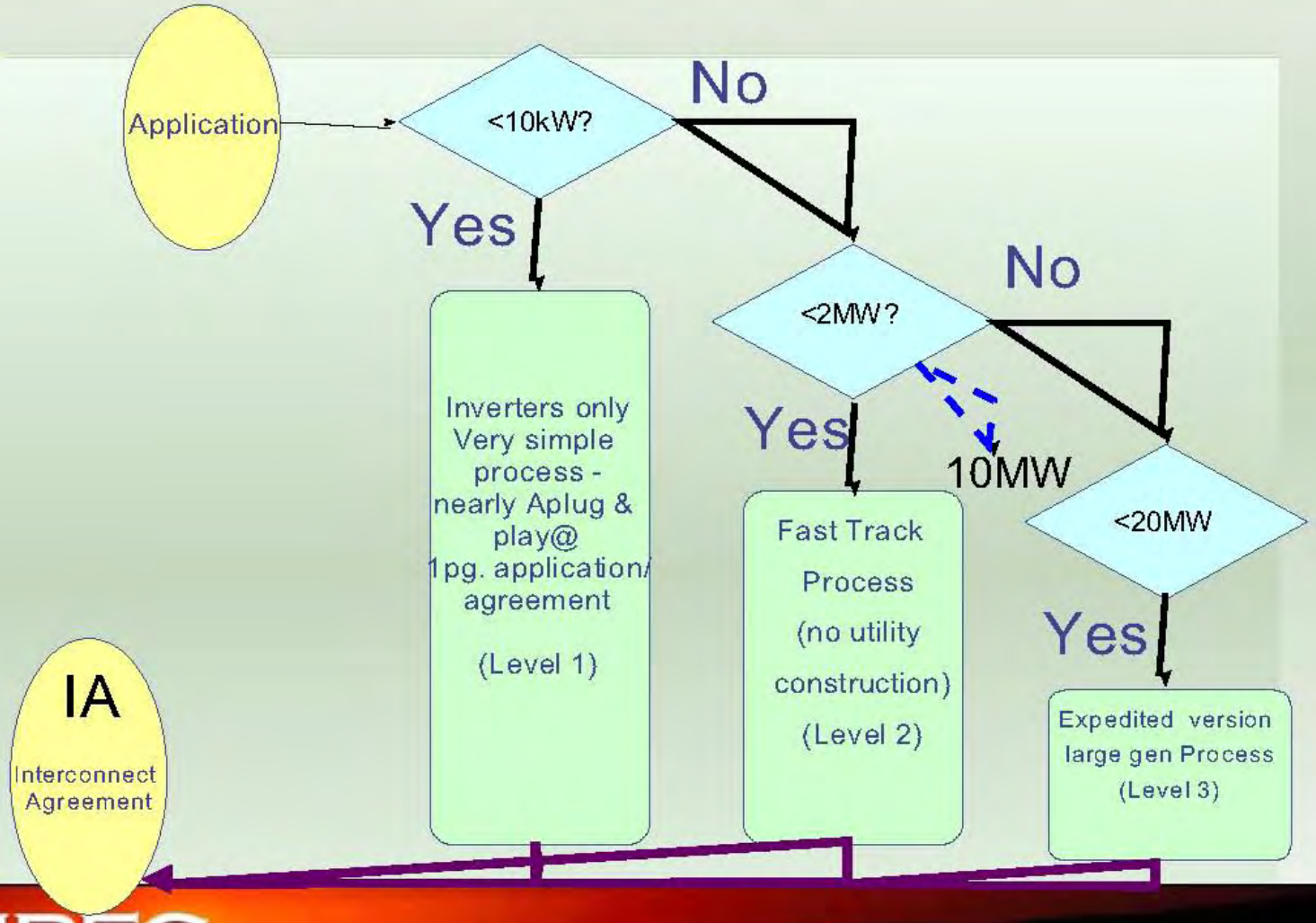
FERC Generator Interconnection Rulemaking

- Size classifications
  - 20 MW - expedited large gen procedure
    - Quick Feasibility; Impact; Facilities studies – may be skipped if not needed. Queue jumping allowed where no impacts or generator agrees to proportional payment
  - 2MW - Fast Track – screens w/ limited review
    - Certified and customer sited only
      - Note: AZ approach – changes 15% load measurement
  - 10kW - inverter based process
  - Commentary : MISSING 10MW non-export

2MW rule – Screens (8)

- Agg. Peak load of generators <15% of line section peak load *(AZ includes fused lateral for non-certified generators)*
- <10% contribution of max fault current
- Not on ckts. where device w/in 87.5% of rating
- Proper wiring configuration 3wire/4wire systems
- Shared transformer limit; imbalance limit
  - add customer svc. entrance limit

The FERC Process



FERC – improvements/clarification

- Insurance -- convoluted language -seems to say not required or only to the extent a liability is shown
- Network interconnections-urban areas
- Colo. rules fix both
  - Insurance $300k and $2M
  - Networks 300kw limit
  - HOWEVER, fees unclear

Good FERC rule portion

- DISPUTE RESOLUTION
  - No state based rule with good DR yet
  - Need 3rd party technical master

Jurisdiction over the process

- What FERC said:
  - Any facility interconnecting with 69kV or above is transmission
  - Any low voltage facilities under an OATT or those used in a wholesale transaction
  - Could be dual use
- My considered opinion:
  - Jurisdiction will turn on the classic FPA test - wholesale sales, interconnected to or affects interstate transmission, or interstate sales.

Jurisdiction – Practical

- Sales:
  - Net metering = state. Retail based rate.
  - On-site consumption only = state.
  - Participation in any ISO market = FERC.
  - Note: ask generator then process based on anticipatory sales.
- Size:
  - <10kW = state
  - 10kW-10MW = dual (where sales matters)
  - >10MW = FERC

•EPAct 2005 Interconnection

- Section 1254 – Interconnection
  - Each electric utility shall make available interconnection service to any electric consumer that the utility serves ... interconnection services shall be based on the IEEE Standard 1547 ... agreements and procedures shall be established that promote current best practices
- States & non regulated utilities must "consider" w/in 1 year of passage (i.e. Aug 2006)
  - complete by Aug. 2007
- Prior State action unaffected

•EPAct 2005 Interconnection

- What's this mean for Colorado
- Regulated utilities probably in compliance
  - Colo. rules are based on IEEE1547
  - Colo. has "prior state action" exemptions
- Question for unregulated utilities
  - Probably need to act
    - Adopt state interconnection rules
    - Adopt other interconnection rules based on IEEE1547
- Historically PURPA "consider" is a weak standard, however…
- FERC has taken initiative on interconnection
  - FERC could assert jurisdiction over munis and co-ops – see safe harbor provisions

Net Metering -Federal Actions

- Majority of the states have net metering rules (see DSIRE and R. Haynes)
- Traditionally not a federal activity but,
  - FERC took jurisdiction in Swecker V. Midland
  - EPAct 2005 Section 1251

Reflection – State trends

- Larger sized systems
  - 1 MW CA
  - 2MW – NJ, PA, CO
    - Remember size doesn't matter
- Increased limits on total installs allowed
  - SDG&E hit 0.5% limit
  - PG&E reaching limit
  - NJ, PA, CO no limit
- Types: Solar almost always, wind other renewables

FERC Action – Net Metering

- Swecker v. Midland Electric Cooperative
- Litigation between farmer member w/ wind turbine and Iowa co-op
- Co-op not regulated under Iowa Utilities Board
- First filing by Swecker at FERC 1999
  - Twice utility service terminated
- Case before the:
  - FERC; IUB, Federal District Court, IA Supreme Court

Swecker v. Midland

- Iowa Supreme Court initially ruled in favor of Swecker and upheld state Dst. Court ruling that ordered Co-op to provide net metering
- Apr. 2005 Iowa Sct. reversed saying it believed it did not have jurisdiction
- June 2005 FERC takes jurisdiction and orders Midland to provide net metering
  - FERC notes bad acting... we are "particularly concerned with the strategy of CIPCO, as demonstrated by its member Midland, to fight vigorously a QF's efforts to sell rather than negotiate with the QF in good faith."

EPAct 2005 Section 1251 Requirements

- Each electric utility shall make available upon request net metering service to any electric consumer the utility serves.
- Does not seem to limit size; fuel source; or total allowed.
  - Utility must develop plan to minimize reliance on 1 fuel source
- States & non-regulated utilities w/in 2 years must start proceeding - finish w/in 3 years

EPAct 2005 Section 1251 Requirements

- Unclear on whether intended to be export or on-site use only. Use of term delivered to "local distribution" would imply export.
- Prior State action exemption
  - Probably most existing NM rules ok
  - may see FERC backstop for unregulated utilities
  - departure from state rules that appear to be a barrier most likely to be challenged

Reference: Interconnection Models

- ELPC - newest interconnection & net metering model – focused on the MidWest
- IREC - new improved. Includes best practices for states w/ IA and application form. Now has 10MW non-export (important for when screens fill up)
- FERC - useful model for states - see Colo. Version
- MADRI - new 10 MW section, otherwise confusing federal language for states
- NARUC - somewhat dated procedures - good IA
- Colo - best FERC at state level model

The End

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