

Safe & Efficient Interconnection

Distributed Resources and Competitive Energy Markets in Illinois Workshop

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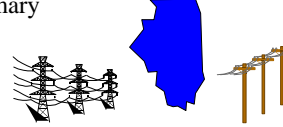
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Safe & Efficient Interconnection

- Key Decisions & Project Timeline
- Interconnection Principles
- California, New York, & Texas
- Summary



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Key Decisions & Project Timeline

- Willingness to undertake an interconnection rulemaking project
 - Decision may take months or years
- **Technical:** Safety and reliability concerns
 - Technical requirement decisions can be made within 3-4 months



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Key Decisions & Project Timeline

- **Process/commercial:** Interconnection process; contract; transaction costs
 - Negotiations over 3-6 months can resolve contractual and process issues
- **Regulatory:** Access to regulated services; rates & tariffs; role of the utility
 - Adoption of tariffs may take 3-6 months
 - Role of the utility is an ongoing issue (years)



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Interconnection Principles

- Do not compromise on public safety
- Do not degrade electric service
- Avoid burdensome requirements
- Adopt performance requirements
- Adopt technology-neutral requirements
- Minimize utility discretion
- Require non-discriminatory access to regulated services

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Technical Issues

- Protective relay settings
- Restart time
- Automatic reclose
- Anti-islanding
- Disconnect switch
- Dedicated transformer
- Harmonics
- Utility studies and review
- Fault current contribution
- Type testing (pre-certification)

(Manufacturer perspective)

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California, New York, & Texas

Requirements include:

- General technical requirements
- Prevention of interference
- Control, protection, and safety equipment
- Field testing or type testing (pre-certification)
- Metering and communications

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General Technical Requirements

- Meet all national, state & local safety codes
- Install manual, visible disconnect device
- Prevent connection to de-energized circuit
- Prevent parallel operation if abnormal voltage or frequency exist

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Technical Requirements

- Prevention of Interference
 - Disconnect for sustained voltage deviation, frequency deviation, flicker & harmonics outside IEEE 519 limits, or if voltage falls outside allowable range
- Protective Function Requirements
 - Manual disconnect device; over/under voltage and frequency trips; fault interrupting device and others depending on size and circumstances

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Testing

- Field testing requires customer to provide notice prior to initial energizing and to functionally test all protective elements
- Type testing (pre-certification) requires laboratory testing by an independent third party (such as UL)

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Process/Commercial Issues

- Application fee
- Fixed timelines
 - Initial review
 - Studies
- Need for interconnection studies
- Fixed study costs
- Time to construct system upgrades
- Liability; mutual indemnification
- Insurance requirements
- Customer responsible for the protection of the DG facilities

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California, New York, & Texas

- Process/commercial issues
 - CA: Screening process separates "simplified interconnections" (pre-certified equipment that has a limited impact on the distribution line) from those requiring study
 - NY: 11 steps set forth the process; there is utility discretion for conducting studies
 - TX: No fees for pre-certified units <500 kW that have a limited impact on distribution feeder

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Regulatory Issues



- Standby tariffs
 - Interruptible
 - Time of use
- Unbundled distribution service
- Compensation for DG value
- Access to ancillary services
- Jurisdiction
- Distribution-only service (wheeling)
- Sharing of information with affiliates
- DG ownership; role of the wires utility
- Stranded costs(!?)

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California, New York, & Texas

- Ongoing regulatory issues
 - CA: Ownership, valuation, and rate issues are pending; future of the distribution utility will be addressed in a staff report
 - NY: Phase II anticipated to address DG value; standby tariffs are in separate proceeding
 - TX: DG activity preceded distribution unbundling rules and the removal of competitive functions from the regulated utility

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California Regulations

- California Public Utilities Commission (CPUC) Distributed Generation and Competition Proceeding
 - <http://www.cpuc.ca.gov/dg-r9910025/index.htm>
- California Energy Commission (CEC) Distributed Energy Resources Project
 - <http://www.energy.ca.gov/distgen/index.html>
- CEC staff interconnection report (April 2000)
 - <http://www.energy.ca.gov/distgen/documents/700-00-003.PDF>
- Pending Activities
 - CPUC Rulemaking 99-10-025 includes testimony, hearings, and briefing on a range of DG issues

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New York Regulations

- New York State Department of Public Service (NYDPS)
 - <http://www.dps.state.ny.us>
- December 31, 1999 Order on Interconnection Rules
 - <http://www.dps.state.ny.us/fileroom/doc7024.pdf>
- Pending Activities
 - Rehearing on several interconnection decisions
 - Phase II proceeding (Case 00-E-0005) will examine benefits associated with DG
 - Case 99-E-1470 addresses standby charges

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Texas Regulations

Index of PUC of Texas Electric Regulations

- <http://www.puc.state.tx.us/rules/subrules/electric/index.cfm>

Distributed Generation Regulations

- <http://www.puc.state.tx.us/rules/subrules/electric/25.212/25.212.pdf>
- <http://www.puc.state.tx.us/rules/subrules/electric/25.211/25.211.pdf>

Archive of Project 21220 (DG Rulemaking)

- <http://www.puc.state.tx.us/rules/rulemake/21220/21220arc/21220arc.cfm>

Pending Activities

- Project 22318 -- Pre-certification (type testing)
- Project 22540 -- Workshop (fees & power export issues)

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Summary

- Adopt principles first
- Technical issues are solvable
- Type testing (pre-certification) reduces costs
- Commercial/process issues are negotiable
- Regulatory issues will take years
- Time is money. Do not allow delays.

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