Interconnection Standards

PURPA Standards Workshop
South Dakota Public Utilities Commission

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Examples of Distributed Generation Systems

- Wind turbines
- Photovoltaics
- “Combined Heat & Power” generators
- Landfill gas systems
- Anaerobic digestion of livestock waste
- Microturbines, fuel cells, etc.

Benefits of Distributed Generation

- Less need to transmit power over long distances – cuts down on “line loss” and capacity bottlenecks.
- Can provide highly reliable power for customers that require uninterrupted service.
- Can offset peak utility power demand – this results in smoother load curve and more secure electric system.
- Cleaner air and healthier environment.

Source, Congressional Budget Office, *Prospects for Distributed Energy Generation* (2003)

Emerging Economic Opportunities

- PV industry >$12 Billion World 2006, >$1.5 Billion US
- Small wind turbine market (<=100kW) approaching $1 Billion-yr World, $50 Million US
- Community wind turbine market (100kw<2 MW) approaching $1 Billion-yr World, $100 Million US

  [Source for economic data: Illinois Solar Energy Association]
- GAO Report (2004) – highlights economic potential of wind power for rural communities
- What share will South Dakota get of these markets and their new businesses, jobs and tax revenues?

Interconnection – one of the "Principal Obstacles" to Distributed Generation

- Interconnection = the physical connection between the customer-sited generator and the utility grid.
- Interconnection agreement typically negotiated with utility / electricity provider.
- This process can be expensive and time consuming for DG developers and the utilities (although it keeps lawyers and engineering firms busy!)
- NREL has identified interconnection as one of the "principal obstacles" to effective development of DG. (NREL, 2000)

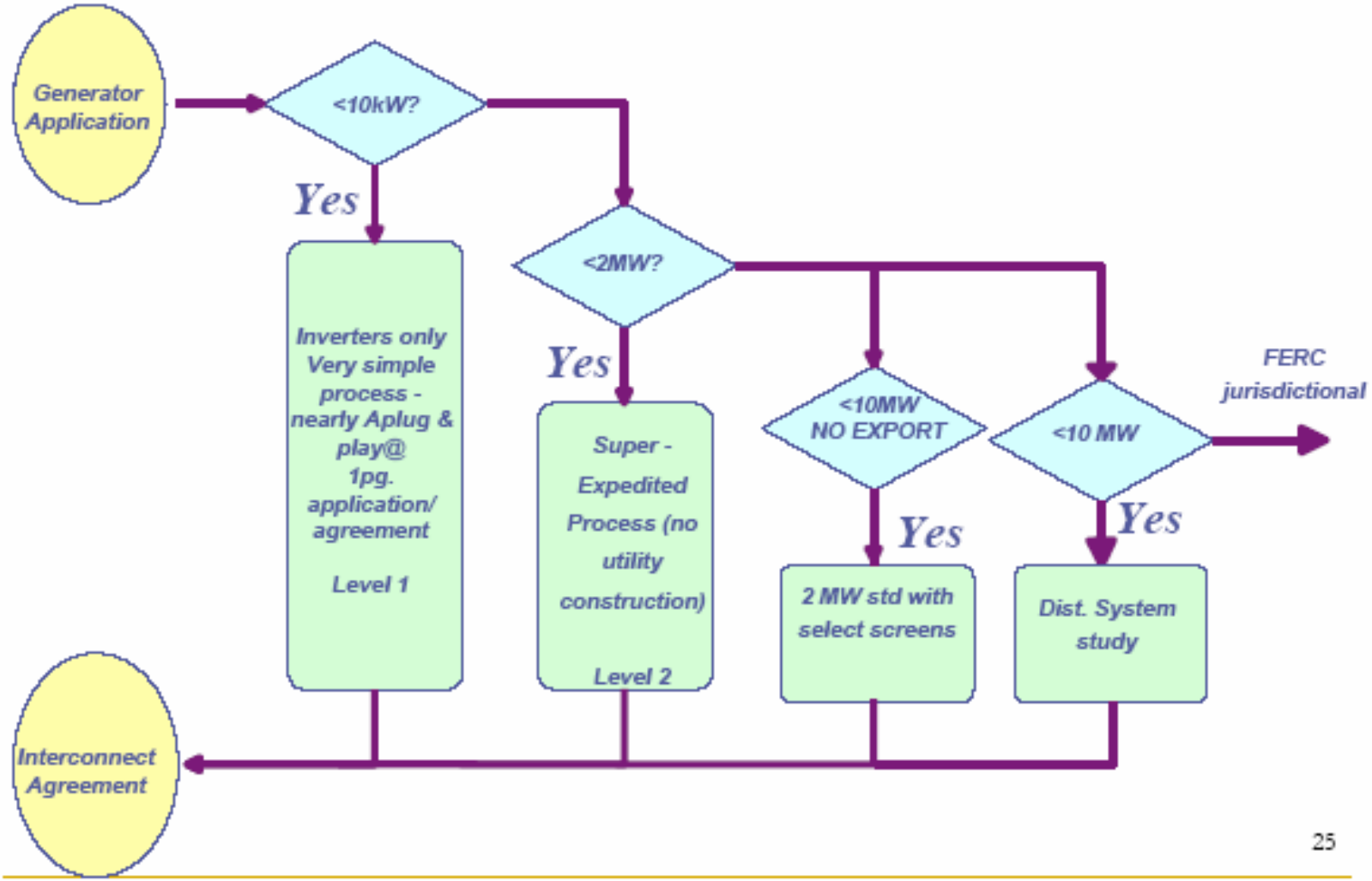
One Solution: Standardized Interconnection Rules

- Streamline the interconnection review and approval process.
- Include standardized technical requirements (often based on IEEE 1547 consensus standards)
- Equipment pre-certification reduces utility workload and provides certainty for developing market.
- Include “tiered” interconnection pathways to allocate workload and engineering reviews effectively.
- Standardized application forms and interconnection agreements – help reduce complexity and transaction costs
- DO NOT ADDRESS RATES!

Jurisdictional considerations

- FERC Small Generator Interconnection Procedures (Orders 2006 a & b)
  - Apply to “small” generators = 20 MW and under
  - Generally apply to transmission level interconnections
- State rules
  - Usually administered by state utility commission
  - Generally apply to distribution level interconnections
  - “Model” state rules: e.g. IREC (2005); MADRI (2005); ELPC
  - EPAct 2005 requires state commissions to “consider” interconnection standards.

Interconnection Processes -- States



Energy Policy Act of 2005

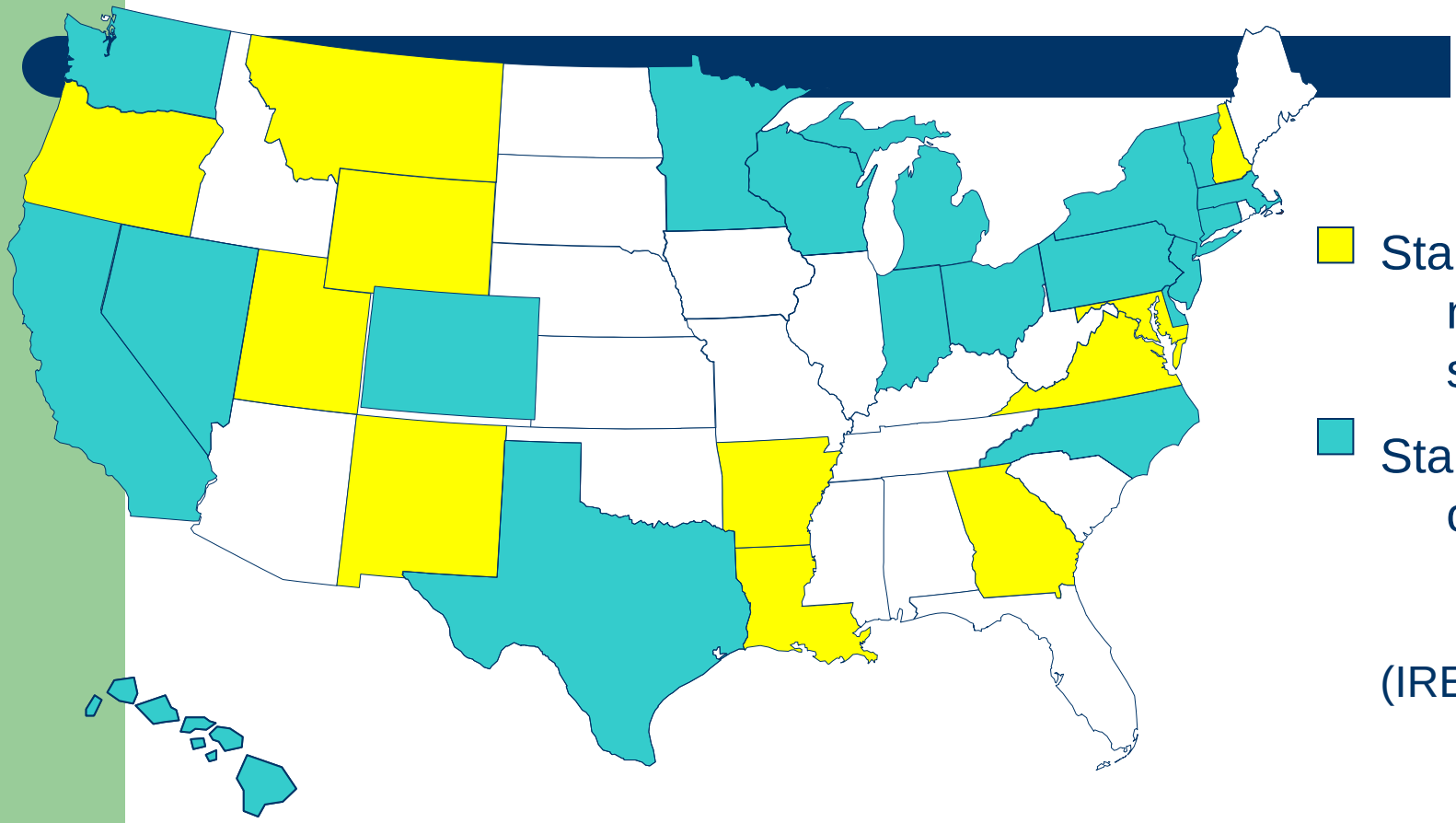
- **Section 1254: Interconnection**
  - PUCs and certain nonregulated utilities must "consider" an interconnection standard.
  - Must make "determination concerning whether or not it is appropriate to implement such standard" by August 8, 2007.
  - Standard based on IEEE 1547 technical standards
  - In addition, must establish "agreements and procedures" to promote "current best practices of interconnection"

ELPC's Involvement in State EPAct proceedings

- **Iowa**
  - Iowa Utility Board Docket NOI-06-4
  - On 4/25/07 Board issued Preliminary Model Procedures, invited feedback from parties.

- **Illinois**
  - Illinois Commerce Commission Docket 06-0525
  - Parties currently engaged in workshops to develop consensus rule.

States with Standardized Interconnection Rules



- Standards for net-metered systems only
- Standards for other DG

(IREC, Nov. 2006)

Resources

- IREC: www.irecusa.org
  - Tracking state “consideration” of EPAct standards
  - Model interconnection rules
  - State-by-state tables of state rules & policies
- DSIRE: Database of State Incentives for Renewables and Efficiency – www.dsireusa.org

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