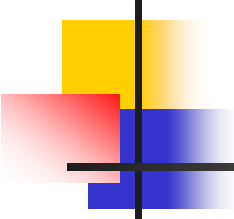


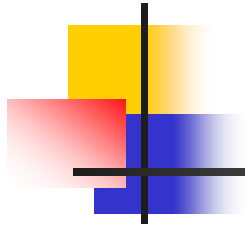
Implementation Issues & Best Practices

South Dakota Small Generator
Interconnection Workshop
March 19, 2008



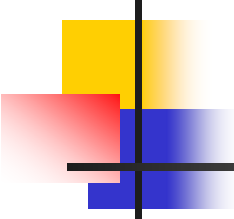
Discussion Outline

- I. Intro to implementation issues
- II. What are interconnection “best practices”?
- III. How does strawman rule address implementation issues?



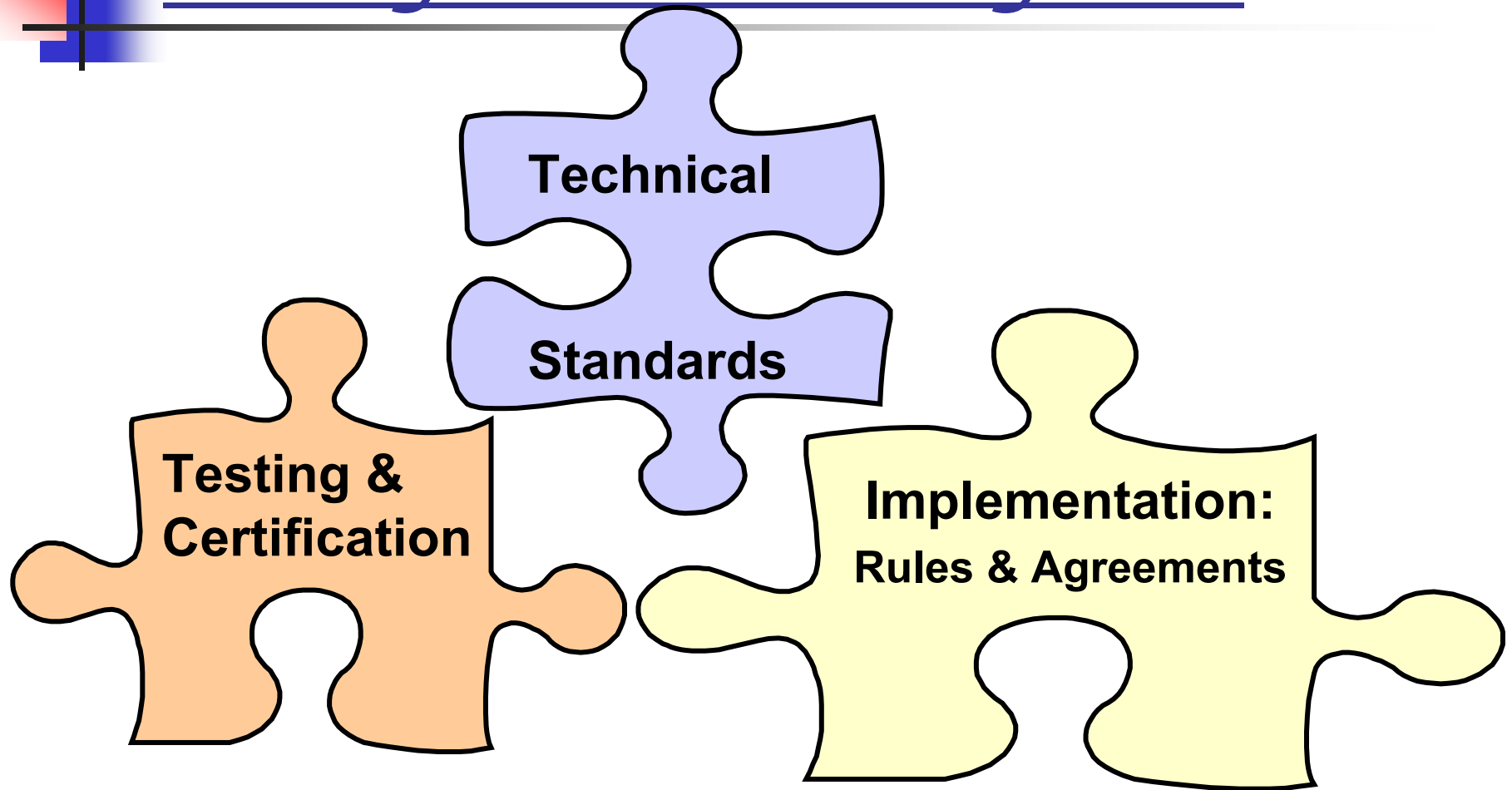
Interconnection Standards

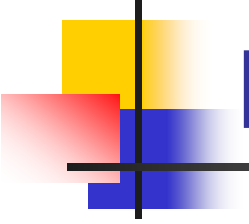
- **Technical issues** include safety, power quality, system impacts.
- **Implementation issues** include legal and procedural considerations.



Interconnection:

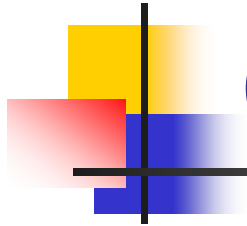
Putting the Pieces Together





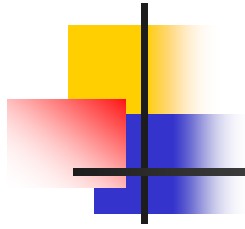
Elements of Standardized Procedures

- Application and review procedures
- Fees and timelines
- Insurance requirements
- Business terms
- Dispute resolution
- Standard forms and contracts



Goals

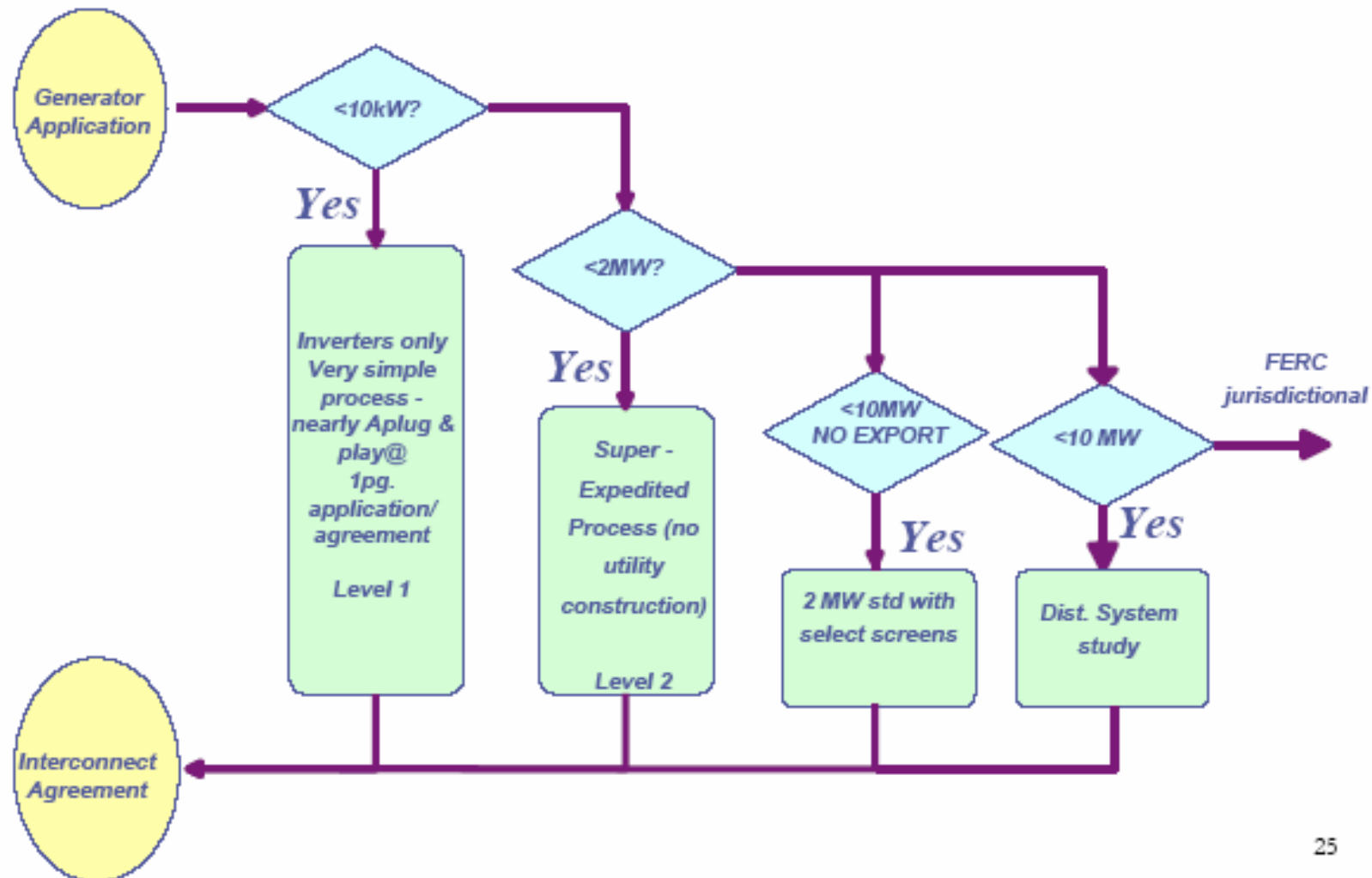
- Keep costs fair and proportionate to project size
- Make rules transparent, uniform, detailed and public
- Provide streamlined review for qualified projects
- Standardize and simplify forms

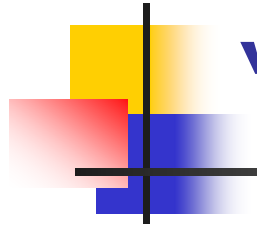


Key features

- Technology neutral
- Context specific
- Transparent
- Avoid cost-shifting
- Fair and non-discriminatory
- Conservative

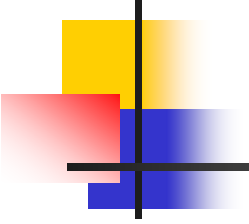
Interconnection Processes -- States





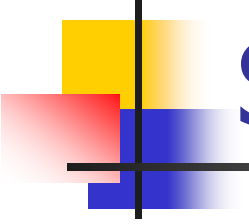
“Best practices” - EPAct 2005

“...agreements and procedures shall be established whereby the services offered *shall promote current best practices* of interconnection for distributed generation...”



“Best practices” SDPUC Order 7/26/07

“The Commission finds that it will adopt the interconnection standard ... this standard will facilitate the development of distributed generation and encourage the goals of PURPA. *Interconnection procedures that reflect current best practices* will assist customers who are interested in developing and implementing distributed generation ...”

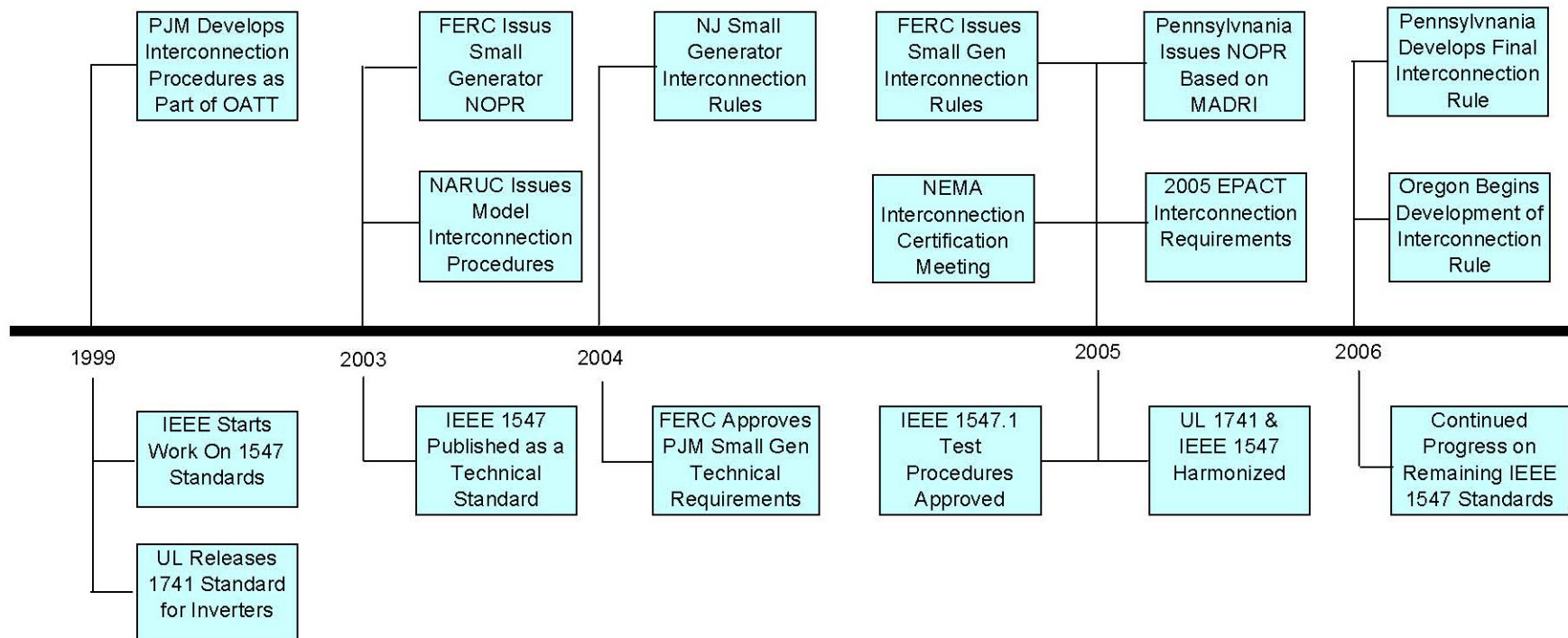


Sources of “best practices”

- FERC Small Generator Interconnection Procedures (2005) -
<http://www.ferc.gov/industries/electric/indus-act/gi/small-gen.asp>
- Other state rules
 - New Jersey, Oregon, Colorado, Maryland
 - NNEC “Freeing the Grid” Report (2007)
- “Best practice” models
 - IREC Model - www.irecusa.org/index.php?id=87

A Brief History of Interconnection Standards/Procedures Development

Interconnection Procedures



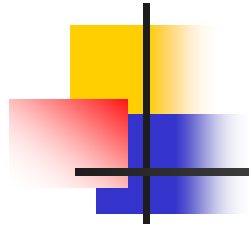
Interconnection Technical Standards

Source: Brad Johnson, ACN Energy Ventures

State Interconnection Standards: Status of State Implementation September 2007

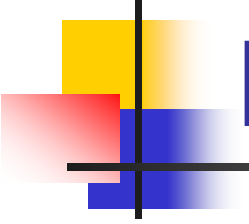


- Source – U.S. EPA, Combined Heat & Power Partnership



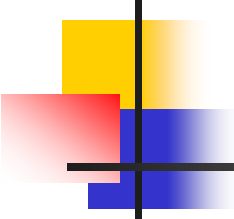
FERC Interconnection Rules

- Order 2003 - Large Generator Interconnection Procedures (> 20 MW)
- Order 2006 a & b – Small Generator Interconnection Procedures (< 20 MW)
 - Directed as a “model” to states
 - 3 procedural pathways or “tiers”
 - Includes standard application forms and agreements



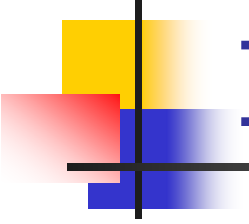
FERC SGIP (cont'd)

- 3 procedural pathways or “tiers”
 - < 10 kW, inverter-based and meets screens
 - < 2 MW and meets screens
 - Study process for everything else
- Screening criteria
 - < 15% of peak load on radial ckt
 - Other screens capture fault current contribution, imbalance, stability, etc



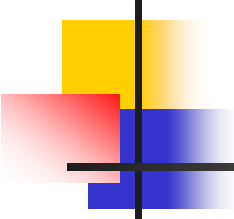
FERC SGIP (cont'd)

- Study process for systems to 20 MW
 - Feasibility study
 - Impact study
 - Facilities study (if construction req'd)
- Many states cut off at 10 MW (*DG above this threshold often FERC jurisdictional*)



Issues not resolved by FERC

- Extraordinary insurance requirements
- External disconnect switch
- Non-exporting (“Level 3”) pathway



State rules – IREC Project

- State-by-state tables

<http://www.irecusa.org/index.php?id=89>

- DSIRE Map

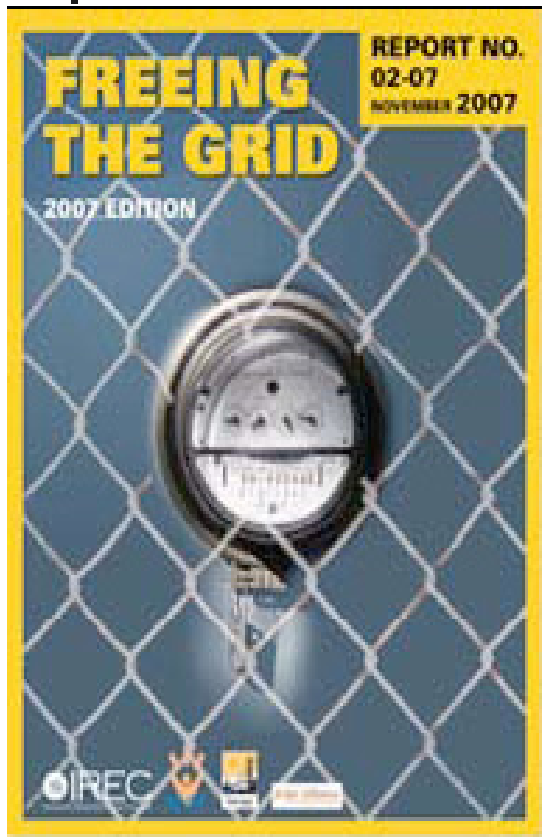
<http://www.dsireusa.org/>

- IREC Model Interconnection Rule

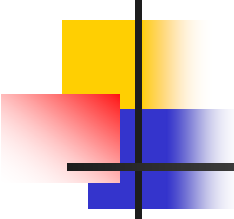
<http://www.irecusa.org/index.php?id=87>

“Freeing the Grid” – 2007

www.newenergychoices.org/uploads/FreeingTheGrid2007_report.pdf

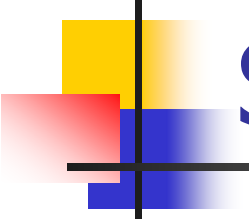


- “A national consensus is emerging around state interconnection policies”
- Evaluates and “grades” the various state interconnection rules based on best practice criteria.



Freeing the Grid criteria

- Eligible technologies
- Individual system capacity
- Breakpoints for “tiers”
- Timelines
- Interconnection charges
- Engineering charges
- External disconnect switch
- Certification
- Technical screens
- Network interconnection requirements
- Standard agreements
- Insurance requirements
- Dispute resolution



South Dakota strawman

- Tomorrow.