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Eastern Interconnection States' Planning Council: Inter- Regional Transmission Planning

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NASEO-ASERTTI Energy Outlook Conference

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Why do this?

The United States operates
on electricity.



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However:

- ***Infrastructure is generally aging and at capacity***
- ***New Policies & Technologies use Infrastructure differently***



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Why do this now?

The U.S. Needs Electricity that is:

- ***Reliable***
- ***Economic***
- ***Environmentally Sensitive***



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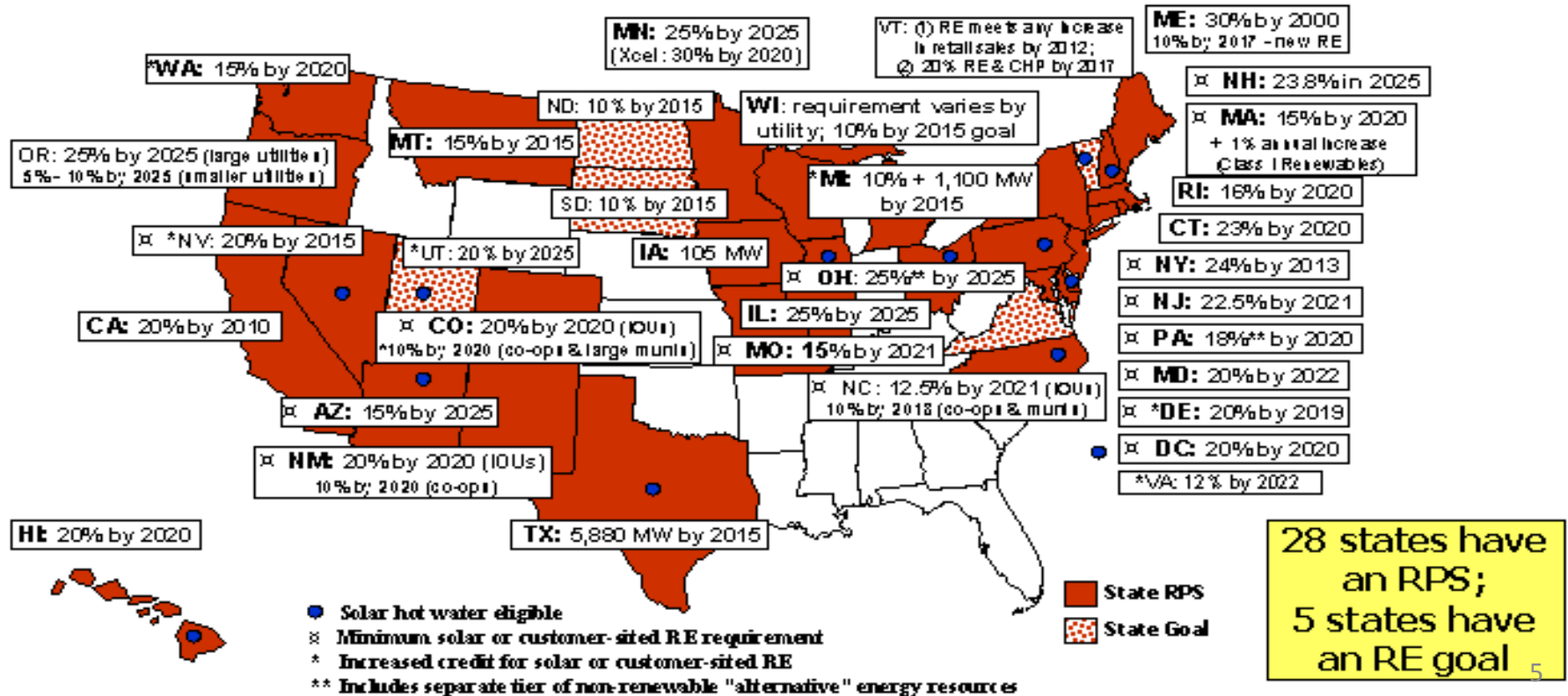
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Renewable Requirements in the States – NOT A UNIFORM REQUIREMENT!

DSIRE: www.dsireusa.org

January 2009

Renewables Portfolio Standards

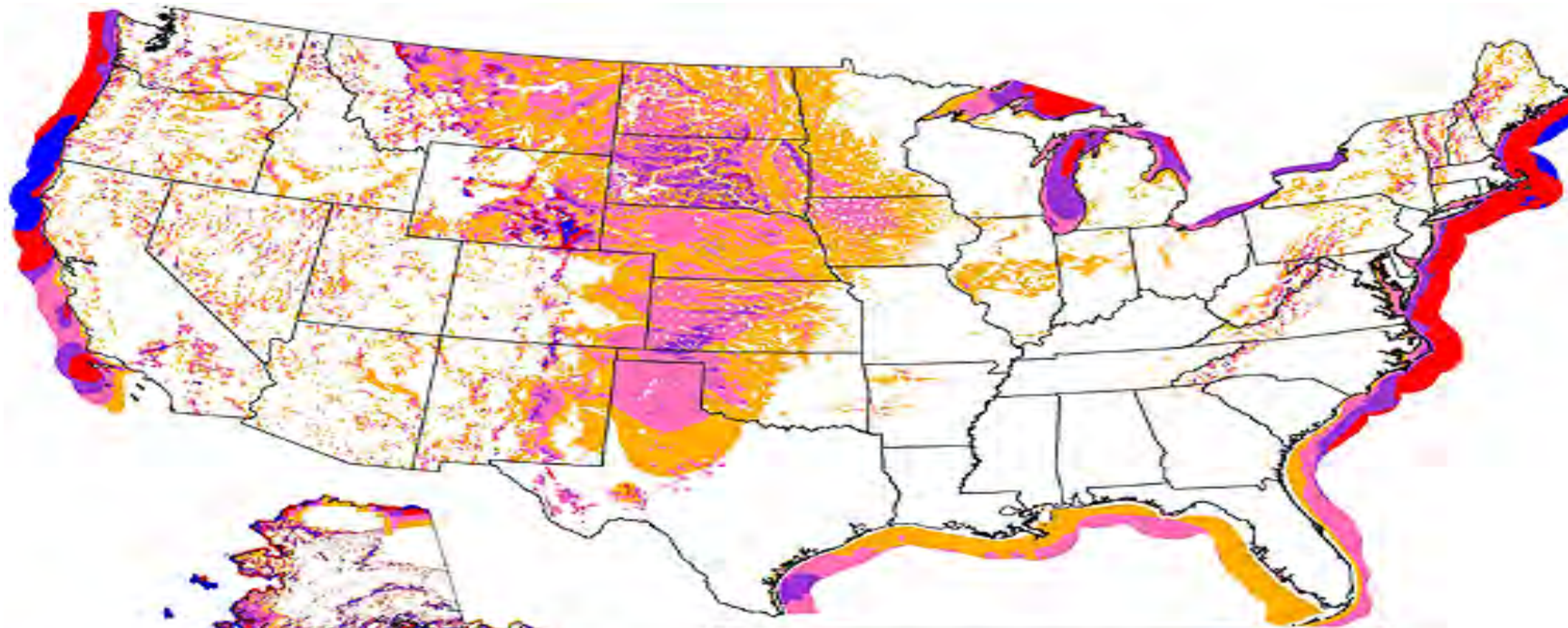




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Wind Resources in the U.S.



Wind Power Classification				
Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m^2	Wind Speed ^a at 50 m m/s	Wind Speed ^a at 50 m mph
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8

^a Wind speeds are based on a Weibull k value of 2.0



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The first of its kind...

“The objective of this Funding Opportunity Announcement is to facilitate the development or strengthening of capabilities in each of the three interconnections in the lower 48 states of the United States, to prepare analyses of transmission requirements under a broad range of alternative futures and develop long-term interconnection-wide transmission expansion plans.”

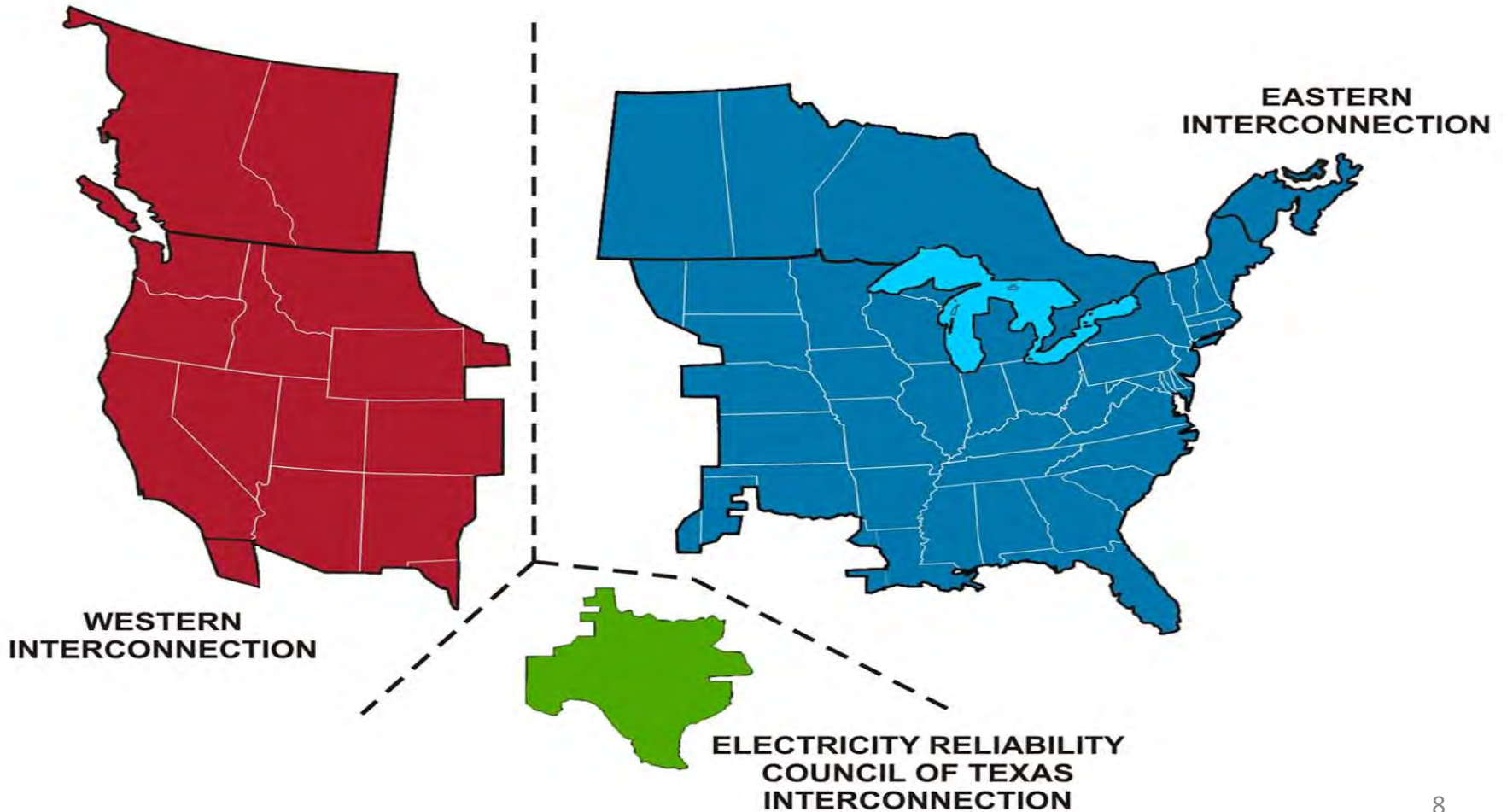
Department of Energy, Funding Opportunity
Announcement DE-FOA0000068



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North American Electric Reliability Corporation Interconnections





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EISPC (aka “Ice Pick”) – What is it?

- ***Eastern Interconnection States , DC, Canada***
- ***2 Representatives per State***
- ***Interconnection-wide Resource Planning***
- ***Interconnection- Wide Transmission Planning***
- ***1/3 of Stakeholder Steering Committee***
- ***Studies and Whitepapers***



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TWO TEAMS IN PLANNING EFFORT

Engineering Team (EIPC)

- Planning Authorities =
 - Regional Transmission Organizations (RTO)
 - Transmission Owners
- Run models and prepare the transmission plans
- Stakeholder Committee – provides strategic advice

Policymakers Team (EISPC)

- State representatives—Commissioners, Governors' Reps., SEOs, Environmental Agencies
- Provide inputs to modelers through Stakeholder Committee
- Conduct Studies
- Prepare Whitepapers



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EISPC TASKS

- 1. Coordinate with SSC and EIPC Engineering Team:**
 - Identify 8 hypothetical Futures/72 Sensitivities***
 - Select 3 hypothetical Scenarios for grid design***
 - Provide input on grid planning and design***
 - Participate in the Stakeholder Steering Committee***
- 2. Conduct Studies to Inform Future Transmission Actions and State Decision-Making (including a study of Energy Zones in the States in the EI)**
- 3. Prepare Whitepapers to Inform Decision-Making**



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Eight Futures+72 Sensitivities= 80 Transmission Scenario Options

- 1. Business as Usual**
- 2. Carbon Policy –Top-Down Implementation**
- 3. Carbon Policy –State/Local Implementation**
- 4. Aggressive EE/DR/DG/Smart Grid**
- 5. Federal RPS – National Implementation**
- 6. Federal RPS – State/Regional Implementation**
- 7. Nuclear Resurgence**
- 8. Combined Federal Climate and Energy Policy**

***All Futures contain environmental components,
including the EPA Rulemaking***



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Three Transmission Build-Out Scenarios

- 1. Business as Usual (Future 1)**
- 2. Combined Federal Climate and Energy Policies (Future 8)**
- 3. National RPS Policy/Regional Implementation (Future 6)**

(Sensitivities from these Futures chosen to address specific variables. The three Scenarios encompass the information from the rest of the Futures.)



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Study Topics – to Date

- 1. Energy Zones—State-by-State Potential**
- 2. State-by-State Potential for DSM**
- 3. State-by-State Potential for Energy Storage**
- 4. State-by-State Potential for DG**
- 5. Identify Locations for New/Upgraded Nuclear**
- 6. State-by-State Assessment of Sm. Generation**
- 7. Assessment for Coal Development with CCS**
- 8. State-by-State Potential for Fast-Start Gen.**
- 9. Assessment of Other Carbon Reduction Steps**
- 10. Assessment of Gas/Other Fuel Prices**



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Whitepaper Topics – to Date

1. Energy Values Impacted Resource Selection
2. Market Structures Impacting Resource Choice
3. Financial Implications of PPAs
4. Inventory Gov. Policies Impacting Transm.
5. Incentives/Disincentives for Energy Develop.
6. PHEV: Identify Potentials and Implications
7. Evaluate Local vs. Remote Generation
8. Economic Uncertainties for emerging tech.
9. Smart Grid: Identify Potential and Impacts
10. Aspects of existing RPSs—”off ramps”
11. RPS Fuels/ Technologies Inclusions



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Clean Energy Zones Study

- **Mandated by DOE FOA**
- **Clean energy resources: Renewables, Clean Coal, Nuclear (incorporate EE/DR info)**
- **Identify energy resource potential in EI States**
- **Identify laws, policies, practices impacting States' resource development**
- **Results include (layered) mapping tool**



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Tasks Completed to Date

- **Futures/Sensitivities modeled**
- **Three Transmission “Build-out” Scenarios chosen**
- **Transmission Studies begun**
- **Studies and Whitepapers Continue**



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Transmission Study –Initial Topics

- **HVDC – When to Consider it**
- **Less-than-Peak Case Studies (Wind)**
- **Generation Location Assumptions**
- **Load Flow Modeling Assumptions**
- **CEI Clearance Required**



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Questions?