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Transmission and Integration of Wind into the U.S. Electric System

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Breakout Session Goal

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The goal of this session is to work collaboratively to answer the following questions for this report chapter:

- Identify specific needs and actions
- Lay out roles and responsibilities
- Define a five year strategy
- Determine a split between federal, state and private funding

The desired result is the skeleton of an action plan, what activities will be needed to make 20% wind by 2030 a reality.

Current budget Background

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AWEA Proposed Transmission and Integration into the U.S. Electric System Spending, FY08-FY13

FY	Proposed Budget (\$m)		Total proposed federal Program budget (\$m)
		DOE Budget (\$m)	
08	8 (13.9%)	15.7	57.5
09	12 (13.4%)	14.5	89.175
10	16 (13.3%)		120
11	16 (13.2%)		121
12	16 (13.6%)		117
13	16 (14.6%)		109

Current budget Background

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Identify Key Issues for 20%

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- **System Planning & Operation**
 - Reliably balancing electrical generation and load with variable generation resources
 - Forecasting Wind Output
- **Transmission System Infrastructure**
 - Insufficient capacity
 - Reliability and operational flexibility concerns
 - Current situation leads to inadequate generation competition
- **Market Operation & Transmission Policy**
 - Balancing Area size limits geographic diversity advantages
 - Certain Market Methods penalize wind

Expand on these Issues – Discuss timing & priorities

Identify Specific Needs & Actions

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System Planning and Operation Recommendations

- Perform detailed wind integration studies
- Deploy more flexible generation and load technologies
- Improve wind plant output forecasting tools
- Improve grid codes and wind plant models
- Aggregate wind plant output over large regions
- Improve balancing area consolidation and ACE sharing
- Ongoing forums to share operating experience

Expand on these Issues – Discuss timing & priorities

Identify Specific Needs & Actions

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Transmission Planning Recommendations

- Develop adequate transmission capacity
- Comprehensive regional planning processes
- Federal leadership in developing transmission in the national interest
- More certainty of transmission cost recovery
 - State policy on recovery for RPS (CA, TX)
 - State policy on current cost recovery
 - FERC protection from stranded cost
- Reassessment of transmission financing approach
 - Participant funding is a non-starter
 - Economies of scale and limited right-of-ways
 - Load pays in the end

Identify Specific Needs & Actions

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Market Operation and Transmission Policy Recommendations

- Develop well-functioning hour-ahead and day-ahead energy and price responsive load markets and expand access to those markets
- Adopt market rules and tariff provisions that are more appropriate to weather-driven resources
- Make better use of physically (in contrast with contractually) available transmission capacity
- Eliminate pancaked transmission rates

- Understand the Future
 - Operating Impacts
 - Transmission Requirements
- Educate
 - Public
 - Professionals
- Affect Policy
 - Federal
 - State
- Build Infrastructure
 - Transmission
 - Flexible Generation

Key Issues – Link to Barrier Level

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Key Issues	Penetration Level (energy)		
	Now	10%	20%
System Planning & Operation			
Large Integration Studies			
Balancing Consolidation			
Grid Codes			
Transmission System Infrastructure			
Project Planning			
Financing			
Market Operation & Transmission Policy			
Tariff Reform			
Interconnection Queue			
Integrated Markets			

Define a five year strategy – Duration,
Roles & Responsibilities

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Key Issues	Duration of Activity	Roles and Responsibilities
System Planning & Operation		
Large Integration Studies		
Balancing Consolidation		
Grid Codes		
Transmission System Infrastructure		
Project Planning		
Financing		
Market Operation & Transmission Policy		
Tariff Reform		
Interconnection Queue		
Integrated Markets		

Define a five year strategy - Funding

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Key Issues	Funding	Funding (%)		
Description	\$ M	Federal	State/Other	Private
System Planning & Operation	9			
Large Integration Studies	5M studies 2M data			
Balancing Consolidation				
Grid Codes	2M			
Transmission System Infrastructure	2-4			
Project Planning				
Financing				
Market Operation & Transmission Policy	2-4M			
Tariff Reform				
Interconnection Queue				
Integrated Markets				