



Eastern Interconnection Planning Collaborative

Demand Response (DR) Treatment

TOTF Meeting
March 29, 2012

Acknowledgement and Disclaimer

The EIPC appreciates and acknowledges the support of DOE for the Eastern Interconnections Studies Project

Acknowledgement:

- This material is based upon work supported by the Department of Energy, National Energy Technology Laboratory, under Award Number DE-OE0000343.

Disclaimers:

- This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Original Description – Future 4

- “Economically achievable efficiency, demand response, distributed generation and smart grid resources used to meet power needs. These are the first resources evaluated and deployed by the model.”
- “Overall energy demand is drastically reduced and new technologies are available for customers and utilities to manage demand to meet power needs in real time.”
- “Demand Resources, including Demand Response and Energy Efficiency, would meet 20% of energy resource needs annually by 2030.”

Final Description – Future 4

- Final futures description separated out the energy efficiency from the demand response.
- “EE would meet 20% of energy resource needs annually by 2030”
- “(Modeling note: DR would reach “full potential” FERC study levels, extended through 2030.)”

Note: Assumptions for Future 4 were adopted into Future 8 – Combined Federal Energy and Climate, which became Scenario 1.

Approach to Modeling in Phase 1

- The peak load forecasts are before DR
- The peak load forecasts are adjusted for Energy Efficiency (1% lower per year for Futures 4 and 8)
- EIPC stakeholders developed an estimate of the demand response (in terms of MW) in each NEEM region for use in this study
- Increased levels of DR directly offset the need for generation resources to meet installed capacity reserve requirements

DR Modeling

- For purposes of the study, the DR pseudo-generators in each NEEM region are increased in size from the specified amount of DR by one-half the applicable target reserve margin percentage in the NEEM region
- Energy provided:
 - The DR in each NEEM region is modeled as a pseudo-generator that has a high variable cost applied (\$750/MWh) and thus will generally not assist in meeting energy demand – it will simply reduce the need for generation expansion
 - Relied on the 2009 FERC National Demand Response report for prices
 - Range in the report was \$500-\$1,000/MWh
 - Prices set at \$750/MWh

DR Capacity and Dispatch

- Capacity
 - Scenario 1 – 152,450 MW
 - Scenario 2 – 70,708 MW
 - Scenario 3 – 70,708 MW
- Dispatch level
 - Scenario 1
 - Block 1 – 2,404 MW in FRCC and 2,812 MW in VACAR
 - Block 13 – 0 MWs
 - Scenario 2
 - Block 1 and Block 13 – 0 MWs
 - Scenario 3
 - Block 1 and Block 13 – 0 MWs

Resulting Load and DR Amounts

Scenario	Load			Demand Response	
	2030 EI Peak (MW)	2011-2030 Growth	Annual Growth Rate	In 2010 (GW)	In 2030 (GW)
1 Nationally Implemented Federal Carbon Constraint with Increased EE/DR (F8S7)	586,397	-5%	-0.25%	33.1	152
2 Regionally-Implemented National Renewable Portfolio Standard (F6S10)	700,487	14%	0.70%	33.1	71
3 Business As Usual (F1S17)	718,433	17%	0.85%	33.1	70.7

DR Treatment in Phase 2

- Transmission planners are modeling the output from NEEM for the generation placement
- NEEM included DR in the choices for new installed capacity resources, offsetting the need for generation capacity and resulting in a different resource mix than if DR were not available
- Demand response energy dispatch will be modeled for those areas where it was dispatched (S1B1) [Note: energy efficiency is already assumed in the load]
- Resulting system (generation and load) will be supported by the transmission option developed

Questions and Discussion

