

Demand Response (DR) in PROMOD

In order to more accurately model the reliability impact of congestion on the bulk electric system, the ATC Economic Planning group placed virtual “demand response units” at loads throughout the ATC system for the 2008 Economic Analysis. These units, rather than reflecting the existence of physical generating resources on the system, serve to offset loads in order to model a demand response action.

The significance of a demand response unit at every load location is that it can verify the areas that require transmission upgrades. Without the demand response units, the PROMOD economic analysis software may “buy through” constraints, allowing more power to flow on the lines in the simulation than is physically possible. This leads to questionable solutions and unrealistic results. Activating the demand response units can help to eliminate these irregular solutions and, at the same time, highlight congested areas.

The 2008 analysis showed that PROMOD will activate the modeled demand response units to serve the load in an area due to lack of generation or transmission facilities even if the dispatch cost of a demand response unit is high.

Demand Response Unit Assumptions for 2008

- Demand response units modeled at every load 5 MW and higher within ATC
- Demand response capacity set equal to bus load
- Total of 736 demand response units modeled
- High dispatch cost of \$1,000/MWH in 2008
- Escalated dispatch cost of \$1,336/MWH in 2024

Proposed changes for 2009

- Model the unit at 50% of the bus load, rather than 100%
- Use increasing cost curves on demand response units
 - As utilities attempt to use more MW of DR, resistance from consumers will be higher, therefore the price of DR will need to be higher as more DR is demanded

Discussion:

Need input on appropriate capacity and cost levels for DR units

- Is 50% an acceptable capacity level?
- How many cost curve segments should there be?
 - How big should the curve segments be in MW?
 - What pricing levels should they use?