

Futures for the MISO CARP IV

Federal RPS with Energy Efficiency Future

The model results in the siting of wind capacity equal to the federally mandated level. If this mandate is greater than the MISO mandate, then the MISO mandate is irrelevant. This will displace otherwise economic generation with wind generation, and may be realized to a greater degree in the western zone. The higher capacity factor used for the west makes wind generation more competitive. Energy efficiency efforts are reflected by moderate levels of demand response and energy efficiency. Increased prices associated with uneconomic generation and smart grid investments would tend to mitigate the level of demand growth, but allow energy to grow along more historical levels.

Variables of interest:

Demand Growth Rate = L

DR Penetration = M

Energy Efficiency = M

Regional Mandate = M

National Mandate = M or MH

Strong Carbon Policy with Energy Efficiency Future

The model will increase the cost of production to fossil fuel units because the cost of CO₂ emissions will rise from zero. Therefore, other generation technologies will gain a larger relative share of the market based on the new industry cost structure. A constraint on CO₂ emissions will displace otherwise economic fossil fuel generation for higher cost “green” (or non-CO₂ emitting) generation technologies. Energy efficiency efforts are reflected by moderate levels of demand response and energy efficiency. Increased prices associated with new production costs and smart grid investments would tend to mitigate the level of demand growth, but allow energy to grow along more historical levels.

Variables of interest:

Demand Growth Rate = L

DR Penetration = M

Energy Efficiency = M

CO₂ = M to H

Uneconomic Coal retirement = M to H

Carbon Reduction = M

Smart Grid Policy and Energy Efficiency Future

This future would result in non-discriminatory choice of generation technologies. Those generation technologies which are cost competitive under the current structure will continue to be sited, constructed and interconnected. Energy efficiency efforts are reflected by moderate levels of demand response and energy efficiency. Increased prices associated with new production costs and smart grid investments would tend to mitigate the level of demand growth, but allow energy to grow along more historical levels.

Variables of interest:

Demand Growth Rate = L

DR Penetration = M

Energy Efficiency = M

Additive Policy Future

There may be reason to believe this model will substitute wind for coal generation. The introduction of a federal RPS constraint would result in a predefined level of wind capacity. Non-zero CO₂ emissions prices increases costs of fossil fuel plants and uneconomic coal retirements specifically displaces coal generation. A mandated CO₂ reduction has the same effect it did in the strong carbon policy future. Energy efficiency efforts are reflected by moderate levels of demand response and energy efficiency. Increased prices associated with new production costs and smart grid investments would tend to mitigate the level of demand growth, but allow energy to grow along more historical levels.

Variables of interest:

Demand Growth Rate = L or M

DR Penetration = M

Energy Efficiency = M

CO₂ = M to H

Uneconomic Coal retirement = M to H

Carbon Reduction = M to H

Regional Mandate = M to H

National Mandate = M to H