

DRAFT 2009 ATC Futures Descriptions and Assumptions

Robust Economy

Energy and peak demand grow at a fast rate because of a fast growing economy.

The percent of energy in ATC from wind sited within the ATC footprint in 2019 is 16%, which is higher than required by current Wisconsin Renewable Portfolio Standard (RPS) standards (i.e., 10% by 2015). The Governor's Task Force on Global Warming has suggested that the RPS standard be increased from its current level. A robust economy could help encourage greater investment in renewable resources, even if their direct costs were somewhat higher than other generation options.

Higher demand for energy results in higher demand and costs for natural gas and coal.

The generation expansion plans both inside and outside of ATC start with MISO's 25 GW Reference Future with a 765 kV Transmission Overlay. New units are added (based on MISO's siting criteria) to serve the higher peak demand and energy levels and maintain 15% reserve margins while ensuring that 25 GW of new wind generation is located within the UMTDI states (ND, SD, MN, IA, and WI). Because of the high demand, there are no generation retirements within the ATC footprint, other than those that have been announced.

High Retirements

ATC footprint energy and peak demand grow at a rate just below that of the "Mid" level assumptions. The combination of a \$25/ton CO₂ tax and 25% higher mercury costs plus the high (and potentially increasing) cost of retrofitting coal-fired plants to meet Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR) regulations (and/or similar regulations like the Federal Clean Air Visibility Rule (CAVR) and Wisconsin's Mercury Reduction Rules) cause smaller and aging coal-fired units within the ATC footprint to be retired for economic reasons.

The percent of energy in ATC from wind sited within the ATC footprint in 2019 is 16%, which is higher than required by current Wisconsin RPS standards (i.e. 10% by 2015). Additional wind power could help replace the loss of local, relatively low energy cost generation due to the retirement of smaller and aging coal-fired units, especially if wind-power tax credits continue. Additional wind power and higher building standards (requiring better insulation, windows, furnaces, air conditioning, etc.) could also help temper demand for natural gas, somewhat reducing costs from historically high levels.

The generation expansion plans both inside and outside of ATC start with MISO's 25 GW Reference Future with a 345 kV Transmission Overlay.

High Environmental

Increased conservation programs help reduce ATC footprint energy and peak demand growth rates below the “Mid” level assumptions. These rates decline further in 2019 as conservation programs ramp up, particularly in Wisconsin. The Wisconsin Governor’s Task Force on Global Warming has proposed conservation programs that have a greater impact on energy usage than peak demand growth. As a result, the reduction in the energy growth rate is somewhat greater than the peak demand rate.

The combination of a \$44/ton CO₂ tax and 25% higher mercury costs plus the high (and potentially increasing) cost of retrofitting coal-fired plants to meet CAIR and CAMR air pollution regulations (and/or similar Federal and State regulations) cause smaller, aging, and less-efficient coal-fired units to be retired within the ATC footprint. The higher CO₂ tax also encourages greater use of natural gas and less use of coal, which puts increasing and decreasing pressure on the cost of these fuels, respectively.

The percent of energy in ATC from renewables in 2019 is 16%, which is higher than required by current Wisconsin RPS standards (i.e. 10% by 2015). Additional wind power could help replace retired smaller coal-fired units, especially if wind-power tax credits continue.

Additional wind power could result in more frequent dispatch of fast-start natural gas-fired combustion turbines because of the variability of wind. This could also cause some upward pressure on natural gas costs.

The generation expansion plans both inside and outside of ATC start with MISO’s 45 GW Gas Only Future with a 345 kV Transmission Overlay. The MISO Gas Only Future is based on policy limitations to coal fired power plants which impact the generation mix found in the expansion portfolio.

Slow Growth

ATC footprint energy and peak demand grow at a slow rate because of a slow growing economy.

The percent of energy in ATC from renewables in 2019 is 11%, which is slightly higher than the current Wisconsin RPS standards (i.e., 10% by 2015). The combination of no CO₂ tax and lower demand for energy results in lower demand and costs for natural gas. Without a CO₂ tax and with lower demand levels, coal-fired plants serve proportionally more of the needs (than natural gas-fired generators), resulting in enough demand for coal to maintain “Mid” level cost projections.

Lower demand and the high (and potentially increasing) cost of retrofitting coal-fired plants to meet the CAIR and CAMR air pollution regulations (and/or similar Federal and

State regulations) cause some smaller and aging coal-fired units within the ATC footprint to be retired for economic reasons.

The generation expansion plans both inside and outside of ATC start with MISO's 15 GW Reference Future with a 345 kV Transmission Overlay.

DOE 20% Wind

ATC footprint energy and peak demand grow at a slightly faster rate because of a somewhat faster growing economy. The percent of energy in ATC from renewables in 2019 is 16%, which is higher than required by current Wisconsin RPS standards (i.e. 10% by 2015). The percent of energy outside ATC from renewables is 20%.

The combination of a \$25/ton CO₂ tax and 25% higher mercury costs, substantial amounts of power from renewables, and high (and potentially increasing) costs for retrofitting coal-fired plants to meet the CAIR and CAMR air pollution regulations (and/or similar Federal and State regulations) cause smaller and aging coal-fired units within the ATC footprint to be retired for economic reasons. Substantial wind power could help replace the retired smaller and aging coal-fired units.

Additional wind power could result in more frequent dispatch of fast-start natural gas-fired combustion turbines because of the variability of wind. This could provide steady demand for natural gas and result in "Mid" level costs.

Because of the substantial amounts of energy coming from renewable resources, less low energy cost generation, primarily coal-fired generation, would be needed, reducing the demand and cost for coal.

The generation expansion plans both inside and outside of ATC start with MISO's 45 GW Reference Future with a 765 kV Transmission Overlay.

Fuel and Investment Limitations

Lengthy regulatory proceedings for approval of new coal-fired generation and transmission projects delay some generation and transmission siting. There is a 5-year delay for new Coal/IGCC permitting. These coal-fired generators are replaced by combustion turbine (CT) and combined cycle (CC) plants located near loads. Greater reliance on natural gas-fired units results in 25% higher natural gas costs. Furthermore, there is some disruption in fuel deliveries. Under these conditions, it would not be unreasonable to experience potential increases in energy conservation and as a result somewhat lower demand and energy growth rates.

The combination of a \$25/ton CO₂ tax and 25% higher mercury costs plus the high (and potentially increasing) cost of retrofitting coal-fired plants to meet the CAIR and CAMR

air pollution regulations (and/or similar Federal and State regulations) cause some smaller and aging coal-fired units within the ATC footprint to be retired for economic reasons.

More reliance on CT and CC plants, plus some disruption in fuel supplies puts upper pressure on natural gas costs causing them to be 25% higher than the “Mid” level.

The generation expansion plans both inside and outside of ATC start with MISO’s 25 GW Gas Only Future with a 345 kV Transmission Overlay.