Response to Customer Input Concerning ATC's 890 Economic Analyses

As discussed on the December 18, 2008 conference call, we posted some corrections to the presentations and also provide the following to follow-up on specific stakeholder feedback.

LMPs Relative to Neighboring Areas, Within ATC and Between Futures

For LMP comparisons to neighboring areas (and beyond), we plan to provide LMPs for MISO's Minnesota, Illinois, Michigan, Cinergy and First Energy hubs, and the Northern Illinois PJM hub (in addition to those for ATC and MISO as a whole). There also was some interest expressed in calculating LMPs for MISO West, Central and East. Since hub data is more readily available and less complicated to obtain from the model, ATC will start by providing hub data.

Based on a request from MGE, ATC plans to provide more information related to LMPs within ATC. LMPs for Madison Gas and Electric, Wisconsin Power and Light, Wisconsin Public Service, We-Energies and WPPI Energy will be provided on both an annual and monthly basis.

There are significant variations in LMPs amongst the futures. This was expected for two reasons: First, the futures are designed to be bounding cases with significant variations in input assumptions that translate into significant variations in LMPs. Second, CO_2 costs have a major impact on dispatch costs. ATC's bounding futures include CO_2 costs that range from $0/ton to $25/ton to $44/ton. Doing the math, $25/ton and $44/ton for CO_2 adds roughly $25/MWh and $44/MWh, respectively, to the dispatch cost for coal-fired units. Comparing the LMPs for ATC's futures, it is clear that these CO_2 "adders" explain a significant portion of the variation in LMPs across the futures.

In response to MGE's question, there are no transmission outages assumed in the PROMOD runs. PROMOD cannot model random forced transmission outages (like done with generator outages). Transmission line outages can significantly affect LMPs, but they typically have a smaller impact than generator outages because they are normally much shorter. In our Paddock-Rockdale PROMOD analyses we modeled some maintenance transmission outages. A sensitivity analyses could be done to model the impact of a longer forced transmission outage. Modeling a transmission outage that actually occurred could be particularly informative.

Wind Power Modeling

ATC agrees with MGE's comment that a 41.5% capacity factor for Wisconsin wind power plants seems high. However, Wisconsin's Renewable Portfolio Standard (RPS) specifies an energy production target (i.e. 10% of energy from renewables by 2015), rather than a megawatt target. We considered lowering MISO's modeled capacity factor for each wind plant but then we would have to add more megawatts of wind power to meet the same energy production target—essentially a zero sum gain from the standpoint

of evaluating transmission reinforcement benefits. As a result we chose to not adjust the capacity factor and modeling of Wisconsin wind power plants in the 2008 analysis.

One of the improvements we plan to make in the 2009 analysis is to use the location specific wind profiles developed by the National Renewable Energy Lab (NREL) in our PROMOD modeling. With this change we anticipate that capacity factors for wind plants within Wisconsin will typically be less than 41.5%. However, capacity factors for new wind units may be higher than for existing units due to the use of taller towers and units with higher efficiencies. Using location specific wind profiles (as opposed to a single profile for all of Wisconsin) will also likely have the added benefit of reducing dump energy in PROMOD due to increased wind generation diversity.

Modeling of Demand Response

We agree with MGE that caution needs to be exercised when modeling demand response in PROMOD. To limit the impact of demand response on the analysis, ATC used a high dispatch cost ($1,000/MWh in 2008$). One significant advantage of modeling demand response at nearly every load within ATC is that it can help pinpoint areas on the ATC transmission system that may benefit from transmission upgrades either because of reliability or economic needs. ATC is using the PROMOD Analysis Tool (PAT) to review the impact of demand response on its PROMOD runs.

Optimized Project Packages

In order to evaluate the benefits of the various high voltage projects being analyzed, ATC plans to develop optimized project "packages" that include cost-effective lower voltage fixes that complement one or more of the projects under evaluation.

Imports, Tie Line Flows and Congestion

ATC plans to correlate information related to imports and tie line flows with congestion by including shadow prices for key flowgates along ATC's interfaces. Also based on an MGE request, ATC plans to provide the actual import and export values that make up the net "Average Weekly Flows from NW to SE on Major Tie Lines" through ATC.