



Date: April 10, 2007
To: Board of Directors
From: Mark Dreyfus, TAC Chair
Subject: Methodology for Reserve Margin Calculation

Issue for the ERCOT Board of Directors

ERCOT Board of Director Meeting Date: April 18, 2007

Agenda Item No.: 9c

Issue:

Consideration of changes in the existing ERCOT reserve margin methodology and of modifications to the format of the ERCOT Capacity, Demand and Reserve (CDR) summary page.

Key Factors Influencing Issue:

Background

In May, 2006, the ERCOT Technical Advisory Committee (TAC) requested that the Generation Adequacy Task Force (GATF), an existing joint task force of the Wholesale Market Subcommittee (WMS) and the Reliability and Operations Subcommittee (ROS), meet to discuss a request from ERCOT staff to clarify the treatment of new generating units in the preparation of the ERCOT CDR analysis that is typically prepared, reported to the North American Electric Corporation (NERC), and released annually to the general public in May or June. The CDR analysis is a forecast of future demands and resources for the summer and winter peak load periods for the current year and five (5) future years. TAC further requested the GATF to review all components of the ERCOT reserve margin methodology.

The GATF held meetings in May, July, September, and November of 2006 and January and February of 2007 to review and discuss the components of the ERCOT reserve margin calculation methodology as directed by TAC. The detailed GATF recommendation to the March 30, 2007 TAC is included as Attachment A.

Existing ERCOT Reserve Margin Calculation Methodology

In May of 2005, the Board approved the following ERCOT reserve margin calculation methodology:

Firm Load = Forecasted total summer peak demand – Demand-side resources

Available Resources = Summer net dependable capacity (excluding wind generation)
+ 50% of DC Tie Capacity
+ 100% - X of “Switchable” Capacity (X to be based on information provided to ERCOT by Switchable Capacity owners)
+ 2.9% of Wind Generation (based on ERCOT analysis of historical data)



- + 100% of Planned Generation with signed Interconnect Agreement or letter to ERCOT from resource owner (letter applies to NOIEs only)
- + 2.9% of Planned Wind Generation with signed Interconnection Agreement or letter to ERCOT from owner (letter applies to NOIEs only)
- + Y of “Mothballed” Units (Y to be based on ERCOT analysis of information provided by mothballed unit owners)
- 100% of Retiring Units (all forecast years)

Reserve Margin = (Available Resources – Firm Load)/Firm Load

In addition to the projected reserve margin, the approved methodology included a range of values, where the “Low” Reserve Margin excluded all Mothballed Units, and the “High” Reserve Margin included the capacity of all Mothballed Units.

GATF Review

Upon completion of its initial task regarding reporting of new generation in the June 2006 ERCOT CDR, the GATF reviewed each remaining component of the ERCOT reserve margin calculation methodology. The GATF recognized a need to make changes to the following components of the ERCOT generation reserve margin calculation methodology:

- Treatment of wind generation
- Treatment of “new” generation

These two topics were discussed at length over the course of the remaining GATF meetings.

Treatment of Wind Generation

The current ERCOT generation reserve margin calculation methodology for wind generation is based on actual historical performance of existing wind generation during hours ending 1600 through 1800 DST for weekdays during the months of July and August adjusted by Equivalent Forced Outage Rate (EFOR). ERCOT staff collects the appropriate data and annually determines the percentage factor of installed wind capacity (the value used for the 2006 ERCOT CDR reserve margin calculation was 2.6%) to include as the amount of wind capacity available to serve summer peak load in the calculation of the ERCOT reserve margin.

To establish a more realistic percentage of capacity value provided by wind generation in the ERCOT market, several alternatives were considered by the GATF (see Attachment A). Based on its review and associated concerns related to the existing methodology used to determine the capacity value of wind for the ERCOT CDR calculation, the GATF recommended to TAC (and TAC approved) that a change in methodology is warranted. Specifically, the GATF recommended that ERCOT use the Effective Load Carrying Capability (ELCC) value of wind as described in the ERCOT Loss-of-Load Probability (LOLP) study dated January 18, 2007. Applying this method to wind generation will yield an equivalent capacity for CDR purposes of approximately 8.7%. The GATF also

recommended that the ELCC methodology should be used until better (i.e., more) actual performance data becomes available to make an accurate determination of the true capacity value of wind in ERCOT.

Treatment of “New” Generation

The existing treatment of “new” generation in the ERCOT reserve margin calculation is to include only those new units that have a signed Generation Interconnect Agreement (SGIA) with the appropriate transmission service provider (TSP). Otherwise, any other “new” generating units, regardless of status of its transmission service request, are not included in the new capacity category in the ERCOT reserve margin calculation.

Previously, when new generating capacity was being added to ERCOT, most of that generation was either natural gas combined-cycle combustion turbines or wind. Generally, the acquisition of an Air Permit from the Texas Commission on Environmental Quality (TCEQ) and not a limiting issue to the construction schedule of these types of generating capacity. However, today, many of the new units planned for ERCOT are solid-fueled and acquisition of an Air Permit from the TCEQ is critical to ultimate construction and operation of the unit. GATF was concerned that using a SGIA alone would not ensure that a new planned fossil capacity addition would actually be built, and thus would tend to overstate the capacity that might be available to ERCOT in future years. In order to provide a reasonable likelihood that a new fossil-fueled generating project will be built (and thus appropriately be included in the calculation of the ERCOT generating reserve margin), GATF recommended (and TAC approved) adding the requirement for a project to have a SGIA and a TCEQ-approved air permit.

Changes to the ERCOT CDR Format

The GATF was concerned that there was some confusion by various parties related to the “official” ERCOT reserve margin since multiple reserve margin percentages were shown on the ERCOT CDR summary page. Specifically, there are four different reserve margins shown for each year of the study period:

- The “official” ERCOT reserve margin
- The “high” ERCOT reserve margin (with all “mothballed” units returned to service)
- The “low” ERCOT reserve margin (with no “mothballed” units returned to service)
- The ERCOT reserve margin based on the “publicly announced” new capacity

To eliminate possible confusion while at the same time provide additional information to the market to reflect new generation that could enter the ERCOT market but was not included in the “official” reserve margin calculation, the GATF recommended the removal of the “high”, “low” and “publicly announced” reserve margin percentages to be replaced by the addition of one line item designated as “Uncommitted” resources expressed in megawatts (MW). “Uncommitted” resources would include:

- Remaining “mothballed” capacity not included in the “official” reserve margin

calculation,

- Remaining DC tie capacity not included in the “official” reserve margin calculation, and
- New generating units that have initiated transmission interconnection studies through the ERCOT generation interconnection process (note that new wind generating units would be included based on the appropriate discounted capacity value applied to existing wind generating units).

Summary of TAC Recommendations

TAC makes the following recommendations to the Board related to changes in the existing ERCOT reserve margin calculation methodology:

1. Use the ELCC for wind generating units as determined in the ERCOT January 2007 LOLP study (8.7%) and update the ELCC value every two years.
2. Include any future fossil-fueled generating project in the ERCOT reserve margin calculation only if the project has both an SGIA and an air permit from the TCEQ.

In addition, the TAC recommends that the format of the ERCOT CDR summary page be modified to:

1. Delete the calculation of:
 - the “high” ERCOT reserve margin (with all “mothballed units returned to service),
 - the “low” ERCOT reserve margin (with no “mothballed” units returned to service) and
 - the ERCOT reserve margin based on the “publicly announced” new capacity.
2. Add a line item entitled “Uncommitted” resources, which would include:
 - Remaining “mothballed” capacity not included in the “official” reserve margin calculation,
 - Remaining DC tie capacity not included in the “official” reserve margin calculation, and
 - New generating units that have initiated transmission interconnection studies through the ERCOT generation interconnection process (note that new wind generating units would be included based on the appropriate discounted capacity value applied to existing wind generating units).

Endorsement of Recommendations

Prior to TAC approval, the two changes recommended by GATF (as well as the recommended format changes to the CDR summary page) were reviewed and endorsed by both the ROS and the WMS. The ROS, at its February 15, 2007 meeting, reviewed the changes in the reserve margin calculation methodology recommended by the GATF and had no objections to those changes.

On March 30, 2007, TAC voted to endorse the GATF recommendation to TAC. The motion passed with one (1) opposing vote and one abstention both from the Consumer Market



Segment. All Market Segments were represented.

Alternatives:

1. Approve the TAC recommendation on the changes to the existing ERCOT reserve margin calculation and modifications to the format of the ERCOT CDR summary page as described above or as modified by the Board;
2. reject the TAC recommendation; or
3. remand to the TAC with instructions.

Conclusion/Recommendation:

As more specifically described above, TAC and ERCOT Staff recommend that the Board approve the changes to the existing ERCOT reserve margin calculation and modifications to the format of the ERCOT CDR summary page as described herein.