



Control Number: 40000



Item Number: 407

Addendum StartPage: 0

**PUBLIC UTILITY COMMISSION OF TEXAS
COMMISSION PROCEEDING TO ENSURE RESOURCE ADEQUACY IN THE
ELECTRIC RELIABILITY COUNCIL
OF TEXAS POWER REGION
PROJECT NUMBER 40000**

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**COMMENTS OF EQUIPOWER RESOURCES CORP. ON BEHALF OF
ODESSA-ECTOR POWER PARTNERS, LP
ON BACK CAST OF INTERIM SOLUTION B+ TO IMPROVE REAL-TIME
SCARCITY PRICING**

EquiPower Resources Corp. (EquiPower) manages and operates the 1,000 megawatt (MW) Odessa-Ector Power Partners, LP (Odessa) combined cycle gas turbine plant (CCGT) in Odessa, Texas. In addition to Odessa, EquiPower manages and operates over 4,000 MWs of CCGT generation in the three Regional Transmission Organizations (RTOs) in the Northeast (ISO-NE, NYISO, PJM), all of which have a wide variety of market constructs and include some form of a capacity market. In a transaction that is expected to close during the 2nd quarter of 2013, EquiPower will acquire an additional 3,525 MWs of coal and simple cycle natural gas generation in PJM and ISO-NE. In addition to operating in these four competitive markets, EquiPower manages and operates the Broad River simple cycle gas turbine peaking facility in the regulated SERC market in the Southeastern United States. Our management team has substantial experience developing, owning, operating, and dispatching power generation facilities of varying fuel types in every major power market across the U.S. including significant experience in ERCOT. In addition, our management team has successfully developed and constructed over 5,000 MWs of predominantly gas fired generation facilities across the country. Most recently, EquiPower's management team developed and constructed the Empire Generation project, a 635 MW dual fueled CCGT, in Rensselaer, New York from 2007 to 2010, and the Waterbury GE LMS 100 peaking facility in Waterbury, Connecticut from 2007 to 2009. EquiPower is also evaluating development opportunities in PJM and Texas. Our participation in the multiple regions has allowed EquiPower to see the strengths and weaknesses of the various market structures as a developer and operating entity, and to become intimately familiar with the difficult decisions new generation developers face. We also understand the importance of

treating new and existing generation consistently as both require significant investment and are equally critical to the long-term reliability of the market.

It is based on this background that EquiPower offers to the PUCT the following comments on the white paper by Dr. William Hogan and the ERCOT staff entitled, “Back Cast of Interim Solution B+ to Improve Real-Time Scarcity Pricing” (Option B+) which was filed by ERCOT staff on March 22, 2013.

Introduction:

EquiPower appreciates the efforts of Dr. Hogan to advocate for better scarcity pricing and the ERCOT staff on their thoughtful analysis and time spent with stakeholders during the past months to discuss the details of the analysis. As the Commission and ERCOT have analyzed the Resource Adequacy challenges facing ERCOT, EquiPower’s comments have remained consistent. In our previously filed comments we noted our belief that a combination of market design changes could be implemented to solve the Resource Adequacy problem in ERCOT. We remain convinced that before any market design changes occur, the Commission must first decide if the reserve margin is to continue to be a target or if it should be set at a mandated level. Answering this fundamental question will allow the Commission, ERCOT, and stakeholders to design the market such that the goals and objectives can be both measured and achieved. We don’t believe this Commission and the citizens of Texas are willing to accept a lower reliability standard than they have enjoyed for years and is critical to the robust Texas economy. For this reason, we remain convinced that the current energy only market (EOM) will not consistently guarantee adequate levels of installed reserves. We believe the most effective way to guarantee a specific reserve margin is through a Texas Capacity Market¹ (TCM) that is designed specifically to meet the needs of the state. However, we recognize that forward capacity markets are not universally accepted and that the Commission might wish to enhance the current EOM instead.

¹ In EquiPower’s August 30, 2012 comments we urged the Commission to consider instituting a Texas Capacity Market, which we believe could be designed by the Commission and ERCOT to provide the potential for compensatory revenues to generators, avoid the flaws of the capacity markets in the Northeastern US RTOs, and work well in concert with the Energy Only Market.

We previously supplied comments that suggested that specific EOM products² could be developed in order to increase revenues for generators providing certain reliability services. The concept of Option B+ using an Operating Reserve Demand Curve (ORDC) to accurately price reserves fits within the concept of creating additional EOM products.

While the Commission will undoubtedly receive a wide array of comments on Option B+, we believe it is important to not forget where all of this effort started. All comments will be submitted under Project Number 40000 which was set up to ensure Resource Adequacy in ERCOT. Whatever option or combination of options the Commission considers should ultimately be done with consideration for the impacts on Resource Adequacy. The initial concept of using operating reserves to accurately price scarcity conditions was submitted as part of GDF Suez Energy North America's comments³ in 2012 which included Dr. Hogan's suggested framework⁴ to improve Resource Adequacy problems in ERCOT while fitting within the current EOM framework. Initially this concept was introduced to use operating reserves as a means to assist in solving the missing revenue problem and "complement its [ERCOT's] resource adequacy initiatives." We are concerned with the path this concept has taken over the past year as it has moved from a framework for ensuring Resource Adequacy to a justification of efficiency and real-time co-optimization of energy and reserves. While the debate for real-time co-optimization is one worth having, we do not believe we would be having that debate at this time based on the merits of it being an efficient market design. Thus the focus of this effort must remain on addressing the problem of Resource Adequacy and whether Option B+ helps solve that problem.

If implemented correctly and in combination with other market design elements, we believe Option B+ and real-time co-optimization do have merits. However, we believe that if Option B+ is implemented without a Texas Capacity Market or further EOM enhancements, Option B+

² See EquiPower's August 30, 2012 comments on behalf of Odessa Ector Power Partners, LP in which we suggested compensating generators for providing additional reliability products including voltage support of the power system, primary frequency response, 10 and 30 minute non-synchronized reserves, and flexible response service as a means of providing them with the potential to obtain compensatory revenues.

³ Docket #40,000 Item #355 filed 11/14/2012

⁴ Hogan, W.W. (2012) Electricity Scarcity Pricing Through Operating Reserves: An ERCOT Window of Opportunity

alone will not allow the Commission to achieve its Resource Adequacy goals. Furthermore, depending on how Option B+ is implemented, we are concerned that it could have negative consequences and lead to a market with potentially lower prices than we have today and further weaken the prospects of Resource Adequacy in ERCOT. Our comments will further expand on these topics and recommend how Option B+ should be implemented if the Commission decides to move forward with it.

The current EOM is providing incentives for new generation, but are they enough?

Supporters of the current EOM believe that we don't really have a Resource Adequacy problem because generation is currently being built without any additional market enhancements. While EquiPower agrees that the current EOM appears to be providing incentives for some new generation to be built, we must point out that the amount of projected generation falls short of the amount needed according to ERCOT's most recent Capacity, Demand, and Reserves Report (CDR Report). While the accuracy of the CDR report has been questioned over the past several months, considerable analysis and design went into the overall process for creating the report, and it is widely viewed by the market and investment community as an accurate assessment of the projected installed reserve margins in ERCOT.

There are numerous challenges with financing new generation in the current market. The lack of liquidity, lack of long-term hedging, and earnings volatility have led to limited financing opportunities. Commercial lenders are not willing to loan money to finance new generation, and public markets do not look favorably on companies that use their equity to finance new generation when the construction costs are significantly higher than would be recovered in the current forward markets. This has led companies to turn to institutional lenders as one of the only ways to finance new generation. While this has led to some newly announced generation, the cost of using this approach is very high and not widely available to most market participants. In addition, we believe given the current market design that equity investors will ultimately realize lower than expected returns if bona fide market design improvements are not implemented. Investors are expecting that those entrusted to ensure the proper functioning of ERCOT will act in the market's best interest and implement a market design that leads to

Resource Adequacy – not just a partial solution. Missing the mark could have disastrous effects possibly leading to financial distress for investors and dampen future investment in ERCOT as investors lose trust in the market and those entrusted to ensure its proper function. Again, we recognize that some generation is being developed in the current EOM, but the amount of new generation falls short of the amount needed to ensure Resource Adequacy and to a great extent is based on an expectation that the future market design will properly focus on Resource Adequacy and a properly functioning market. We believe it is ill advised to look at the current new generation development and construction in ERCOT and believe it is validation of the ERCOT market as currently designed or a reason to make minimal incremental tweaks to the current market. Rather, we believe that the current development activities are based on the belief that this Commission will take prudent, bold action to modify the markets to provide for Resource Adequacy in ERCOT.

Will Option B+ solve ERCOT's Resource Adequacy Problems?

Implemented by itself, Option B+ will not solve ERCOT's Resource Adequacy problems. There have been substantial stakeholder, ERCOT, and IMM discussions and analysis over the past months. The ERCOT Technical Advisory Subcommittee (TAC) established the Resource Adequacy Task Force (RATF) as a non-voting body that reports to the Wholesale Market Subcommittee (WMS). The RATF convened a few times over the past months, with both ERCOT and the IMM, to discuss "Back Cast of Interim Solution B+ to Improve Real-Time Scarcity Pricing" (ERCOT's back cast). In order for Option B+ to solve ERCOT's Resource Adequacy problems, the increased revenues associated with Option B+ must bridge the gap between revenue derived from the existing EOM and the costs of building new generation.

There are several components to ERCOT's analysis that likely overstate the increases to energy prices had Option B+ been in effect during 2011 and 2012, which we will discuss in detail later. However, even if we assume that ERCOT's back cast analysis is correct and accurately predicts the effects that Option B+ would have on energy prices, due to the large pricing variance between the 2011 and 2012 study years, Option B+ will likely result in only small amounts of incremental generation. In extreme weather years like 2011, Option B+ would have a

meaningful impact on increasing energy prices but even during an above normal weather year like 2012⁵, Option B+ would have a negligible impact on increasing energy prices. In effect, Option B+ increases the volatility of the EOM, and its effectiveness for raising energy prices is reliant upon extreme weather. Developers would have to make investment decisions using their forecast for weather conditions over the next 10 to 20 years when it is difficult for the best weather forecasters to predict summer conditions even a few months in advance. This sort of volatility is not conducive for financing the development of new generation and won't achieve the Commission's Resource Adequacy goals.

Reasons why ERCOT's back cast analysis is potentially overstated.

In order to believe that Option B+ will solve ERCOT's Resource Adequacy goal, one must believe that ERCOT's analysis underestimates the expected increase in energy prices.

Throughout the entire stakeholder discussions there have not been any comments or statements to suggest that ERCOT's back cast analysis is conservative. In fact, EquiPower and various other stakeholders believe that ERCOT's back cast analysis likely overstates the increases to energy prices. EquiPower recognizes and appreciates the challenges the ERCOT staff encountered when developing its back cast analysis and that they had to make certain assumptions when developing its back cast analysis of Option B+. Some of the assumptions ERCOT made do not result in the most efficient and economic dispatch of the ERCOT system and therefore do not follow first principles⁶ as referenced by Dr. Hogan. Thus an important question that must be addressed during this process is if the Commission decides to move forward with Option B+ should it be designed and implemented to first principles that are consistent with PUC Subst. R. 25.501(a)⁷ or should it be designed and implemented with aggressive variables in order to produce compensatory revenues? If the Commission decides that first principles should be followed, ERCOT's back cast is likely overstated for the following reasons.

⁵ Summer 2012 was the 14th hottest summer since 1895, per ERCOT Presentation to Board of Directors 5/14/2013. http://www.ercot.com/content/meetings/board/keydocs/2013/0514/5_Hurricane_Weather_Forecast.pdf

⁶ Hogan, W.W. (2012) Electricity Scarcity Pricing Through Operating Reserves: An ERCOT Window of Opportunity

⁷ PUC Subst. R. 25.501(a) <http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.501/25.501.pdf>

First, ERCOT's analysis ignores the effects of certain market changes that went into effect during the study period. In order to counter the effects of price reversal during the deployment of ancillary services, certain price floors were instituted. Following first principles would require the release of all ancillary services and make them available for deployment without any price floors. ERCOT staff commented during a RATF meeting that they assume all ancillary services would be available for deployment without any price floors should Option B+ be implemented. However, ERCOT's back cast analysis assumes that the actual energy prices remain constant and the Option B+ adder is incremental to them. But, there were times in 2012 when the System Wide Offer Cap (SWOC) was reached in the current EOM while the reserve floors were in place. In those hours if all reserves had been available for deployment, the actual energy prices would have likely been lower than the SWOC level.

Second, ERCOT's back cast analysis uses three different levels for minimum contingency reserves. The concept behind a minimum contingency reserve is that it is the reserve level where the probability of firm load shedding is equal to 100% and the adder price would be set at the Value of Lost Load (VOLL). ERCOT's back cast analysis showed the price adder impacts of using 2,300 MWs, 1,750 MWs and 1,375 MWs as contingency reserve levels. The price adders are significantly higher when a 2,300 MW contingency reserve level is selected compared to a 1,375 MW level. Following first principals, the contingency level would be set to 1,375 MWs as this level corresponds with the ERCOT EEA Level 3, which is the level when ERCOT may begin shedding firm load. This lower contingency level corresponds to the lowest energy adders in ERCOT's back cast analysis and will not lead to significant investments in new generation.

Third, the ERCOT analysis assumes the VOLL is set to the current SWOC levels. ERCOT is currently in the early stages of performing a VOLL study. If the ERCOT VOLL shows a price lower than the SWOC levels and the VOLL in Option B+ is changed to this new study value, the back cast energy adder values would be reduced. It is possible that the ERCOT study might determine that VOLL is lower than the SWOC levels since other studies of VOLL, such as in MISO, have resulted in VOLL of \$3,500, which is well below the SWOCs. But, EquiPower

believes that a \$3,500 VOLL is well below a value that is appropriate for the robust Texas economy.

Fourth, ERCOT's back cast analysis calculates the Loss of Load Probability (LOLP), which is used to form the energy adder, based on forecasted conditions for the upcoming hour instead of using actual conditions. We believe actual conditions are a more appropriate proxy for what the energy adder would have been. Had ERCOT used actual conditions, the energy adder due to Option B+ would have been lower.

Lastly, ERCOT used a piecewise linear function to develop the LOLP curve. The IMM commented during the RATF meeting that a continuous LOLP is a more accurate representation of the LOLP curve. The IMM went on to state that using a piecewise linear function instead of a continuous function significantly overstates the LOLP curve values.

EquiPower brings these issue to the Commission's attention to further illustrate that the impact of Option B+ will ultimately depend on how all of variables are designed and more importantly, that Option B+ on its own will not be enough to ensure resource adequacy.

Response to Questions from the PUCT

How long will it take and what is the cost to implement Solution B+?

EquiPower believes that ERCOT is in a much better position to perform a detailed impact analysis the time and cost to implement Option B+. ERCOT released its analysis⁸ on May 17th 2013, and EquiPower does not have any reason to question ERCOT's analysis.

If Solution B+ is implemented, will the benefits of implementing full real-time co-optimization exceed the incremental costs of such implementation?

⁸ Docket #40,000 Item #406 filed 05/17/2013. ERCOT IMPACT ANALYSIS ESTIMATING COST AND TIMELINE FOR IMPLEMENTATION OF ORDC B+ PROPOSAL

EquiPower would support full real-time co-optimization if it is implemented with a Texas Capacity Market or other EOM enhancements that would lead to an installed reserve margin consistent with 1 day in 10 years LOLP. Without the backstop of a Texas Capacity Market or other EOM enhancements, implementing full real-time co-optimization could in fact lead to lower prices than those produced in the current EOM market. Implementing full real-time co-optimization would follow first principles and likely produce more efficient results, however, optimization and efficiency will not lead to potential compensatory revenues for generators which is the ultimate problem the Commission is trying to solve. Other markets have spent significant amounts of money and years to implement full real-time co-optimization. If the Commission ultimately decides that Option B+ should be implemented, EquiPower recommends that we give Option B+ a couple of years to work and then evaluate if the benefits of implementing full real-time co-optimization outweigh the costs. For example, if we can achieve 80% of the benefits of full real-time co-optimization for a fraction of the costs and time to implement, it would be prudent to implement Option B+ and then evaluate if we need to go further.

If Solution B+ is implemented, are bidding floors for ancillary services still needed to avoid price reversal? If so, should minimum bids for ancillary services be set according to a curve where minimum bids increase as reserve capacity is depleted, or should the minimum bid be set at a discrete level?

Similar to comments earlier in this document regarding Option B+ design, the answer depends on what the overall objective is. If the objective is to follow first principals, the existing bidding floors should be removed. If the objective is to prevent the opportunity for price reversal, the existing bidding floors should remain. Worth noting is the fact that it is ERCOT's current interpretation that the current design framework for Option B+ would remove all bidding floors. We believe that an Option B+ implementation should not allow price reversal as this is contrary to Resource Adequacy.

With regard to minimum bids for ancillary services, should different ancillary services (such as on-line non-spin and off-line non-spin) be treated differently?

If the offer floors are removed and all ancillary services are released for deployment, EquiPower does not believe any distinction between on-line non-spin and off-line non-spin is needed. Since all on-line reserves would be paid the adder, EquiPower doesn't believe an on-line non-spin product makes sense. Therefore, all reserves used to satisfy non-spin reserve requirements should be supplied from off-line resources.

How should Option B+ be implemented?

EquiPower does not believe Option B+ should be implemented by itself. There is enough uncertainty surrounding the back cast analysis and how Option B+ would be designed to call into question its efficacy for solving ERCOT's Resource Adequacy challenges. However, if the Commission decides to move forward with Option B+ by itself, EquiPower recommends the Commission instruct ERCOT to implement Option B+ with aggressive variables which have the prospect of moving the market toward compensatory revenues for generators and Resource Adequacy. This approach has the further benefit of reducing the necessary revenue that would be needed through a TCM should one be implemented in the future. Without these aggressive variables, the Option B+ adders could produce little additional revenue except in extreme weather years like 2011.

Specifically, we would recommend choosing the higher contingency reserve levels, either maintaining the existing price floors or even increasing them to more meaningful levels, and ensure a price floor for the VOLL such that the value will not go below the current SWOC levels. In recent public comments, Dr. Hogan voiced similar recommendations when asked what contingency reserve levels he would recommend by stating, "My advice to everyone involved would be, at this stage, to pick a higher number, but just to be conservative at this stage, because what we're talking about is concerns about not having enough capacity and prices that are too low⁹." Setting the Option B+ parameters aggressively would add the greater amount of

⁹ March 26, 2013 "ERCOT Energy-Only Reforms with Bill Hogan." A UBS sponsored conference call with Dr. Hogan.

compensatory revenue and would minimize the amount of revenue that would be needed through a Texas Capacity Market, if the Commission ultimately decides to implement one.

Additionally, we recommend the Commission consider allowing the adder to go beyond the SWOC level. In previously filed comments¹⁰, EquiPower shared with the Commission analysis that was based on work performed by a leading energy consultant. That analysis showed that a price cap of \$12,500/MWh or higher would be sufficient to incent new investment in the necessary new generation to achieve the current target reserve margins. Using this approach would decouple the price cap from the SWOC, send appropriate scarcity pricing signals, and allow most of the scarcity pricing to be produced from the operational reserve demand curve instead of relying on generation supply offers at the SWOC.

Conclusion

The goal of Project 40000 is to ensure Resource Adequacy for ERCOT. Unfortunately the current EOM does not provide sufficient revenues to guarantee the needed reserve margin. While it may be politically unpopular, any solution to fix this problem must result in additional revenue to generators in order to bridge the current revenue gap. EquiPower is very concerned that new generation projects currently under construction are being viewed as validation that the current market is working and a reason to slow down the urgency for market reform and the level to which reforms are implemented to achieve Resource Adequacy. In our view this is a misread of the market and risks confidence and further investment in ERCOT. We believe that the current development activity is due to investor confidence that the Commission will make the necessary changes to assure Resource Adequacy in ERCOT, not that the existing design is adequate.

We believe implementing Option B+ as currently contemplated will result in limited amounts of incremental generation and will not make a significant improvement to the Resource Adequacy problem in ERCOT. Reforms in addition to Option B+ are needed in order to ensure proper

¹⁰ Docket #40,000 Item #279 filed 08/30/2012. COMMENTS OF EQUIPOWER RESOURCES CORP ON BEHALF OF ODESSA-ECTOR POWER PARTNERS, LP
http://interchange.puc.state.tx.us/WebApp/Interchange/Documents/40000_279_735555.PDF

price signals are sent with the prospect of an adequate amount of new generation is built. EquiPower remains convinced that a Texas Capacity Market provides the greatest certainty in achieving a defined reserve margin. Properly designed in combination with the current SWOC the level of capacity payments necessary would be modest but the certainty brought to the market would be substantial. Implementing a Texas Capacity Market would lead to the greatest prospect of compensatory revenues and the desired reserve margin. If the Commission adopts Option B+ with first principles and does not move forward with additional enhancements like a Texas Capacity Market or other enhancements, energy revenues could actually be lower than the current market and run counter to the goal of ensuring Resource Adequacy.

EquiPower believes the most efficient market design for ERCOT would include both:

- a) An improvement to scarcity pricing to increase operational efficiency and provide for real time incentives. Option B+ or some simpler alternative would achieve this objective, and
- b) A Texas Capacity Market or other EOM enhancements to provide for longer term incentives and fill the missing money gap when the energy market fails to do so.

The goal of Project 40000 is to ensure Resource Adequacy in ERCOT and Option B+ and/or full real-time co-optimization by themselves do not achieve that goal. As we've discussed in these comments, implementing Option B+ with or without co-optimization could actually have negative consequences for Resource Adequacy and therefore EquiPower recommends that the Commission address the Resource Adequacy issue first through either the Texas Capacity Market or the EOM enhancements that we have suggested. Once the Resource Adequacy problem is solved the Commission will have the luxury of time to proceed with the implementation of Option B+ and/or co-optimization.

Option B+ and/or full real-time co-optimization are not solutions, or enhancements that will help achieve Resource Adequacy. Instead, Option B+ and/or full real-time co-optimization are market design concepts that improve efficiency. EquiPower supports efficient market design but

believes that the Commission should focus on the most critical problem facing ERCOT, Resource Adequacy, before it focuses on Option B+ and/or full real-time co-optimization.

EquiPower appreciates the opportunity to provide its comments on this important topic and looks forward to participating in the ongoing debate and resolution of the resource adequacy issue.

Respectfully submitted,

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May 30, 2013