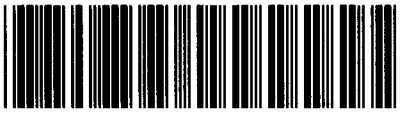

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PROJECT NO. 40000

COMMISSION PROCEEDING TO ENSURE RESOURCE ADEQUACY IN TEXAS	§ § § §	**BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS**

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LUMINANT'S RESPONSE TO REQUEST FOR COMMENTS REGARDING EMERGENCY RESPONSE SERVICE

TO THE HONORABLE PUBLIC UTILITY COMMISSION OF TEXAS:

Luminant Energy Company LLC and Luminant Generation Company LLC (collectively, "Luminant") submit the following comments, in response to the Public Utility Commission of Texas' ("Commission") request for comments at the October 3, 2013 open meeting, regarding whether Emergency Response Service should be included in calculating the available operating reserves.

I. INTRODUCTION

At its September 12, 2014 open meeting, the Commission voted to implement an Operating Reserve Demand Curve ("ORDC") with a 2000 MW minimum contingency level, value of loss of load of $9,000, and cumulative distribution function shape, with the removal of the current floors for ancillary services. The key function of the ORDC is to be a "more appropriate method of pricing scarcity during conditions of low operating reserves in Real-Time."[1] Implementation of the Commission's chosen ORDC is being addressed through the ERCOT stakeholder process, including Nodal Protocol Revision Request ("NPRR") 568 and its related documents (hereafter "ERCOT Implementation Documents"). The ERCOT Implementation Documents do not currently include Emergency Response Service ("ERS") in the calculation of reserves for purposes of the ORDC, but *do* include Reliability Unit Commitment ("RUC") and on-line Reliability Must Run ("RMR").

The Commission recently posed the question of whether ERS should be included in the ORDC's calculation of available reserves. To this end, Luminant recommends excluding ERS capacity from the calculation and would also recommend excluding RUC capacity and on-line

[1] *Commission Proceeding to Ensure Resource Adequacy in Texas,* Corrected Version: ERCOT's Response to the Commission's Request for Additional Analysis of the "Interim Solution B" Scarcity Pricing Proposal Discussed at the January 24, 2013 Workshop in Project No. 40000, Project No. 40000, at 1, Bates 000005 (Mar. 22, 2013).

RMR capacity ("RUC and on-line RMR") from the ERCOT Implementation Document's formula for calculating operating reserves, as demonstrated on Attachment A to these comments. Excluding ERS capacity, RUC, and on-line RMR from the calculation of available reserves would help preserve the incremental resource adequacy improvements achieved through the market design enhancements implemented by the Commission during the last two years. Finally, Luminant recommends that the reserve calculation be adjusted when ERS load is deployed, which will prevent ERS from suppressing the ORDC adder when it is deployed without dampening the adder at other intervals.

II. EMERGENCY OUT-OF-MARKET RELIABILITY SERVICES SHOULD *NOT* BE INCLUDED IN CALCULATING OPERATING RESERVES

The Commission has continually— and appropriately— emphasized that out-of-market reliability actions must not harm price formation.[2] Consequently, ERS capacity, RUC, and on-line RMR should all be excluded from the reserve calculation, since such products are purchased and deployed as out-of-market mechanisms. The ORDC was intended to be implemented in a manner that "should not materially and adversely affect resource revenue in the energy market."[3] Including ERS, RUC, and on-line RMR in the calculation of reserves would dilute the value of the ORDC and thus contravene this guiding principle.

ERS capacity that is procured by ERCOT, RUC capacity committed by ERCOT, and RMR capacity that is instructed on-line by ERCOT are all reliability backstops that should not be included in the reserve calculations when applying the ORDC. While it is reasonable and prudent for ERCOT to procure and deploy ERS, RUC and RMR capacity to ensure reliability, if these products are treated as reserves for the purpose of calculating the ORDC, it will discourage the very market response that the ORDC is designed to encourage. Specifically, the market response will not result in pricing consistent with the full value of the opportunity costs of real-time reserves in times of scarcity.

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[2] *Commission Proceeding to Ensure Resource Adequacy in Texas,* Memorandum from Chairman Donna L. Nelson, Project No. 40000, at 1-3 (Mar. 6, 2012)

[3] *Commission Proceeding to Ensure Resource Adequacy in Texas,* Memorandum from Commissioner Kenneth W. Anderson, Jr., Project No. 40000, at 2 (Jul. 19, 2013).

A. ERS, if Added to Reserves, Will Lower the Expected Peaker Net Margin and Equilibrium Reserve Margin

ERS capacity is not counted as a reserve in the formula contained in the ERCOT Implementation Documents and this formula should not be changed to add ERS capacity. While Luminant agrees with the proponents of adding ERS capacity to the reserve calculation that such action would help eliminate the issue of price suppression when ERS is deployed, this benefit would come at the cost of suppressing prices in all other hours in which the ORDC operates. Specifically, if ERS is included in the reserve calculation, the instances of a positive ORDC adder will occur less frequently and at a lower level. As demonstrated below, adding ERS to the reserve calculation has the equivalent effect of reducing the minimum contingency reserve by several hundred megawatts below the 2000 MW ordered by the Commission.

ERS capacity was not counted as a reserve in any of the ORDC analyses filed at the Commission that informed the Commission's ORDC decision. Luminant has performed a forward-looking analysis of the expected impact to peaker net margin ("PNM") if the ORDC is implemented using the Commission-chosen parameters but with ERS capacity added to available reserves. The expected impact is significantly negative, and is summarized in the Tables 1, 2, and 3 below. For the purposes of this analysis, Luminant started with the 475 MWs of ERS reflected in ERCOT's Capacity, Demand, and Reserves report.[4] Luminant added 90 percent of that ERS capacity during the summer for HE2 through HE8 and 10 percent of the ERS amount to reserves in all other hours, based on ERCOT's analysis showing that it intends to procure ERS capacity using a 10X weighting for summer peak hours, versus a 1X weighting in all other hours.[5] Further, Luminant very conservatively modeled only 20 percent of those ERS MWs having a 10-minute deployment time, with the remaining 80 percent having a 30-minute deployment time. The net impact shows approximately a 10 percent negative impact on PNM and a reduction in equilibrium reserve margin. In other words, simply adding ERS to the available reserves (without changing the minimum reserve contingency parameter) will contradict the Commission's goal by eroding

[4] Report on the Capacity, Demand, and Reserves in the ERCOT Region, at 8 (May 2013) (showing deduction of Emergency Response Service from Total Summer Peak Demand for the Summer of 2014).

[5] Presentation by Mark Patterson at the October 7, 2013 ERCOT Qualified Scheduling Entity Managers Working Group entitled "Update: 30-Minute Emergency Response Service (ERS) Pilot Project," at 11 (Oct. 7, 2013) (setting forth ERCOT's proposed weighting of reserves).

market support for additional resources, thus further jeopardizing resource adequacy. The Commission should not take this step backward.

Table 1: Expected Impact ($/kW) to PNM as Compared to Base Case 2000 MW Contingency Reserve Level								
VOLL/SWOC-$9000/MWh	**Reserve Margin (%)**						**Equilibrium**	**Impact**
	6%	**8%**	**10%**	**12%**	**14%**	**16%**		
Basecase	$210	$144	$95	$63	$45	$36	9.5%	
Piecewise Curve	$259	$156	$95	$60	$43	$35	9.6%	0.1%
Smooth Curve	$223	$135	$83	$54	$41	$34	9.0%	-0.5%
VOLL/SWOC=$7000/MWh								
Basecase	$187	$127	$84	$57	$42	$35	8.9%	
Piecewise Curve	$211	$130	$81	$54	$41	$34	8.9%	0.0%
Smooth Curve	$184	$114	$73	$50	$39	$34	8.3%	-0.6%

Table 2: Expected Impact ($/kW) to PNM as Compared to Base Case 2000 MW Contingency Reserve Level (Plus 427.5 MW ERS Summer HE2-HE8; 47.5 MW ERS all other hours; 20% in 10 minute and 80% 30 minute)								
VOLL/SWOC-$9000/MWh	**Reserve Margin (%)**						**Equilibrium**	**Impact**
	6%	**8%**	**10%**	**12%**	**14%**	**16%**		
Basecase	$210	$144	$95	$63	$45	$36	9.5%	
Piecewise Curve	$233	$139	$85	$55	$41	$34	9.1%	-0.4%
Smooth Curve	$201	$120	$75	$50	$38	$33	8.6%	-0.9%
VOLL/SWOC=$7000/MWh								
Basecase	$187	$127	$84	$57	$42	$35	8.9%	
Piecewise Curve	$190	$116	$74	$50	$39	$33	8.4%	-0.5%
Smooth Curve	$166	$102	$66	$46	$37	$33	7.9%	-1.0%

Table 3: Delta							
VOLL/SWOC-$9000/MWh	**Reserve Margin (%)**						**Equilibrium**
	6%	**8%**	**10%**	**12%**	**14%**	**16%**	
Basecase	$0	$0	$0	$0	$0	$0	0.0%
Piecewise Curve	($26)	($16)	($10)	($5)	($3)	($1)	-0.5%
Smooth Curve	($23)	($14)	($8)	($4)	($2)	($1)	-0.4%
VOLL/SWOC=$7000/MWh							
Basecase	$0	$0	$0	$0	$0	$0	0.0%
Piecewise Curve	($21)	($13)	($8)	($4)	($2)	($1)	-0.5%
Smooth Curve	($18)	($12)	($7)	($3)	($2)	($1)	-0.4%

Luminant has also conducted a back-cast analysis to examine the impact that the ORDC with Commission-chosen parameters would have, as compared to 2013 PNM, if ERS is added to available reserves, as described above. Over the summer months of 2013, adding ERS to available reserves would result in the ORDC increasing the PNM by only an incremental $2,782/MW on top of the PNM that was produced in the absence of the ORDC. Given that the ORDC using the Commission-chosen parameters, which did not add ERS to reserves, increased the 2013 PNM by only about $5,000/MW over the summer,[6] the ~45% reduction that results from adding ERS to reserves is significant. Thus, this back-cast analysis provides further evidence that adding ERS to available reserves would have a detrimental impact on the Commission's fundamental goal of promoting resource adequacy.

Furthermore, even with the conservative assumptions set forth above, adding ERS to the reserves calculation results in similar outputs as setting the minimum contingency reserves level between 1500 MW and 1750 MW.[7] Implementing an ORDC with a minimum contingency that is significantly less than 2000 MW would not be consistent with the decision that the Commission just made regarding the ORDC parameters. Thus, this is another basis for not including ERS in the reserves calculation.

For all the above reasons, ERS should be excluded from the ORDC's available reserve calculation.

B. ERS, when Deployed, Should be Excluded from Available Reserves to Avoid Price Suppression

Under Luminant's recommendation discussed above, ERS capacity would not be added to the reserve calculation in each hour for which ERS is procured. Consequently, a different adjustment to the calculation of reserves is needed to address the price suppression that occurs when ERS is deployed. The ORDC reserve calculation should subtract out ERS that is deployed,

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[6] *Commission Proceeding to Ensure Resource Adequacy in Texas,* Luminant's Response to Request for Comments for October 8, 2013 Workshop, Project No. 40000, at 9 (Sep. 23, 2013).

[7] *Commission Proceeding to Ensure Resource Adequacy in Texas,* Luminant's Response to Request for Comments Regarding Hogan Proposal, Project No. 40000, at 15-17 (May 31, 2013). The projection of a 1500-1750 MW minimum contingency reserve level is based on ERS procurement of no more than 427.5MW; however, ERCOT has the latitude to procure substantially more ERS, with the total amount procured limited only by the ERS spending cap.

so that the quantity of available market-based reserves is the same at post-ERS-deployment as it was pre-ERS-deployment. The deployment of ERS as a supply resource (*i.e.*, reducing demand, which is the same as increasing reserves), will fundamentally impact the application of the ORDC. Reducing demand (which effectively increases generating reserves) during the deployment of ERS would shift the point on the ORDC. This shift would result in energy and reserves that were priced at $X dollars on the ORDC pre-ERS-deployment suddenly being priced at a value less than $X dollars, because reserves would increase as load decreases, and the ORDC produces a price that decreases as reserves increase. Thus, the deployment of an out-of-market service would directly result in the devaluation of the ORDC adder for all resources providing energy and reserve services. Therefore, unless the reserve calculation is adjusted when there is an out-of-market deployment of ERS, price formation will be affected negatively.

C. RUC and On-Line RMR Should Also be Excluded from Available Reserves, to Mitigate Price Suppression and to Avoid Interfering with Price Formation

For much of the same reasons that ERS should be excluded from available reserves for the purposes of applying the ORDC, RUC and on-line RMR should also be excluded.[8] The 2011 and 2012 back-cast analysis evaluated by the Commission in connection with making its ORDC implementation decisions contained a relatively insignificant level of RUC and RMR, given ERCOT's use of those services during the studied time period.[9] However, because RUC and RMR capacity can be committed in the future (for either capacity shortages or for transmission constraints), their related price suppressing effects should be addressed. Unlike ERS capacity, which is not counted in the reserve formula, RUC and RMR, when used by ERCOT for reliability, would be counted in the calculation of reserves. Therefore, the reserve calculation currently proposed in the ERCOT Implementation Documents needs to be modified so that RUC and RMR capacity are not counted when they are being used by ERCOT for reliability. Included as Attachment A to these comments is a redline of Luminant's proposed changes to the current formula.

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[8] Luminant specifies on-line RMR because unlike RUC units, which must be online, the commitment of RMR is at ERCOT's discretion. Therefore, ERCOT might not always commit RMR that it has purchased.

[9] *Commission Proceeding to Ensure Resource Adequacy in Texas,* Corrected Version: ERCOT's Response to the Commission's Request for Additional Analysis of the "Interim Solution B" Scarcity Pricing Proposal Discussed at the January 24, 2013 Workshop in Project No. 40000, Project No. 40000 (Mar. 22, 2013).

When a unit is committed by ERCOT through the RUC process, the unit will operate, at a minimum, at its low sustained limit ("LSL"). To accommodate this energy and maintain energy balance in the Security Constrained Economic Dispatch ("SCED"), the base point of one or more other on-line units will be decreased by ERCOT. The quantity of available reserves will increase by the amount of energy delivered from the RUC unit, plus any additional unloaded capacity available on that unit. Due to this out-of-market reliability action, the reserve level would be calculated to have increased by the HSL of the RUC unit. To avoid this increase in calculated reserves from out-of-market capacity, the reserve formula should be modified to subtract the HSL of RUC units so that reserves are not inappropriately calculated as including the out-of-market RUC unit's HSL.

Excluding the RUC unit's HSL from the reserve calculation is important in order to not depress the ORDC's calculation of the value of all available market reserves. As noted above, the ORDC calculates a reserve value that decreases as the quantity of reserves increases. If RUC units are added to the reserve value (*i.e.*, if the reserve formula is not modified as suggested in the preceding paragraph), then commitment of a RUC unit (an out-of-market action) would lead to an increase in reserves and thus a direct decrease in the ORDC-assigned value for all available market reserves. To avoid that detrimental price-suppressing impact, RUC units' HSL should be excluded from the calculation of reserves.

With respect to RMR, when ERCOT makes a decision to bring an RMR unit on-line, that is a similar out-of-market action (*i.e.*, similar to RUC) that would have the same price-suppressing impact on the ORDC-calculated price if the HSL of an online RMR unit is not excluded from the reserve calculation. Thus, the HSL of online RMR units should also be excluded from the reserve calculation, just as ERS and RUC units' capacity should be excluded.

Making these adjustments to the ORDC reserves calculation would largely resolve the zero-to-LSL price depression during scarcity times from RUC and RMR capacity that stakeholders have struggled to address for the last two years. If RUC and RMR capacity were included in the calculation of reserves, out-of-market reliability decisions would impact the appropriate price formation intended to apply to market-based energy and reserves and would harm market outcomes. Thus, RUC and on-line RMR MWs should not be included in the calculation of reserves.

III. CONCLUSION

Luminant appreciates the Commission's consideration of these comments and respectfully suggests that, in order to not detrimentally impact resource adequacy, the Commission should implement the ORDC in a way that promotes appropriate price formation. To accomplish that objective, with respect to calculating available reserves for purposes of applying the ORDC, ERS, RUC, and on-line RMR should all be excluded from available reserves. Further, the reserve calculation should be adjusted when ERS load is deployed to avoid price suppression.

Respectfully submitted,

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ATTACHMENT A

Below are Luminant's proposed changes (in redline) to the current Version 1 formula contained in the ERCOT Implementation Documents. Luminant would recommend that the Version 2 formula, which would replace Version 1 upon the implementation of NPRR 555, would also be changed consistent with the principles below.

1) R_S is calculated based on SCED telemetry and solution as:

$$R_S = (1 - DF) * (HSL_{GEN} - HSL_{IRR} - HSL_{NUC}) - (BP_{GEN} - BP_{IRR} - BP_{NUC}) + RRS_{LR} + REGUP_{CLR} - \underline{\boldsymbol{ERS_{DEP} - \Sigma HSL_{RUC} - \Sigma HSL_{RMRONLINE}}}$$

Where

- DF is the discount applied to the Real-Time High Sustained Limits (HSLs) of Generation Resources.
- HSL_{GEN} and BP_{GEN} are the system total SCED On-Line HSL and Base Points respectively.
- HSL_{IRR} and HSL_{NUC} are the system total SCED telemetered On-Line HSL of Intermittent Renewable Resource (IRR) and nuclear Resources respectively. The IRRs in this formula exclude Synchronous Condenser Units having an RRS Ancillary Service Schedule.
- BP_{IRR} and BP_{NUC} are the system total SCED On-Line Base Points of IRR and nuclear Resources respectively.
- RRS_{NCLR} is the system total SCED telemetered RRS Ancillary Service Schedules from Load Resources other than Controllable Load Resources.
- BP_{CLR} is the system total SCED Base Points from Controllable Load Resources.
- LSL_{CLR} is the system total SCED telemetered Low Sustained Limit (LSL) from Controllable Load Resources.
- $NONSPIN_{CLR}$ is the system total SCED telemetered Non-Spin Ancillary Service Schedule from Controllable Load Resources.
- RRS_{LR} is the system total SCED telemetered RRS Ancillary Service Schedules from all Load Resources.
- $REGUP_{CLR}$ is the system total SCED telemetered Regulation Up Ancillary Service Schedules from Controllable Load Resources.
- **ERS_{DEP} is the amount of ERS resources currently deployed.**
- **HSL_{RUC} is the sum of all capacity committed as reliability unit commitment.**
- **$HSL_{RMRONLINE}$ is the sum of online capacity committed as a reliability must run.**