**Luminant Energy Company LLC’s (Luminant’s) initial comments and questions addressing the Discussion Items in the ERCOT Concept Paper for Real-Time Co-Optimization of Energy and Ancillary Services.**

1. AS products: Two options under discussion (Option 1, Option 2).
   * At this point, Luminant prefers Option 1, but would like more information on what is trying to be accomplished through Option 2. Is SOR viewed as a premium product compared to the current Non-Spin? How would procurement of Non-Spin change under Option 2? Would QSGRs available to SCED be qualified to perform SOR or NSOR? What reliability need is being satisfied by the proposal to change the current Non-Spin product?
2. AS demand curves: Three examples currently under discussion.
   * Luminant would find it helpful for ERCOT to prepare examples of various scenarios and the pricing outcome under each example.
3. Co-ordination of PBPC, VOLL, SWOC and max. value on ASDC
   * At this time, Luminant prefers Option 3, maintaining VOLL at $9k
4. Locational Reserves: Is there a reliability requirement and other conceptual discussions. Examine the implementation of local ASDC as part of real time co-optimization in other markets to understand the need. What are the requirements? To what extent should mitigation of AS offer curves be considered.
   * Luminant does not support implementation of a locational reserve product at this time.
5. RUC/SASM changes
   * Luminant agrees with EERCOT’s view that changes to RUC are needed and SASM can be eliminated; however, specific language needs to be developed and reviewed to address details of the necessary changes.
6. Do we need to model Real-Time AS demand curves in the DAM?
   * Luminant agrees with the discussion at SAWG that modeling AS demand curves in DAM is an important component of RTASCOOP.
7. If we model AS demand curves in the DAM, as the DAM is voluntary, are there any issues? Resources do not have to participate since it is not mandatory to submit Resource specific Offers for energy and AS.
   * Luminant agrees that this will need further discussion after other points are decided.
8. If we model AS demand curves in the DAM, then what is the process of achieving required levels of AS procurement in the DAM when the DAM process does not procure enough? Is it Reliability Unit Commitment or RUC?
   * Luminant believes that penalty pricing for RRS and Regulation in the DAM will result in few if any instances where AS will not be fully procured in DAM.

1. AS Demand Curves: If AS demand curves are not modeled in the DAM, then AS procurement is effectively given higher priority than energy…
   * Luminant agrees that AS demand curves should be modeled in DAM.
2. AS Participation rules in RTC: Must every Resource qualified to provide AS participate? Under what conditions can a Resource opt out of AS participation in RTC?
   * There must be a clear path for units to opt out of AS participation, at a minimum, if the unit is testing or its operations are unstable and the QSE has concerns about its reliable performance.

1. AS participation in RTC – timeline for informing ERCOT of changes to AS offers
   * It appears that there may be opportunities for gaming if a market participant can change AS offers in real time. What have other co-optimized markets done to address these issues?
2. Load Resource Deployment for RRS: Need to develop process to account and differentiate scenarios where RRS from LR is deployed versus failure to provide, etc. This has impact on the AS imbalance settlement.
   * Luminant does not have an opinion on this topic at this time.
3. Load Resource Deployment for RRS: AS imbalance charges.
   * Luminant does not have an opinion on this topic at this time.
4. Offer floors: Should offer floors on Non-Spin (NSOR) be removed?
   * Yes. Offer floors are counter-intuitive to the purpose of RTASCOOP.
5. Non-Spin Reserve Calculation: For Non-Spin, should the statistical distribution of Online Reserves be used or Online+Offline Reserves or some combination. Note that the price on the Non-Spin demand curve will be lower if the statistical distribution of Online+Offline Reserves is used.
   * Luminant generally agrees with the SAWG discussion that the distribution should match the product that is procured.
6. Reg Down Demand Curve: How should the demand curve for Reg-Down be determined? Is it the same as the Reg-Up demand curve?
   * Luminant believes that both Reg-Down and Reg-Up are needed for reliability and the demand curve should be flat at the cap for both services.
7. Accounting Issues: Accounting for Resource providing “truly” Offline Non-Spin (Option 1) and NSOR (Option 2): Should these Resources be exempt from AS Imbalance charges upon deployment?
   * Luminant prefers Option 1 at this time, and does not believe any changes are needed in the operation of the AS imbalance for Non-Spin resources.
8. What other metrics apart from following Base Points, GREDP are required.
   * Luminant does not have an opinion on this topic at this time.
9. Ramping issues: Stakeholder discussions will be required to develop methodology to share the ramp rates between energy and AS (similar to the ramp sharing between current Security Constrained Economic Dispatch or SCED and LFC).
   * Luminant does not have an opinion on this topic at this time.
10. Emergency Ramp Rates: When should Emergency Ramp Rates be used? Only upon ERCOT notification?
    * Luminant does not have an opinion on this topic at this time.
11. Reg-Up award limits: Should Reg-Up awards be limited by RE-down ramp rate? This is to prevent Resources from being harmed by sequence of increasing Base Points over a period of time and then a reduction where due to ramp down limitations, they become price takers and simultaneously there is a Reg-Up shortage pricing.
    * Luminant generally believes that a QSE could prevent this issue through coordination of its EOCs, ASDCs and telemetered ramp rates – it seems unlikely that a unit would be committed sequentially for Reg-Up and Reg-Down and could telegraph its willingness to move in either direction through its AS offer. However, Luminant welcomes additional stakeholder discussion on this issue.
12. Make Whole Issues: Should there be make whole payments if Resources financially harmed with respect to Day-Ahead positions due to RT energy + AS co-optimization?
    * Luminant is not aware of any scenarios that would require make whole payments, but welcomes additional stakeholder discussion on this issue.
13. Settlement Interval Changes: Should ERCOT move to a 5 minute settlement?
    * Luminant believes this would create more costs for ERCOT and Stakeholders without resulting benefit.
14. AS Deliverability: What are the AS deliverability concerns and how can it be mitigated.
    * Luminant welcomes additional stakeholder discussion on this issue.
15. AS Offer Submittal Structure:
    * Luminant interprets this question to address the question of substitutability, and agrees that there should be substitutability if a higher quality AS product (e.g., RRS) can be procured for less than a lower quality AS product (e.g., Non-Spin).
16. ERCOT Operator ability to enter manual offset to GTBD (current functionality).
    * Luminant would find it helpful to get more understanding of ERCOTs operational needs for adjusting GTBD.