



January 14, 2025

**Via Express Mail**

Ms. Kris Abel  
Records and Recording Division  
Louisiana Public Service Commission  
Galvez Building, 12th Floor  
602 North Fifth Street  
Baton Rouge, Louisiana 70803

CC: MV/LE  
LA PUBLIC SERVICE COMM  
JAN 16 2026 AM 11:38

Re: **Docket No. U-37425**, Entergy Louisiana LLC, ex parte. In Re: Application for Approval of Generation and Transmission Resources in Connection with Service to a Single Customer for a Project in North Louisiana

Dear Ms. Abel:

Enclosed for filing in the above-captioned docket please find original and two (2) copies of the Alliance for Affordable Energy and Union of Concerned Scientists' (collectively, "NPOs") Response to Entergy Louisiana, LLC's Transient Stability Analysis.

In addition, I have also enclosed the original and two copies of the **Confidential** Version of the NPOs' Response to ELL's Transient Stability Analysis. The Confidential version contains information that either (a) is highly confidential Critical Energy Infrastructure Information, and/or (b) Entergy has designated as Highly Sensitive Protected Material. This Confidential version is being provided to you under seal, in a separate envelope, pursuant to the provisions of the LPSC General Order dated August 31, 1992, and Rules 12.1 and 26 of the Commission's Rules of Practices and Procedure.

Thank you in advance for your assistance and cooperation and please do not hesitate to contact me should you have any questions or concerns.

Respectfully submitted,

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*Public Redacted Version*

**BEFORE THE LOUISIANA PUBLIC SERVICE COMMISSION**

**ENTERGY LOUISIANA LLC, ex parte**

**IN RE: APPLICATION FOR  
APPROVAL OF GENERATION AND  
TRANSMISSION RESOURCES IN  
CONNECTION WITH SERVICE TO A  
SINGLE CUSTOMER FOR A PROJECT  
IN NORTH LOUISIANA**

**DOCKET NO. U-37425**

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**NON-PROFIT ORGANIZATIONS' RESPONSE TO  
ENTERGY LOUISIANA, LLC'S TRANSIENT STABILITY ANALYSIS**

*Public Redacted Version*

The Alliance for Affordable Energy and the Union of Concerned Scientists (collectively, the “Non-Profit Organizations” or “NPOs”), through undersigned counsel, respectfully submit this Response to the transient stability analysis that Entergy Louisiana, LLC (“ELL” or “the Company”) filed on November 24, 2025. As explained below, ELL’s analysis suffers from several fundamental flaws, and fails to adequately assess the reliability risks of serving the data center being developed by Laidley LLC (“Laidley” or “the Customer”). If the Louisiana Public Service Commission (“Commission” or “LPSC”) wishes to protect Louisiana customers’ access to reliable electricity, it should direct ELL to redo this analysis by addressing the specific concerns discussed below.

**BACKGROUND**

In this proceeding, ELL asked the Commission to approve three combined cycle gas plants (the “Planned Generators”) and various transmission facilities in order to serve load from a data center to be constructed by Laidley LLC (“Laidley” or “the Customer”).

On April 11, 2025, NPOs witness Nicholas Miller submitted direct testimony which, among other things, warned that ELL’s application did not address the reliability risks of serving the proposed data center load. He explained that serving this load, which could fluctuate significantly over extremely short periods of time (within milliseconds, seconds, or tens of seconds), can threaten the stability of the grid.<sup>1</sup> Mr. Miller also discussed the risk that additional transmission investments may be required beyond those identified in ELL’s filings. Mr. Miller explained that ELL may have “understate[d] the full scope of transmission facilities necessary to

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<sup>1</sup> Direct Testimony of Nicholas W. Miller (“Miller Direct”) at 20.

meet this large new data center load. . . . [T]he transmission system designed by ELL may be subject to three types of constraints that could limit the delivery of power to the Customer data center: thermal constraints, voltage constraints, and transient stability constraints.”<sup>2</sup> His testimony details those constraints, and discusses the potential mitigations – many of which are costly – that may be needed to address those thermal, voltage, and transient stability constraints.<sup>3</sup>

With respect to transient stability risks specifically, Mr. Miller testified:

. . . I am concerned that ELL has not adequately investigated whether the transmission system, including the transmission facilities proposed in the Application, can handle unstable generator swing behavior during disturbances, particularly under conditions of higher power import from the rest of the system and for all reasonable conditions that may be encountered. Transient stability limits can be lower than the thermal and voltage limits discussed above, and it is unclear whether ELL has thoroughly analyzed this issue. . . .

A transmission system with new and existing transmission, especially 500kV improvements, often exhibits unstable generator swing behavior when disturbed. This is a concern because the system is sometimes subjected to large disturbances. These disturbances cause the system to swing. If the system cannot successfully return to a satisfactory equilibrium following such disturbances, that would violate transient stability requirements. The amount of power being transferred – such as the power that would be delivered to the data center – is often a key factor, and this aspect of system stability will often translate into power transfer limits.<sup>4</sup>

Mr. Miller further noted that the Planned Generators may “have the potential to address these transient stability constraints,” but “can provide those services only when operating. Thus, the concern I raised above [about] the CCCTs’ inability to run 100% of the time applies equally to this transient stability issue.”<sup>5</sup> And he explained that the cost of mitigating the transient stability problems could “rang[e] from less than a \$1 million to tens of millions of dollars or more. And addressing the transient stability constraints could require a combination of mitigation measures, each of which could carry significant cost. The full cost of such mitigation will only become clear after much more analysis.”<sup>6</sup> In cross-answering testimony, LPSC Staff Witness Sisung testified that Mr. Miller “raise[d] valid transmission and system reliability concerns that ELL needs to address,” and he recommended a specific condition that “should be added to any Commission approval of the Application.”<sup>7</sup>

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<sup>2</sup> Miller Direct at 5.

<sup>3</sup> *Id.* at 6-16.

<sup>4</sup> *Id.* at 4.

<sup>5</sup> *Id.* at 15.

<sup>6</sup> *Id.* at 16.

<sup>7</sup> Cross-Answering Testimony of R. Lane Sisung at 34.

On July 11, 2025, ELL entered into a settlement with several parties (hereinafter, the “Settlement”).<sup>8</sup> The Settlement did not include the condition recommended by Mr. Sisung, nor did it include the conditions proposed by Mr. Miller.<sup>9</sup> The Settlement did require ELL to file a transient stability analysis within 90 days of a Commission Order approving the Settlement.<sup>10</sup> The Commission issued a final Order approving the Settlement on August 29, 2025.

**RESPONSE TO ELL’S ANALYSIS**

ELL’s transient stability analysis suffers from at least three fundamental flaws:

- 1) The scope of the analysis was unreasonably limited, testing only a single class of disturbances under a single set of conditions. ELL should have modeled different conditions and sensitivities.
- 2) In presenting its analysis, ELL failed to provide the assumptions and other critical information typically included in a transient stability analysis. The failure to share this information prevents independent third-party reviewers from verifying ELL’s conclusions.
- 3) The analysis fails to address the broader reliability concerns associated with large data centers’ rapidly fluctuating load.

These flaws are discussed further below.

**I. The scope of ELL’s analysis was unreasonably limited. By failing to evaluate the system under different conditions, ELL failed to adequately investigate transient stability risks.**

The analysis submitted by ELL only considered a single class of disturbance and a single set of conditions. More specifically, ELL only tested [REDACTED]  
[REDACTED] ] Because it did not model disturbances under a wider range of likely conditions, ELL failed to adequately evaluate transient stability risks.

As ELL described in its one-paragraph summary:

The model and dynamic databases representing the [REDACTED] were used for this analysis. The system model incorporated the new Franklin Farms

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<sup>8</sup> See Joint Motion for Approval of Settlement Pursuant to Rule 57 (Aug. 7, 2025), Exhibit A – Final Stipulated Settlement Term Sheet.

<sup>9</sup> Cf. Miller Direct at 32-34.

<sup>10</sup> Specifically, the Settlement provides: “Within ninety (90) days of an Order approving this settlement, ELL will file with the Commission, the results of a study of the effect of losing the computing resources portion of the Customer’s load and a plan for addressing any resulting transmission violations.” Settlement ¶ 5.D.

generation, [[REDACTED]] load, and the associated transmission facilities. The [[REDACTED]] load was modeled as two [[REDACTED]] which were further divided into separate components: [[REDACTED]] Stability simulations were performed to evaluate the impact of the Project Titanium data center on the transient behavior of nearby generation and the overall stability of the Entergy system.<sup>11</sup>

There are several reasons why ELL's analysis was incomplete. *First*, the only operating conditions that ELL studied was the [[REDACTED]]



When evaluating transient stability issues, it is common industry practice to perform light-load tests. NERC's transmission planning reliability standards recognize this, stating as follows (emphasis added):

Each Transmission Planner and Planning Coordinator shall prepare an annual Planning Assessment of its portion of the BES. **This Planning Assessment shall use current or qualified past studies . . . , document assumptions, and document summarized results of the steady state analyses, short circuit analyses, and Stability analyses. . . .**

For the Planning Assessment, the Near-Term Transmission Planning Horizon portion of the steady state analysis shall be assessed annually and be supported by current annual studies or qualified past studies as indicated in Requirement R2, Part 2.6. **Qualifying studies need to include the following conditions:**

2.1.1. System peak Load for either Year One or year two, and for year five.

2.1.2. **System Off-Peak Load for one of the five years.**<sup>12</sup>

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<sup>11</sup> Project Titanium Transient Stability Analysis (filed Nov. 24, 2025) (hereinafter, the "ELL Analysis") at PDF p. 1.

<sup>12</sup> NERC, Reliability Standards, TPL-001-5.1, *Transmission System Planning Performance Requirements* at 1-2 (emphasis added), available at: <https://www.nerc.com/globalassets/standards/reliability-standards/tpl/tpl-001-5.1.pdf>.

[[ [REDACTED] ]].

Second, although it is difficult to confirm given the limited information provided, it appears that ELL assumed that the [ [REDACTED] ] ELL's failure to evaluate any scenarios [ [REDACTED] ] further limits the robustness of the study.

Under different operating conditions, [ [REDACTED] ], the transient stability risks could be much greater than under the conditions ELL actually studied.<sup>16</sup> For these reasons, ELL's analysis is incomplete. The study submitted on November 24 fails to provide assurances that the system will remain stable under real-life conditions.

Finally, ELL compounded things by failing to consider different types of load behavior at the data center in response to the simulated disturbances. In every single case considered, it appears that ELL assumed that the data center's [ [REDACTED] ]<sup>17</sup> Although that assumption is not unreasonable, ELL should have also studied cases involving different responses from the data center load, such as a different timeline for [ [REDACTED] ]. The rigor of ELL's analysis was further compromised by the Company's failure to consider scenarios with different load behavior.

To address these shortcomings, ELL should perform a more thorough transient stability analysis that includes different operating conditions. This analysis should, at minimum:

- [ [REDACTED] ]

<sup>13</sup> There's no reason to think that [ [REDACTED] ]

<sup>14</sup> ELL Analysis at PDF p. 1: "The system model incorporated the new Franklin Farms generation. . . ."

<sup>15</sup> Miller Direct at 12.

<sup>16</sup> Satisfactory transient stability performance includes requirements that post-disturbance voltage swings be within specified bounds. The untested operating conditions mentioned above are likely to exacerbate risks of non-compliant voltage behavior.

<sup>17</sup> ELL Analysis at PDF pp. 5-25.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**II. ELL failed to provide critical assumptions, making it impossible to verify ELL's conclusions.**

The analysis filed by ELL – consisting of a one-paragraph description, a table of fault cases, and 21 pages of graphs – includes so little detail that it is borderline unreviewable. In contrast to a typical transient stability analysis, ELL failed to identify assumptions, instead providing only a cursory description of the operating conditions. By failing to disclose critical information, ELL has made it impossible to verify the study's conclusions.

More specifically, ELL's submission provided no statement of the assumptions (model representation), let alone justifications for the assumptions, or the context for making them. There is no description of the models used to represent load, and no linkage between the assumptions and the design data for the data center project. The information provides no basis for thinking that the model and its assumptions represent the expected behavior of the data center load in real life. This sort of cursory report might suffice for interconnecting a small induction motor load (e.g., 20 MW), where the worst-possible outcomes are somewhat limited. But this analysis is nowhere near adequate for assessing the risk of a [[REDACTED]] data center, with unpredictable and potentially fluctuating loads, where the worst-case outcomes could be severe and prolonged. At a minimum, ELL should have documented the model, including the source of the model, the underlying assumptions, the known limitations and simplifications of the model, and suggested potential options to improve the fidelity of the model and validate the assumptions made.

Without attempting to be exhaustive, ELL's report suffers from the following critical gaps and unanswered questions:

- 1) Load models and assumptions
  - a. What models are used to represent the loads? What are the model parameters?

- b. A dyr file and justifications of model selection and parameter selection should be described.
- c. What is the justification for the [REDACTED] ]  
Can this representation be traced to the actual equipment planned for the Customer's data center? If not, what's the basis for the assumption?

2) [REDACTED] ]

- 3) Voltage/frequent protection
  - a. What are the voltage protection parameters and frequency protection parameters in the model? What is the source of these parameters? Are they traceable to the equipment manufacturers?
  - b. Is the voltage protection planned for the data center project acting on 3-phase voltage measurements or individual phase voltage measurements?
    - i. If individual phase, is it L-L, L-N, or both?

4) ELL appears to have used a [REDACTED] ]

5) ELL's analysis, which was apparently performed with the [REDACTED] ]

6) ELL's analysis includes no assessment of [REDACTED] ].

**III. ELL's analysis does not adequately address the rapidly fluctuating load of large data centers.**

Setting aside the specific flaws and omissions discussed in Sections I and II above, ELL's analysis is deficient because it ignores the reliability risks of data centers' rapidly fluctuating load. As witness Miller explained in his direct testimony, large data centers, like the one that ELL plans to accommodate, often have rapidly fluctuating loads.<sup>18</sup> While ELL's stability analysis examined one specific scenario (a drop in load due to a system disturbance), the analysis did not consider the broader problem of fluctuating loads at large data centers.

As witness Miller explained in his testimony:

The industry is finding that data center loads can be highly disruptive. Data centers are often discussed and even planned for as if their loads are static, which is part of what makes them "high load factor" customers. But the reality is that their demand can be highly variable on timescales that introduce significant challenges for the bulk electric power system. In general, these loads, which utilize complex power electronics (switched-mode power supplies), have the possibility of imposing rapid pulsations, steep ramps up and down, and unexpected/uncontrolled starts and stops. These variations are likely to induce both reliability and cost-related concerns.<sup>19</sup>

He also noted that the specific load behavior of the Customer's data center remains unknown:

[W]e, ELL, and perhaps even the Customer do not know. Apparently, the only load shape provided by the Customer to ELL was "a monthly load ramp and expected load factor."<sup>20</sup> No hourly data was provided. It similarly appears that the Customer did not provide sub-hourly nor sub-second data, since [[REDACTED]]. Further, the load fluctuations in Figure 1 is just one example of disruptive behavior. Data center loads are subject to many other types of dynamic behavior.

Unless the Customer is required to operate with flat power demand, we should assume that the risks posed by the dynamic behavior of data centers apply here as well. To assume otherwise would expose ELL's existing customers to very significant grid reliability and cost risks.<sup>21</sup>

If ELL does not adequately consider and plan for the dynamic load behavior of the Customer's data center, it could have serious repercussions for Louisiana customers, as Mr. Miller explained:

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<sup>18</sup> Mr. Miller further noted that, on the record in this proceeding, we actually do not know how the Customer data center will behave.

<sup>19</sup> Miller Direct at 17.

<sup>20</sup> ELL response to NPO 8-1 (attached as Exhibit NWM-10).

<sup>21</sup> Miller Direct at 19.

If these load fluctuation problems are not adequately addressed, businesses and residents in North Louisiana could face major disruptions to their electric service. These load fluctuations could also damage equipment at the new Franklin Farms CCCT facility, as well as at nearby generation facilities, such as the Grand Gulf Nuclear Station. The ISO may have to adopt defensive operations strategies with significant cost and efficiency penalties. Addressing these load fluctuation problems could be costly, potentially requiring additional capital expenditures for transmission and substation equipment such as dynamic compensation equipment, EMS upgrades, and other infrastructure. Further, there is a risk of increased operating costs for ancillary services (such as REG and spinning reserve) because more expensive generation may need to run just to provide the additional support to the grid that was not anticipated in the planning process.

LPSC Staff witness Sisung agreed with the risks identified by Mr. Miller. He noted that Figure 1 in Mr. Miller's testimony "illustrates the type of dramatic temporary load spikes that could be produced by a data center's potential dynamic load behavior," and found that Mr. Miller's testimony supports Mr. Sisung's "concerns related to the impacts that the data center may have on reliability during emergency conditions."<sup>22</sup>

ELL may try to defend its transient stability analysis by claiming that it meets NERC's minimum standards for interconnection studies. But even if accurate – as explained above, ELL did not share enough information to independently verify the analysis – ELL's analysis is insufficient given that large data centers often have rapidly fluctuating loads. Indeed, NERC itself has acknowledged that its current standards may be insufficient for this emerging type of load. In July 2025, NERC's Large Load Task Force released a white paper that discussed the risks of emerging large loads to the bulk power system. The recommendations included the following (emphasis added):

**Recommendation 1: The NERC LLTF should identify existing processes and standards that do not fully address the risks of emerging large loads, as planned for the LLTF's second work item— White Paper: Assessment of Gaps in Existing Practices, Requirements, and Reliability Standards for Emerging Large Loads.**<sup>23</sup>

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<sup>22</sup> Sisung Cross-Answering at 39-40; *see also id.* at 33-34.

<sup>23</sup> NERC, Large Loads Task Force White Paper, Characteristics and Risks of Emerging Large Loads (July 2025) at vii (emphasis added), available at [https://www.nerc.com/globalassets/who-we-are/standing-committees/rstc/3\\_doc\\_white-paper-characteristics-and-risks-of-emerging-large-loads.pdf](https://www.nerc.com/globalassets/who-we-are/standing-committees/rstc/3_doc_white-paper-characteristics-and-risks-of-emerging-large-loads.pdf). *See also* Large Loads Task Force, October 23, 2025 Meeting at 2 (indicating that the second white paper draft recommendation may address "Risks for which the LLTF believes that . . . NERC Standard changes are needed as a mitigation" and "Reliability Guideline is needed as a mitigation."), available at [https://www.nerc.com/globalassets/who-we-are/standing-committees/rstc/lltf/lltf\\_presentations\\_october\\_23\\_2025.pdf](https://www.nerc.com/globalassets/who-we-are/standing-committees/rstc/lltf/lltf_presentations_october_23_2025.pdf).

Given that NERC is actively evaluating gaps in its existing reliability standards to address the specific concerns of emerging large loads like this [[REDACTED]] data center, grid reliability cannot be ensured by simply following the existing minimum standards.

The analysis submitted by ELL fails to address the risks of data center fluctuating loads. To protect Louisiana customers, the following dynamic risks that should be considered:

- Voltage impacts of load fluctuation
- Torsional impacts on the Franklin Farms CCTs and other generators that are electrically nearby.<sup>24</sup>
- Small signal stability. Other than the fact that [[REDACTED]] of [[REDACTED]] of complex IBR load and the rest of the system.

Unless and until these impacts are studied and mitigated, ELL's customers will be at significant risk of potentially severe power disruptions.

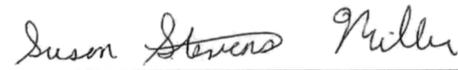
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<sup>24</sup> As Mr. Miller explained, the risk relates to “torsional stress . . . of the long steel shaft of either the new combined cycle power plants or other existing turbine-generators in the vicinity of the Customer. Stresses can occur as a result of control interaction (one specific variety of sub-synchronous oscillation), or as individual shocks (transient torques). Both of the Planned Generators that would be co-located with the Customer may be at risk. The Grand Gulf nuclear plant may also be at risk of torsional stress. . . . Undue torsional stress due to interaction with the Customer load could result in loss-of-life of the generating assets. In an extreme case, this stress could cause mechanical failure of the shaft or other components. To evaluate this risk, an analysis includes torsional interaction screening; frequency domain analysis; and possibly control hardware-in-the-loop (CHIL) simulations.” Miller Direct at 25.

**CONCLUSION**

As explained above, ELL's transient stability analysis suffers from several fundamental flaws and omissions, raising concerns about the data center's impact on grid stability. If the Commission wishes to ensure that Louisiana customers have access to reliable electricity, it should direct ELL to re-do this analysis while addressing the specific concerns discussed above.

Respectfully submitted,



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**CERTIFICATE OF SERVICE**

I, Susan Miller, hereby certify that I have this 14th day of January, 2026, served copies of the foregoing document on all known parties on the Official Service List for Docket No. U-37425 via electronic mail. In addition, I hereby certify that I emailed a link to the Confidential HSPM/CEII version of the foregoing document to those parties designated by Entergy Louisiana, LLC as being entitled to receive such HSPM/CEII information.



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