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APPLICATION OF AEP TEXAS
NORTH COMPANY FOR
REGULATORY APPROVALS
RELATED TO THE INSTALLATION
OF UTILITY-SCALE BATTERY
FACILITIES

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BEFORE THE PUBLIC UTILITY COMMISSION
OF
ADMINISTRATIVE HEARINGS

**LUMINANT ENERGY COMPANY LLC AND
TXU ENERGY RETAIL COMPANY LLC'S FIRST SET OF REQUESTS FOR
INFORMATION FROM AEP TEXAS**

COME NOW Luminant Energy Company LLC (Luminant) and TXU Energy Retail Company LLC (TXU Energy), by and through their attorneys of record, and request that you provide the information and answer the attached questions under oath. It is further requested that the questions be answered in the order in which they are asked with as much detail so as to fully present all of the relevant facts.

Instructions

Please answer the attached questions on separate pages and copy the question immediately above the answer to each question. Following each answer, please identify the witness or witnesses who will sponsor each of your answers at the hearing in PUC Docket No. 46368. These questions are continuing in nature and, should there be a change in circumstances that would modify or change any of your answers, then, in such case, please change or modify such answer and submit such changed answer as a supplement to the original answer within five (5) working days of your discovery that such change or modification is appropriate.

In answering these requests for information, you are requested to furnish such information as is available to you, including information that you are able to obtain by due diligence from your present or former attorneys, accountants, investigators, consultants, employees, agents, and persons acting on your behalf.

If you are unable to answer any request fully and completely after exercising due diligence to make inquiry and to secure information, you are to answer such request as fully and completely as you can and to specify the portions that you are unable to answer in such request. In addition to specifying those portions, you are to state with regard to each portion:

1. The fact on which you base the contention that you are unable to answer that portion;
2. The knowledge, information, and belief you have concerning that portion; and
3. The acts done and inquiries made by you in attempting to answer such request.

The singular includes the plural and the plural includes the singular.

Masculine, feminine, or neuter pronouns do not exclude the other genders.

The words “document” and “documents” have the broadest meaning that can be ascribed to them pursuant to the Texas Rules of Civil Procedure. Among other things, the words “document” and “documents” mean the final form and **all drafts and revisions of any kind** of written or graphic matter, original or reproduced copy, however produced or reproduced, of any kind and of every kind, and all copies therefrom that are different in any way from the original regardless of whether designated “confidential,” “privileged,” or otherwise restricted. Without limiting the generality of the foregoing, the words “document” and “documents” also include information stored or maintained on, or which could be reproduced from, film, microfilm, computer printout, disk or diskette, magnetic tape, cassette, phonographic disc, videotape, compact disk, DVD, or similar means.

The words “and” and “or” shall be construed conjunctively or disjunctively as necessary to bring within each request all documents that might otherwise be construed as outside its scope.

The words “communication” and “communications” include, without limitation of their generality, both written and oral: statements, representations, discussions, conversations, speeches, meetings, remarks, questions, answers, panel discussions, and symposia. These words include, without limitation of their generality, both communications and statements that are face-to-face and those that are transmitted by any writing or document or by media such as e-mail, intercoms, telephones, television, or radio.

The words “identify” and “identification” when used with respect to a natural person or persons mean to state the name, address(es) and telephone number(s) of each such person. If any of the foregoing information is not available, state any other available means of identifying such person.

The words “identify” and “identification” when used in reference to a person other than a natural person mean to set forth its:

- (1) full name or title;
- (2) nature or organization, including the state under which the same was organized or incorporated;
- (3) address and telephone number (with area code prefix); and
- (4) principal line of business.

If any of the foregoing information is not available, state any other available means of identifying such person.

The words "identify" and "describe" when used in reference to a fact mean to state not only the fact itself, but also state:

- (1) its date, time, and place;
- (2) the name, address, and telephone number of each person with knowledge of the fact;
- (3) whether the act is supported by an oral communication, a document, or other event; and
- (4) any other evidence that supports such fact.

The words "identify" and "identification" when used in reference to a document mean to state:

- (1) its date;
- (2) its author;
- (3) its addressee;
- (4) the type of document (e.g., letter, memorandum, receipt, invoice, schedule, report, telegram, chart, photograph, etc.); and
- (5) its present location and identity of its custodian. If any document was, but is no longer, in your possession, custody, or control, or is no longer in existence, explain why.

If any of the foregoing information is not available, state any other available means of identifying such document. If a document is one of a series of pages contained in a book, pamphlet, binder, folder, microfilm (or other storage device), include in your identification of such document(s) any available numerical reference (or other aid) to the pages and line or other portion thereof at which the information referred to can be found. A true and correct copy of any document may be produced and filed with your Answers hereto in lieu of the above information.

The words "identify" and "describe" when used with respect to an oral communication mean:

- (1) to state the substance of each such oral communication;

- (2) to state the exact words used by each person participating in the oral communication;
- (3) to identify each speaker;
- (4) to identify each person present at the making or reception of such oral communication;
- (5) to specify the date, time, and place of each oral communication;
- (6) to identify each person repeating such oral communication;
- (7) to identify every document that records, memorializes, or relates to all or part of such communication; and
- (8) to identify the mode of such communication (e.g., telephone, face-to-face, etc.).

The words "person" and "persons" as used herein mean all individuals and entities and shall be deemed to include natural persons, firms, partnerships, associations, organizations, joint ventures, corporations, and any other entities.

The words "relate," "related," "relates," and "relating" as used herein mean involving, relating to, referring to, having any relationship to, pertaining to, evidencing, or constituting evidence of, in whole or in part.

All computer readable data should be provided on CD ROMs or DVDs for use on PC-compatible machines. Luminant and TXU Energy will provide a sufficient amount of CDs or DVDs if requested by you before the deadline for your response.

If you have any question concerning the attached Questions or any of these instructions, please contact Kirk Rasmussen at (512) 615-1203 or Emily Jolly at (512) 615-1208.

Unless the specific question permits a longer time period, answers to this Request for Information should be served on Luminant and filed with the Public Utility Commission of Texas within 20 days of your receipt of said request. Service on Luminant and TXU Energy should be made as follows:

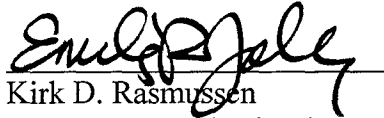
Kirk D. Rasmussen
Emily R. Jolly
Enoch Kever PLLC
5918 W. Courtyard Drive, Suite 500
Austin, Texas 78730

Such answers should be served on counsel for Luminant and TXU Energy by Federal Express and, for this purpose only, you are authorized to use the following Federal Express number: 2833-7767-9.

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Respectfully submitted,


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**ATTORNEYS FOR LUMINANT ENERGY
COMPANY LLC AND TXU ENERGY
RETAIL COMPANY LLC**

CERTIFICATE OF SERVICE

It is hereby certified that a copy of the foregoing has been hand delivered or sent via facsimile transmission to counsel for AEP Texas on this the 1st day of May, 2017.


Emily R. Jolly

ADDITIONAL DEFINITIONS

1. “You,” “your,” and “AEP” means AEP Texas and all of its predecessors, successors, and assigns.
2. “ERCOT” means the Electric Reliability Council of Texas.
3. “kWh” means kilowatt hours.
4. “UFE” means Unaccounted for Energy, as defined in Section 2 of the ERCOT Protocols.

QUESTIONS

- 1.1 Refer to the Direct Testimony of Judith E. Talavera at pages 3 and 4.
 - a. Provide any and all analyses, studies, reports, and any other documents in AEP's possession, custody, or control related to AEP's determination that installing batteries is the least-cost option that addresses distribution-level issues at the Woodson and Paint Rock locations.
 - b. Identify any statute, rule, or other authority directing or encouraging AEP or any other distribution service provider in Texas to "advance the knowledge and experience of using [battery] technology."
 - c. Provide any and all analyses, studies, reports, presentations, meeting notes, and any other documents in AEP's possession, custody, or control related to the assertion that "battery technology is evolving and is expected to become more prevalent in the future" (including drafts of any relevant documents).
 - d. Identify all Texas legal and policy support for why AEP believes the battery facilities proposed by AEP should be classified as distribution assets.
- 1.2 Refer to the Direct Testimony of Judith E. Talavera at page 5.
 - a. Fully describe all of the factors and information that caused AEP to begin considering the use of batteries as an alternative to installing traditional distribution facilities. Provide any documents related to AEP's consideration.
 - b. Provide all documents in AEP's possession, custody, or control related to the pricing of utility-scale batteries over the past 10 years, including, but not limited to any presentations, sales information, meeting notes, etc.
 - c. Fully describe all legal and policy reasons why "[e]nergy storage must become a tool in the kit of T&D utilities to serve customer needs going forward."
- 1.3 Provide all documents in AEP's possession, custody, or control related to AEP's decision to partner with Greensmith Energy, including, but not limited to, any presentations, decision analysis, and meeting notes (including drafts of any relevant documents). Fully explain why AEP chose to partner with Greensmith Energy and why AEP rejected partnering with any other entity similar to Greensmith Energy.
- 1.4 Provide AEP's contract with Greensmith Energy, including any drafts prior to execution of a final agreement.
- 1.5 Refer to the Direct Testimony of Judith E. Talavera at page 7. Fully describe the manner in which AEP believes the battery installations proposed comply with Texas law today.
- 1.6 Refer to the Direct Testimony of Charles R. Brower III at page 5.

- a. When did AEP begin considering utility-scale battery facilities?
- b. What caused AEP to begin considering utility-scale battery facilities?
- c. Provide all documents in AEP's possession, custody, or control related to AEP's decision to begin considering utility-scale battery facilities, including, but not limited to, any presentations, decisions analysis documentation, and meeting notes (including drafts of any relevant documents).
- d. Fully describe why utility-scale battery installations are not a traditional solution.

1.7 Refer to the Direct Testimony of Charles R. Brower III at page 6.

- a. What alternative technologies to lithium-ion batteries did AEP consider?
- b. Provide all documents in AEP's possession, custody, or control related to Mr. Brower's claim that utility-scale lithium-ion battery prices have declined 80% since 2009, including any documents contrary to Mr. Brower's claims.
- c. Provide all documents in AEP's possession, custody, or control related to Mr. Brower's claim that costs of traditional transmission and distribution solutions continue to rise, including any documents contrary to Mr. Brower's claims.
- d. Provide all documents in AEP's possession, custody, or control related to Mr. Brower's claim that lithium-ion batteries are the best performing and most efficient utility-scale batteries available; including any documents contrary to Mr. Brower's claims.

1.8 Refer to the Direct Testimony of Charles R. Brower III at page 7. What is the expected degradation of the lithium-ion batteries over their 15-year expected useful life?

1.9 What person or entity will own the energy that is used during the battery charge and discharge process in the case of the Woodson installation?

1.10 What person or entity will own the energy that is used during the battery charge and discharge process in the case of the Paint Rock installation?

1.11 Has AEP made any examination into the average wholesale cost of power to charge the batteries proposed and the average wholesale cost of power when the batteries will be discharged? If AEP has made such an examination, fully describe the examination and provide any documents in AEP's possession, custody, or control related to such inquiry (including drafts of any relevant documents).

1.12 For each of the instances over the last five years where electric service to the Paint Rock or Woodson areas that are proposed to be served by the batteries in this proceeding was interrupted, what was the average wholesale and retail cost of power at those locations during the duration of those outages?

- 1.13 Could metering be installed and operated on the battery installations proposed in this proceeding that would record the energy flows into and out of the proposed batteries? If your answer is “no,” fully describe why such metering cannot be installed and operated in such a manner.
- 1.14 Other than the Presidio battery, is AEP aware of any commercial operations of battery installations of a similar size to those being proposed in this proceeding (i.e., utility-scale) within the State of Texas? Identify each instance of which AEP is aware of commercially operated battery installation of a similar size to those being proposed in this proceeding.
- 1.15 Refer to your response to OPUC’s First Request for Information, Question 1-7. Identify each outage experienced by end-use customers in Woodson, including the date, time, and duration, that would have been addressed by the proposed battery installation in this proceeding.
- 1.16 Refer to the Direct Testimony of Charles R. Brower III at page 16, as amended by the Errata filed on April 20, 2017.
- a. What is the market value of the 1,200 kWh energy loss (10% during both the charging and discharging cycles) associated with Mr. Brower’s estimate of energy losses associated with the operation of the proposed battery installation?
 - b. What is the market value of the difference between the cost of energy to charge the batteries and the cost of energy when the batteries would be discharged for the operation of the battery installation?
- 1.17 Could a battery installation similar to what AEP has proposed for Woodson and Paint Rock be provided by a competitive energy provider? Fully describe why or why not.
- 1.18 Could a natural gas-fired generator be installed by AEP at Woodson to provide the service proposed to be provided by the proposed battery installation? Fully describe why or why not.
- 1.19 Could a natural gas-fired generator be installed by AEP to Paint Rock to provide the service proposed to be provided by the proposed battery installation? Fully describe why or why not.
- 1.20 Identify the vendor(s) that would provide, install, maintain and/or operate the battery facilities proposed in this proceeding. Provide the executed contract(s) and any draft or proposed contract(s) between AEP and the vendor(s).
- 1.21 To the extent not already provided in response to Question 1.4, produce any and all documents made available to AEP by the battery and battery software provider(s).
- 1.22 Refer to the Supplemental Testimony of Judith E. Talavera at page 7. Explain fully why AEP’s proposal to treat the energy used in connection with its proposed batteries as UFE “means that batteries will not be used to sell energy or ancillary services.” Provide any and all documents that Ms. Talavera relies on in support of this statement.

- 1.23 Refer to AEP's response to Commission Staff's Second Request for Information, Question 2-12.
- a. List any and all criteria AEP considers in evaluating potential locations for battery installations.
 - b. Do locations on AEP's system other than Woodson and Paint Rock meet the criteria identified in response to part a above? If your answer is "yes," identify each and every location.
 - c. Provide all documents related to AEP's investigation into the Woodson and Paint Rock areas as potential locations for battery installations.
 - d. Provide all documents related to AEP's investigation of any other area as a potential location for a battery installation.
- 1.24 Refer to the Supplemental Testimony of Judith E. Talavera at page 4. Describe fully how AEP's proposal to install utility-scale batteries does not involve the provision of customer-specific services.
- 1.25 Admit or deny: ERCOT Protocol Section 10.3.3.1(1)(f)(iii) does not apply to battery storage facilities other than the Presidio substation facilities. If your answer is anything other than an unqualified "admit," explain fully.
- 1.26 Refer to the Supplemental Testimony of Judith E. Talavera at page 2. If the Commission determines that AEP's proposed battery installations do not constitute "distribution" facilities, does AEP admit that a CCN amendment is required for the proposed battery facilities to be constructed and operated?
- 1.27 Refer to the Supplemental Testimony of Judith E. Talavera at page 2. Are there any circumstances under which AEP would need to obtain or amend a CCN to own and operate the proposed battery facilities?
- 1.28 Refer to the Supplemental Testimony of Judith E. Talavera at pages 3-4. Fully explain each and every way in which the ownership and operation of utility-scale battery storage facilities is not a service "capable" of being provided on a competitive basis in the retail market.
- 1.29 Refer to the Errata to Correct an Error in the Amount of Energy Lost During Charging and Discharging filed on April 20, 2017.
- a. When and under what circumstances were these errors relating to the amount of energy lost during the discharge cycle and to the average annual kWh of losses that would have occurred at the Woodson installation discovered?
 - b. What amount of energy is estimated to be lost to heat during the discharge cycle in the case of the Paint Rock installation?

- c. Provide all documents in AEP's possession, custody, or control relating to Mr. Brower's estimate of energy losses associated with the operation of the proposed battery installations.
 - d. Provide all documents in AEP's possession, custody, or control (including all communications and any and all draft documents) relating to the filing of this errata.
- 1.30 Refer to your response to OPUC's First Request for Information, Question 1-1. Confirm that the "outage conditions resulting from transmission or distribution issues upstream from Woodson" refers specifically to "outages due to loss of either the existing distribution line from the Bush Knob Substation or the 69kV transmission line that serves the Bush Knob Substation," as referenced in the Direct Testimony of Charles R. Brower III at page 12. If the "outage conditions resulting from transmission or distribution issues upstream from Woodson" refers to the outage of any element other than those quoted in Mr. Brower's testimony at page 12, identify and fully describe such outage(s).
- 1.31 Refer to the Direct Testimony of Charles R. Brower III at pages 11-12.
- a. What was the duration of the seven outages in the Woodson area in the past five years that exceeded two hours?
 - b. How many outages did customers in the Woodson area experience in the last ten years? Of those outages, how many exceeded two hours in duration?