



Control Number: 32182



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**PROJECT NO. 32182**

**PUC INVESTIGATION OF METHODS §  
TO IMPROVE ELECTRIC AND §  
TELECOM INFRASTRUCTURE THAT §  
WILL MINIMIZE LONG TERM §  
OUTAGES AND RESTORATION §  
COSTS ASSOCIATED WITH GULF §  
COAST HURRICANES §**

**BEFORE THE  
PUBLIC UTILITY COMMISSION  
OF TEXAS**

*Received by Public Utility Commission  
May 10, 2006 10:25 AM*

**COMMENTS OF TXU ELECTRIC DELIVERY COMPANY**

**TO THE HONORABLE PUBLIC UTILITY COMMISSION OF TEXAS:**

COMES NOW TXU Electric Delivery Company ("Electric Delivery") and, in response to the request by the Staff of the Public Utility Commission of Texas' ("PUC" or "Commission"), files these its Comments to the recommendations included in the draft Executive Summary filed by the Staff on May 10, 2006, and would respectfully show as follows:

**I. GENERAL COMMENTS**

Electric Delivery appreciates the opportunity to provide comments on Staff's draft Executive Summary. The summer and fall of 2005 provided challenges for electric utilities to respond to the devastation brought about by two major hurricanes. Electric Delivery recognizes the importance of addressing this issue to the citizens of the State of Texas, and particularly to those along the coastal region.

The draft Executive Summary was made available by Staff on May 10, 2006, with a Workshop to solicit oral comments being held on May 15, 2006. Staff initially proposed that written comments regarding the draft Executive Summary be submitted on May 18, 2006, but subsequently extended the deadline to May 30, 2006. To Electric Delivery's knowledge, the comprehensive report detailing Staff's findings has not been made available to parties, and it should be noted that the draft Executive Summary does not provide the bases or justification for Staff's eighteen recommendations. Therefore, Electric Delivery's comments are limited solely to the draft executive summary.

A preliminary review of the Recommendations contained within Staff's draft indicates that while those recommendations are well-intended, there is the need for a more comprehensive review of each recommendation as it relates to: 1) previously established engineering codes; 2)

existing statutes; 3) city jurisdictional matters; 4) implementation costs; and 5) cost recovery issues associated with these initiatives. As an example, proposed engineering or design standards must undergo extensive review to ensure that unintended consequences do not compromise the original design intent.

Given the magnitude of the effort expended by both Staff and the participating utilities, and the potential financial ramifications associated with some of the Recommendations, Electric Delivery believes that it would be appropriate to examine the potential benefits anticipated through improved restoration activities as compared to the hardening of facilities. A significant portion of Project No. 32182 was spent addressing the utilities' practices as well as state and local government practices in the wake of a hurricane event, and Electric Delivery anticipates that lessons learned among the workshop participants with regard to restoration activities will further minimize the duration of outages associated with these events. Certainly, the benefits anticipated from improvements in these activities must be weighed against the significant costs associated with Staff's recommendations to determine the true benefit to the consumers of the State of Texas.

Finally, the proposed Recommendations appear to apply state-wide, even though the full impact of hurricanes tend to be restricted to the immediate coastal areas. Electric Delivery believes that each Recommendation must be reviewed to see if it is reasonable to apply it to the entire state, or whether it should be more limited in its scope.

## **II. COMMENTS ON SPECIFIC RECOMMENDATIONS**

### **Immediate (within six months)**

- 1. Require the development and implementation of an inspection cycle for vegetation management for all overhead electrical and telecommunication lines. This cycle should consider the growth rates of common vegetation in the service area. Utilities should provide the Commission with the details of its vegetation inspection program within six months.**

The development and implementation of an inspection cycle for Vegetation Management is currently a part of Electric Delivery's internal procedures. As such, the guidelines employed pursuant to this inspection can be made available to the Commission within the stated timeframe of the recommendation.

- 2. Require the development and implementation of a regular, ground-based inspection cycle for all overhead electrical and telecommunication facilities, including a condition-based assessment of wood pole suitability for continued service. Utilities**

**should provide the Commission with the details of this inspection program within six months.**

Electric Delivery inspects electrical overhead equipment on both a formal and informal basis as part of routine work on the system. Formal inspections are tracked. Informal inspections done as part of routine work are not tracked; however, a work order is created for any problems found from the informal inspection. The guidelines employed with respect to these inspections can be made available to the Commission within the stated timeframe of the recommendation.

**3. Require utilities to establish processes, and incorporate these requirements into their existing contracts or tariffs, to ensure the structural integrity of poles and attachments in situations where utilities augment or add cable facilities to existing poles.**

Electric Delivery has an attachment agreement with all parties attaching to a Company pole. The Agreement commits both parties to permitting, attachment count and maintenance of facilities. The agreement specifically identifies penalties for unauthorized (not permitted) attachments. Many of those making attachments to Company poles are governed by the Federal Communications Commission (FCC) and the appropriate policies and procedures are in place to follow those requirements.

- ▶ Attachment Standards - All attachers are required to follow NESC or Electric Delivery Standards, whichever is more stringent. Electric Delivery has a section in the overhead standards manual specifically for joint use requirements and all attachers have access to this information via a web site or by requesting the information directly.
- ▶ Permit Application - All attachers are required to provide a permit application before making attachment to a pole. Electric Delivery follows a process which assures that the new attachment is made to NESC and/or Electric Delivery Standards.
- ▶ Safety Compliance Audit – Electric Delivery currently audits individual attachers for their compliance to NESC and/or Electric Delivery Standards.
- ▶ Attachment Count – Counting of 3<sup>rd</sup> party attachments takes place every 5 years per the attachment agreement. Attachments found that were not permitted are considered unauthorized. By contract, Electric Delivery is allowed to charge back rent up to 5 years as well as a specific amount for each unauthorized attachment.
- ▶ Pole Loading – As a general matter, when a request is made by a third party to attach facilities to a pole, Electric Delivery does not require or complete pole loading calculations, as general loading information, based upon engineering studies, is known at

the time the pole was first installed. The Company could implement a new pole loading analysis requirement as part of the permit application process, although that would increase costs and the time it takes to approve the application, and Electric Delivery does not support implementation of such a broad requirement.

**Short - Term (one year)**

- 4. Require each utility to provide the Commission with a report within one year that evaluates the level of inventory for transmission facilities considering the requirements of staff's recommendations.**

Electric Delivery's response addresses both hurricane restoration efforts and proposed replacement initiatives. With regard to inventory levels for transmission facilities required to support hurricane restoration efforts, Electric Delivery has repeatedly demonstrated that the appropriate inventory levels are maintained. This has been accomplished through the utilization of Electric Delivery's vast experience in dealing with large-scale outage events, innovative supply-chain management procedures, and participation in a vibrant mutual assistance program.

With regard to inventory levels for transmission facilities associated with Staff's recommendations as outlined the draft executive summary, Electric Delivery believes that these recommendations are unnecessary and inappropriate given the ambiguity associated with them. Evaluation of inventory levels within one year is premature until ambiguities in other requirements are resolved.

- 5. Require removal within one year of all trees that could potentially damage electrical or telecommunication structures or facilities and that are located within the right of way (ROW) easement.**

It is not practical to create a requirement to remove all trees that could potentially damage facilities under the scenario of hurricane-force winds. Even if the rights-of-way ("ROW") could all be clear cut the entire width, trees adjacent to the ROW in the East Texas area are tall enough to contact and outage the transmission line if they are blown over in the direction of the transmission line. Utilities have no legal right to remove trees that are located outside of the ROW, and many landowners will object to removing trees on their land. Additionally, in many areas, trees could not be removed for various reasons (city parks, national forest, etc.). Further, the requirement to "remove" trees will cause distribution ROWs in densely populated areas to be clear cut. This will be an expensive undertaking and will result in numerous customer complaints. Current ROW width standards provide an appropriate balance between the competing public interests in reliable electric service and the aesthetic/environmental attributes

of trees.

6. **Require each utility to perform a study within one year that evaluates the reasonableness and costs of retrofitting overhead distribution facilities so that, under conditions of high wind and/or ice loading, the conductors and/or support hardware will fail before the structures fail and provide the Commission with its evaluation and any recommendations.**

The requirement calls for a study to be done by each utility on the feasibility (reasonableness and cost) of using "breakaway" hardware on distribution equipment to minimize damage to structures during severe weather events. There are two primary areas of concern raised by the issue. The first is public safety, and the second is practicality.

In the area of public safety, the concern is the possibility of conductors breaking free from their supporting structures in such a way that a protective device is not cleared. The result could be energized cables operating at substandard clearances and possibly being accessible to the public. There may also be an increased likelihood of a cascade failure of hardware across multiple structures once a conductor breaks loose. This may unnecessarily increase the magnitude of the damage to a line and increase its restoration time. Any type of breakaway hardware should be prohibited on roadway crossings where a wire would be subject to being hung by a vehicle and have a high likelihood of causing injury to the general public.

There are no specific restrictions in the NESC that prohibit breakaway facilities, but the Company believes the concept violates the general spirit of the code. The NESC was established to protect electrical workers and the general public from electrical equipment. Poles and equipment have established loading criteria in the code for the purpose of keeping energized conductors in the air and out of the reach of the public. The "breakaway" hardware concept, in essence, serves to defeat many of those rules and criteria.

From a practical side, to implement such a program would require having insulator pins, deadends, and through bolts for crossarms and braces engineered to break or shear at specific levels of force. Electric Delivery is not aware of any distribution hardware on the market today that meets this description. It would be desirable to have the hardware designed to break at as close to the rated strength of a wood pole as possible to prevent unnecessary component failures. The problem with this approach is wood is not an engineered product. Every installed pole is going to break at a different level of force. The relative strength of a pole is dependant on factors such as diameter, variations in wood density, loading, the number and location of holes drilled in the pole, as well as others. Pole strength is not a static figure. It will change (usually decrease)

with the age of the pole. These factors will make it very difficult to engineer line equipment that will reliably fail under appropriate conditions. If it could be done, this hardware would then have to be retrofitted onto approximately 1.9 million poles in the Electric Delivery service territory. That would be an expensive and time consuming process.

In addition, Electric Delivery proposes that a consortium of Utilities perform any such study to evaluate the proposed recommendation and develop a single set of findings, rather than requiring each utility to perform the study. This approach would eliminate the Utilities undertaking the task on an independent basis, would present a consolidated set of findings, and thereby eliminate the need for Staff to review multiple evaluations and recommendations.

7. **Require utilities to perform a study within one year that evaluates the current practice of automatically sectionalizing a distribution line to improve reliability and examines a practice of increasing the number of automatic sectionalizers to gain additional enhancements to reliability. The utilities should provide the Commission with this study and any recommendations.**

Sectionalizing can be accomplished through the employment of reclosers or switches. Our system primarily uses reclosers in the rural areas. There can be one or several reclosers coordinated on a feeder circuit. Where cost effective communication is available, remote control of these sectionalizing devices would also prove beneficial.

Sectionalizing switches are being installed on feeder circuits. The control logic allows only one automated switch with sectionalizing capabilities. These switches are remote control enabled to improve reliability. A new product is being tested later this year that will allow several of these devices to be placed as "sectionalizers" in series on a circuit feeder. Electric Delivery's current plan is to add automated switching capabilities to about 100 feeders per year. As such, an evaluation of this initiative can be made available to the Commission within the stated timeframe of the recommendation.

8. **Require utilities to conduct inspections of all distribution circuits to determine whether the amount of non-electric equipment on structures is causing an overload on those structures. If overloads are identified utilities should be required to correct the problem. Furthermore, utilities should be required to institute practices that will prevent such overloads in the future. The results of this initial inspection should be reported to the Commission within a year.**

Using figures from Osmose (based on work they are doing in Florida), Electric Delivery has estimated costs on a per pole basis to do pole loading analysis for the system. Osmose has developed software called "Load Calc" that allows field personnel to do rough pole loading

analysis in the field from their hand held units. The calculations use pole class, basic conductor configurations, assumed attachment points, and general weights, tensions, and attachment points for joint users to determine if a pole is within its acceptable loading guidelines. Any structure found to be close to or over its loading limits would have a more detailed pole loading analysis utilizing the "O Calc" software. This method also assumes guyed structures are not a problem.

Assuming 10% of our distribution structures are guyed, Osmose believes 85% of the remaining poles can be successfully analyzed using their "Load Calc" software. The remaining poles would need a detailed analysis with the "O Calc" software. The estimated cost for the inspection and running "Load Calc" is \$9 per pole. The cost for running "O Calc" on a structure is \$90/pole. The cost figures total to over \$36 million to do loading analysis on all 1.9 million poles in the system. This figure does not include remediation of any problems found.

Electric Delivery's analysis assumes that contractors would be available to do the work. If the utilities in Texas and Florida are all being required to do this simultaneously, qualified skilled labor may be in short supply. In addition, time spent on this type of pole-by-pole analysis would reduce worker availability to perform other necessary field work.

To prevent loading problems going forward, we would need to require a detailed loading analysis on any pole a joint user requests to attach to. This is not currently being done and would need to be added to our joint use contracts and permitting process, and would increase the permitting cost to third party attachers.

- 9. Require telecommunications utilities to install onsite generators with a minimum of seventy-two hours of fuel in all central offices in hurricane prone areas. Utilities should also be required to have processes in place to ensure refueling of these generators for extended periods of time.**

This recommendation is not applicable to Electric Delivery.

**Long Term (more than one year, ongoing)**

- 10. Require annual upgrades to current National Electric Safety Code (NESC) wind loading standards of at least 10% of the 230 kV or greater above-ground transmission infrastructure and 5% of the 138 kV or less starting with the highest voltage lines.  
In addition, all transmission infrastructure upgrades within ten (10) miles of the Texas coastline should be required to meet current NESC standards assuming 140 mile-per-hour wind speed. Annual reports on the utilities' upgrading programs should be reported to the Commission.**

The recommendation as set forth in the draft executive summary appears to be ambiguous and onerous based upon its current reading. The recommendation calls for adherence to a wind

loading standard that has the potential to change from time to time. Given the potential for evolution of the standard on a going-forward basis, the Utility is forced into a perpetual replacement program of the specified transmission lines. Rather than index design requirements to a potentially evolving standard, it seems more prudent that Staff specify a particular design criterion congruent with its desired performance.

Furthermore, the NESC code is not the only factor that is considered in the design of Electric Delivery's infrastructure. Additional elements are taken into consideration pursuant to the actual location of installation. These elements would need to be prudently considered on a case-by-case basis to determine the applicability of upgrading to a prescribed criterion.

To fully understand the financial impact of this recommendation, a detailed analysis would need to be conducted to determine compliance relative to the selected criterion. As always, impacts to the consumers of the State of Texas as well as prudent cost recovery mechanisms for the Utilities must be addressed. For illustrative purposes, if the assumption is made that 50% of our lines would not comply with selected criterion, and that typical rebuild costs approach \$300,000 per mile, the projected impact would be \$2.1 Billion to meet this recommendation.

**11. Require all new and replacement transmission structures to be pre-stressed concrete or steel.**

Electric Delivery believes that all new and replacement transmission structures should be constructed in accordance with the applicable NESC standards, and that such standards should not be supplemented with the requirement of an arbitrary specification regarding selected material.

In general, the recommendation as it pertains to new lines is not a problem. However, this could be a significant impact on historical inventories. Transmission Engineering would need to provide a cost impact based on our historical pole replacement and additions, wood vs. concrete/steel. Current inventory would need to be revised to carry many more concrete poles with various heights. It should also be noted that some easements might require clarification since many of our easements are for wood poles *only*.

The requirement of all replacement transmission structures being of steel or concrete is a good idea but will require a significant change in the methods and people used for this work. A significant number of wood poles are replaced every year by Electric Delivery crews. The trucks that they use are not capable of lifting and setting most of the sizes of concrete poles that would

be required. ROW access will also be a challenge for a crane and haul truck that will be required for the concrete poles. The access issues are different for maintenance work versus new construction and rebuild projects. Access is provided for the whole line during new construction and rebuilds for upgrade projects. This access includes proper gates, culverts, etc. that are not in place on many existing lines. Also many rural bridges would not support the weight of a haul truck or the crane. The access issues for maintenance pole replacements will be a problem even if a contractor performs the work.

This may require interim wood poles and then replacement outages for concrete at an increased cost. It would probably be more feasible to recommend a program to get the wood poles replaced on the system, but not set the requirement for only concrete pole replacements in emergencies. Furthermore, the recommendation should allow for exceptions to the wholesale requirement of concrete or steel replacement structures in various instances such as the replacement of a single wooden pole along an existing H-frame transmission line.

**12. Require utilities, through negotiation with landowners, to remove all trees that have limbs extending into, or those that may potentially extend into, the transmission and distribution ROW easements under high wind conditions.**

It is not practical to create a requirement to remove all trees that could potentially damage facilities under the scenario of hurricane-force winds. Even if the ROWs could all be clear cut the entire width, trees adjacent to the ROW in the East Texas area are tall enough to contact and outage the transmission line if they are blown over in the direction of the transmission line. Utilities have no legal right to remove trees that are located outside of the ROW, and many landowners will object to removing trees on their land. Additionally, in many areas, trees could not be removed for various reasons (city parks, national forest, etc.). Further, the requirement to "remove" trees will cause distribution ROWs in densely populated areas to be clear cut. This will be an expensive undertaking and will result in numerous customer complaints. Current ROW width standards provide an appropriate balance between the competing public interests in reliable electric service and the aesthetic/environmental attributes of trees.

**13. Require utilities to identify any damage of transmission and distribution facilities that occurs as the result of a weather event other than lightning, and provide an annual report to the Commission that includes; the cause of the damage, the type of facility involved and the voltage, and age of the structure or facility.**

Electric Delivery currently reports for weather events classified as "major" under Substantive Rule 25.52(c)(2)(D). As mentioned in the May 15, 2006 Workshop, some of the causes of

forced interruptions are attributed to “unknown” simply because the physical aftermath of a hurricane, and the immediacy of the need for service restoration, do not afford the opportunity for conclusive forensic analysis. And in some cases, there is simply no evidence clearly indicating the cause of the outage. Furthermore, the age of a particular structure may not be clearly delineated because the components of said structure may be of differing vintages. Staff’s comments at the workshop seem to indicate that a reporting requirement would somehow make “unknown” outage causes become attributable to a known cause. Utilities are already extremely interested in determining the cause of outages, as knowing the cause can contribute significantly to programs designed to reduce outages. Electric Delivery does not support this recommendation and views it as excessive and unlikely to significantly improve reliability.

- 14. Require utilities to design and construct all substations so that no water enters the control house or damage any electrical equipment in the substation during a 500-year rain event rendering electrical equipment inoperable due to accumulated water.**

Electric Delivery currently utilizes the criterion of a 100-year flood plain. Electric Delivery does not support this recommendation and views it as excessive and unlikely to significantly improve reliability, and it is unclear whether Staff intended some type of differentiation by specifying a rain event versus a flood event.

- 15. Electric utilities have embarked on projects to modernize the electric grid by deploying intelligent devices on the network. These deployments will enable real time monitoring of outages, selective switching of electric supply routes, and preventative maintenance of protective devices to increase the reliability of the power grid. The Commission should establish incentives to encourage such deployments by electric utilities.**

Electric Delivery is taking the lead in modernizing the electric grid. Incentives to encourage the use of such devices may be beneficial to complement the penalties inherent in the Commission’s current reliability rule. Electric Delivery would note that the technology in this area is emerging and, thus, any incentive program must be fluid enough to keep pace with new and better equipment, availability, and/or cost.

Broadband Over Powerline (“BPL”) will be installed to read AMIS meters for approximately 2 million customers in the Electric Delivery service area over the next four years. This opens the opportunity to collect voltage and transformer load data to monitor the system. Some equipment operational data can also be gathered and communicated on the BPL fiber network for an additional communication cost. There is statutory language already in place

associated with AMR and BPL, but no legislation or Commission rules to encourage the separate development of the Smart Grid.

There are other devices being developed to support a Smart Grid. These include fault indicators with communications back to the operating center and R&D projects such as a fault anticipator.

Electric Delivery applauds Staff for its forward-thinking and embracement of new technologies such as Broadband over Power Lines, and would support the proposed recommendation.

**16. If new underground distribution facilities must be installed in the rear of residential lots, require developers and homeowners to provide at least a 10-foot ROW restriction upon the inclusion of trees or other structures so that suitable access is available for any future repair work.**

The Company agrees that, for facilities (overhead / underground) that are installed in the rear of residential lots, the developer and homeowners should provide suitable access to our facilities for any future repair. Even though a 10-foot ROW may be desirable, subdivisions with small lots may not make this requirement feasible without affecting the developers plan, therefore reducing the number of lots that can be developed. Electric Delivery would prefer a dedicated easement that provides suitable access to all major facilities (transformers, poles) located in the back of the lots without alleys. Currently there are two cities within the Electric Delivery area that have requirements that facilities must be installed along the back lot line and one of those cities has provisions that the developer/customer must provide suitable access (5-foot). Ultimately, most subdivision development requirements are set at the municipal level, and Electric Delivery will consult with cities as to municipal requirements.

**17. Require burial of all new distribution lines serving new residential developments.**

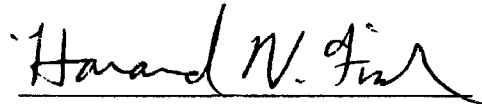
Many cities require burial of all distribution lines located within a new residential development, and Electric Delivery believes that tariffs are available to facilitate the burial of distribution lines in residential developments should the developer and/or governing municipality elect to pursue this option. As noted above, subdivision development requirements are set at the municipal level, and Electric Delivery will consult with cities as to municipal requirements.

**18. Encourage developers of new residential developments to locate underground facilities in front of homes or in accessible alleyways.**

It is Electric Delivery's current practice to install underground facilities in the front of homes or in accessible alleyways. This is most common in the Metroplex or residential developments that

have a large number of lots. Once again, Electric Delivery will consult with cities as to municipal requirements.

**Respectfully submitted,  
TXU Electric Delivery Company**

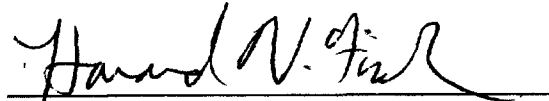
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**CERTIFICATE OF SERVICE**

It is hereby certified that a copy of the foregoing has been hand delivered to the Staff of the Public Utility Commission on this the 30<sup>th</sup> day of May, 2006.

A handwritten signature in black ink, appearing to read "Howard V. Fisher", written over a horizontal line.