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Item Number: 726

Addendum StartPage: 0

SOAH DOCKET NO. 473-21-0247
PUC DOCKET NO. 51023

APPLICATION OF THE CITY OF SAN ANTONIO TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE SCENIC LOOP 138 KV TRANSMISSION LINE IN BEXAR COUNTY	§	**BEFORE THE STATE OFFICE**
	§	**OF**
	§	**ADMINISTRATIVE HEARINGS**

REBUTTAL TESTIMONY

OF

ADAM R. MARIN, PE

ON BEHALF OF

APPLICANT
CPS ENERGY

April 7, 2021

726

SOAH DOCKET NO. 473-21-0247
PUC DOCKET NO. 51023
REBUTTAL TESTIMONY OF ADAM R. MARIN, PE

TABLE OF CONTENTS

EXHIBITS

SOAH DOCKET NO. 473-21-0247
PUC DOCKET NO. 51023
REBUTTAL TESTIMONY OF ADAM R. MARIN, P.E.

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND OCCUPATION.

A. My name is Adam R. Marin. I am employed by the City of San Antonio (City), acting by and through the City Public Service Board (CPS Energy) as Regulatory Case Manager, and am providing testimony in this docket on behalf of CPS Energy.

Q. ARE YOU THE SAME ADAM R. MARIN THAT PROVIDED DIRECT TESTIMONY IN THIS DOCKET?

A. Yes, I am.

Q. WHAT TESTIMONY WILL YOU BE ADDRESSING IN YOUR REBUTTAL TESTIMONY?

A. I will be addressing testimony filed by or on behalf of several intervenors and Mr. John Poole, testifying on behalf of the Staff of the Public Utility Commission of Texas (PUC or Commission).

Q. WERE YOUR REBUTTAL TESTIMONY AND EXHIBITS PREPARED BY YOU OR BY KNOWLEDGEABLE PERSONS UPON WHOSE EXPERTISE, JUDGMENT AND OPINIONS YOU RELY IN PERFORMING YOUR DUTIES?

A. Yes, they were.

Q. IS THE INFORMATION CONTAINED IN YOUR REBUTTAL TESTIMONY AND EXHIBITS TRUE AND CORRECT TO THE BEST OF YOUR KNOWLEDGE AND BELIEF?

A. Yes, it is.

Q. HAVE YOU HAD AN OPPORTUNITY TO REVIEW THE TESTIMONY FILED BY THE INTERVENORS AND THE PUC STAFF IN THIS DOCKET, AND IF SO, DO YOU HAVE ANY GENERAL REMARKS?

A. Yes, I have read the testimonies filed by intervenors and Mr. Poole for PUC Staff. I understand the concerns expressed by the intervenors. I understand that most of the intervenors do not want a new transmission line on or near their property and prefer the PUC not approve a route near their land or the places they frequent.

After having reviewed the testimony filed by the intervenors and Mr. Poole, and after having reviewed discovery responses filed by parties in this docket, I still maintain that all of the routes and the seven substation sites filed by CPS Energy in its application (as amended) remain viable alternatives. In addition, other alternative routes comprised solely of segments included in the CPS Energy application (as amended) are viable route alternatives. CPS Energy does not have a preferred route, and all of the routes that have been presented in the CPS Energy application (as amended) in this proceeding satisfy the need for the proposed Scenic Loop 138 kilovolt (kV) Transmission Line Project (Project) and can be feasibly constructed, operated, and maintained by CPS Energy.

Q. DO YOU AGREE WITH THE MANNER IN WHICH MR. POOLE DESCRIBES CPS ENERGY'S APPLICATION IN THIS PROCEEDING?

A. Yes, with one point of clarification that is addressed also in the rebuttal testimony of Mr. George J. Tamez for CPS Energy. The Project is proposed as a double-circuit ***looped*** line, not a radial line as described on page 19, line 4 of Mr. Poole's testimony.

II. ROUTING

Q. HAS CPS ENERGY CHANGED ITS IDENTIFICATION OF THE ROUTE THAT IT BELIEVES BEST ADDRESSES THE REQUIREMENTS OF PURA AND PUC SUBSTANTIVE RULES?

A. Not specifically. As I stated in my direct testimony, the identification of a route that best addresses the statutory and regulatory requirements is not intended to be an indication of CPS Energy's "preferred" routing. It is simply intended to be a notification to parties to the proceeding, PUC Staff, the Administrative Law Judges (ALJs), and the Commission of a route in the application that CPS Energy believed, at the time of the filing of the application,

is the route that best addressed the applicable criteria. It is not uncommon in transmission line cases for other parties to have a different opinion and present testimony to the PUC regarding which route, in their opinion, best addresses the statutory and regulatory routing criteria. In addition, it is not uncommon for new combinations of segments to be presented that compare favorably to other routes presented in the application or even the route identified by the utility that best addresses the routing criteria.

In its application amendment, filed on December 22, 2020, CPS Energy made route modifications that were ordered by the ALJs and unopposed by CPS Energy. As a result of those modifications, Route Z was functionally replaced by Route Z1. Thus, the general attributes listed in response to Question 17 of the application and as I describe in my direct testimony regarding Route Z, remain relatively consistent for Route Z1. CPS Energy's response to Question 17 in the CCN application should not be construed, however, as CPS Energy's preference or desire that Route Z (or now Route Z1) be constructed over any other proposed route. Rather, CPS Energy's identification of Route Z in the application originally filed simply provided a route for other routing alternatives to be compared against. CPS Energy has no preference for any route in this case.

Q. CPS ENERGY FILED AN AMENDED APPLICATION IN THIS PROCEEDING. WHY DID IT DO SO?

A. There were two primary reasons necessitating the filing of an amendment to CPS Energy's application. For clarity, I will refer collectively to the original application filed on July 22, 2020, as amended by CPS Energy on December 22, 2020, as the "Application."

After the original application was filed on July 22, 2020, CPS Energy was approached by representatives of Toutant Ranch, Ltd., Pinson Interests Ltd. LLP, ASR Parks, LLC, and Crighton Development Co. (Developers), regarding the Developers' desire to make certain modifications to segments across their property. After several months of discussions and negotiations, CPS Energy and the Developers were able to agree to proposed modifications wholly on the Developers' property that resulted in segments being modified or removed. The Developers proposed those changes in this proceeding on November 24, 2020, as part of a route adequacy statement.

Subsequent to the filing of the application on July 22, 2020, CPS Energy became aware of a new house under construction directly within the right of way proposed for

Segment 26, a segment included in the application filed in July 2020. Because of the residential development in the area and the new house under construction directly within the right of way of Segment 26, at the route adequacy hearing on December 10, 2020, CPS Energy proposed to modify Segment 26 to the east across an existing property line.

On December 11, 2020, Order No. 5 from the State Office of Administrative Hearings (SOAH) ordered CPS Energy to make the modifications proposed by the Developers and the CPS Energy proposed changes to Segment 26. The amendment filing also included other revisions to address items such as habitable structure counts and other data revisions.

Q. SOME INTERVENORS, INCLUDING MR. STEVE CICHOSWKI, MR. ROY R. BARRERA, SR., MS. CARMEN BARRERA RAMIREZ, MR. STEPHEN ROCKWOOD, AND MR. PAUL ROCKWOOD HAVE ACCUSED CPS ENERGY OF NO LONGER BEING IMPARTIAL ON ROUTING BY AGREEING TO MODIFICATIONS REQUESTED BY THE DEVELOPERS AND REQUIRING THE DEVELOPERS TO SUPPORT ROUTING ACROSS THEIR PROPERTY. HOW DO YOU RESPOND?

A. CPS Energy is ready, willing, and able to build a route involving any of the segments in the Application and has no preference for any route. In requiring the Developers to support routing across their property, CPS Energy simply ensured that the modifications CPS Energy was making at the Developers' request would be supported by the Developers and not later challenged. Similarly, by requiring the Developers to donate right of way to offset additional costs that resulted from the Developers' requested modifications, CPS Energy ensured that those modifications remained cost neutral to the Project to the extent possible and, ultimately, to ratepayers. CPS Energy's treatment of the Developers in this case is consistent with the Commission's Preliminary Order and previous directives regarding landowner requested route changes.

Q. MR. MARK ANDERSON FOR THE ANAQUA SPRINGS HOMEOWNERS' ASSOCIATION (ANAQUA) AND BRAD JAUER AND BVJ PROPERTIES, L.L.C. (JAUER), DISCUSSED WHETHER CPS ENERGY FOLLOWED ITS OWN ROUTING CRITERIA IN SELECTING CERTAIN SEGMENTS OR ROUTES. HOW DO YOU RESPOND?

A. CPS Energy has an *Electric Transmission Line Routing/Substation Siting General Process Manual* (Routing Guidance) that provides guidance for selecting transmission line routes and substation sites. That document lists various criteria for transmission lines (Section 4.A.1) and substation sites (4.A.2) within the city limits. In accordance with PURA § 37.051, the Application in this proceeding was prepared in accordance with PURA, the Commission's Substantive and Procedural Rules, the Commission's CCN Form, and the practices and precedent of the Commission related to transmission line CCN proceedings.

Thus, although the Routing Guidance was not directly applicable to this proceeding, it was utilized by CPS Energy and POWER Engineers, Inc. (POWER) for reference in preparing the Application. The criteria listed in the Routing Guidance are not ranked or listed in a specific order of importance, but rather are set out in a list for consideration when making routing and siting decisions. For example, Section 4.A.1.a of that document states that "Existing residential areas and subdivisions will be avoided when possible. Habitable structures will be avoided whenever feasible." Section 4.A.1.b states "Alternative routes will utilize or parallel existing transmission line, distribution line, highway, roadway, or railroad right of way, etc., whenever feasible." There are many other criteria listed after these two, and such criteria are consistent with the criteria utilized by the Commission. All of the listed criteria must be considered, and none is identified in the document as having precedence over others. So, CPS Energy attempts to take into account all of these factors when identifying transmission line segments and substation sites. At times, factors may conflict—such as when routing parallel to a roadway or existing transmission line also means coming into closer proximity to more habitable structures. Ultimately, CPS Energy attempts to provide a reasonable number of segments and routes that are reasonably differentiated from each other to allow the Commission to decide how it wishes to weigh the appropriate criteria in selecting a route. By presenting a variety of reasonably differentiated routes, however, this means that different segments and routes will have

different characteristics—some satisfying some criteria (such as paralleling) better, while others satisfy different criteria (such as a lesser impact upon residential areas) better. The process of presenting reasonably differentiated alternatives for the Commission to consider will, by necessity, mean that different segments and routes will have different characteristics when it comes to the applicable criteria for consideration.

Q. MR. CARL HUBER, TESTIFYING ON BEHALF OF JAUER, EXPRESSED CONCERNS ABOUT THE PROXIMITY OF THE PROPOSED TRANSMISSION LINE TO A COMMUNICATION TOWER ON TOUTAUNT BEAUREGARD ROAD. WHAT CONCERNS DO YOU HAVE?

A. I do not have any concerns. CPS Energy owns and safely operates a number of transmission facilities that are in close proximity to, or collocated with, communication facilities, including cellular and microwave facilities. Attached to my testimony as Exhibit ARM-1R are photographs I took of communication facilities within or near a CPS Energy substation (Helotes). These pictures were taken by me on March 8, 2021, and accurately depict the conditions I observed at the time and reflected in the photographs. In my experience, transmission facilities are compatible with communication towers and related facilities, and I do not believe that the location of any communication facilities in this case would present a concern with any proposed route or segment, nor would any route or segment create any concerns related to communications towers, including access to such. I have reviewed the locations of communications towers in the study area and, because of the existing electric and telecommunication facilities in the area and the height of the communication towers elevated above the proposed location of transmission line routes in the area, I am confident that such facilities will be readily accessible and not obstructed regardless of which route proposed in the Application is ultimately selected. Exhibit ARM-2R is a photograph of the entrance to the communication tower addressed in Mr. Huber's testimony. The existing utility infrastructure currently located across the entrance and the elevated height of the tower can clearly be visible in this photograph. I took this photograph on March 8, 2021, and it accurately depicts the conditions I observed at the time and reflected in the photograph.

Q. DR. LAUREN PANKRATZ AND MR. STEVE CICHOWSKI HAVE EXPRESSED CONCERNS THAT THE ENTRANCE TO THE ANAQUA SPRINGS RANCH (ASR) SUBDIVISION WILL BE ADVERSELY IMPACTED IN MULTIPLE WAYS BY SEGMENT 36, INCLUDING THE POTENTIAL NECESSITY TO RELOCATE THE ASR GUARDHOUSE. HOW DO YOU RESPOND?

A. If the Commission's final order approves a route using Segment 36, I do not anticipate any significant adverse effects to the entrance to the ASR subdivision. There is already an existing distribution line crossing the entrance of the ASR subdivision, and CPS Energy's proposed transmission line will be higher than the existing distribution line and will be able to span the entrance of the ASR subdivision with minimal clearing. Exhibit ARM-3R is a photograph of the entrance to the ASR. The existing distribution facilities located directly above the entrance roadway are clearly be visible in this photograph. I took this photograph on March 24, 2021, and it accurately depicts the conditions I observed at the time and reflected in the photograph. I do not expect any meaningful impact to the guardhouse, the automated gates, or other ASR facilities at the entrance to the ASR subdivision from the presence of a transmission line along Segment 36.

III. SUBSTATION SITING AND ALTERNATIVES

Q. SOME PARTIES, INCLUDING MR. ANDERSON, MS. ROSE MARIE ALVERADO, MS. LUCIA ZEEVAERT, MS. BROOKE CHAVEZ, AND MR. JASON BUNTZ, HAVE EXPRESSED CONCERNS REGARDING ONE OR MORE SUBSTATION SITES. WHY DID CPS ENERGY BELIEVE IT WAS IMPORTANT TO PRESENT THE PUC WITH NUMEROUS SUBSTATION ALTERNATIVES?

A. The substation alternatives presented in CPS Energy's Application in this proceeding represent sites that CPS Energy was able to study and identify as viable substation sites. In addition, some of the sites were added as a result of public input or the identification of willing sellers. All substation alternatives presented by CPS Energy are viable, constructible alternatives available for consideration by the Commission. By providing a robust number of geographically diverse alternate substation sites (seven in total), CPS Energy has presented the PUC with a variety of substation site options that connect to a

network of segments which provide an adequate number of reasonably differentiated routes to conduct a proper evaluation.

Q. SHOULD ANY OF THE SUBSTATION SITES BE REMOVED FROM CONSIDERATION FOR THIS PROJECT?

A. No. None of the testimony that I have reviewed provides sufficient grounds for elimination of any of the alternate substation sites contained in CPS Energy's Application from consideration. As I stated above, it is important for the Commission to have an adequate number of reasonably differentiated alternatives so it may conduct a proper evaluation. CPS Energy's Application accomplishes this.

IV. COMMUNITY VALUES

Q. MANY OF THE INTERVENORS EXPRESSED CONCERNS REGARDING PERCEIVED IMPACTS TO THEIR INDIVIDUAL PROPERTIES AS AN INDICATION OF COMMUNITY VALUES. HOW DID CPS ENERGY CONSIDER COMMUNITY VALUES IN EVALUATING THE ROUTES PROPOSED FOR THIS PROJECT?

A. Assertions of impacts on individual properties as a statement of "community values" are commonly raised in contested transmission line proceedings. In general, most property owners, particularly those who are willing to intervene and participate in a contested proceeding, do not want a transmission line crossing or near their properties and they would prefer that the Commission approve a route that is not on, near, or visible from their land. In considering the potential impacts of the Project on the community of the study area, CPS Energy made reasonable choices when identifying alternative routes, segments, and modifications of such by considering the interests of the community along with the other statutory and regulatory criteria.

For example, in attempting to discern the community values of this study area, CPS Energy gathered information in a variety of ways. Early in the project development, CPS Energy and POWER solicited input from a wide range of federal, state, and local government agencies and officials. The input received was evaluated and discussed in the Environmental Assessment (EA). CPS Energy also held a public open house meeting in the study area to provide interested persons an opportunity to both formally (via a provided

questionnaire) and informally comment and express concerns and views on the Project. The results of the input provided by the public are presented and discussed in the EA. CPS Energy also participated in numerous additional meetings with homeowners associations and other groups of interested landowners regarding the Project. During these meetings, CPS Energy received input from the community. CPS Energy also received many emails, letters, and phone calls throughout the route development process from interested members of the study area community. CPS Energy reviewed and evaluated all of this input. CPS Energy has also received informal input from intervenors following the pre-hearing conference and at the technical conference held in this proceeding.

The input received prior to beginning the route delineation process guided CPS Energy's initial identification of preliminary alternative route segments. Based on the significant community input received after identification of the preliminary alternative route segments, CPS Energy added and modified route segments and potential substation sites in direct response to community input. The EA and CPS Energy's direct testimony in this proceeding discuss and summarize much of the overall input CPS Energy has received regarding the Project. However, even since the filing of the Application and CPS Energy's direct testimony, CPS Energy has continued to work with landowners who approached it to make modifications requested by the landowner if such modifications were solely on that landowner's property. Ultimately, while certain community value factors may weigh against certain route segments, other community values and routing considerations, such as prudent avoidance and the need to offer a robust set of routing alternatives, may weigh in favor, and have resulted in the segments remaining in the Application. The routes presented in the Application carefully consider and take into account the significant community values presented by the public and government officials in this case and provide the Commission with a geographically diverse set of routes in accordance with the statutory and regulatory routing criteria established by the Commission and all address the need for the Project.

V. PRUDENT AVOIDANCE

Q. MANY INTERVENORS RAISED CONCERNS ABOUT THE EFFECT OF ELECTRIC AND MAGNETIC FIELDS (EMF). HOW DO YOU RESPOND?

A. EMF is found everywhere, especially where electricity is used, and emanates from many sources including household appliances, electrical equipment, communications equipment, and power lines. Although I appreciate the concerns reflected by these intervenors, the weight of expert testimony in transmission line routing cases has routinely shown that there is no scientific basis to conclude that EMF from electric transmission lines like those proposed in this Project causes or contributes to adverse health effects.

As indicative of the safety of transmission lines, CPS Energy owns and safely operates a number of transmission facilities that are in close proximity to hospitals and other healthcare facilities, park and recreational areas, and numerous commercial and residential developments. For example, attached to my testimony as Exhibit ARM-4R is a photograph I have taken identifying transmission facilities immediately adjacent to Methodist Stone Oak Hospital. This picture was taken by me on March 6, 2021, and accurately depicts the conditions I observed at the time and reflected in the photograph. That hospital was built after the transmission facilities were in place, so it was built with knowledge of the existence of the transmission facilities. In many instances hospitals and healthcare facilities have been built adjacent to transmission lines that have existed for many years. In my experience, even healthcare professionals have not avoided proximity to transmission lines when developing medical campuses.

Additionally, the Commission, in Substantive Rule 25.101, requires transmission service providers to consider prudent avoidance in its routing for new transmission lines. Prudent avoidance is defined in the Commission's Rules as "[t]he limiting of exposures to electric and magnetic fields that can be avoided with reasonable investments of money and effort." This requirement by the Commission is a reflection of the Commission's recognition of landowner concerns related to EMF. All of CPS Energy's alternative routes comply with the Commission's policy of prudent avoidance.

Q. DID CPS ENERGY SPECIFICALLY EVALUATE THE EMF LEVELS ANTICIPATED FROM THIS PROJECT?

A. Yes. At my direction, engineering experts at POWER evaluated the EMF levels anticipated from this Project. Their findings are presented in the report attached as Exhibit ARM-5R to my testimony. As can be seen in the report, the EMF levels projected are consistent with background levels and exposures common to many household appliances on a day to day basis.

Q. PLEASE EXPLAIN HOW YOU BELIEVE THE ROUTES PROPOSED IN THIS PROCEEDING COMPLY WITH PRUDENT AVOIDANCE.

A. Prudent avoidance has been demonstrated by CPS Energy in many ways in this proceeding. In the initial stages of the routing process, CPS Energy worked with POWER to identify areas of significant residential and commercial development, and opportunity areas to avoid or to maximize distances from those areas to the extent reasonable, while providing a sufficient network of routing alternatives that address the need for the Project. For example, during that process, CPS Energy and POWER examined routing corridors along existing compatible rights-of-way like roads and highways to avoid bisecting neighborhoods and communities where practical, reasonable, and appropriate. In some areas, segments were delineated that cross from one side of a roadway to another to maximize distance from habitable structures. CPS Energy also may be able to utilize roadway clearances along some segments, as feasible and in accordance with the PUC's final order, in order to maximize the distance to nearby neighborhoods and habitable structures. Mr. Scott Lyssy addresses this in his rebuttal testimony.

VI. URBAN AND SUBURBAN ENVIRONMENTS

Q. SEVERAL INTERVENORS, INCLUDING MR. ANDERSON, RAISED CONCERNS ABOUT WHETHER THIS PROJECT CAN BE SAFELY CONSTRUCTED AND OPERATED NEAR RESIDENTIAL AREAS. HOW DO YOU RESPOND?

A. Although I appreciate the concerns reflected by these intervenors, the location of transmission lines near residential and developing areas is not uncommon. As development continues and demand for power in the study area grows, the need for electricity and

electrical infrastructure also grows. CPS Energy has safely constructed and reliably operates hundreds of miles of electric transmission line in residential and urban areas of Bexar County. Therefore, I have no concerns and am confident that this Project can be safely and reliably constructed and operated, including in close proximity to residential areas.

Q. INTERVENORS IN THE SCENIC HILLS AND SERENE HILLS NEIGHBORHOODS RAISED CONCERNS ABOUT IMPACTS ON FUTURE DEVELOPMENT. HOW DO YOU RESPOND?

A. Future development is not a criterion the Commission has historically considered in approving a route for a proposed transmission line project. My experience is that development happens around transmission lines and substations frequently, and has even occurred around and along existing transmission lines and substations located within or near the study area. As with construction of any infrastructure, development plans may need to be altered or modified, but rarely if ever is this infrastructure a reason for development to stop. On the contrary, most developments need a reliable source of electricity to realize their full potential, and the presence of reliable transmission facilities generally is a supporting factor for development.

Q. WITNESSES FOR BEXAR RANCH EXPRESSED SOME CONCERNS ABOUT THE IMPACT OF SEGMENTS 43, 44, OR 45 ON ITS PROPERTY. HOW DO YOU RESPOND?

A. CPS Energy will reasonably attempt to work with every landowner directly affected by the route ultimately selected by the Commission to try to accommodate such landowner's concerns. This is true in regard to Bexar Ranch and, if a route were approved by the Commission across that property, CPS Energy will reasonably attempt to work cooperatively with Bexar Ranch within the parameters of the Commission's final order and the Commission's rules to address the concerns Bexar Ranch may have.

Q. SEVERAL INTERVENORS, INCLUDING MR. JACOB VILLARREAL, TESTIFYING ON BEHALF OF THE NORTHSIDE INDEPENDENT SCHOOL DISTRICT (NISD), RAISED CONCERNS ABOUT LOCATING TRANSMISSION LINES ON OR NEAR NISD PROPERTY. HOW DO YOU RESPOND?

A. CPS Energy owns and safely operates a number of transmission facilities that are on or in close proximity to school properties, including several campuses operated by the Northside Independent School District (NISD). Attached to my testimony as Exhibit ARM-6R are photographs I have taken of existing CPS Energy transmission line facilities immediately adjacent to two NISD schools and one Northeast Independent School District school. Each of these pictures was taken by me on March 6, 2021, and accurately depicts the conditions I observed at the time and reflected in the photographs. In all three campuses depicted, the school facilities were constructed adjacent to existing transmission lines. In addition, I am personally aware of numerous other instances throughout the CPS Energy service territory of both public and private school campuses located adjacent to and even operating facilities (such as parking areas, driveways, athletic fields, and running tracks) within CPS Energy transmission line rights of way.

Although some intervenors have expressed concerns regarding the location of transmission facilities in proximity to school facilities, in my experience school districts regularly locate and develop school properties adjacent or in close proximity to existing transmission facilities. In many cases, the areas along the perimeter of a school property, in which transmission facilities are located, are used by the school for recreational areas, parking, drainage, utilities, and driveways, all of which are land uses highly compatible with transmission lines.

Q. SOME PARTIES HAVE EXPRESSED CONCERNS THAT CPS ENERGY DID NOT CONTACT PARENTS OF CHILDREN ATTENDING SARA MCANDREW ELEMENTARY SCHOOL TO ADVISE THEM OF THIS PROJECT. HOW DO YOU RESPOND TO THOSE CONCERNS?

A. CPS Energy provided notice of this Project on several occasions to the NISD, as well as Sara McAndrew Elementary School. CPS Energy does not know the names and addresses of the children attending school in the study area, nor am I aware that CPS Energy has any right to get the names and addresses of such school children. I am unaware of what actions

NISD or the Sara McAndrew Elementary School may have taken with the information about the Project that CPS Energy provided to them.

VII. ENVIRONMENT AND ECOLOGY

Q. SOME INTERVENORS DISCUSS FEDERALLY PROTECTED SPECIES IN THEIR TESTIMONIES. HOW DOES CPS ENERGY PROPOSE TO ADDRESS SUCH CONCERNS WITH THE CONSTRUCTION AND OPERATION OF THE PROPOSED PROJECT?

A. First, after a route is approved by the Commission, CPS Energy will conduct a habitat assessment along the route. If potential habitat is present, CPS Energy may:

1. adjust the route to go around the habitat (avoidance),
2. span over the habitat (avoidance),
3. minimize the clearing corridor through the habitat (minimization).

If CPS Energy cannot avoid impacts to potential protected species habitat, it will obtain approval from US Fish and Wildlife Service (USFWS), consistent with the Endangered Species Act (ESA), associated with impacts to potential habitat. Approval from USFWS could be in the form of a Section 10(a)(1)(B) permit, through Section 7 consultation in conjunction with other required federal permitting activities (e.g., Clean Water Act Section 404), or through the use of the Bexar County Regional Habitat Conservation Plan. Compensatory mitigation for unavoidable impacts to habitat is typically required during the ESA permitting process, and, as Mr. Lyssy explains in his direct testimony, CPS Energy has included costs for such mitigation in the cost estimates included in the Application.

In summary, CPS Energy has experience dealing with protected species habitat on transmission line projects. CPS Energy has successfully avoided impacts to endangered species in many instances and obtained permits/approvals to directly impact habitat on other projects where impacts were unavoidable. I have no reason to believe CPS Energy cannot do the same for this Project if the Commission-approved route crosses such habitat and impacts cannot be avoided.

VIII. PIPELINES

Q. MR. JAUER RAISES CONCERNS REGARDING GAS PIPELINES ALONG TOUTANT BEAUREGARD ROAD. WHAT CONCERNS DO YOU HAVE REGARDING THOSE FACILITIES?

A. I do not have any concerns. In accordance with Commission Substantive Rule 25.101(b)(3)(B), CPS Energy sought to parallel existing road right of way in identifying potential routes for the Project. It is common through CPS Energy's service territory for gas and water distribution pipelines as well as electric distribution and communication facilities to be located within road right of way. Thus, location of a transmission line segment parallel and adjacent to a road right of way necessarily brings the line into proximity with other existing facilities within the road right of way. In the study area for this Project, CPS Energy is aware that there are low pressure natural gas distribution lines operated by CPS Energy's Gas Solutions. The facilities are a 6-inch and 8-inch plastic pipe located within the road right of way of Toutant Beauregard Road in the vicinity of Segment 20 as well as many other segments proposed for the Project. These types of natural gas distribution facilities are common within road rights of way throughout many urban and suburban areas of Bexar County and throughout the study area. CPS Energy does not anticipate any interference between such low pressure natural gas distribution facilities and the proposed transmission line facilities.

IX. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

Exhibit ARM-1R: Photographs of Communication Facilities

Helotes Substation – March 8, 2021

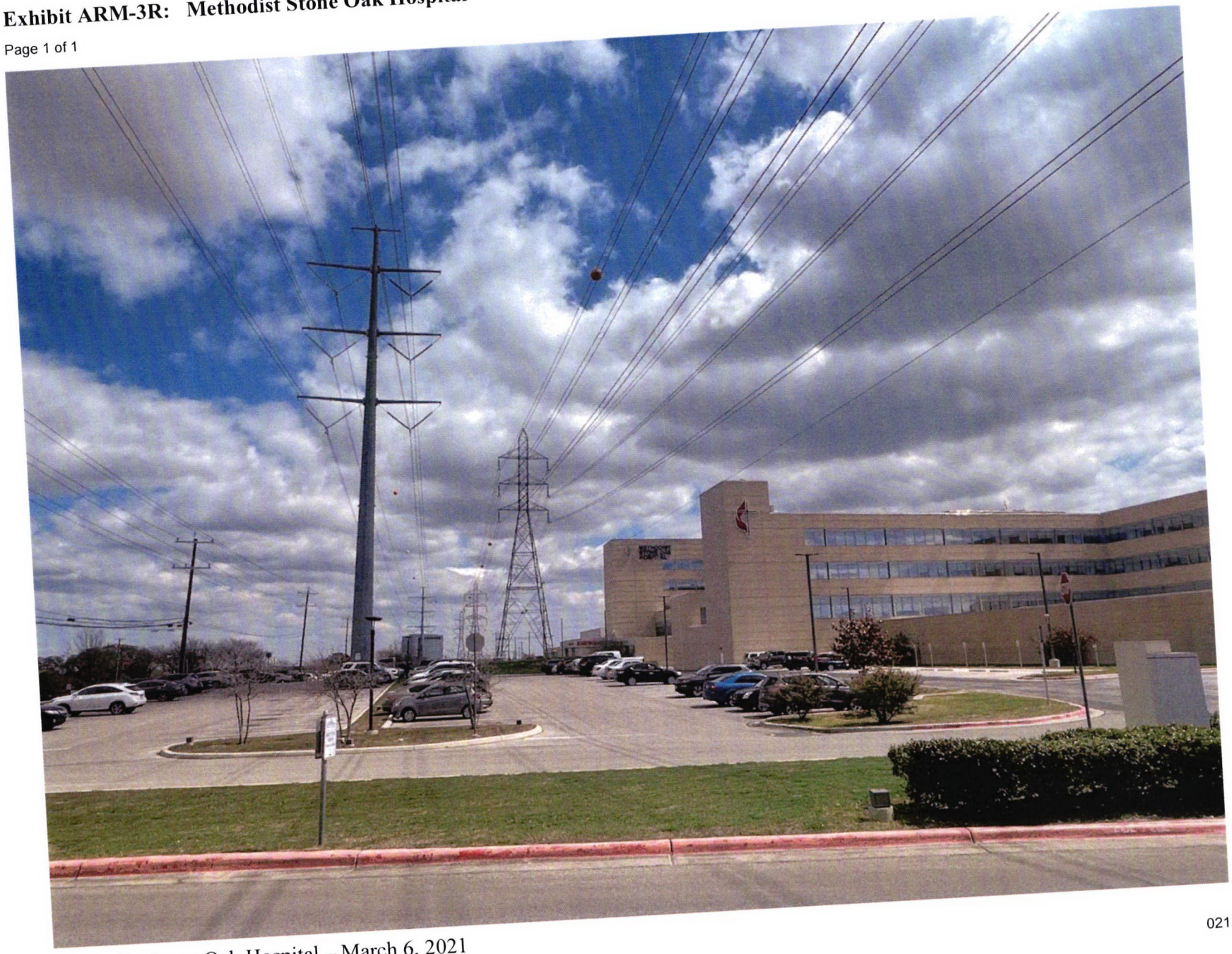
Exhibit ARM-1R: Photographs of Communication Facilities

Helotes Substation – March 8, 2021

Exhibit ARM-2R: Communication Tower 501

Toutant Beauregard Road – March 8, 2021

Exhibit ARM-3R: Methodist Stone Oak Hospital



Methodist Stone Oak Hospital – March 6, 2021

Exhibit ARM-4R: ASR Entrance

ASR Entrance – March 24, 2021

CPS ENERGY

Scenic Loop 138 kV Transmission Line

EMF Analysis

PROJECT NUMBER:
156816
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POWER ENGINEERS

This document is released for the purpose of interim review under the authority of Robert E Schaerer, P.E. #122721. It is not to be used for construction, bidding, or implementation purposes.
POWER Engineers, Inc. #F-988.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

This study is to perform electric and magnetic field (EMF) calculations for the proposed CPS Energy Scenic Loop 138 kV transmission line. The proposed 138 kV transmission line consists of a double circuit pole with double bundle configuration. POWER Engineers, Inc.'s (POWER) engineering service for this study was to perform calculations to determine the predicted electric and magnetic fields from the transmission line and report the calculated electric and magnetic fields.

DATA

Electric and magnetic fields from a transmission line are based on the electrical and physical characteristics. Specifically, these factors are driven by the voltage and current loading of the line; the physical conductor characteristics; relationships of each phase conductor to the other phases and shield wires; and the heights of the conductors from the ground. As a result, several variable factors will affect calculated electric and magnetic fields. The following data was used for this analysis.

- For the 138 kV line, a maximum operating voltage of 105% of nominal voltage (144.9 kV) was used for electric and magnetic field analysis.
- The loading and direction for each circuit was provided by CPS Energy.
    - 60 MW typical loading.
    - 201 MW maximum load when power is flowing towards Menger Creek.
    - 74 MW maximum load when power is flowing towards Ranchtown.
    - For the purposes of these calculations, the load at the new substation was assumed to be negligible.
- A horizontal double bundle of 795 kcmil ACSR Drake conductor is proposed for each phase of the 138 kV line. The bundle spacing is assumed to be 18 inches.
- The shield wire is assumed to be 0.5 inches in diameter.
- The phasing arrangement and spacing was provided by CPS Energy and labeled on the structure drawings provided for reference in Appendix A. The phasing is A-B-C top-to-bottom on both sides with opposite power flow directions due to the loop in configuration to the substation.
- The total right-of-way width will be approximately 100 feet, with the reference centered on the structure.
- The minimum conductor height, mid-span, max sag, for the lowest phase conductor was set to the clearance value of 26 feet for all lines.

ANALYSIS

The electric and magnetic field effects analysis was performed using Bonneville Power Administration's (BPA) Corona and Field Effects Program (CAFEP) software (Version 3) on the proposed transmission line structure configuration. CAFEP uses the electrical and physical characteristics of the transmission line to calculate electric and magnetic fields.

The electric fields are primarily a function of the maximum operating voltage of the line. Magnetic fields are primarily a function of the line current loading, which varies over time. The electric and magnetic fields calculations were performed at 105% of the nominal voltage and at typical and maximum line loading respectively.

The electric and magnetic field values are typically reported at various locations across the right-of-way. Values reported include the maximum electric and magnetic fields within the right-of-way and at the edge of the right-of-way. Also included for reference are plots of the calculated electric and magnetic fields across the entire width of the right-of-way and beyond.

For the analysis, electric and magnetic fields were analyzed at a minimum conductor height (mid-span and maximum sag), as this will produce the highest values at ground level.

Exposure to EMF is a common occurrence, both in and out of home. Table 1 lists median magnetic field strengths, measured in milligauss (mG), for common household items at discrete distances. A dash indicates no measurable difference after the item was turned on.

TABLE 1: TYPICAL MAGNETIC FIELD LEVELS (mG)

Appliance	Distance from Source (ft)			
	0.5	1	2	3
Baby Monitor	6	1	-	-
Electric Oven	9	4	-	-
Food Processor	30	6	2	-
Hair Dryer	300	1	-	-
Microwave Oven	200	4	10	2
Refrigerator	2	2	1	-
Video Display Terminal (PCs with color monitors)	14	5	2	-
Washing Machine	20	7	1	-

Source National Institute of Environmental Health Sciences

RESULTS

Electric Field

The electric field strength is a measure of the force per unit charge at a given point in space relative to a charged object. It can be measured in volts or kilovolts per meter (kV/m). Table 2 shows a summary of the calculated electric field strengths in the right-of-way for the tangent structure configuration. Values were calculated at the minimum conductor height (mid-span) at a height of one meter above the ground per IEEE Std 644-2019, "IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines".

TABLE 2: CALCULATED ELECTRIC FIELD RESULTS [kV/m]

Case	Edge of ROW	Maximum in ROW	Plot
Scenic Loop	0.264	2.0	Figure 1

Figure 1 shows a plot of the calculated electric fields across the right-of-way.

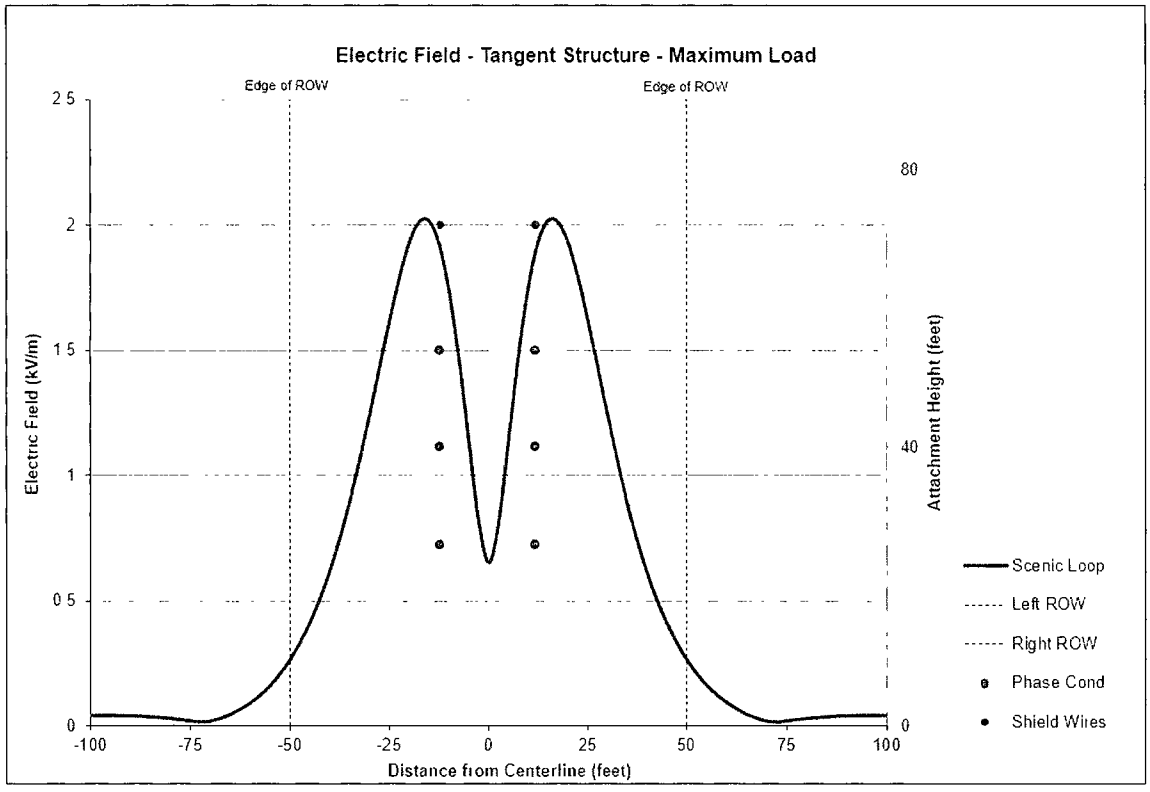


Figure 1: Calculated Electric Field for Scenic Loop

Magnetic Field

The reported magnetic field values are the magnetic flux density at a given point in space. Magnetic flux density is measured in gauss or milligauss (mG) or in micro-teslas (μT). These values can be easily converted as one tesla equals 10,000 gauss, or simply 10 mG equals 1 μT.

Table 3 shows a summary of the calculated magnetic field resultant values in the right-of-way, at typical and maximum current loading. Values are calculated at the minimum conductor height (mid-span) at a height of one meter above the ground per IEEE Std 644-2019.

TABLE 3: CALCULATED MAGNETIC FIELD RESULTS [mG]

Case	Edge of ROW	Maximum in ROW	Plot
Scenic Loop Maximum Loading (201 MVA)	25.7	130	Figure 2
Scenic Loop Typical Loading (60 MVA)	7.7	39	Figure 3

Figure 2 and Figure 3 show a plot of the calculated magnetic fields across the right-of-way for each loading scenario.

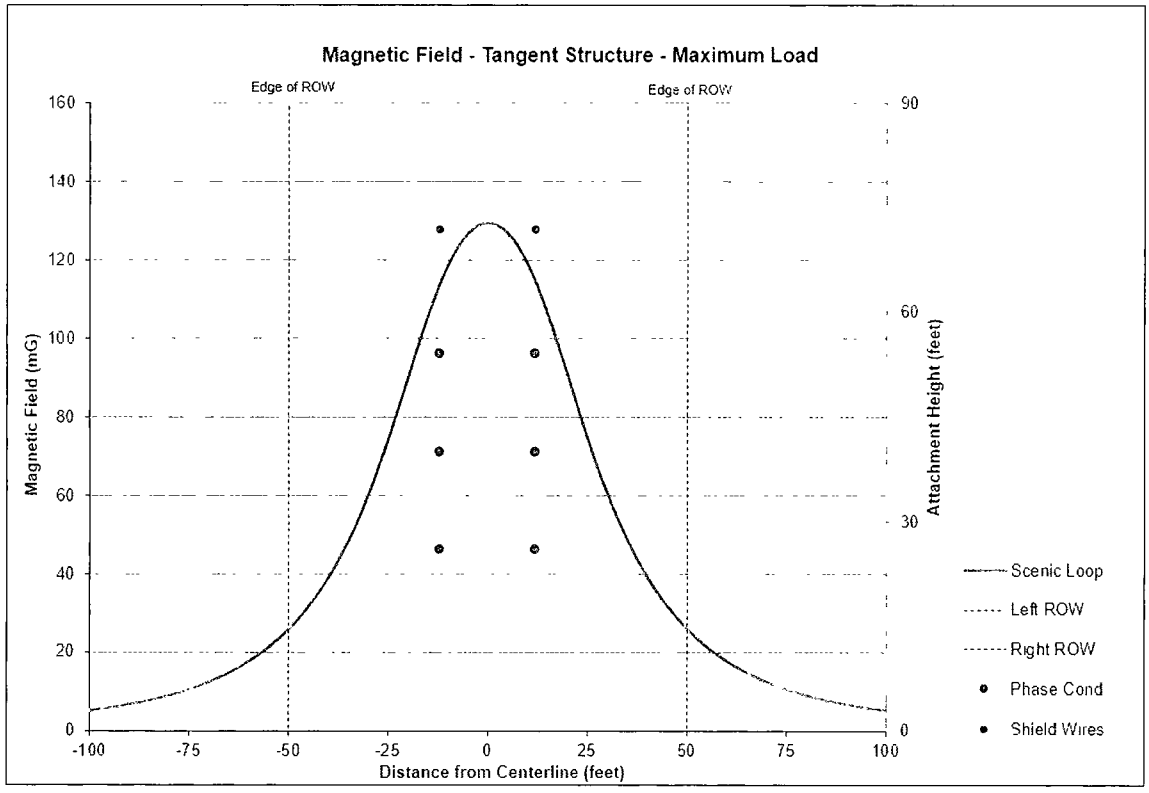


Figure 2: Calculated Magnetic Field for Scenic Loop Maximum Load (201 MVA)

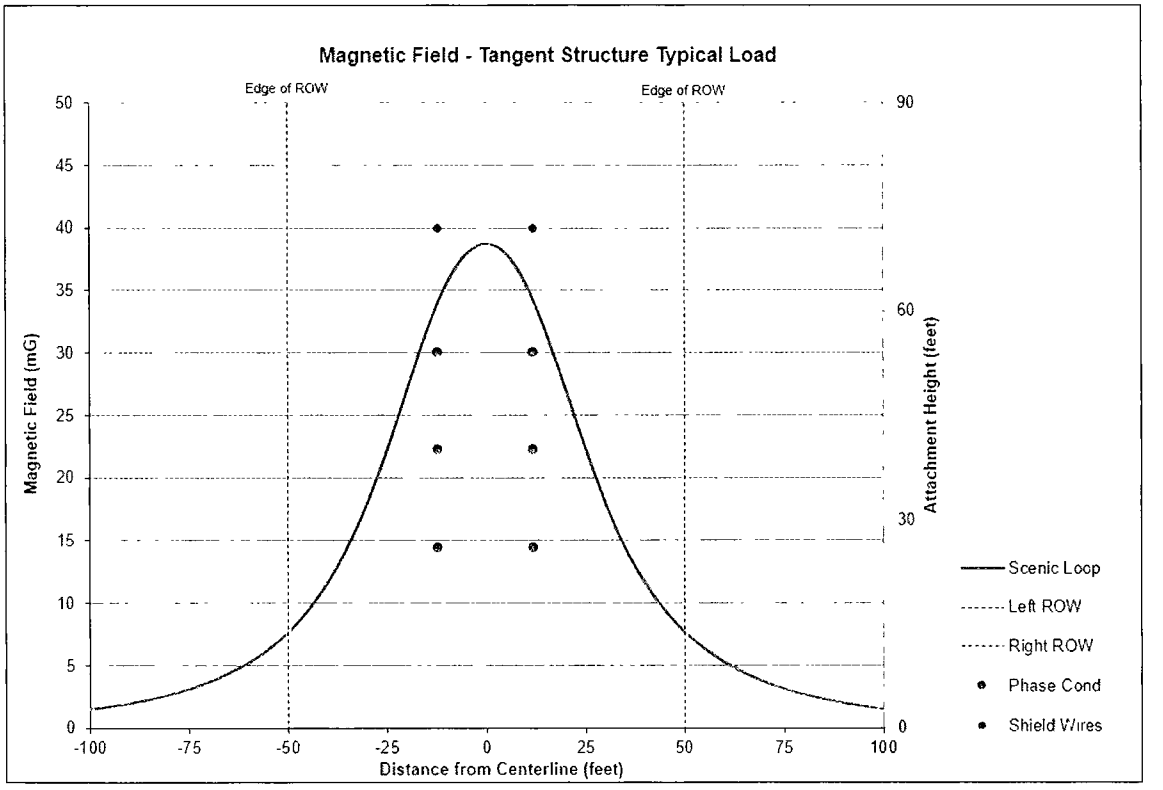


Figure 3: Calculated Magnetic Field for Scenic Loop Typical Load (60 MVA)

CONCLUSION

Based on the study criteria provided, calculated EMF values for the proposed Scenic Loop 138 kV transmission line is comparable to common household appliances. The maximum calculated magnetic field on the Scenic Loop, with 201 MVA, is 130 mG, which is less than the median magnetic field produced by a microwave oven from six inches away, 200 mG. At the edge of the right-of-way, the calculated magnetic field for both simulations is between 7.7 and 25.7 mG, was found to be significantly weaker than the median magnetic field while standing six inches away from a microwave. Table 3 may be further compared with Table 1 for a better understanding of the strength of the calculated magnetic fields produced by the proposed 138 kV line.

APPENDIX A – STRUCTURE DRAWING

Exhibit ARM-5R: Scenic Loop 138 kV Transmission Line EMF Analysis

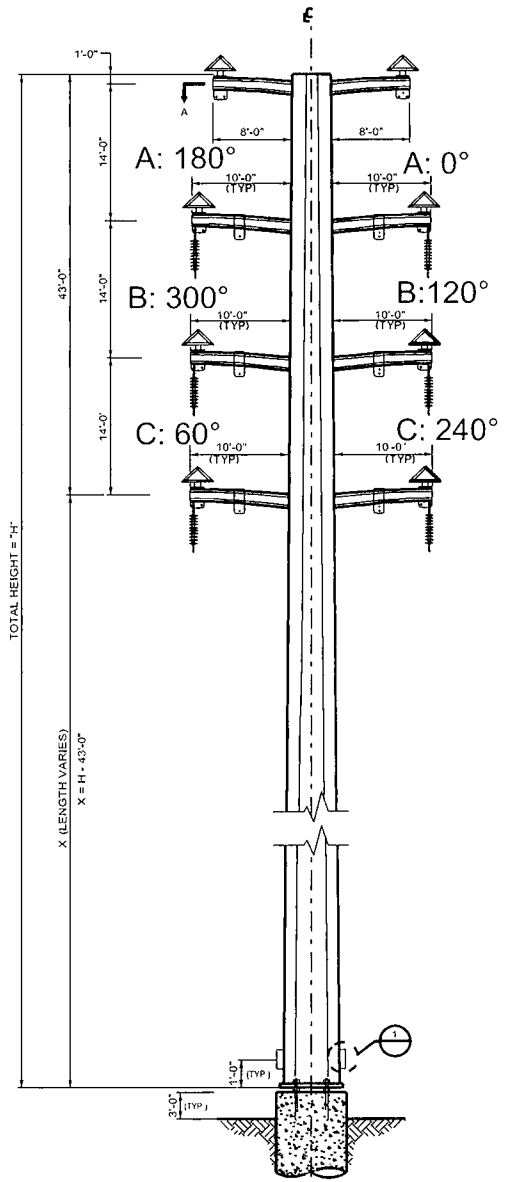
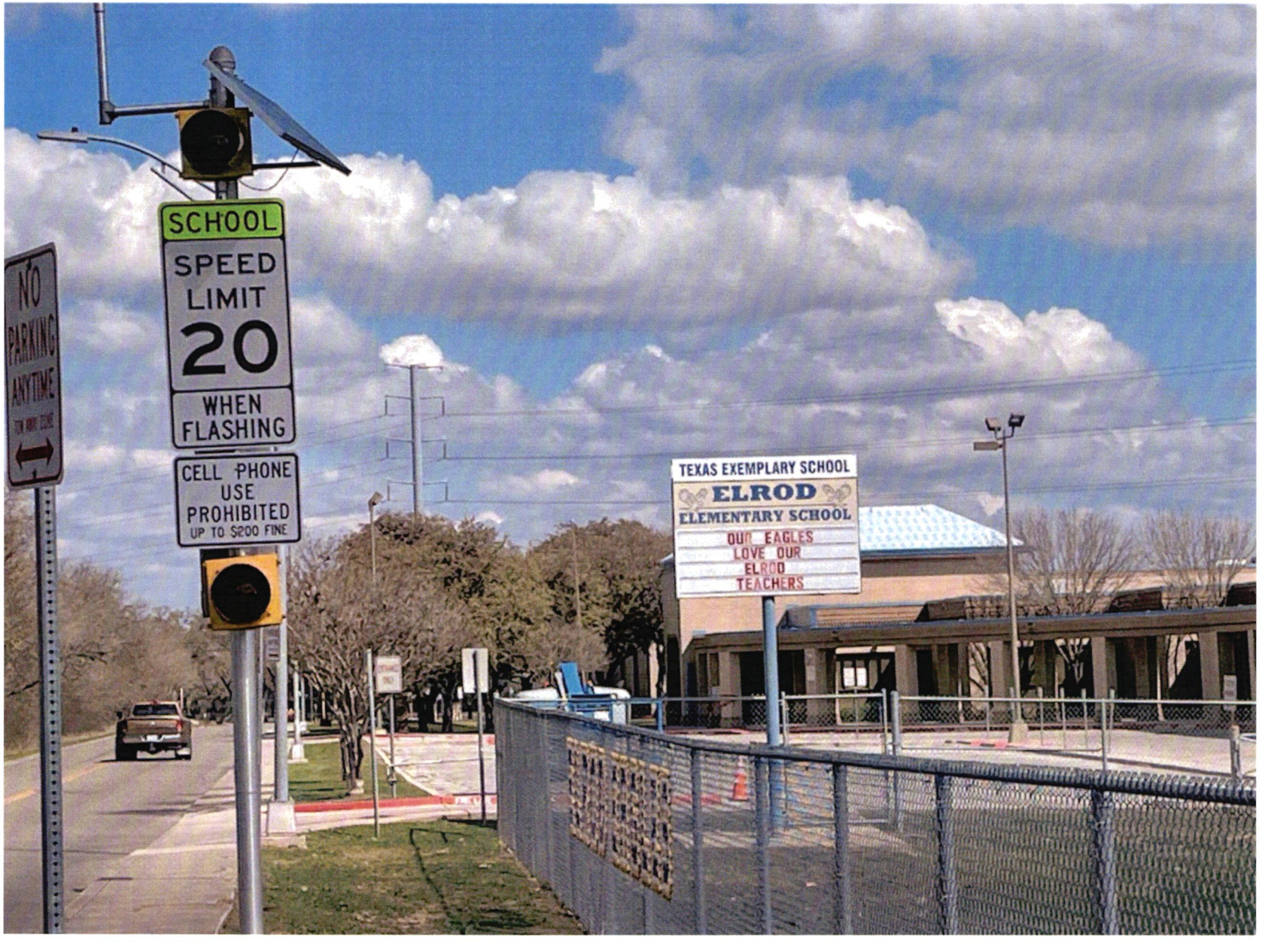


Exhibit ARM-6R: NISD and NEISD Schools with Transmission Lines

Braun Elementary School - NISD - March 8, 2021

Braun Elementary School - NISD - March 8, 2021

Exhibit ARM-6R: NISD and NEISD Schools with Transmission Lines



Elrod Elementary School - NISD - March 8, 2021

Exhibit ARM-6R: NISD and NEISD Schools with Transmission Lines

Elrod Elementary School - NISD - March 8, 2021

Exhibit ARM-6R: NISD and NEISD Schools with Transmission Lines

Elrod Elementary School - NISD - March 8, 2021

Huebner Elementary School - NEISD - March 8, 2021

Huebner Elementary School - NEISD - March 8, 2021