Control Number: 51023

Item Number: 572

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 PUBLIC UTILITY COMMISSION OF TEXAS**

CPS ENERGY'S RESPONSE TO COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION

Staff Question No. 1-2:

Please provide the location of all existing schools in the project area and the distance each school is from the center line. If CPS Energy is aware of any school that has been planned but not yet constructed in the project area (Planned Schools), please provide the location of any Planned Schools and the distance from the centerline of any of the proposed segments.

Response No. 1-2:

During the performance of its routing study for this project, POWER identified one public school within the Study Area, Dr. Sara McAndrew Elementary School, located at 26615 Toutant Beauregard Road (*see* Page 3-36 of the Environmental Assessment), which is a public school operated by the Northside Independent School District (Northside ISD). McAndrew Elementary School is approximately 214 feet from the centerline of Segment 35 (which is located across the road from the school) (*see, e.g.*, Table 4-8 in Appendix C of the Environmental Assessment). The centerline of Segment 42 is approximately 323 feet from the school. The centerline of Segment 41 is approximately 627 feet from the school. All other segments proposed for the Project are further than those three segments from the school.

A private school, Concept Therapy Institute, located at 25550 Boerne Stage Road was also identified within the study area. The Concept Therapy Institute is approximately 832 feet from the centerline of Segment 1 (which is located across the road from the school) (see Figure 2-4 of the EA).

During its routing evaluation, POWER identified property owned by the Northside ISD to the northwest of McAndrew Elementary School. On June 19, 2019, POWER requested information from the Northside ISD concerning land use constraints or other issues of interest to the proposed project. Northside ISD did not respond to POWER's request at that time. CPS Energy has recently been informed by a representative of the Northside ISD that a middle school "out in that general vicinity sometime in the future is a possibility."

Prepared By: Lisa Meaux — Title: Project Manager, POWER Engineers
Sponsored By: Lisa Meaux — Title: Project Manager, POWER Engineers

O = Crude Transmission
M = Municipal Distribution
N = City Not Served
L = Crude Gathering
P = Product Lines (NOT Highly Volatile)
Q = Other Liquid Lines (Highly Volatile)
S = Municipal Supply Line
T = Transmission
U = Underground Liquid Storage
V = Underground Gas Storage
W = Mobile Home Parks
X = Liquefied Natural Gas
Y = Brine
Z = Offshore (Gas) Gathering

Prepared By:	Lisa B. Meaux	Title:	Project Manager, POWER Engineers, Inc.
	Adam R. Marin	Title:	Regulatory Case Manager
Sponsored By:	Lisa B. Meaux	Title:	Project Manager, POWER Engineers, Inc.
	Adam R. Marin	Title:	Regulatory Case Manager

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

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

CPS ENERGY'S RESPONSE TO BRAD JAUER'S AND BVJ PROPERTIES, L.L.C.'S SECOND REQUESTS FOR INFORMATION TO CPS ENERGY

Brad Jauer & BVJ Properties RFI 2-16:

Regarding the pipeline or other utility service line currently marked with yellow paint and flags on the north side of Toutant Beauregard along Segment 20, please provide its (e.g., the pipeline's) owner, size (e.g., diameter), composition or material (e.g., metal, polyvinyl, etc., including type thereof), and type (e.g. water, natural gas, etc., as well as whether it is a distribution or transmission line), and please indicate whether CPS is the entity currently having that pipeline or other utility service marked.

Response No. 2-16:

CPS Energy does not have any information regarding any pipelines in proximity to Segment 20, including owner, size, composition or material, and type. The pipeline information that POWER obtained from PLATTs and the Railroad Commission of Texas (RRC) in performing the routing assessment for this Project does not show any distribution, transmission, gathering, intrastate, or interstate hydrocarbon pipelines within the study area. CPS Energy is not currently surveying or marking pipelines in the Study Area in association with this Project. Following approval of a specific route for the Project by the Public Utility Commission of Texas, survey and geotechnical studies necessary to design and construct the proposed transmission line facilities will be completed.

Typical pipeline system types in the RRC data include the following:

A = Offshore (Liquids)
B = Apartment Complexes
C = Compressor Station
D = Distribution
E = Interstate Transmission Gas
F = Non-Jurisdictional Gathering
G = Gas Gathering
H = Government (Housing Authority)
I = LP Gas Distribution
J = Direct Sales Customer
K = Carbon Dioxide Pipelines

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

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

CPS ENERGY'S RESPONSE TO BRAD JAUER'S AND BVJ PROPERTIES, L.L.C.'S SECOND REQUESTS FOR INFORMATION TO CPS ENERGY

Brad Jauer & BVJ Properties RFI 2-8:

CPS response to AS 2-12 states in part: "As a prudent utility operator CPS Energy will ensure appropriate grounding, if necessary, for any of the facilities proposed for the construction of the Project." Please state how CPS determines if appropriate grounding is necessary? Do CPS easements convey the right to enter properties and test and install grounding systems? Does CPS disclose up front when initial easement negotiations take place with impacted homeowners that grounding may be necessary, what potential dangers will be mitigated, and how this grounding will be maintained? Please describe CPS's typical cathodic protection for steel natural gas or water pipelines.

Response No. 2-8:

CPS Energy obtains easements that provide sufficient access to safely construct and operate its facilities. Any specific landowner requirements, negotiations, or access needs are addressed on a case by case basis. It is not anticipated that access to any property outside of the easement will be necessary to ensure safe grounding of the proposed transmission line facilities. Once CPS Energy identifies the exact locations and the foundations are installed, a resistivity test is conducted on all foundations. If the test returns a result of 25 ohms or greater, additional grounding conductor is buried around the foundations until a reading of less than 25 ohms is achieved.

CPS Energy is not aware of any steel natural gas or water pipelines within the study area. Further, any issues necessitating potential consideration of cathodic protection will only be related to steel pipelines carrying hydrocarbons (not water) running parallel to the proposed transmission line facilities. CPS Energy is not aware of any standards that require it to take any specific actions with regard to a pipeline's cathodic protection requirements to safely operate pipeline facilities.

Prepared By: Scott D. Lyssy Title: Manager Civil Engineering
Sponsored By: Scott D. Lyssy Title: Manager Civil Engineering

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**

CPS ENERGY'S RESPONSE TO PATRICK CLEVELAND'S FIRST REQUEST FOR INFORMATION TO CPS ENERGY

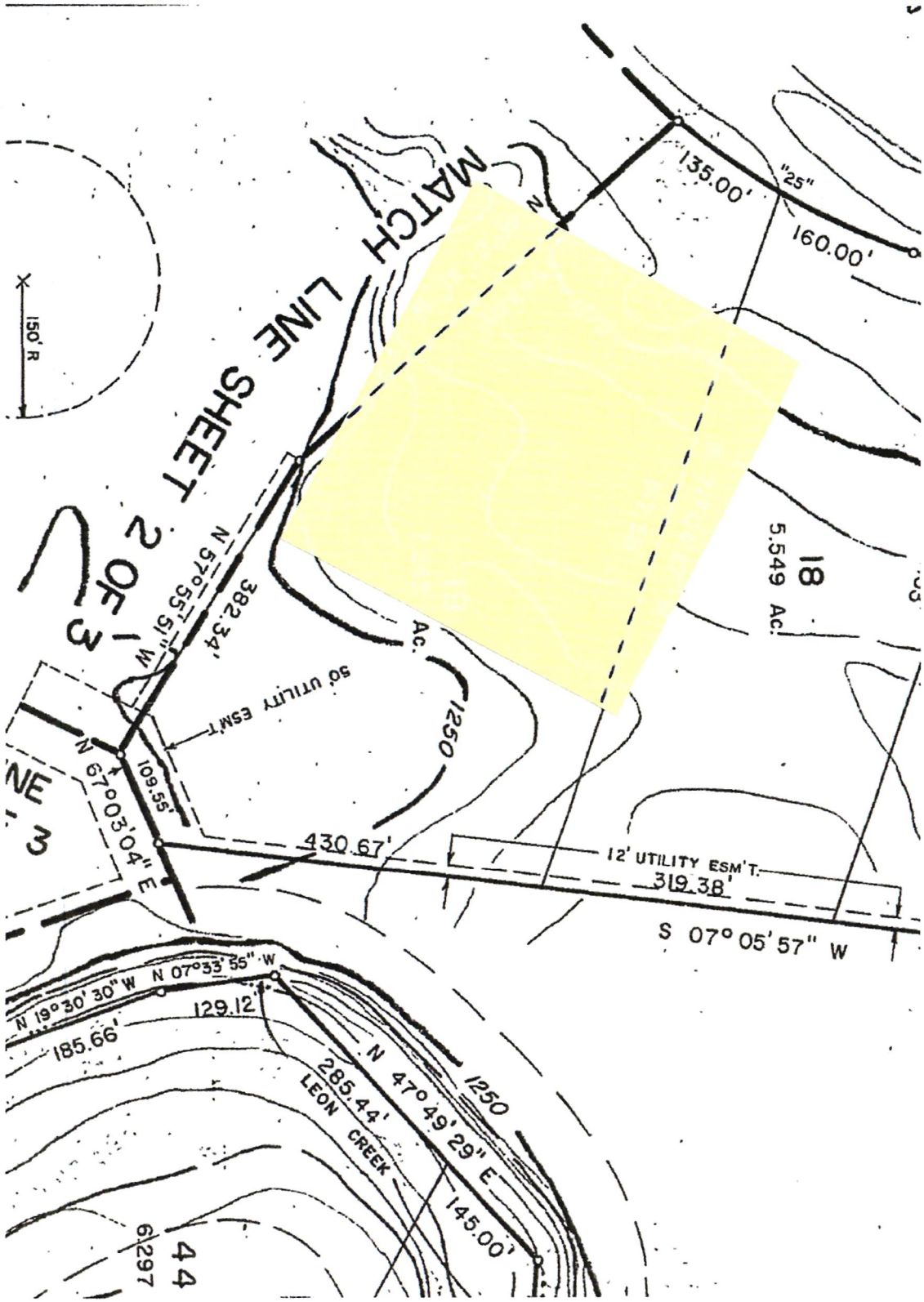
Patrick Cleveland Question No. 1-10:

Please admit or deny that the distance between Segment 42 and the outdoor areas accessible to children at Dr. Sara B. McAndrew Middle School is less than 323 feet.

Response No. 1-10:

The school referenced in this question is the Dr. Sara B. McAndrew Elementary School. Based on fencing and other indications of potential property use, the distance between proposed Segment 42 and the closest corner of an outdoor area on the elementary school property that POWER Engineers, Inc. believes may be accessible to children on a regular basis is approximately 335 feet to the area with playground structures and approximately 280 feet to the grass area with a baseball/kickball backstop in the southwest corner of the elementary school property.

Prepared By: Lisa B. Meaux Title: Project Manager, POWER Engineers, Inc.
Sponsored By: Lisa B. Meaux Title: Project Manager, POWER Engineers, Inc.


MATCH LINE SHEET 2 OF 3
135.00'
"25"
160.00'
150' R
N 57°55'51" W
382.34'
50' UTILITY ESM'T
Ac.
1250
5.549 Ac.
18
N 67°03'04" E
109.55'
430.67'
12' UTILITY ESM'T.
319.38'
S 07°05'57" W
N 19°30'30" W
N 07°33'55" W
129.12'
185.66'
285.44'
LEON CREEK
N 47°49'29" E
1250
145.00'
44
6297

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**

CPS ENERGY'S RESPONSE TO BRAD JAUER'S AND BVJ PROPERTIES, L.L.C.'S SECOND REQUESTS FOR INFORMATION TO CPS ENERGY

Brad Jauer & BVJ Properties RFI 2-13:

Referring to *CPS Energy Electric Transmission Line Routing/Substation Siting General Process Manual, 4.A.2.h re: Neighborhood Impact, where it is stated: "The substation site will be located to minimize impact on churches, schools, parks, residences, etc."* Please describe how Substation Site 7 minimizes impacts on nearby residences given its location within a populated/mature residential neighborhood.

Response No. 2-13:

Because of the residential and developing nature of the Study Area for the Project, most of the substation locations included in CPS Energy's Application are within some proximity to habitable structures. CPS Energy's evaluation of Substation Site 7 specifically took into consideration impacts to the surrounding area and determined the location was acceptable. The oversized and heavily vegetated property provides CPS Energy with an opportunity to construct and operate the substation facilities away from the property lines with existing vegetation around the facility reducing the visual impacts. Refer also to CPS Energy's response to Brad Jauer & BVJ Properties RFI 2-10.

Prepared By: Adam R. Marin Title: Regulatory Case Manager
Sponsored By: Adam R. Marin Title: Regulatory Case Manager

SOAH DOCKET NO. 473-21-0247
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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**

CPS ENERGY'S RESPONSE TO BRAD JAUER'S AND BVJ PROPERTIES, L.L.C.'S SECOND REQUESTS FOR INFORMATION TO CPS ENERGY

Brad Jauer & BVJ Properties RFI 2-10:

Regarding AS 2-16 and 2-17, substation site 7, parcel A-078 is just slightly larger than 7 acres and is irregularly pie shaped with a maximum width of just over 400 feet. CPS figure 1-6 shows a squarish boundary with equal clearance to the fence for all components. How would altering CPS standard design to fit within this narrow parcel change the response to these RFI's? Would the entire parcel need to be clear cut of all vegetation? Would the substation security fence generally be located at the lot lines, and is there any setback required for perimeter fencing?

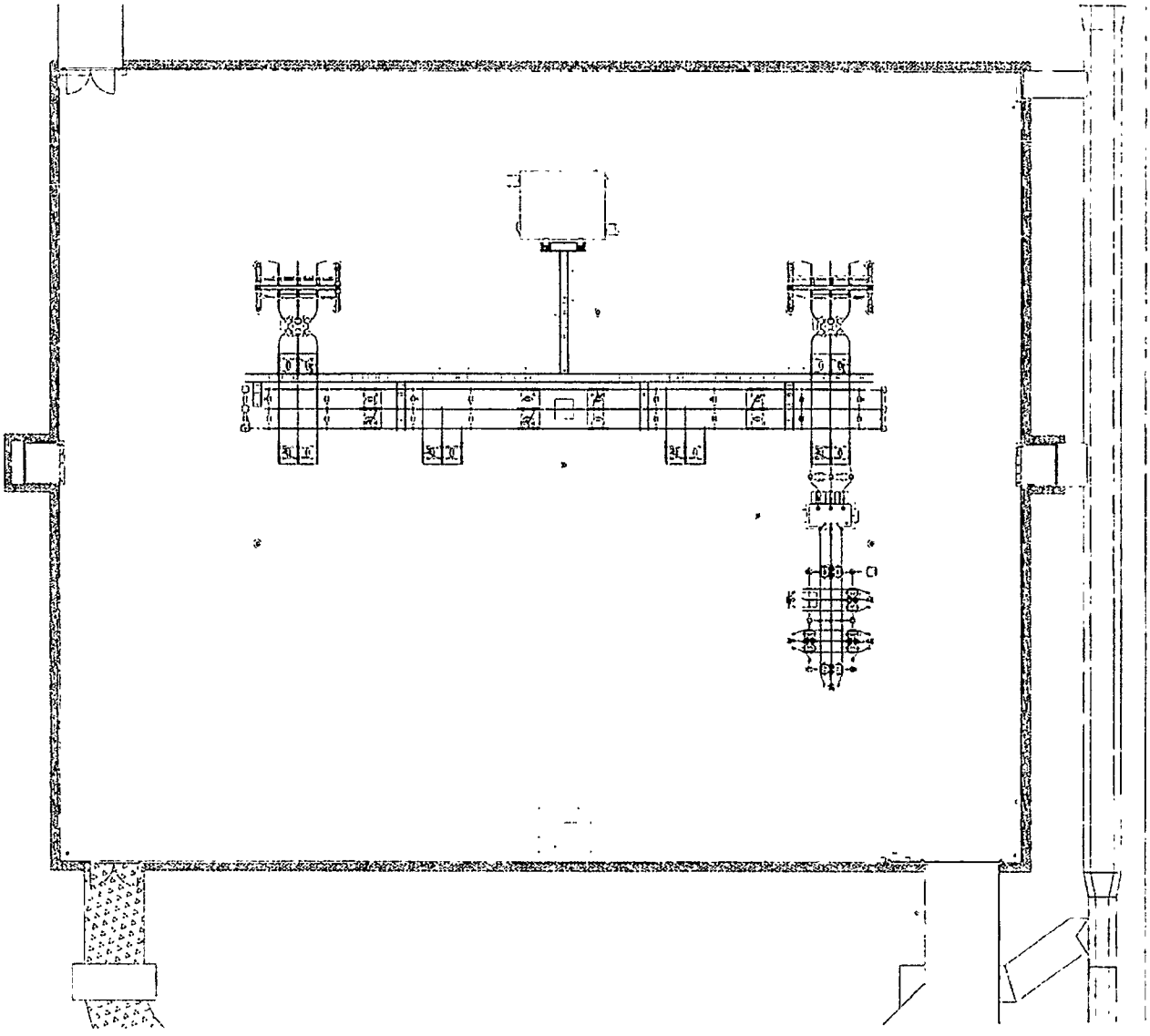
Response No. 2-10:

If Substation Site 7 is an endpoint of a route approved by the Public Utility Commission of Texas for the Project, the substation facilities will be designed and constructed on the property in a way that minimizes the footprint on the property and leaves as much of the existing vegetation as possible for a visual buffer. No "clear cutting" is anticipated. Based on CPS Energy's current understanding of the property without the benefit of on the ground surveys, it is anticipated the substation facilities will be constructed in the center area of the property.

CPS Energy is not aware of any setback requirements that will be applicable to the construction and operation of substation facilities on Substation Site 7.

It is presently anticipated that approximately eight foot high chain-link security fencing will be installed around the perimeter of the substation equipment (i.e., not at the lot line). If Substation Site 7 is utilized for the project, CPS Energy will evaluate if a lower barbed wire property line fence is also appropriate.

Prepared By: Scott D. Lyssy Title: Manager Civil Engineering
Sponsored By: Scott D. Lyssy Title: Manager Civil Engineering



SCENIC LOOP 138 KV TRANSMISSION LINE AND SUBSTATION PROJECT

Figure 1-6

Typical 3-Unit Substation Layout

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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**

CPS ENERGY'S RESPONSE TO ANAQUA SPRINGS HOMEOWNERS' ASSOCIATION SECOND REQUEST FOR INFORMATION

Anaqua Springs Question No. 2-16:

Regarding Substation Site 7, please provide a detailed sketch showing the dead-end transmission structure, the substation site, including fence and lights. Please describe the security lighting heights and wattage and the hours of illumination proposed for the Substation Site 7 or, if not yet proposed, typically used by CPS.

Response No. 2-16:

The line terminal structures that will be utilized if the proposed Project is connected to a substation at Substation Site 7 have not yet been designed. Typical CPS Energy line terminal structures can be seen in Appendix B to Attachment 1 to the Application (see Bates Pages 310, 311, 312, 313, 316, and 320).

The site layout for a substation at Substation Site 7 has not yet be designed. Figure 1-6 in Attachment 1 to the Application is the general proposed substation layout. Appendix B to Attachment 1 to the Application includes pictures of CPS Energy substations that will be generally similar to the substation facilities that are proposed to be constructed for this Project, (see Bates Pages 310, 311, 312, 313, 316, and 320).

The lighting design for the substation constructed as part of the Project will follow the City of San Antonio's guidance of exterior lighting for the International Dark Sky and the San Antonio Urban Lighting Master Plan. The height of security lighting for a substation constructed at Substation Site 7 has not yet been determined. Typically, CPS Energy installs security lighting approximately 10-20 feet in height. Typical substation security lighting for CPS Energy is 120 watts for the yard lights and 113 watts for the wall mounted lights and the hours of illumination are dawn to dusk. Images of typical substation lighting within CPS Energy substations can be seen in Appendix B to Attachment 1 to the Application (see e.g., Bates Page 320).

Prepared By: Scott D. Lyssy Title: Manager Civil Engineering
Sponsored By: Scott D. Lyssy Title: Manager Civil Engineering

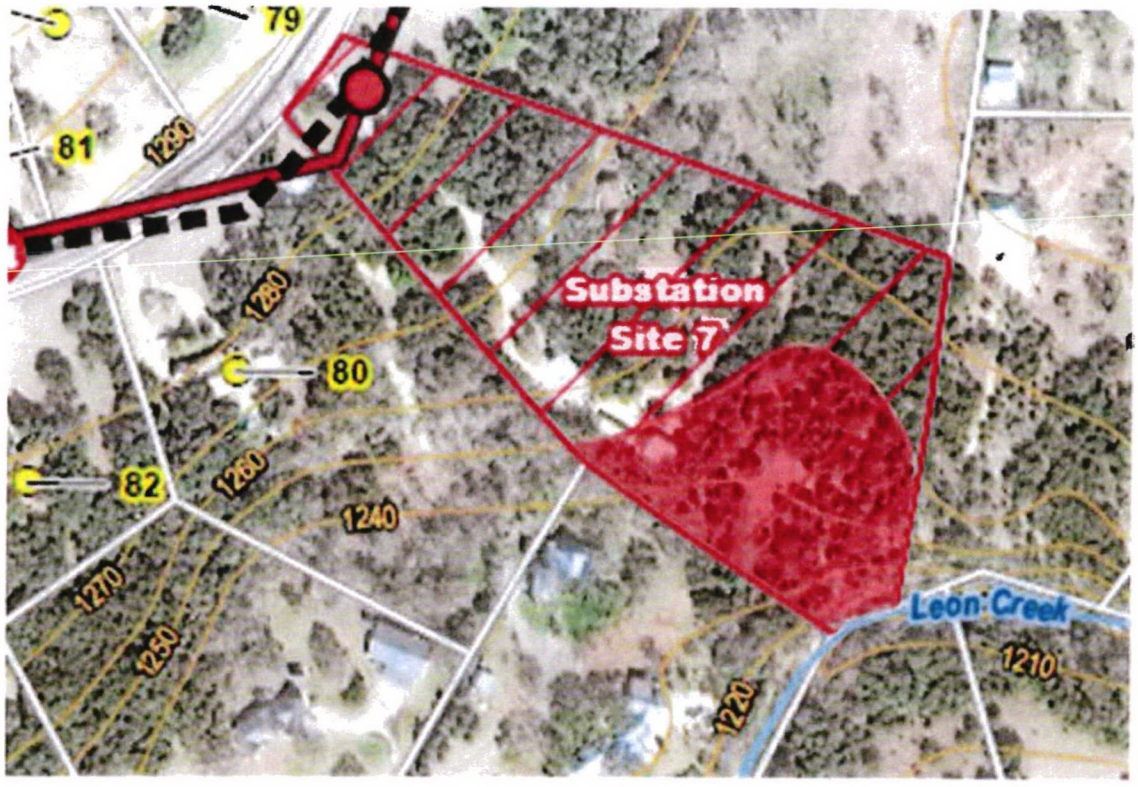
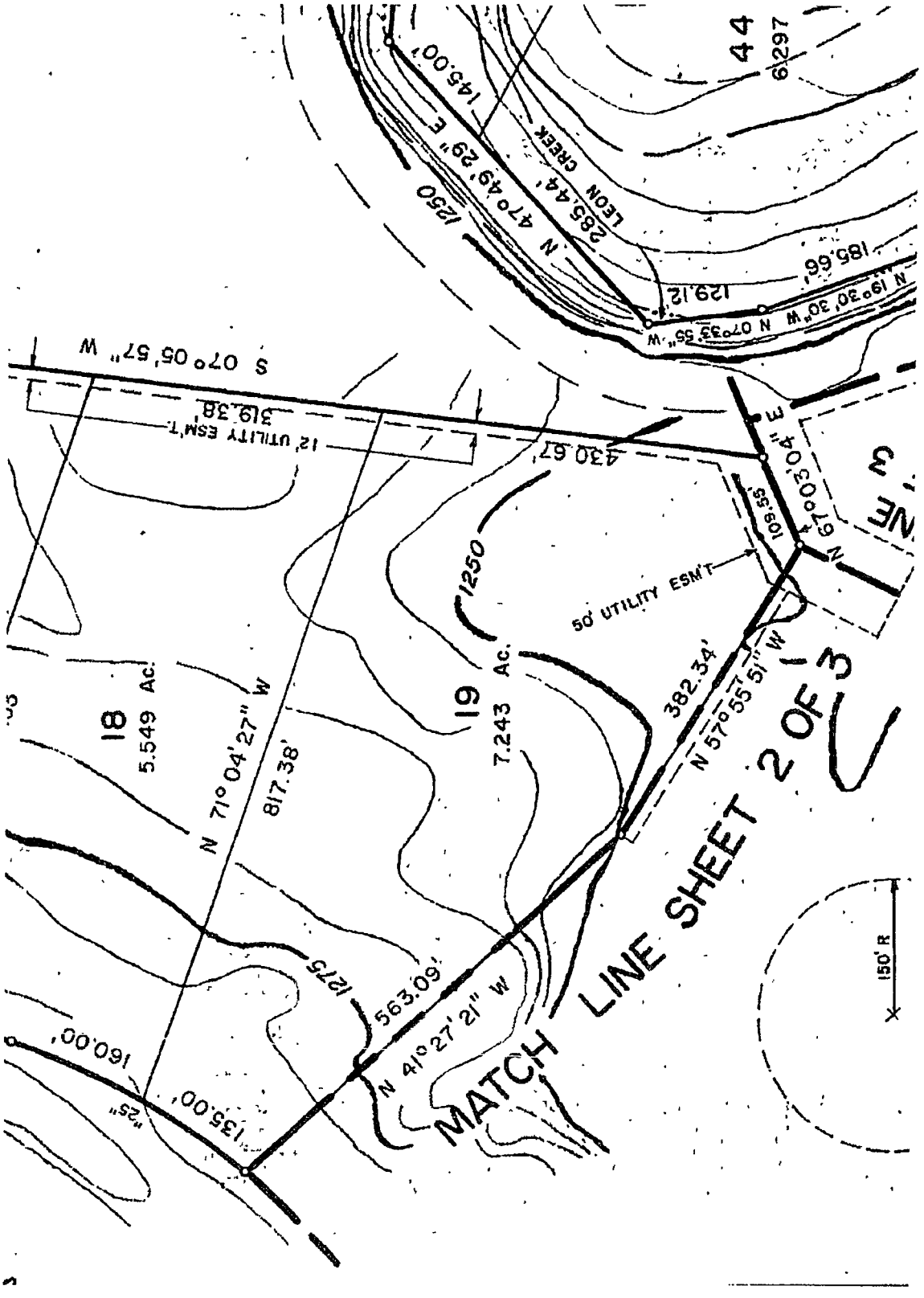


Figure 6-3, entitled "Addition of Substation 7; Relable of Southern Portion of 14 as 54 Following the Open House Meeting" from CPS's Application, Environmental Assessment, Page 6-13 (Bates Stamp No. 000200), *with highlighting added to show floodplain starting at the 1250 contour line.*


44
6.297
145.00'
N 47°49'29" E
LEON CREEK
285.44'
1250
129.12'
185.66'
N 19°30'30" W
N 07°33'55" W
S 07° 05' 57" W
319.38'
12' UTILITY ESM'T
430.67'
N 67°03'04" E
105.55'
50' UTILITY ESM'T
1250
382.34'
N 57°55'51" W
18
5.549 Ac.
19
7.243 Ac.
N 71° 04' 27" W
817.38'
1275
563.09'
N 41°27'21" W
160.00'
135.00'
MATCH LINE SHEET 2 OF 3
150' R

920744

FILED IN MY OFFICE
ROBERT D. GREEN
COUNTY CLERK BEXAR CO.
1978 JUL 6 AM 11:34
Brewer

8200/136

Filed for record 6 July A.D. 19 78 at 11:34 o'clock A M
Recorded & Indexed 5 July A.D. 19 78 at 1:35 o'clock A M
ROBERT D. GREEN
County Clerk, Bexar County, Texas
By Donna K. Stange Deputy

SCALE: 1" = 200'

TOUTANT BEAUREGARD ROAD — R.O.W. VARIES

SCENIC LOOP ROAD — R.O.W. VARIES

DALE RILEY

100 YEAR FLOOD LINE

SANITARY CONTROL SET-BACK LINE

MATCH LINE SHEET 2 OF 3

MATCH LINE SHEET 1 OF 3

MATCH LINE SHEET 3 OF 3

LEON CREEK

HUNTRESS LANE

E.K. MELTON

TYPICAL WATER WELL SANITARY CONTROL ESMT.

CURVE DATA				
NO	RAD	DELTA	TAN	LEN
9	440.16'	29°28'35"	117.88'	211.00'
10	350.16'	29°28'35"	92.1'	180.14'
11	443.16'	20°59'20"	84.53'	167.25
12	323.16'	20°59'20"	95.47'	188.66'
13	304.96'	30°36'19"	144.8'	269.37'
14	244.96'	50°36'19"	115.82'	216.37'
15	756.11'	73°45'47"	567.40'	973.55'
16	552.91'	72°05'07"	387.46'	670.07'
17	10.00'	215°49'38"	———	188.34'

TYPICAL UTILITY EASEMENTS

TEN FOOT UTILITY EASEMENTS ARE GRANTED ALONG THE FRONT LINES OF EACH LOT AND FIVE FOOT ALONG THE SIDE AND TEN FOOT ALONG THE BACK LOT LINES

R.O.W.
10' 50' 50' 10'
UNDEVELOPED

STATE OF TEXAS
COUNTY OF BEXAR

I HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN THIS PLAT TO THE MATTERS OF STREETS, LOTS AND DRAINAGE LAYOUT AND TO THE BEST OF MY KNOWLEDGE THIS PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION ORDINANCE, EXCEPT FOR THOSE VARIANCES THAT MAY HAVE BEEN GRANTED BY THE PLANNING COMMISSION OF THE CITY.

C A Balcom
REGISTERED PROFESSIONAL ENGINEER

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 5th DAY OF June A.D., 19 78

NOTARY PUBLIC
BEXAR COUNTY, TEXAS

STATE OF TEXAS
COUNTY OF BEXAR

THE OWNER OF THE LAND SHOWN ON THIS PLAT AND WHOSE NAME IS SUBSCRIBED HERETO, AND IN PERSON OR THROUGH A DULY AUTHORIZED AGENT DEDICATES TO THE USE OF THE PUBLIC FOREVER ALL STREETS, ALLEYS, PARKS, WATER COURSES, DRAINAGE EASEMENTS AND PUBLIC PLACES THEREON SHOWN, FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED.

OWNER

LIEN HOLDER

STATE OF TEXAS
COUNTY OF BEXAR

BEFORE ME, THE UNDERSIGNED AUTHORITY ON THIS DAY PERSONALLY APPEARED H.W. MARSCHALL JR. & E.A. BASSE JR. KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS 6th DAY OF June A. D., 1978

NOTARY PUBLIC
BEXAR COUNTY, TEXAS

SUBDIVISION PLAT
OF
WEST BROOK TWO
BEXAR COUNTY

BEING:
253.159 ACRES OF LAND OUT OF THE J.S. WESTBROOK SURVEY NO. 32, ABSTRACT 813, COUNTY BLOCK 4703, BEXAR COUNTY TEXAS.

The City of San Antonio as a part of its electric and gas system (City Public Service Board) is hereby dedicated the easements and rights-of-way for electric and gas distribution and service facilities in the areas designated on this plat as "Electric Easement", "Gas Easement", "Anchor Easement", "Service Easement", "Overhang Easement", "Utility Easements", and "Transformer Easement" for the purpose of installing, constructing, reconstructing, maintaining, repairing, inspecting, patrolling, and erecting poles, hanging or burying wires, cables, conduits, pipelines or transformers, each with its necessary appurtenances; together with the right of ingress and egress over grantor's adjacent land, the right to relocate said facilities within said easement and right-of-way areas, and the right to remove from said lands all trees or parts thereof, or other obstructions which endanger or may interfere with the efficiency of said lines or appurtenances thereto. It is agreed and understood that no buildings, concrete slabs, or walls will be placed within said easement areas.

Any CPS monetary loss resulting from modifications required of CPS equipment, located within said easement, due to grade changes or ground elevation alterations shall be charged to the person or persons deemed responsible for said grade changes or ground elevation alteration.

STATE OF TEXAS
COUNTY OF BEXAR

I HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECT AND WAS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY MADE UNDER MY SUPERVISION ON THE GROUND.

C A Balcom
REGISTERED PROFESSIONAL ENGINEER
OR
REGISTERED PUBLIC SURVEYOR

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 5th DAY OF June A.D. 1978

NOTARY PUBLIC
BEXAR COUNTY, TEXAS

STATE OF TEXAS
COUNTY OF BEXAR

I, _____ COUNTY CLERK OF SAID COUNTY, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT OF WRITING WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE, ON THE ____ DAY OF _____ A. D. _____ AT _____ M. AND DULY RECORDED THE _____ DAY OF _____ A. D. _____ AT _____ M. IN THE RECORDS OF _____ OF SAID COUNTY, IN BOOK VOLUME _____ ON PAGE _____

IN TESTIMONY WHEREOF, WITNESS MY HAND AND OFFICIAL SEAL OF OFFICE, THIS ____ DAY OF _____ A. D.

COUNTY CLERK, BEXAR COUNTY, TEXAS

CERTIFICATE OF APPROVAL

The undersigned, County Judge of Bexar County, Texas and Presiding Officer of the Commissioners Court of Bexar County, does hereby certify that the attached plat was duly filed with the Commissioners Court of Bexar County, Texas, and that after examination it appears that said plat is in conformity with the statutes, rules and regulations governing same, and that the plat has been approved by the said Commissioners Court.

On this the 5th day of July, 19 78

ATTESTED

Judge, Bexar County, Texas

County Clerk, Bexar County, Texas

APPROVED P.L. Tomassini DATE 7-5-78
DIRECTOR OF PUBLIC WORKS

COUNTY ROAD MAINTENANCE TO BEGIN _____

SHEET 3 OF 3 920744

JUL 6 1978 VOL 8200 136

EXHIBIT MDA-17 (CONF)

Exhibit MDA-17 to the Direct Testimony of Mark D. Anderson is Confidential and is being provided pursuant to the terms of the Protective Order.

transmission line facilities will be constructed utilizing a right-of-way width of approximately 100 feet. The survey, geotechnical, and engineering work necessary to design the proposed transmission line facilities along Segment 54 have not yet been completed. Thus, CPS Energy cannot yet identify where pole structures will be located and whether narrower than anticipated right-of-way may be required in that area.

Prepared By:	Lisa B. Meaux	Title:	Project Manager, POWER Engineers, Inc.
	Scott D. Lyssy	Title:	Manager Civil Engineering
Sponsored By:	Lisa B. Meaux	Title:	Project Manager, POWER Engineers, Inc.
	Scott D. Lyssy	Title:	Manager Civil Engineering

SOAH DOCKET NO. 473-21-0247
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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**

CPS ENERGY'S RESPONSE TO ANAQUA SPRINGS HOMEOWNERS' ASSOCIATION SECOND REQUEST FOR INFORMATION

Anaqua Springs Question No. 2-5:

Regarding Segment 54, please provide the anticipated distance from the edge of the right-of-way to Habitable Structure Nos. 79, 178, 81, 85, 86, 87, 88 and 89 on the north side of Toutant Beauregard Road (EA Figure 4-1) and Habitable Structure Nos. 70, 72, 78, and 80 on the south side of Toutant Beauregard. Please provide a sketch or drawing showing anticipated ROW easement width, structure spacing and locations for Segment 54 given the need to follow the sharp curve in the road and proximity to housing. Is it accurate that in this stretch of 54, CPS plans to use a 75-foot right-of-way with structures spaced more closely together? If not, how will this segment be constructed?

Response No. 2-5:

The approximate distance from the edge of the right-of-way to the habitable structures identified above are as follows:

Habitable Structure No.	Approximate Distance (feet)
70	156
72	154
78	119
79	165
80	152
81	32
85	108
86	112
87	250
88	72
89	84
178	163

As stated in response to Question 6 of the Application and on page 1-1 of the Environmental Assessment, which is Attachment 1 to the Application, it is currently anticipated that the proposed

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**

CPS ENERGY'S RESPONSE TO ANAQUA SPRINGS HOMEOWNERS' ASSOCIATION SECOND REQUEST FOR INFORMATION

Anaqua Springs Question No. 2-7:

How many transmission structures does CPS anticipate will be located on Segment 14? How many structures on Segment 54, 36, and 20? And what will the approximate distance be between each structure, given the 75-foot right-of-way?

Response No. 2-7:

As stated in response to Question 6 of the Application and on page 1-1 of the Environmental Assessment, which is Attachment 1 to the Application, it is currently anticipated that the proposed transmission line facilities will be constructed utilizing a right-of-way width of approximately 100 feet. The survey, geotechnical, and engineering work necessary to design the proposed transmission line facilities along Segments 14, 20, 36, and 54 have not yet been completed. Thus, CPS Energy cannot yet identify where pole structures will be located or the exact number of poles, nor whether narrower than anticipated right-of-way may be required along some portions of those segments. For preliminary estimating, the following structure count and span lengths were used.

Segment	Number of Structures	Estimated Average Span Length
14	4	550 feet
54	9	465 feet
36	6	500 feet
20	6	630 feet

Prepared By: Scott D. Lyssy Title: Manager Civil Engineering
Sponsored By: Scott D. Lyssy Title: Manager Civil Engineering

TABLE 2-1 AMENDED ALTERNATIVE SUBSTATION AND ROUTE COMPOSITION AND LENGTH

PRIMARY ALTERNATIVE ROUTES	ALTERNATIVE SUBSTATION AND ROUTE SEGMENT COMPOSITION	TOTAL LENGTH IN MILES
A	Sub 1 – 13-14-54-17-28-29-40	6.66
B1	Sub 1 – 13-14-54-17-31-42a-46a-46b	6.19
C1	Sub 1 – 2-3-4-5-14-54-20-36-35-34-41-46a-46b	5.77
D1	Sub 2 – 4-5-14-54-20-36-42a-46a-46b	5.22
E	Sub 2 – 4-5-14-54-17-28-30-34-33-40	6.62
F1	Sub 2 – 7-8-50-15-26a-38-43	5.66
G1	Sub 3 – 5-14-54-17-31-42a-46a-49a	6.20
H	Sub 3 – 5-14-54-17-28-29-40	6.32
I1	Sub 3 – 5-14-54-20-36-42a-46-46b	5.03
J1	Sub 3 – 5-14-54-20-36-42a-46a-49a	5.46
K	Sub 3 – 5-14-54-21-25-37-38-43	5.29
L	Sub 3 – 5-14-54-21-25-37-38-39-53-52-45	6.91
M1	Sub 4 – 1-3-4-5-14-54-20-36-42a-46a-46b	5.85
N1	Sub 5 – 8-50-15-26a-38-43	5.33
O	Sub 5 – 8-50-16-56-57-27-47-53-44	6.83
P	Sub 6 – 50-15-22-25-37-38-43	4.89
Q1	Sub 6 – 50-15-26a-38-39-44	5.56
R1	Sub 6 – 50-15-26a-38-43	4.76
S	Sub 6 – 50-16-56-57-27-51-45	6.73
T1	Sub 6 – 50-15-22-25-32-36-42a-46a-46b	5.93
U1	Sub 6 – 50-15-26a-38-39-53-52-45	6.36
V	Sub 6 – 50-16-55-57-27-47-53-44	6.60
W	Sub 6 – 50-16-56-57-27-47-53-44	6.25
X1	Sub 7 – 54-17-28-30-34-41-46a-46b	5.34
Y	Sub 7 – 54-20-36-35-34-33-40	5.23
Z1	Sub 7 – 54-20-36-42a-46a-46b	4.53
AA1	Sub 7 – 54-20-36-42a-46-49a	4.82
BB	Sub 7 – 54-21-25-37-38-43	4.73
CC	Sub 7 - 54-20-32-37-38-43	5.23
DD	Sub 7 – 54-20-36-35-34-41-46a-46b	4.64
EE	Sub 7 – 54-20-36-35-34-41-46a-49a	4.99

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Table 4-1 Amended
Environmental and Land Use Data For Route Evaluation
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Evaluation Criteria		R1	S	T1	U1	V	W	X1	Y	Z1	AA1	BB	CC	DD	EE
Land Use															
1	Length of alternative route (miles)	4.76	6.73	5.93	6.36	6.60	6.25	5.34	5.23	4.53	4.82	4.73	5.23	4.64	4.99
2	Number of habitable structures[1] within 300 feet of the route centerline	7	25	34	6	31	25	40	39	30	30	24	54	32	31
3	Length of ROW using existing transmission line ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Length of ROW parallel and adjacent to existing transmission line ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Length of ROW parallel to other existing ROW (roadways, railways, canals, etc.)	0.65	2.57	0.51	1.20	2.60	2.60	0.79	3.01	1.60	1.85	1.45	1.94	1.88	2.13
6	Length of ROW parallel and adjacent to apparent property lines[2]	2.21	0.74	3.96	2.54	2.21	1.03	2.67	1.26	1.49	0.87	1.85	1.90	1.39	0.68
7	Sum of evaluation criteria 4, 5, and 6	3.06	3.31	4.46	3.74	4.82	3.63	3.46	4.27	3.09	2.72	3.30	3.84	3.27	2.81
8	Percent of evaluation criteria 4, 5, and 6	64%	49%	75%	59%	73%	58%	65%	82%	68%	56%	70%	73%	70%	56%
9	Length of ROW across parks/recreational areas[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Number of additional parks/recreational areas[3] within 1,000 feet of ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Length of ROW across cropland	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Length of ROW across pasture/rangeland	0.36	0.08	0.28	0.24	0.00	0.08	0.59	0.93	0.54	0.54	0.37	0.62	1.05	1.05
13	Length of ROW across land irrigated by traveling systems (rolling or pivot type)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Length of route across conservation easements and/or mitigation banks (Special Management Area)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Length of route across gravel pits, mines, or quarries	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Length of ROW parallel and adjacent to pipelines[4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Number of pipeline crossings[4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Number of transmission line crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Number of IH, US and state highway crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Number of FM or RM road crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Number of cemeteries within 1,000 feet of the ROW centerline and substation site	1	0	2	1	0	0	0	1	1	1	0	0	1	1
22	Number of FAA registered airports[5] with at least one runway more than 3,200 feet in length located within 20,000 feet of ROW centerline and substation site	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	Number of FAA registered airports[5] having no runway more than 3,200 feet in length located within 10,000 feet of ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Number of private airstrips within 10,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Number of heliports within 5,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Number of commercial AM radio transmitters within 10,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline and substation site	0	1	1	0	1	1	0	1	1	1	0	1	1	1
28	Number of identifiable existing water wells within 200 feet of the ROW centerline and substation site	1	2	3	1	0	2	2	1	2	2	2	2	1	1
29	Number of oil and gas wells within 200 feet of the ROW centerline (including dry or plugged wells) and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aesthetics															
30	Estimated length of ROW within foreground visual zone[6] of IH, US and state highways	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	Estimated length of ROW within foreground visual zone[6] of FM/RM roads	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Estimated length of ROW within foreground visual zone[6][7] of parks/recreational areas[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecology															
33	Length of ROW across upland woodlands/brushlands	4.35	6.51	5.46	6.07	6.52	6.03	4.25	3.76	3.60	3.81	4.08	4.27	3.12	3.40
34	Length of ROW across bottomland/riparian woodlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Length of ROW across NWI mapped wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Length of ROW across critical habitat of federally listed endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Area of ROW across golden-cheeked warbler modeled habitat designated as 3-Moderate High and 4-High Quality (acres)[8]	19.03	4.77	20.39	8.31	4.28	2.95	11.92	11.12	11.12	9.6	25.08	23.82	10.74	11.43
38	Area of ROW across golden-cheeked warbler modeled habitat designated as 1-Low and 2-Moderate Low Quality (acres)[8]	13.33	18.57	15.87	22.81	18.34	16.59	13.18	12.34	11.02	14.56	10.50	11.35	10.93	13.72
39	Length of ROW across open water (lakes, ponds)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	Number of stream and river crossings	8	10	8	12	9	9	3	6	8	9	4	4	6	7
41	Length of ROW parallel (within 100 feet) to streams or rivers	0.15	0.11	0.10	0.08	0.24	0.24	0.00	0.07	0.10	0.17	0.26	0.15	0.00	0.08
42	Length of ROW across Edwards Aquifer Contributing Zone	4.76	6.73	5.93	6.36	6.60	6.25	5.34	5.23	4.53	4.82	4.73	5.23	4.64	4.99
43	Length of ROW across FEMA mapped 100-year floodplain	0.16	0.24	0.97	0.40	0.00	0.00	0.03	0.38	1.03	1.00	0.17	0.15	0.28	0.25
Cultural Resources															
44	Number of recorded cultural resource sites crossed by ROW	2	1	1	2	1	1	0	0	0	0	0	0	0	0
45	Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline	12	1	12	12	0	1	2	2	2	2	0	0	2	2
46	Number of NRHP listed properties crossed by ROW	1	1	0	1	1	1	0	0	0	0	1	1	0	0
47	Number of additional NRHP listed properties within 1,000 feet of ROW centerline	0	0	1	0	0	0	1	2	1	1	0	0	1	1
48	Length of ROW across areas of high archeological site potential	2.65	4.07	3.72	4.77	2.85	2.75	1.44	2.26	3.01	3.35	2.33	2.80	2.34	2.52

[1] Single-family and multi-family dwellings, and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 300 feet of the centerline of a transmission project of 230-kV or less

[2] Apparent property boundaries created by existing roads, highways, or railroad ROWs are not "double-counted" in the length of ROW parallel to apparent property boundaries criteria

[3] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church within 1,000 feet of the centerline of the project

[4] Only steel pipelines six inches and greater in diameter carrying hydrocarbons were quantified in the pipeline crossing and paralleling calculations

[5] As listed in the Chart Supplement South Central US (FAA 2019b formerly known as the Airport/Facility Directory South Central US) and FAA 2019a

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria

[8] From Model C by Diamond et al. 2010

All length measurements are shown in miles unless noted otherwise

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Table 4-1 Amended
Environmental and Land Use Data For Route Evaluation
Scenic Loop

Evaluation Criteria		A	B1	C1	D1	E	F1	G1	H	I1	J1	K	L	M1	N1	O	P	Q1
Land Use																		
1	Length of alternative route (miles)	6.66	6.19	5.77	5.22	6.62	5.66	6.20	6.32	5.03	5.46	5.29	6.91	5.85	5.33	6.83	4.89	5.56
2	Number of habitable structures[1] within 300 feet of the route centerline	69	61	48	43	60	12	52	61	43	41	36	35	43	11	29	12	6
3	Length of ROW using existing transmission line ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Length of ROW parallel and adjacent to existing transmission line ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Length of ROW parallel to other existing ROW (roadways, railways, canals, etc)	1.79	1.00	2.43	2.13	2.45	1.48	1.35	1.89	2.01	2.26	1.86	2.21	2.76	1.15	2.91	0.85	1.39
6	Length of ROW parallel and adjacent to apparent property lines[2]	3.71	3.19	1.39	1.49	2.54	2.49	1.96	3.20	1.58	0.78	1.85	2.18	1.49	2.49	1.30	2.62	2.44
7	Sum of evaluation criteria 4, 5, and 6	5.50	4.19	3.82	3.62	4.99	3.97	3.31	5.09	3.59	3.04	3.71	4.38	4.25	3.64	4.21	3.47	3.83
8	Percent of evaluation criteria 4, 5, and 6	83%	68%	66%	69%	75%	70%	53%	80%	71%	56%	70%	63%	73%	68%	62%	71%	69%
9	Length of ROW across parks/recreational areas[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Number of additional parks/recreational areas[3] within 1,000 feet of ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Length of ROW across cropland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Length of ROW across pasture/rangeland	0.61	0.76	1.69	0.77	0.69	0.89	0.65	0.50	0.67	0.67	0.51	0.38	1.09	0.71	0.42	0.36	0.24
13	Length of ROW across land irrigated by traveling systems (rolling or pivot type)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Length of route across conservation easements and/or mitigation banks (Special Management Area)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Length of route across gravel pits, mines, or quarries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Length of ROW parallel and adjacent to pipelines[4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Number of pipeline crossings[4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Number of transmission line crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Number of IH, US and state highway crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Number of FM or RM road crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Number of cemeteries within 1,000 feet of the ROW centerline and substation site	0	1	1	1	0	1	1	0	1	1	0	0	1	1	0	1	1
22	Number of FAA registered airports[5] with at least one runway more than 3,200 feet in length located within 20,000 feet of ROW centerline and substation site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	Number of FAA registered airports[5] having no runway more than 3,200 feet in length located within 10,000 feet of ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Number of private airstrips within 10,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Number of heliports within 5,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Number of commercial AM radio transmitters within 10,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline and substation site	0	0	1	1	0	0	0	0	1	1	0	0	1	0	1	0	0
28	Number of identifiable existing water wells within 200 feet of the ROW centerline and substation site	6	4	2	3	3	1	4	5	3	3	3	3	4	1	2	1	1
29	Number of oil and gas wells within 200 feet of the ROW centerline (including dry or plugged wells) and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aesthetics																		
30	Estimated length of ROW within foreground visual zone[6] of IH, US and state highways	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	Estimated length of ROW within foreground visual zone[6] of FM/RM roads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Estimated length of ROW within foreground visual zone[6][7] of parks/recreational areas[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecology																		
33	Length of ROW across upland woodlands/brushlands	5.27	5.06	3.48	3.94	5.24	4.70	5.10	5.03	3.86	4.20	4.40	6.14	4.24	4.56	6.24	4.42	5.27
34	Length of ROW across bottomland/riparian woodlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Length of ROW across NWI mapped wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Length of ROW across critical habitat of federally listed endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Area of ROW across golden-cheeked warbler modeled habitat designated as 3-Moderate High and 4-High Quality (acres) [8]	13.88	13.68	10.74	11.12	12.29	19.03	12.78	12.29	8.92	11.81	25.08	14.38	11.12	19.03	2.95	25.11	5.52
38	Area of ROW across golden-cheeked warbler modeled habitat designated as 1-Low and 2-Moderate Low Quality (acres) [8]	18.21	17.55	12.08	12.17	15.74	15.04	18.59	16.46	12.93	14.95	11.65	21.28	12.17	13.33	16.59	12.04	17.59
39	Length of ROW across open water (lakes, ponds)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	Number of stream and river crossings	3	6	6	8	3	10	7	3	8	9	4	8	10	9	10	4	11
41	Length of ROW parallel (within 100 feet) to streams or rivers	0.07	0.10	0.00	0.10	0.07	0.15	0.17	0.07	0.10	0.17	0.26	0.20	0.10	0.15	0.24	0.15	0.21
42	Length of ROW across Edwards Aquifer Contributing Zone	6.66	6.19	5.77	5.22	6.62	5.66	6.20	6.32	5.03	5.46	5.29	6.91	5.85	5.33	6.83	4.89	5.56
43	Length of ROW across FEMA mapped 100-year floodplain	0.13	0.78	0.55	1.03	0.13	0.25	0.75	0.13	1.03	1.00	0.17	0.42	1.49	0.23	0.07	0.09	0.16
Cultural Resources																		
44	Number of recorded cultural resource sites crossed by ROW	0	0	0	0	0	2	0	0	0	0	0	0	0	2	1	1	2
45	Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline	0	2	2	2	2	12	2	0	2	2	0	0	2	12	1	10	12
46	Number of NRHP listed properties crossed by ROW	0	0	0	0	0	1	0	0	0	0	1	1	0	1	1	1	1
47	Number of additional NRHP listed properties within 1,000 feet of ROW centerline	1	2	1	1	1	0	2	1	1	1	0	0	1	0	0	0	0
48	Length of ROW across areas of high archeological site potential	1.73	2.94	2.89	3.14	1.49	3.10	2.84	1.44	3.24	3.27	2.40	4.55	3.76	2.84	2.94	2.49	3.13

[1] Single-family and multi-family dwellings, and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 300 feet of the centerline of a transmission project of 230-kV or less

[2] Apparent property boundaries created by existing roads, highways, or railroad ROWs are not "double-counted" in the length of ROW parallel to apparent property boundaries criteria

[3] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church within 1,000 feet of the centerline of the project

[4] Only steel pipelines six inches and greater in diameter carrying hydrocarbons were quantified in the pipeline crossing and paralleling calculations

[5] As listed in the Chart Supplement South Central US (FAA 2019b formerly known as the Airport/Facility Directory South Central US) and FAA 2019a

[6] One-half mile, unobstructed Lengths of ROW within the visual foreground zone of interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria

[7] One-half mile, unobstructed Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria

[8] From Model C by Diamond et al 2010

All length measurements are shown in miles unless noted otherwise

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Table 4-1 Amended
Environmental and Land Use Data For Route Evaluation
Scenic Loop

Evaluation Criteria		R1	S	T1	U1	V	W	X1	Y	Z1	AA1	BB	CC	DD	EE
Land Use															
1	Length of alternative route (miles)	4.76	6.73	5.93	6.36	6.60	6.25	5.34	5.23	4.53	4.82	4.73	5.23	4.64	4.99
2	Number of habitable structures[1] within 300 feet of the route centerline	7	25	34	6	31	25	40	39	30	30	24	54	32	31
3	Length of ROW using existing transmission line ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Length of ROW parallel and adjacent to existing transmission line ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Length of ROW parallel to other existing ROW (roadways, railways, canals, etc.)	0.85	2.57	0.51	1.20	2.60	2.60	0.79	3.01	1.60	1.85	1.45	1.94	1.88	2.13
6	Length of ROW parallel and adjacent to apparent property lines[2]	2.21	0.74	3.96	2.54	2.21	1.03	2.67	1.26	1.49	0.87	1.85	1.90	1.39	0.68
7	Sum of evaluation criteria 4, 5, and 6	3.06	3.31	4.46	3.74	4.82	3.63	3.46	4.27	3.09	2.72	3.30	3.84	3.27	2.81
8	Percent of evaluation criteria 4, 5, and 6	64%	49%	75%	59%	73%	58%	65%	82%	68%	56%	70%	73%	70%	56%
9	Length of ROW across parks/recreational areas[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Number of additional parks/recreational areas[3] within 1,000 feet of ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Length of ROW across cropland	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Length of ROW across pasture/rangeland	0.36	0.08	0.28	0.24	0.00	0.08	0.59	0.93	0.54	0.54	0.37	0.62	1.05	1.05
13	Length of ROW across land irrigated by traveling systems (rolling or pivot type)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Length of route across conservation easements and/or mitigation banks (Special Management Area)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Length of route across gravel pits, mines, or quarries	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Length of ROW parallel and adjacent to pipelines[4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Number of pipeline crossings[4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Number of transmission line crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Number of IH, US and state highway crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Number of FM or RM road crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Number of cemeteries within 1,000 feet of the ROW centerline and substation site	1	0	2	1	0	0	0	1	1	1	0	0	1	1
22	Number of FAA registered airports[5] with at least one runway more than 3,200 feet in length located within 20,000 feet of ROW centerline and substation site	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	Number of FAA registered airports[5] having no runway more than 3,200 feet in length located within 10,000 feet of ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Number of private airstrips within 10,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Number of heliports within 5,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Number of commercial AM radio transmitters within 10,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline and substation site	0	1	1	0	1	1	0	1	1	1	0	1	1	1
28	Number of identifiable existing water wells within 200 feet of the ROW centerline and substation site	1	2	3	1	0	2	2	1	2	2	2	2	1	1
29	Number of oil and gas wells within 200 feet of the ROW centerline (including dry or plugged wells) and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aesthetics															
30	Estimated length of ROW within foreground visual zone[6] of IH, US and state highways	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	Estimated length of ROW within foreground visual zone[6] of FM/RM roads	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Estimated length of ROW within foreground visual zone[6][7] of parks/recreational areas[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecology															
33	Length of ROW across upland woodlands/brushlands	4.35	6.51	5.46	6.07	6.52	6.03	4.25	3.76	3.60	3.81	4.08	4.27	3.12	3.40
34	Length of ROW across bottomland/riparian woodlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Length of ROW across NWI mapped wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Length of ROW across critical habitat of federally listed endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Area of ROW across golden-cheeked warbler modeled habitat designated as 3-Moderate High and 4-High Quality (acres)[8]	19.03	4.77	20.39	8.31	4.28	2.95	11.92	11.12	11.12	9.6	25.08	23.82	10.74	11.43
38	Area of ROW across golden-cheeked warbler modeled habitat designated as 1-Low and 2-Moderate Low Quality (acres)[8]	13.33	18.57	15.87	22.81	18.34	16.59	13.18	12.34	11.02	14.56	10.50	11.35	10.93	13.72
39	Length of ROW across open water (lakes, ponds)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	Number of stream and river crossings	8	10	8	12	9	9	3	6	8	9	4	4	6	7
41	Length of ROW parallel (within 100 feet) to streams or rivers	0.15	0.11	0.10	0.08	0.24	0.24	0.00	0.07	0.10	0.17	0.26	0.15	0.00	0.08
42	Length of ROW across Edwards Aquifer Contributing Zone	4.76	6.73	5.93	6.36	6.60	6.25	5.34	5.23	4.53	4.82	4.73	5.23	4.64	4.99
43	Length of ROW across FEMA mapped 100-year floodplain	0.16	0.24	0.97	0.40	0.00	0.00	0.03	0.38	1.03	1.00	0.17	0.15	0.28	0.25
Cultural Resources															
44	Number of recorded cultural resource sites crossed by ROW	2	1	1	2	1	1	0	0	0	0	0	0	0	0
45	Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline	12	1	12	12	0	1	2	2	2	2	0	0	2	2
46	Number of NRHP listed properties crossed by ROW	1	1	0	1	1	1	0	0	0	0	1	1	0	0
47	Number of additional NRHP listed properties within 1,000 feet of ROW centerline	0	0	1	0	0	0	1	2	1	1	0	0	1	1
48	Length of ROW across areas of high archeological site potential	2.65	4.07	3.72	4.77	2.85	2.75	1.44	2.26	3.01	3.35	2.33	2.80	2.34	2.52

[1] Single-family and multi-family dwellings, and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 300 feet of the centerline of a transmission project of 230-kV or less

[2] Apparent property boundaries created by existing roads, highways, or railroad ROWs are not "double-counted" in the length of ROW parallel to apparent property boundaries criteria

[3] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church within 1,000 feet of the centerline of the project

[4] Only steel pipelines six inches and greater in diameter carrying hydrocarbons were quantified in the pipeline crossing and paralleling calculations

[5] As listed in the Chart Supplement South Central US (FAA 2019b formerly known as the Airport/Facility Directory South Central US) and FAA 2019a

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria

[8] From Model C by Diamond et al. 2010

All length measurements are shown in miles unless noted otherwise

CPS Energy
Application Amendment
December 22, 2020
Attachment 2

Table 4-1 Amended
Environmental and Land Use Data For Route Evaluation
Scenic Loop

Evaluation Criteria		A	B1	C1	D1	E	F1	G1	H	I1	J1	K	L	M1	N1	O	P	Q1
Land Use																		
1	Length of alternative route (miles)	6.66	6.19	5.77	5.22	6.62	5.66	6.20	6.32	5.03	5.46	5.29	6.91	5.85	5.33	6.83	4.89	5.56
2	Number of habitable structures[1] within 300 feet of the route centerline	69	61	48	43	60	12	52	61	43	41	36	35	43	11	29	12	6
3	Length of ROW using existing transmission line ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Length of ROW parallel and adjacent to existing transmission line ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Length of ROW parallel to other existing ROW (roadways, railways, canals, etc.)	1.79	1.00	2.43	2.13	2.45	1.48	1.35	1.89	2.01	2.26	1.86	2.21	2.76	1.15	2.91	0.85	1.39
6	Length of ROW parallel and adjacent to apparent property lines[2]	3.71	3.19	1.39	1.49	2.54	2.49	1.96	3.20	1.58	0.78	1.85	2.18	1.49	2.49	1.30	2.62	2.44
7	Sum of evaluation criteria 4, 5, and 6	5.50	4.19	3.82	3.62	4.99	3.97	3.31	5.09	3.59	3.04	3.71	4.38	4.25	3.64	4.21	3.47	3.83
8	Percent of evaluation criteria 4, 5, and 6	83%	68%	66%	69%	75%	70%	53%	80%	71%	56%	70%	63%	73%	68%	62%	71%	69%
9	Length of ROW across parks/recreational areas[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Number of additional parks/recreational areas[3] within 1,000 feet of ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Length of ROW across cropland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Length of ROW across pasture/rangeland	0.61	0.76	1.69	0.77	0.69	0.89	0.65	0.50	0.67	0.67	0.51	0.38	1.09	0.71	0.42	0.36	0.24
13	Length of ROW across land irrigated by traveling systems (rolling or pivot type)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Length of route across conservation easements and/or mitigation banks (Special Management Area)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Length of route across gravel pits, mines, or quarries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Length of ROW parallel and adjacent to pipelines[4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Number of pipeline crossings[4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Number of transmission line crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Number of IH, US and state highway crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Number of FM or RM road crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Number of cemeteries within 1,000 feet of the ROW centerline and substation site	0	1	1	1	0	1	1	0	1	1	0	0	1	1	0	1	1
22	Number of FAA registered airports[5] with at least one runway more than 3,200 feet in length located within 20,000 feet of ROW centerline and substation site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	Number of FAA registered airports[5] having no runway more than 3,200 feet in length located within 10,000 feet of ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Number of private airstrips within 10,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Number of heliports within 5,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Number of commercial AM radio transmitters within 10,000 feet of the ROW centerline and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline and substation site	0	0	1	1	0	0	0	0	1	1	0	0	1	0	1	0	0
28	Number of identifiable existing water wells within 200 feet of the ROW centerline and substation site	6	4	2	3	3	1	4	5	3	3	3	3	4	1	2	1	1
29	Number of oil and gas wells within 200 feet of the ROW centerline (including dry or plugged wells) and substation site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aesthetics																		
30	Estimated length of ROW within foreground visual zone[6] of IH, US and state highways	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	Estimated length of ROW within foreground visual zone[6] of FM/RM roads	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Estimated length of ROW within foreground visual zone[6][7] of parks/recreational areas[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecology																		
33	Length of ROW across upland woodlands/brushlands	5.27	5.06	3.48	3.94	5.24	4.70	5.10	5.03	3.86	4.20	4.40	6.14	4.24	4.56	6.24	4.42	5.27
34	Length of ROW across bottomland/riparian woodlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Length of ROW across NWI mapped wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Length of ROW across critical habitat of federally listed endangered or threatened species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Area of ROW across golden-cheeked warbler modeled habitat designated as 3-Moderate High and 4-High Quality (acres)[8]	13.88	13.68	10.74	11.12	12.29	19.03	12.78	12.29	8.92	11.81	25.08	14.38	11.12	19.03	2.95	25.11	5.52
38	Area of ROW across golden-cheeked warbler modeled habitat designated as 1-Low and 2-Moderate Low Quality (acres)[8]	18.21	17.55	12.08	12.17	15.74	15.04	18.59	16.46	12.93	14.95	11.65	21.28	12.17	13.33	16.59	12.04	17.59
39	Length of ROW across open water (lakes, ponds)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	Number of stream and river crossings	3	6	6	8	3	10	7	3	8	9	4	8	10	9	10	4	11
41	Length of ROW parallel (within 100 feet) to streams or rivers	0.07	0.10	0.00	0.10	0.07	0.15	0.17	0.07	0.10	0.17	0.26	0.20	0.10	0.15	0.24	0.15	0.21
42	Length of ROW across Edwards Aquifer Contributing Zone	6.66	6.19	5.77	5.22	6.62	5.66	6.20	6.32	5.03	5.46	5.29	6.91	5.85	5.33	6.83	4.89	5.56
43	Length of ROW across FEMA mapped 100-year floodplain	0.13	0.78	0.55	1.03	0.13	0.25	0.75	0.13	1.03	1.00	0.17	0.42	1.49	0.23	0.07	0.09	0.16
Cultural Resources																		
44	Number of recorded cultural resource sites crossed by ROW	0	0	0	0	0	2	0	0	0	0	0	0	0	2	1	1	2
45	Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline	0	2	2	2	2	12	2	0	2	2	0	0	2	12	1	10	12
46	Number of NRHP listed properties crossed by ROW	0	0	0	0	0	1	0	0	0	0	1	1	0	1	1	1	1
47	Number of additional NRHP listed properties within 1,000 feet of ROW centerline	1	2	1	1	1	0	2	1	1	1	0	0	1	0	0	0	0
48	Length of ROW across areas of high archeological site potential	1.73	2.94	2.89	3.14	1.49	3.10	2.84	1.44	3.24	3.27	2.40	4.55	3.76	2.84	2.94	2.49	3.13

[1] Single-family and multi-family dwellings, and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 300 feet of the centerline of a transmission project of 230-kV or less

[2] Apparent property boundaries created by existing roads, highways, or railroad ROWs are not "double-counted" in the length of ROW parallel to apparent property boundaries criteria

[3] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church within 1,000 feet of the centerline of the project

[4] Only steel pipelines six inches and greater in diameter carrying hydrocarbons were quantified in the pipeline crossing and paralleling calculations

[5] As listed in the Chart Supplement South Central US (FAA 2019b formerly known as the Airport/Facility Directory South Central US) and FAA 2019a

[6] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria

[7] One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates, US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria

[8] From Model C by Diamond et al. 2010

All length measurements are shown in miles unless noted otherwise

Table 3: Transmission Facilities Total Estimated Costs

Route	Total Length (miles)	Sub Site	Estimated Total Cost	ROW & Land Acquisition	Engineering & Design (Utility)	Engineering & Design (Contract)	Procurement of Material & Equipment	Construction of Facilities (Utility)	Construction of Facilities (Contract)	Other
A	6 66	1	**$39,479,733**	$6,205,475	$266,400	$1,498,500	$10,375,854	$666,000	$9,249,539	$11,217,966
B1	6.19	1	**$35,821,831**	$4,604,350	$247,600	$1,392,750	$10,246,212	$619,000	$8,906,692	$9,805,226
C1	5.77	1	**$32,899,624**	$5,381,475	$230,800	$1,298,250	$9,045,109	$577,000	$8,091,240	$8,275,750
D1	5.22	2	**$29,130,346**	$4,260,000	$208,800	$1,174,500	$8,143,958	$522,000	$7,219,957	$7,601,131
E	6.62	2	**$38,654,663**	$6,310,125	$264,800	$1,489,500	$10,091,858	$662,000	$9,077,775	$10,758,605
F1	5.66	2	**$34,248,570**	$4,311,363	$226,400	$1,273,500	$9,516,417	$566,000	$8,386,875	$9,968,015
G1	6.2	3	**$36,200,846**	$4,594,900	$248,000	$1,395,000	$10,172,782	$620,000	$8,956,930	$10,213,234
H	6.32	3	**$37,742,578**	$6,174,925	$252,800	$1,422,000	$9,822,018	$632,000	$8,780,019	$10,658,816
I1	5.03	3	**$28,079,256**	$4,473,713	$201,200	$1,131,750	$7,682,502	$503,000	$6,820,609	$7,266,482
J1	5.46	3	**$29,661,502**	$4,079,413	$218,400	$1,228,500	$8,210,034	$546,000	$7,352,759	$8,026,397
K	5.29	3	**$31,238,339**	$3,703,600	$211,600	$1,190,250	$8,554,942	$529,000	$7,581,408	$9,467,538
L	6.91	3	**$38,164,609**	$4,938,450	$276,400	$1,554,750	$9,836,263	$691,000	$8,928,042	$11,939,704
M1	5.85	4	**$31,931,306**	$5,189,800	$234,000	$1,316,250	$8,647,864	$585,000	$7,765,702	$8,192,689
N1	5.33	5	**$32,774,012**	$4,059,750	$213,200	$1,199,250	$9,162,723	$533,000	$8,022,555	$9,583,534
O	6.83	5	**$41,311,213**	$3,959,163	$273,200	$1,536,750	$12,240,789	$683,000	$10,568,993	$12,049,319
P	4.89	6	**$29,655,409**	$3,195,350	$195,600	$1,100,250	$8,233,678	$489,000	$7,241,349	$9,200,182
Q1	5 56	6	**$31,911,929**	$3,712,400	$222,400	$1,251,000	$8,535,901	$556,000	$7,554,785	$10,079,442
R1	4.76	6	**$29,759,151**	$3,427,650	$190,400	$1,071,000	$8,425,608	$476,000	$7,379,204	$8,789,289
S	6.73	6	**$40,490,343**	$3,429,463	$269,200	$1,514,250	$11,957,738	$673,000	$10,506,016	$12,140,676
T1	5.93	6	**$33,268,576**	$4,674,675	$237,200	$1,334,250	$8,927,893	$593,000	$7,735,057	$9,766,501
U1	6.36	6	**$36,158,857**	$4,026,850	$254,400	$1,431,000	$9,705,097	$636,000	$8,721,049	$11,384,462
V	6.6	6	**$39,437,492**	$3,005,263	$264,000	$1,485,000	$11,933,906	$660,000	$10,180,802	$11,908,522
W	6.25	6	**$38,256,396**	$3,327,063	$250,000	$1,406,250	$11,421,971	$625,000	$9,847,938	$11,378,174
X1	5.34	7	**$31,423,745**	$3,919,700	$213,600	$1,201,500	$8,717,440	$534,000	$7,630,041	$9,207,463
Y	5.23	7	**$28,852,833**	$4,749,475	$209,200	$1,176,750	$7,304,200	$523,000	$6,719,861	$8,170,347
Z1	4.53	7	**$24,986,251**	$3,176,463	$181,200	$1,019,250	$6,914,148	$453,000	$6,241,831	$7,000,360
AA1	4.82	7	$25,176,699	$3,612,963	$192,800	$1,084,500	$6,496,341	$482,000	$5,973,334	$7,334,761
BB	4.73	7	**$28,856,185**	$2,821,750	$189,200	$1,064,250	$8,102,730	$473,000	$7,216,596	$8,988,659
CC	5.23	7	**$29,906,929**	$3,422,838	$209,200	$1,176,750	$8,067,743	$523,000	$7,260,999	$9,246,400
DD	4.64	7	**$25,528,232**	$3,442,588	$185,600	$1,044,000	$6,999,527	$464,000	$6,172,541	$7,219,976
EE	4 99	7	**$26,239,758**	$3,463,688	$199,600	$1,122,750	$6,952,628	$499,000	$6,238,009	$7,764,084

Table 4: Substation Facilities Total Estimated Costs

Sub Site	Estimated Total Cost	ROW & Land Acquisition	Engineering & Design (Utility)	Engineering & Design (Contract)	Procurement of Material & Equipment	Construction of Facilities (Utility)	Construction of Facilities (Contract)
1	**$10,243,343.00**	$ 870,743	$372,000 00	$400,000.00	$3,562,000.00	$2,288,600 00	$2,750,000 00
2	**$10,895,754.79**	$ 1,523,155	$372,000 00	$400,000 00	$3,562,000 00	$2,288,600 00	$2,750,000.00
3	**$11,004,617.00**	$ 1,632,017	$372,000 00	$400,000.00	$3,562,000.00	$2,288,600 00	$2,750,000 00
4	**$10,039,796.54**	$ 667,197	$372,000.00	$400,000.00	$3,562,000.00	$2,288,600 00	$2,750,000 00
5	**$9,774,880.00**	$ 402,280	$372,000 00	$400,000 00	$3,562,000.00	$2,288,600.00	$2,750,000.00
6	**$9,807,084.00**	$ 434,484	$372,000 00	$400,000.00	$3,562,000.00	$2,288,600.00	$2,750,000 00
7	**$9,999,864.00**	$ 627,264	$372,000 00	$400,000 00	$3,562,000 00	$2,288,600.00	$2,750,000.00

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Table 2: Transmission and Substation Facilities Total Estimated Costs (Sorted Least to Most Expensive)

Route	Total Length (miles)	Sub Site	**Estimated Total Cost	ROW & Land Acquisition	Engineering & Design (Utility)	Engineering & Design (Contract)	Procurement of Material & Equipment	Construction of Facilities (Utility)	Construction of Facilities (Contract)	Other
AA1	4.82	7	**$38,291,572**	$4,261,602	$621,280	$1,632,950	$11,064,175	$3,047,660	$9,595,667	$7,334,761
Z1	4.53	7	**$38,474,771**	$4,174,144	$608,520	$1,561,175	$11,523,763	$3,015,760	$9,891,014	$7,000,360
DD	4.64	7	**$38,996,943**	$4,392,874	$613,360	$1,588,400	$11,617,680	$3,027,860	$9,814,795	$7,219,976
EE	4 99	7	**$39,757,435**	$4,393,897	$628,760	$1,675,025	$11,566,090	$3,066,360	$9,886,810	$7,764,084
Y	5 23	7	**$42,723,887**	$5,900,333	$639,320	$1,734,425	$11,952,819	$3,092,760	$10,416,847	$8,170,347
BB	4.73	7	**$42,741,654**	$3,793,915	$617,320	$1,610,675	$12,831,203	$3,037,760	$10,963,256	$8,988,659
I1	5.03	3	**$42,877,497**	$6,601,539	$630,520	$1,684,925	$12,368,953	$3,070,760	$10,527,670	$7,266,482
P	4.89	6	**$43,408,742**	$3,992,817	$624,360	$1,650,275	$12,975,245	$3,055,360	$10,990,484	$9,200,182
R1	4.76	6	**$43,522,858**	$4,248,347	$618,640	$1,618,100	$13,186,368	$3,041,060	$11,142,125	$8,789,289
CC	5.23	7	**$43,897,472**	$4,455,112	$639,320	$1,734,425	$12,792,717	$3,092,760	$11,012,099	$9,246,400
D1	5.22	2	**$43,904,818**	$6,237,577	$638,880	$1,731,950	$12,876,554	$3,091,660	$10,966,953	$7,601,131
J1	5 46	3	**$44,068,606**	$5,618,447	$649,440	$1,791,350	$12,949,237	$3,118,060	$11,113,035	$8,026,397
X1	5 34	7	**$45,496,087**	$4,931,777	$644,160	$1,761,650	$13,507,384	$3,104,860	$11,418,045	$9,207,463
Q1	5.56	6	**$45,890,914**	$4,561,572	$653,840	$1,816,100	$13,307,691	$3,129,060	$11,335,264	$10,079,442
M1	5 85	4	**$46,044,320**	$6,318,803	$666,600	$1,887,875	$13,430,851	$3,160,960	$11,567,273	$8,192,689
K	5.29	3	**$46,467,251**	$5,869,179	$641,960	$1,749,275	$13,328,636	$3,099,360	$11,364,549	$9,467,538
N1	5 33	5	**$46,803,781**	$4,908,233	$643,720	$1,759,175	$13,997,195	$3,103,760	$11,849,811	$9,583,534
T1	5.93	6	**$47,259,333**	$5,496,182	$670,120	$1,907,675	$13,738,882	$3,169,760	$11,533,563	$9,766,501
C1	5.77	1	**$47,373,301**	$6,793,477	$663,080	$1,868,075	$13,867,819	$3,152,160	$11,925,364	$8,275,750
F1	5.66	2	**$49,658,757**	$6,417,969	$658,240	$1,840,850	$14,386,259	$3,140,060	$12,250,563	$9,968,015
B1	6.19	1	**$50,551,923**	$5,902,834	$681,560	$1,972,025	$15,189,033	$3,198,360	$12,822,362	$9,805,226
U1	6.36	6	**$50,562,536**	$4,907,467	$689,040	$2,014,100	$14,593,806	$3,217,060	$12,618,154	$11,384,462
G1	6.2	3	**$51,216,234**	$6,139,834	$682,000	$1,974,500	$15,108,260	$3,199,460	$12,877,623	$10,213,234
W	6.25	6	**$52,869,828**	$4,137,701	$684,200	$1,986,875	$16,482,368	$3,204,960	$13,857,732	$11,378,174
H	6 32	3	**$53,621,915**	$8,587,636	$687,280	$2,004,200	$14,722,420	$3,212,660	$12,683,021	$10,658,816
L	6 91	3	**$54,086,149**	$7,227,514	$713,240	$2,150,225	$14,738,090	$3,277,560	$12,845,846	$11,939,704
V	6.6	6	**$54,169,034**	$3,783,721	$699,600	$2,073,500	$17,045,497	$3,243,460	$14,223,883	$11,908,522
E	6 62	2	**$54,505,460**	$8,616,608	$700,480	$2,078,450	$15,019,244	$3,245,660	$13,010,552	$10,758,605
A	6.66	1	**$54,695,384**	$7,783,840	$702,240	$2,088,350	$15,331,639	$3,250,060	$13,199,493	$11,217,966
S	6.73	6	**$55,327,170**	$4,250,341	$705,320	$2,105,675	$17,071,712	$3,257,760	$14,581,618	$12,140,676
O	6 83	5	**$56,194,703**	$4,797,587	$709,720	$2,130,425	$17,383,068	$3,268,760	$14,650,892	$12,049,319

CPS Energy
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CPS Energy CCN Application Amendment
(revised 12/23/2020)
Estimated Costs for Transmission Line and Substation Facilities

Table 1: Transmission and Substation Facilities Total Estimated Costs

Route	Total Length (miles)	Sub Site	**Estimated Total Cost	ROW & Land Acquisition	Engineering & Design (Utility)	Engineering & Design (Contract)	Procurement of Material & Equipment	Construction of Facilities (Utility)	Construction of Facilities (Contract)	Other
A	6 66	1	**$54,695,384**	$7,783,840	$702,240	$2,088,350	$15,331,639	$3,250,060	$13,199,493	$11,217,966
B1	6.19	1	**$50,551,923**	$5,902,834	$681,560	$1,972,025	$15,189,033	$3,198,360	$12,822,362	$9,805,226
C1	5.77	1	**$47,373,301**	$6,793,477	$663,080	$1,868,075	$13,867,819	$3,152,160	$11,925,364	$8,275,750
D1	5.22	2	**$43,904,818**	$6,237,577	$638,880	$1,731,950	$12,876,554	$3,091,660	$10,966,953	$7,601,131
E	6.62	2	**$54,505,460**	$8,616,608	$700,480	$2,078,450	$15,019,244	$3,245,660	$13,010,552	$10,758,605
F1	5.66	2	**$49,658,757**	$6,417,969	$658,240	$1,840,850	$14,386,259	$3,140,060	$12,250,563	$9,968,015
G1	6.2	3	**$51,216,234**	$6,139,834	$682,000	$1,974,500	$15,108,260	$3,199,460	$12,877,623	$10,213,234
H	6.32	3	**$53,621,915**	$8,587,636	$687,280	$2,004,200	$14,722,420	$3,212,660	$12,683,021	$10,658,816
I1	5.03	3	**$42,877,497**	$6,601,539	$630,520	$1,684,925	$12,368,953	$3,070,760	$10,527,670	$7,266,482
J1	5.46	3	**$44,068,606**	$5,618,447	$649,440	$1,791,350	$12,949,237	$3,118,060	$11,113,035	$8,026,397
K	5 29	3	**$46,467,251**	$5,869,179	$641,960	$1,749,275	$13,328,636	$3,099,360	$11,364,549	$9,467,538
L	6.91	3	**$54,086,149**	$7,227,514	$713,240	$2,150,225	$14,738,090	$3,277,560	$12,845,846	$11,939,704
M1	5.85	4	**$46,044,320**	$6,318,803	$666,600	$1,887,875	$13,430,851	$3,160,960	$11,567,273	$8,192,689
N1	5.33	5	**$46,803,781**	$4,908,233	$643,720	$1,759,175	$13,997,195	$3,103,760	$11,849,811	$9,583,534
O	6.83	5	**$56,194,703**	$4,797,587	$709,720	$2,130,425	$17,383,068	$3,268,760	$14,650,892	$12,049,319
P	4 89	6	**$43,408,742**	$3,992,817	$624,360	$1,650,275	$12,975,245	$3,055,360	$10,990,484	$9,200,182
Q1	5.56	6	**$45,890,914**	$4,561,572	$653,840	$1,816,100	$13,307,691	$3,129,060	$11,335,264	$10,079,442
R1	4.76	6	**$43,522,858**	$4,248,347	$618,640	$1,618,100	$13,186,368	$3,041,060	$11,142,125	$8,789,289
S	6 73	6	**$55,327,170**	$4,250,341	$705,320	$2,105,675	$17,071,712	$3,257,760	$14,581,618	$12,140,676
T1	5.93	6	**$47,259,333**	$5,496,182	$670,120	$1,907,675	$13,738,882	$3,169,760	$11,533,563	$9,766,501
U1	6.36	6	**$50,562,536**	$4,907,467	$689,040	$2,014,100	$14,593,806	$3,217,060	$12,618,154	$11,384,462
V	6.6	6	**$54,169,034**	$3,783,721	$699,600	$2,073,500	$17,045,497	$3,243,460	$14,223,883	$11,908,522
W	6.25	6	**$52,869,828**	$4,137,701	$684,200	$1,986,875	$16,482,368	$3,204,960	$13,857,732	$11,378,174
X1	5.34	7	**$45,496,087**	$4,931,777	$644,160	$1,761,650	$13,507,384	$3,104,860	$11,418,045	$9,207,463
Y	5.23	7	**$42,723,887**	$5,900,333	$639,320	$1,734,425	$11,952,819	$3,092,760	$10,416,847	$8,170,347
Z1	4.53	7	**$38,474,771**	$4,174,144	$608,520	$1,561,175	$11,523,763	$3,015,760	$9,891,014	$7,000,360
AA1	4.82	7	**$38,291,572**	$4,261,602	$621,280	$1,632,950	$11,064,175	$3,047,660	$9,595,667	$7,334,761
BB	4.73	7	**$42,741,654**	$3,793,915	$617,320	$1,610,675	$12,831,203	$3,037,760	$10,963,256	$8,988,659
CC	5.23	7	**$43,897,472**	$4,455,112	$639,320	$1,734,425	$12,792,717	$3,092,760	$11,012,099	$9,246,400
DD	4.64	7	**$38,996,943**	$4,392,874	$613,360	$1,588,400	$11,617,680	$3,027,860	$9,814,795	$7,219,976
EE	4 99	7	**$39,757,435**	$4,393,897	$628,760	$1,675,025	$11,566,090	$3,066,360	$9,886,810	$7,764,084

**Estimated Costs include a 10% Contingency for unknown project costs not evident at the time these estimates were created

CPS Energy
Application Amendment
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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**

CPS ENERGY'S RESPONSE TO ANAQUA SPRINGS HOMEOWNERS' ASSOCIATION SECOND REQUEST FOR INFORMATION

Anaqua Springs Question No. 2-9:

If the transmission line were to fail during a storm and fall towards the houses within a 75 foot right-of-way on Segments 14, 54, 36, 20, and any other portions along Toutant Beauregard with 75 foot rights-of-way, are any houses within the fall radius of either the structures or conductors, given due regard to conductor sag being extended towards the houses?

Response No. 2-9:

As stated in response to Question 6 of the Application and on page 1-1 of the Environmental Assessment, which is Attachment 1 to the Application, it is currently anticipated that the proposed transmission line facilities will be constructed utilizing a right-of-way width of approximately 100 feet. The transmission line proposed in this proceeding will be designed to meet or exceed all safety and clearance requirements applicable to the facilities, including the current version of the National Electrical Safety Code. The transmission line facilities proposed in this Project are not anticipated to ever fail during a storm and fall. However, as a general design principle, the transmission line, if it does fail, it will likely fail within the right-of-way.

Because the transmission line has not been designed and pole heights and conductor clearances have not yet been determined, CPS Energy cannot determine whether any structures are located within a theoretical fall radius of the proposed facilities.

Prepared By:	Lisa B. Meaux	Title: Project Manager, POWER Engineers, Inc.
	Scott D. Lyssy	Title: Manager Civil Engineering
Sponsored By:	Lisa B. Meaux	Title: Project Manager, POWER Engineers, Inc.
	Scott D. Lyssy	Title: Manager Civil Engineering

--	Boerne Stage Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm National Register Historic District	142	40

167	Single Family Residence	270	55
168	Single Family Residence	169	55
169	Single Family Residence	58	55
170	Single Family Residence	103	55
171	Single Family Residence	190	55
172	Single Family Residence	158	55
173	Single Family Residence	217	57
174	Single Family Residence	122	57
175	Single Family Residence	94	57
176	Single Family Residence	272	57
177	Single Family Residence	78	57
178	Single Family Residence	213	54
179	Single Family Residence	272	55
181	Single Family Residence	191	57
182	Single Family Residence	192	57
183	Single Family Residence	91	55
184	Single Family Residence	153	57
185	Single Family Residence	307	57
186	Single Family Residence	288	40
187	Single Family Residence	151	56
188	Single Family Residence	197	56
189	Single Family Residence	251	56
190	Single Family Residence	227	56
191	Single Family Residence	183	56
192	Single Family Residence	287	56
193	Single Family Residence	208	56
194	Single Family Residence	70	56
195	Single Family Residence	157	56
196	Single Family Residence	278	56
197	Single Family Residence	239	37
198	Single Family Residence	69	26a
199	Single Family Residence	291	26a
200	Commercial-Guard House	227	36
201	Single Family Residence	280	43
301	Boerne Stage Field	7,210	29
501	CellTex Site Services, Ltd.	482	36
502	Global Tower, LLC	521	16
701	Heidemann Cemetery	593	36
702	Huntress Lane Cemetery	128	15
901	Heidemann Ranch Historic District	98	36
902	R.L. White Ranch Historic District	0	43
--	Boerne Stage Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm National Register Historic District	50	28
--	Boerne Stage Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm National Register Historic District	50	17

108	Single Family Residence	140	32
109	Single Family Residence	198	32
110	Single Family Residence	169	32
111	Single Family Residence	176	32
112	Single Family Residence	194	32
113	Single Family Residence	120	32
114	Single Family Residence	110	32
115	Single Family Residence	296	32
116	Single Family Residence	298	32
117	Single Family Residence	225	32
118	Single Family Residence	185	32
119	Single Family Residence	194	32
120	Single Family Residence	186	32
121	Single Family Residence	184	32
122	Single Family Residence	201	32
123	Single Family Residence	208	32
124	Single Family Residence	199	32
125	Single Family Residence	195	32
126	Single Family Residence	212	32
127	Single Family Residence	240	32
134	Single Family Residence	218	43
135	Single Family Residence	260	37
136	Single Family Residence	171	25
137	Single Family Residence	111	25
139	Single Family Residence	283	8
140	Single Family Residence	171	8
141	Single Family Residence	193	8
142	Single Family Residence	304	8
143	Single Family Residence	222	15
146	Single Family Residence	155	15
147	Single Family Residence	208	15
148	Single Family Residence	198	22
149	Single Family Residence	14 1	22
150	Single Family Residence	89	22
151	Single Family Residence	299	16
152	Single Family Residence	172	16
153	Single Family Residence	270	16
154	Single Family Residence	257	16
155	Single Family Residence	162	16
156	Single Family Residence	174	16
157	Single Family Residence	146	55
158	Single Family Residence	141	55
159	Single Family Residence	174	55
160	Single Family Residence	184	55
161	Single Family Residence	115	55
162	Single Family Residence	97	55
163	Single Family Residence	300	55
166	Single Family Residence	55	55

60	Single Family Residence	263	13
61	Single Family Residence	285	13
62	Single Family Residence	241	13
63	Single Family Residence	190	13
64	Single Family Residence	144	13
65	Single Family Residence	104	13
66	Single Family Residence	187	13
67	Single Family Residence	148	13
68	Single Family Residence	304	13
69	Single Family Residence	208	14
70	Single Family Residence	206	14
71	Single Family Residence	251	14
72	Single Family Residence	204	14
73	Single Family Residence	244	14
74	Single Family Residence	228	14
75	Single Family Residence	230	14
76	Single Family Residence	260	14
77	Single Family Residence	267	14
78	Single Family Residence	169	14
79	Single Family Residence	215	54
80	Single Family Residence	202	54
81	Single Family Residence	82	54
82	Single Family Residence	251	54
83	Single Family Residence	207	54
84	Single Family Residence	214	54
85	Single Family Residence	158	54
86	Single Family Residence	162	54
87	Single Family Residence	300	54
88	Single Family Residence	122	54
89	Single Family Residence	134	54
90	Single Family Residence	284	54
91	Single Family Residence	223	54
92	Single Family Residence	264	54
93	Single Family Residence	200	54
94	Single Family Residence	224	54
95	Single Family Residence	279	54
96	Single Family Residence	280	20
97	Single Family Residence	195	20
98	Single Family Residence	241	20
99	Single Family Residence	241	20
100	Single Family Residence	244	20
101	Single Family Residence	265	20
102	Single Family Residenc e	266	20
103	Single Family Residence	263	20
104	Single Family Residence	211	20
105	Single Family Residence	255	20
106	Single Family Residence	100	32
107	Single Family Residence	125	32

Habitable Structure Number	Structure or Feature	Approximate Distance from Route Centerline' (feet)	Nearest Alternative Route Segment2
1	Single Family Residence	267	40
2	Single Family Residence	220	40
3	Single Family Residence	141	40
4	Single Family Residence	194	40
5	Single Family Residence	128	40
6	Single Family Residence	187	40
7	Single Family Residence	290	40
9	Single Family Residence	167	29
10	Single Family Residence	197	29
13	Single Fami y Residence	164	29
14	Single Family Residence	238	30
15	Single Family Residence	174	46
16	Single Fami y Residence	162	46b
17	School	214	35
18	Single Family Residence	162	35
19	Single Family Residence	274	31
20	Single Family Residence	296	31
23	Single Family Residence	191	17
24	Single Family Residence	94	17
25	Single Family Residence	97	17
26	Single Family Residence	84	17
27	Single Family Residence	70	17
28	Single Family Residence	147	17
29	Single Family Residence	170	17
30	Single Family Residence	238	17
31	Single Family Residence	273	17
32	Single Family Residence	233	17
33	Single Family Residence	195	17
34	Single Family Residence	189	17
35	Single Family Residence	189	17
36	Single Family Residence	142	17
37	Single Family Residence	146	17
38	Single Family Residence	152	17
39	Single Family Residence	235	17
40	Single Family Residence	297	17
41	Single Family Residence	158	17
42	Single Family Residence	305	17
51	Single Family Residence	194	2
52	Single Family Residence	307	2
53	Single Family Residence	137	2
55	Commercial	304	4
56	Commercial (Rose Palace)	292	5
57	Single Family Residence	267	7
58	Single Family Residence	229	5
59	Single Family Residence	227	13

--	Boerne Stage Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm National Register Historic District	142	40

167	Single Family Residence	270	55
168	Single Family Residence	169	55
169	Single Family Residence	58	55
170	Single Family Residence	103	55
171	Single Family Residence	190	55
172	Single Family Residence	158	55
173	Single Family Residence	217	57
174	Single Family Residence	122	57
175	Single Fami y Residence	94	57
176	Single Family Residence	272	57
177	Single Family Residence	78	57
178	Single Family Residence	213	54
179	Single Family Residence	272	55
181	Single Family Residence	191	57
182	Single Family Residence	192	57
183	Single Family Residence	91	55
184	Single Family Residence	153	57
185	Single Family Residence	307	57
186	Single Family Residence	288	40
187	Single Family Residence	151	56
188	Single Family Residence	197	56
189	Single Family Residence	251	56
190	Single Family Residence	227	56
191	Single Family Residence	183	56
192	Single Family Residence	287	56
193	Single Family Residence	208	56
194	Single Family Residence	70	56
195	Single Family Residence	157	56
196	Single Family Residence	278	56
197	Single Family Residence	239	37
198	Single Family Residence	69	26a
199	Single Family Residence	291	26a
200	Commercial-Guard House	227	36
201	Single Family Residence	280	43
301	Boerne Stage Field	7,210	29
501	CellTex Site Services, Ltd.	482	36
502	Global Tower, LLC	521	16
701	Heidemann Cemetery	593	36
702	Huntress Lane Cemetery	128	15
901	Heidemann Ranch Historic District	98	36
902	R.L. White Ranch Historic District	0	43
--	Boerne Stage Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm National Register Historic District	50	28
--	Boerne Stage Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm National Register Historic District	50	17

108	Single Family Residence	140	32
109	Single Family Residence	198	32
110	Single Family Residence	169	32
111	Single Family Residence	176	32
112	Single Family Residence	194	32
113	Single Family Residence	120	32
114	Single Family Residence	110	32
115	Single Family Residence	296	32
116	Single Family Residence	298	32
117	Single Family Residence	225	32
118	Single Family Residence	185	32
119	Single Family Residence	194	32
120	Single Family Residence	186	32
121	Single Family Residence	184	32
122	Single Family Residence	201	32
123	Single Family Residence	208	32
124	Single Family Residence	199	32
125	Single Family Residence	195	32
126	Single Family Residence	212	32
127	Single Family Residence	240	32
134	Single Family Residence	218	43
135	Single Family Residence	260	37
136	Single Family Residence	171	25
137	Single Family Residence	111	25
139	Single Family Residence	283	8
140	Single Family Residence	171	8
141	Single Family Residence	193	8
142	Single Family Residence	304	8
143	Single Family Residence	222	15
146	Single Family Residence	155	15
147	Single Family Residence	208	15
148	Single Family Residence	198	22
149	Single Family Residence	14 1	22
150	Single Family Residence	89	22
151	Single Family Residence	299	16
152	Single Family Residence	172	16
153	Single Family Residence	270	16
154	Single Family Residence	257	16
155	Single Family Residence	162	16
156	Single Family Residence	174	16
157	Single Family Residence	146	55
158	Single Family Residence	141	55
159	Single Family Residence	174	55
160	Single Family Residence	184	55
161	Single Family Residence	115	55
162	Single Family Residence	97	55
163	Single Family Residence	300	55
166	Single Family Residence	55	55

60	Single Family Residence	263	13
61	Single Family Residence	285	13
62	Single Family Residence	241	13
63	Single Family Residence	190	13
64	Single Family Residence	144	13
65	Single Family Residence	104	13
66	Single Family Residence	187	13
67	Single Family Residence	148	13
68	Single Family Residence	304	13
69	Single Family Residence	208	14
70	Single Family Residence	206	14
71	Single Family Residence	251	14
72	Single Family Residence	204	14
73	Single Family Residence	244	14
74	Single Family Residence	228	14
75	Single Family Residence	230	14
76	Single Family Residence	260	14
77	Single Family Residence	267	14
78	Single Family Residence	169	14
79	Single Family Residence	215	54
80	Single Family Residence	202	54
81	Single Family Residence	82	54
82	Single Family Residence	251	54
83	Single Family Residence	207	54
84	Single Family Residence	214	54
85	Single Family Residence	158	54
86	Single Family Residence	162	54
87	Single Family Residence	300	54
88	Single Family Residence	122	54
89	Single Family Residence	134	54
90	Single Family Residence	284	54
91	Single Family Residence	223	54
92	Single Family Residence	264	54
93	Single Family Residence	200	54
94	Single Family Residence	224	54
95	Single Family Residence	279	54
96	Single Family Residence	280	20
97	Single Family Residence	195	20
98	Single Family Residence	241	20
99	Single Family Residence	241	20
100	Single Family Residence	244	20
101	Single Family Residence	265	20
102	Single Family Residenc e	266	20
103	Single Family Residence	263	20
104	Single Family Residence	211	20
105	Single Family Residence	255	20
106	Single Family Residence	100	32
107	Single Family Residence	125	32

Habitable Structure Number	Structure or Feature	Approximate Distance from Route Centerline' (feet)	Nearest Alternative Route Segment2
1	Single Family Residence	267	40
2	Single Family Residence	220	40
3	Single Family Residence	141	40
4	Single Family Residence	194	40
5	Single Family Residence	128	40
6	Single Family Residence	187	40
7	Single Family Residence	290	40
9	Single Family Residence	167	29
10	Single Family Residence	197	29
13	Single Fami y Residence	164	29
14	Single Family Residence	238	30
15	Single Family Residence	174	46
16	Single Fami y Residence	162	46b
17	School	214	35
18	Single Family Residence	162	35
19	Single Family Residence	274	31
20	Single Family Residence	296	31
23	Single Family Residence	191	17
24	Single Family Residence	94	17
25	Single Family Residence	97	17
26	Single Family Residence	84	17
27	Single Family Residence	70	17
28	Single Family Residence	147	17
29	Single Family Residence	170	17
30	Single Family Residence	238	17
31	Single Family Residence	273	17
32	Single Family Residence	233	17
33	Single Family Residence	195	17
34	Single Family Residence	189	17
35	Single Family Residence	189	17
36	Single Family Residence	142	17
37	Single Family Residence	146	17
38	Single Family Residence	152	17
39	Single Family Residence	235	17
40	Single Family Residence	297	17
41	Single Family Residence	158	17
42	Single Family Residence	305	17
51	Single Family Residence	194	2
52	Single Family Residence	307	2
53	Single Family Residence	137	2
55	Commercial	304	4
56	Commercial (Rose Palace)	292	5
57	Single Family Residence	267	7
58	Single Family Residence	229	5
59	Single Family Residence	227	13

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**

CPS ENERGY'S RESPONSE TO BRAD JAUER'S AND BVJ PROPERTIES, L.L.C.'S SECOND REQUESTS FOR INFORMATION TO CPS ENERGY

Brad Jauer & BVJ Properties RFI 2-17:

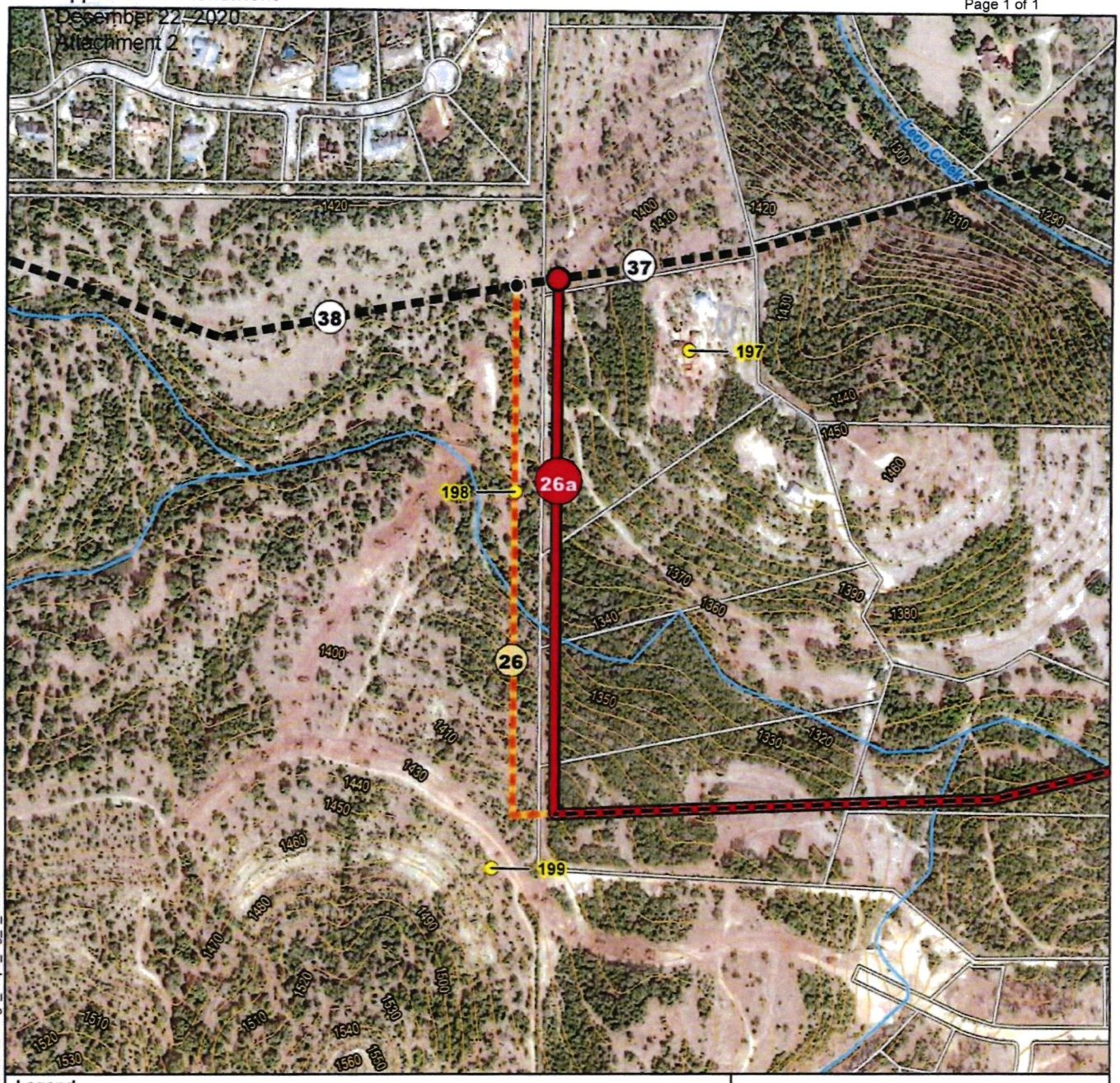
Is the habitable structure currently located between Habitable Structures 93 and 94 included in the Application, as amended? What is the distance from that habitable structure to the centerline of the right-of-way on Segment 54?

Response No. 2-17:

The habitable structure located between Habitable Structures 93 and 94 was not tabulated in the data presented in either the Application or Application Amendment. The distance from the habitable structure to the centerline of Segment 54 is approximately 260 feet. POWER's initial aerial photograph interpretation using ESRI identified the structure as a shed. Upon further review, POWER agrees that this is a habitable structure and that it should be included in the Application. The owner of the property was provided direct mail notice of the Project at the time the Application was filed on July 22, 2020 (Tract A-074, row 75 of Attachment 8 to the Application). CPS Energy will update its habitable structure counts for routes within 300 feet of this structure prior to the Hearing on the Merits in this proceeding (e.g., the habitable structure counts for Routes A, B1, C1, D1, E, G1, H, I1, J1, K, L, M1, X1, Y, Z1, AA1, BB, CC, DD, EE will all increase by one). Note that the data CPS Energy provided in response to Chandler RFI 1-1a for Route AA2 does include this habitable structure in the count.

Prepared By: Lisa B. Meaux Title: Project Manager, POWER Engineers, Inc.
Sponsored By: Lisa B. Meaux Title: Project Manager, POWER Engineers, Inc.

CPS Energy
Application Amendment
December 22, 2020
Attachment 2



Legend

- Revised or New Alternative Route Segment
- Unchanged Portion of Preliminary Alternative Route Segment
- Primary Alternative Route Segment
- Revised or New Alternative Route Segment Node
- Unchanged Alternative Route Segment Node
- Removed Alternative Route Segment Node
- Revised Alternative Route Segment Label
- Primary Alternative Route Segment Label
- Removed Alternative Route Segment
- Removed Alternative Route Segment Label
- Habitable Structure within 300 Feet of a Primary Segment
- Parcel Boundary
- River or Stream
- 10 foot Contour

12/22/2020

Scenic Loop 138 kV Transmission Line And Substation Project

Figure 6-21

Modification of Segment 26 Following the CCN Filing

cps ENERGY

POWER ENGINEERS

Feet
0 500 1,000

12/22/2020 C:\PowerENG\156816_CPS_Scenic_Loop\DDG\Sapps\December2020\Change_Maps_Fig_6_21.mxd

PUC Docket No. 51023 SHLAA Response to AS's 1st RFI

AS-1-10 Please provide the date the road allowing access to the structure circled on the Aerial Photograph was paved.

Response: The access road was paved in November 2020.

Prepared By: Counsel
Sponsoring Witness: None

PUC Docket No. 51023 SHLAA Response to AS's 1st RFI

AS-1-9 Was construction started on any homes or structures within 300 feet of the centerline of Segment 26 after CPS provided landowner notice of the Application?

Response:

Yes.

Prepared By: Counsel
Sponsoring Witness: None

PUC Docket No. 51023 SHLAA Response to AS's 1st RFI

AS-1-8 If the answer to Anaqua Springs 1-7 is yes, please provide the locations of those homes either by street address, Bexar County parcel number, or CPS Attachment 6 parcel number.

Response:

Please see "Sheet 11 Amended" in Attachment 5 to the amended CPS Energy Application and "Sheet 12" in Attachment 6 to the original CPS Energy Application.

Habitable Structure Map ID 198 located on Parcel No. F-129 is the structure asked about in AS-1-1 through AS-1-6 plus AS-1-10.

Habitable Structure Map ID 199 located on Parcel No. 119, as page 5 of the Amendment to CPS Energy's Application indicates, is another newly constructed habitable structure located south of Segment 26 and within 300 feet thereof.

Construction has also started on a habitable structure located on Parcel No. F-106 and on a habitable structure located on Parcel No. F-131 (the latter of which has the address of 10619 Kendall Canyon).

It appears that there are additional, already-completed habitable structures within the vicinity of 300 feet of Segment 26 at the following addresses, but they may or may not be exactly within 300 feet of Segment 26:

1. 10205 Kendall Canyon
2. 10209 Kendall Canyon
3. 10215 Kendall Canyon
4. 10403 Doherty Springs
5. 10431 Doherty Springs
6. 10503 Kendall Canyon
7. 10519 Kendall Canyon
8. 10539 Kendall Canyon

Prepared By: Counsel
Sponsoring Witness: None

PUC Docket No. 51023 SHLAA Response to AS's 1st RFI

AS-1-7. Was construction started on any homes or structures in the Canyons at Scenic Loop within 300 feet of Segment 26 after the open house in October 2019?

Response:

Yes.

Prepared By: Counsel
Sponsoring Witness: None

PUC Docket No. 51023 SHLAA Response to AS's 1st RFI

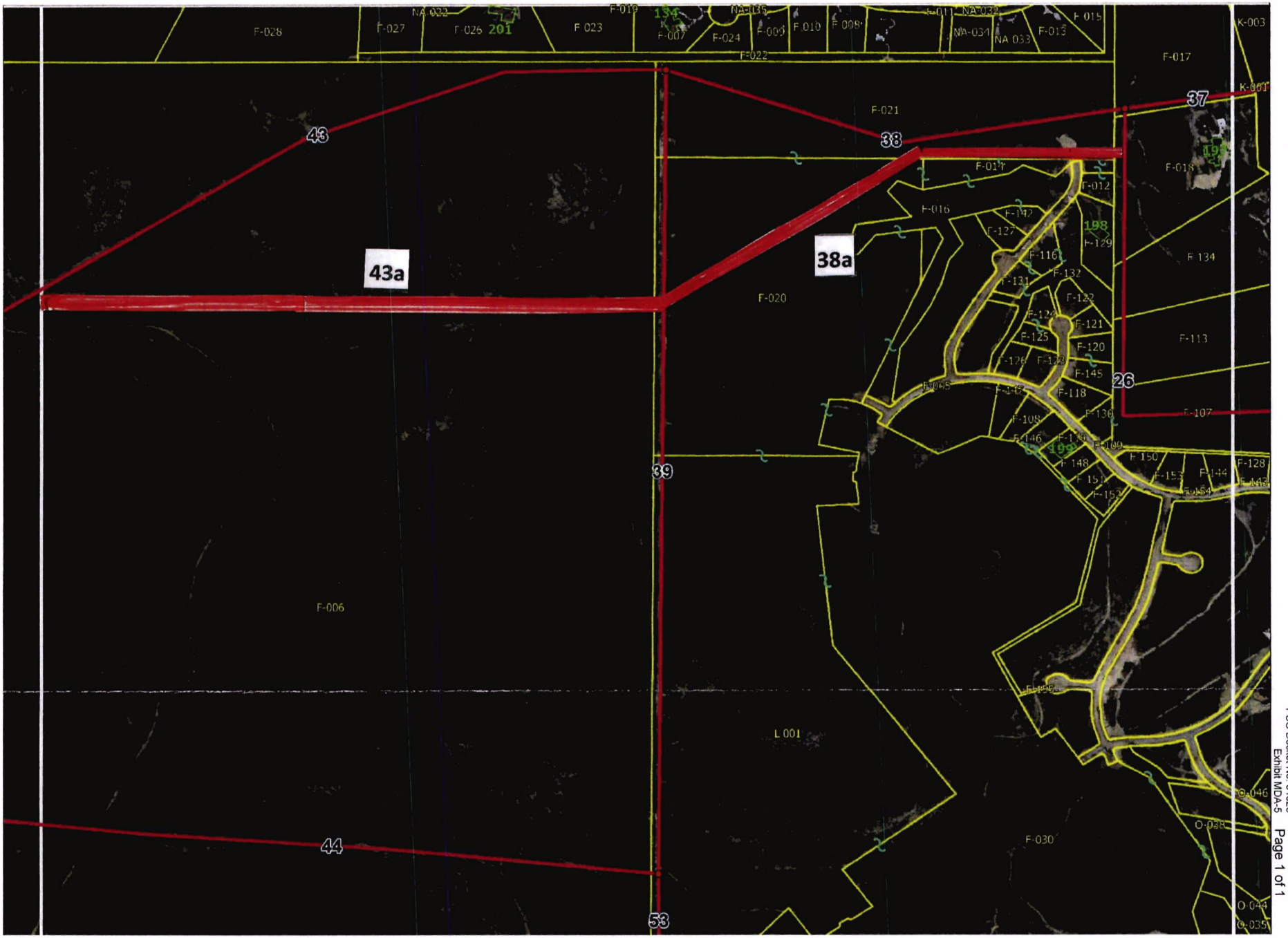
AS-1-1 Please provide the date construction started on the structure circled on the Aerial Photograph.

Response: On or about February 25, 2020.

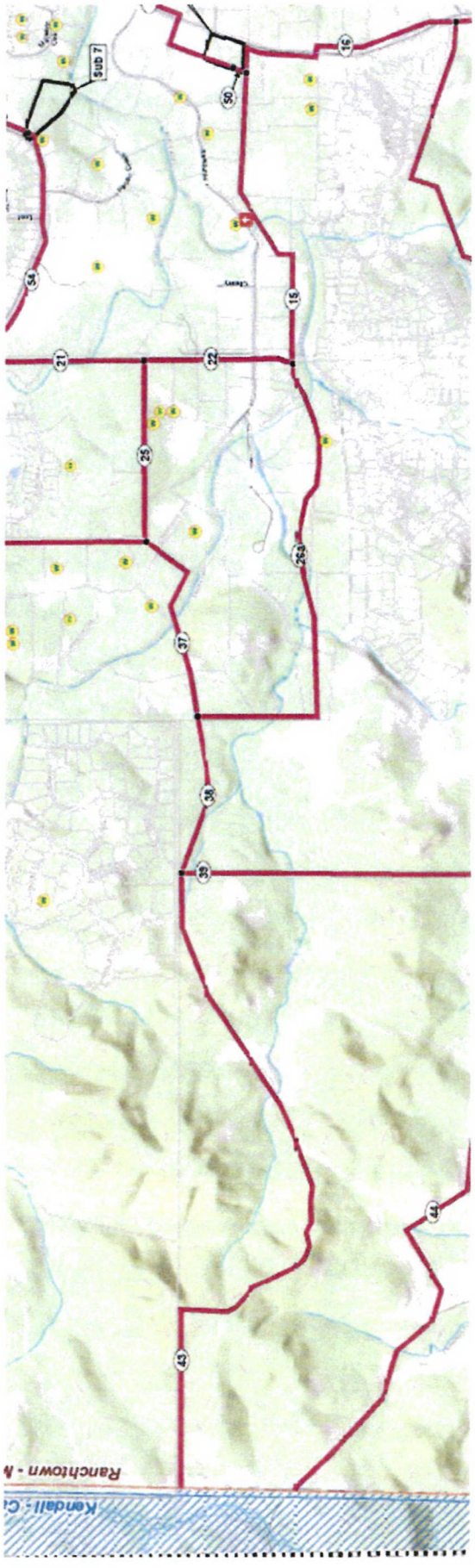
Prepared By: Counsel
Sponsoring Witness: None

Aerial Photograph

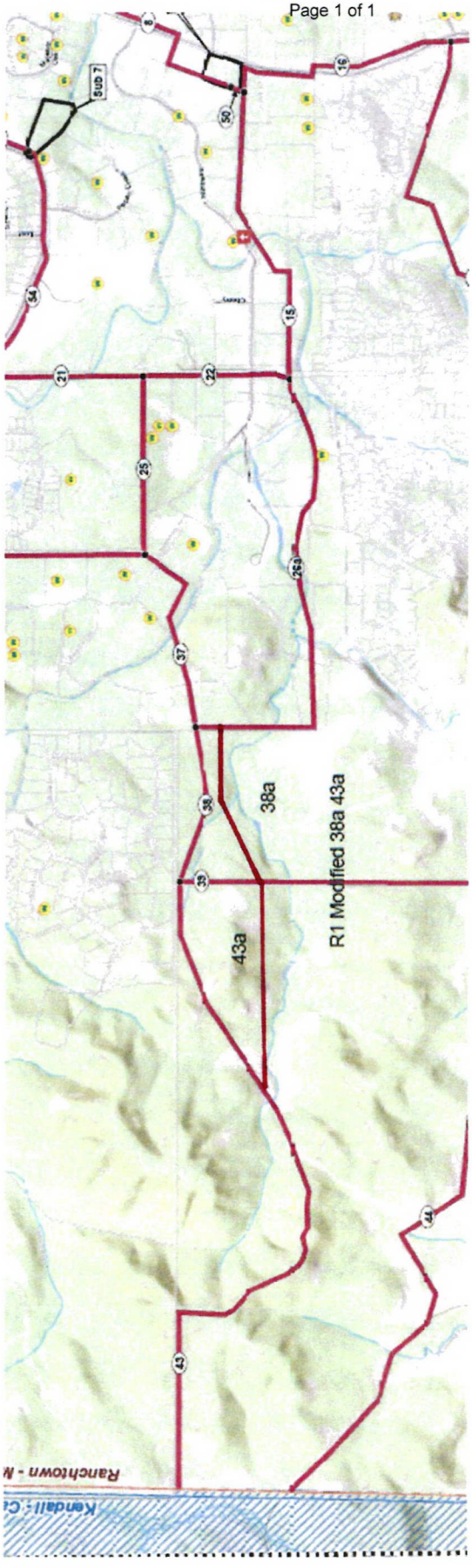
Attachment 6 Amended



Route R1



Route R1 Modified



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APPENDIX D

EXAMPLE TABLE OF CONTENTS

ENVIRONMENTAL ASSESSMENT/ALTERNATIVE ROUTING ANALYSIS REPORT

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Length of ROW across 100-year floodplain
Cultural Resources
Number of recorded historic or prehistoric sites crossed
Number of recorded historic or prehistoric sites within 1,000 ft of ROW centerline
Number of National Register listed or determined-eligible sites crossed
Number of National Register listed or determined-eligible sites within 1,000 ft of ROW centerline
Length of ROW through areas of predicted high archaeological/historic site potential

6/7/17

Land Use
Length of alternative route (new ROW)
Additional length of route in existing transmission line ROW
Length of ROW paralleling property lines
Length of ROW parallel to existing ROW (transmission line, pipeline, roads, etc.)
Length of ROW along proposed highway
Number of habitable structures[1] within 200 ft of ROW centerline
Length of ROW through developed areas
Length of ROW through undeveloped areas
Length of ROW through recreational areas
Number of parks and/or recreational areas within 1,000 ft of TOW centerline
Length of ROW through cropland
Length of ROW trough grazing land
Length of ROW through irrigated pasture or cropland
Length of ROW across prime farmland soils
Length of ROW across gravel pits, mines or quarries
Number of pipeline crossings
Number of transmission line crossings
Number of U.S. and state highway crossings
Number of FM and county road crossings
Number of FAA-listed airfields within 10,000 ft of ROW centerline
Number of commercial AM radio transmitters within 10,000 ft of ROW centerline
Number of FM radio transmitters microwave towers, etc. within 2.000 ft of ROW centerline
Aesthetics
Estimated length of ROW within foreground visual zone[2] of U.S. and State highways
Estimated length of ROW within foreground visual zone[2] of FM roads
Estimated length of ROW within foreground visual zone[2] of recreational or park areas
Estimated length of ROW within foreground visual zone[2] of churches, schools, hospitals and cemeteries
Ecology
Length of ROW through upland woodland
Length of ROW through bottomland/riparian woodland
Length of ROW across wetlands
Length of ROW across known habitat of endangered/threatened species
Length of ROW across open water (lakes, ponds)
Number of stream crossings
Length of ROW over Edwards Aquifer Recharge Zone
Length of ROW parallel (within 100 ft) to streams

---

[1] Residences, businesses, schools, churches, cemeteries, hospitals, nursing homes, etc

[2] One-half mile, unobstructed

APPENDIX C
EXAMPLE LIST OF ENVIRONMENTAL/LAND USE CRITERIA

6/7/17

1. Local
   a. City of San Antonio
   b. Alamo Area Council of Governments
   c. Edwards Aquifer Authority
   d. Alamo Soil and Water Conservation District
   e. San Antonio River Authority
   f. Bexar County Judge
   g. Bexar County Commissioners
   h. Bexar County Floodplain Administrator
   i. Other Counties/Cities/Towns
2. State
   a. Texas Department of Transportation
      (1) Aviation Division
      (2) Environmental Affairs
   b. Texas Water Development Board
   c. Texas Parks and Wildlife Department
   d. Texas Historical Commission
   e. Texas Natural Resource Conservation Commission
3. Federal
   a. Natural Resources Conservation Service
   b U.S. Army Corps of Engineers, Ft. Worth District
   c. U.S. Environmental Protection Agency
   d. Federal Emergency Management Agency
   e. Federal Aviation Administration
   f. U.S Fish and Wildlife Service
   (note. If Federally-owned property is involved with any routing/siting alternatives, then the agency owning the property, as well as the National Park Service will be contacted)

APPENDIX B

EXAMPLE LIST OF LOCAL, STATE, AND FEDERAL AGENCY CONTACTS

CPS ENERGY GENERAL ROUTING/SITING PROCESS

1. Utility Planners/Engineers determine/establish need for project
   - Transmission line voltage needs
   - Substation needs
2. Study Area delineated based on end points for transmission line and/or electrical load area for substation
   - Study area large enough to allow flexibility in transmission line routing/substation location
3. Data Gathering Phase and Development of Constraints Map
   - Letters sent to federal, state, and local agencies requesting information/concerns about study area
   - Aerial photographs of study area obtained
   - Information regarding sensitive/important natural, cultural, human resources mapped as constraints
   - Property boundary information obtained (not land ownership)
4. Preliminary alternative transmission line routes/substation sites developed, considering
   - Environmental/land use constraints or avoidance/exclusion areas
   - Routing/siting opportunities
   - Engineering/right-of-way concerns
   - Evaluation of structure types
5. Public Involvement Program
   - Landowner and interested party notification and newspaper notices for public meetings
   - Public Open House meetings held to explain need for the project and to solicit input on preliminary alternative routes/sites
6. Alternatives refined
   - Public and agency input evaluated and used to modify alternative routes, if appropriate
7. Additional public meetings
   - Review revised routes with public, if necessary
8. Primary alternative routes/sites evaluated using list of environmental criteria
   - 25-35 environmental/land use criteria used to evaluate/compare alternatives
9. Preferred route/site recommended
   - Based on environmental/land use factors
   - One or more viable alternatives identified
10. Environmental assessment report prepared, including discussion of:
    - Purpose and need for project
    - Description of proposed design and construction
    - Existing environment
    - Alternative analysis
    - Public/Agency input
    - Impacts of each alternative
    - Local/state/federal permitting requirements
    - Mitigation (if necessary)
    - Costs for each alternative
11. Utility selects overall preferred route based on factors such as.
    - Public input
    - Engineering
    - Cost
    - Right-of-way considerations
    - Maintenance
    - Environmental
    - Land Use
12. Public notified of final route/site selected and date for start of construction

APPENDIX A

CPS FACILITY GENERAL ROUTING/SITING PROCESS

http://www.tnrcc.state.tx.us/water/quality/data/wmt/mid_col _assmt.html. Texas Natural Resource Conservation Commission, Office of Water Quality Resource Management, Austin, Texas.

_____. 1996. The State of Texas Water Quality Inventory 1994. 13th Edition. Volume III. Texas Natural Resource Conservation Commission. Austin, Texas.

. Undated. Edward's Aquifer Recharge and Transition Zone Maps. Austin, Texas.

Texas Department of Transportation (TxDOT). Aviation Division. 1998. Texas Airport Directory.

Texas Parks and Wildlife Department (TPWD). Biological and Conservation Database (TXBCD). Available from Texas Parks and Wildlife Department. Austin, Texas. *Organized by USGS quad.*

Texas Water Development Board (TWDB). 2000. Numerical groundwater flow model of the Upper and Middle Trinity Aquifer, Hill Country Area. Open-file Report No. 00-02. Austin, Texas.

. 1997. Water for Texas: A Consensus-based Update to the State Water Plan, Vol. II, Technical Planning Appendix. Document No. GP-6-2. Texas Water Development Board, Austin, Texas.

. 1995. Aquifers of Texas. Report 345. Austin, Texas.

Texas Water Commission (TWC). 1992. The State of Texas Water Quality Inventory. 11th Edition. Texas Water Commission, Austin, Texas.

U.S. Geological Survey (USGS). *Texas Quadrangles.* 7.5 Minute Series. U.S. Geological Survey. Washington, D.C.

U.S.D.A. Natural Resources Conservation Service (NRCS, formerly Soil Conservation Service). 1985. General Soil Surveys *(by county).* USDA SCS (now NRCS) National Cartographic Center, Fort Worth, Texas.

U.S.D.A. Natural Resources Conservation Service (NRCS, formerly Soil Conservation Service). 1979. Texas Prime and Potential Prime Farmland Soils Inventory. USDA NRCS, Fort Worth, Texas.

References/Bibliography

Ashworth, J B. and J. Hopkins. 1995. Aquifers of Texas. Report 345. Texas Water Development Board. Austin, Texas.

Blair, W.F. 1950. The biotic provinces of Texas. Texas Journal of Science 2:93-117.

Bureau of Economic Geology (BEG). 1976. Energy Resources of Texas. The University of Texas at Austin, Austin, Texas.

_____. 1977. Land Resources of Texas. Austin, Texas.

_____. 1979. Mineral Resources of Texas. Austin, Texas.

_____. Geologic Atlas of Texas, *Regional Sheets*. Austin, Texas.

Federal Flood Emergency Management Agency (FEMA). Flood Insurance Rate Maps *(by county)*. National Flood Insurance Program. Washington, D.C. (More recent than Flood Hazard Boundary Maps)

Federal Insurance Administration. Flood Hazard Boundary Maps *(by county)*. U.S. Department of Housing and Urban Development, Federal Insurance Administration. (If FEMA maps not available for county)

Fish and Wildlife Service (FWS) 1999/2000. Federally listed threatened and endangered species of Texas. U.S. Fish and Wildlife Service. Washington, D.C. Updates available from USFWS Web site.

Fish and Wildlife Service (FWS). 1992. National Wetlands Inventory Texas. Quadrangles. 7.5 Minute Series. U.S. Fish and Wildlife Service. Washington, D.C.

National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce 1998. Airport Facility Directory - South Central U.S. Washington, D.C.

. 2000. San Antonio sectional aeronautical chart. Washington, D.C.

Sellards, E.H., W.S. Adkins, and F.B. Plummer. 1932. The Geology of Texas: Vol. I, Stratigraphy. 8th Printing (1981). Bureau of Economic Geology, University of Texas. Austin, TX

Texas Natural Resource Conservation Commission (TNRCC). 1997. Watershed and stream segment information. TNRCC Web site,

If existing lines are re-conductored or new conductors are added, no additional investigations beyond engineering analyses and landowner contact should be required.

5. MINOR LINE ALTERATIONS/RELOCATIONS

The relocation or alteration of minor lengths of line (a few spans) should require minimal investigations beyond engineering analyses and right-of-way acquisition. Investigations could include the following components.

A. Landowner/Stakeholder Input
B. Brief Environmental/Land Use Analysis (Habitable Structures, Threatened & Endangered Species, Wetlands/Karst Features, Cultural Resources)
C. Brief Report Documenting the Results of the Analyses

new substation is located in a previously developed area. If the new substation is to be located in a more rural/remote area, the modified process may include the following items.

A. Determine General Substation Location Area
B. Alternative Site Selection/Engineering and Environmental Constraint Analysis
C. Records Check/Site Inspection for Threatened and Endangered Species
D. Site Inspection for Wetlands and Karst Features
E. Records Check/Site Survey for Cultural Resources
F. Floodplain Evaluation
G. Land Use/Aesthetics Evaluation
H. Noise Analysis for Nearest Residence (as deemed necessary)
I. Draft Report Documenting the Results up to this point in Process
J. Landowner/Public/Homeowner Associations Input/ Meetings as Necessary
K. Utility selects best site
L. Brief Final Report Documenting the Results of the Process/Results

2. SUBSTATION RELOCATIONS/EXPANSIONS

The relocation of an existing substation will require most of the components discussed above for new substations. The expansion of an existing substation may only require a brief engineering and environmental overview/constraint analysis and landowner input.

3. USE OF EXISTING RIGHT-OF-WAY/RIGHT-OF-WAY WIDENING FOR RECONSTRUCTION OF ELECTRIC TRANSMISSION LINES

The reconstruction of transmission lines within existing right-of-way and widening of existing right-of-way may include the following modified process components.

A Landowner Contract/Input (Meetings as Necessary)
B. Threatened and Endangered Species Records Check/Site Survey
C Cultural Resources Records Check/Site Survey
D. Site Survey for Wetlands and Karst Features if Right-of-way Requires Clearing or Widening
E. Aesthetic Analysis for Change of Structure Type
F. Brief Report Documenting the Results

4. RE-CONDUCTORING /ADDING NEW CONDUCTORS ON EXISTING TRANSMISSION STRUCTURES

A. Public input
B. Engineering criteria
C. Cost
D. Right-of-way considerations
E. Maintenance
F. Environmental impacts
G. Land use impacts

12. **PUBLIC NOTIFICATION OF FINAL ROUTE/SITE SELECTED** - CPS will notify interested persons of the final route/site selected and the date for start of construction. This will be accomplished by individual letter and/or newspaper advertisements.

MODIFIED PROCESS FOR OTHER ELECTRIC FACILITIES

In the course of providing safe and reliable electric service to its customers, CPS must plan for and construct electric transmission and substation facilities other than totally new electric transmission lines and related new substations. These projects include, but are not limited to the following facilities.

- New Substations Not Associated With A New Transmission Line
- Substation Relocations/Expansions
- Use of Existing Right-of-Way/Right-of-Widening for Reconstruction of Electric Transmission Lines
- Re-Conductoring/Adding New Conductors on Existing Transmission Structures
- Minor Line Alterations/Relocations

During the planning process, each of these types of projects will be evaluated by CPS staff on a case by case basis to determine the components of a "Modified Process." The level of detail and components comprising the "Modified Process" for a particular project will be selected based upon the nature, extent, and location of the project; engineering; safety; environmental issues/regulations; project costs; right-of-way; and public/stakeholder/agency input, as necessary. A general discussion of the components of the "Modified Process" for each type of project is presented below.

1. NEW SUBSTATION NOT ASSOCIATED WITH A NEW TRANSMISSION LINE

Depending on the location, a new substation siting project may involve most of the steps presented above in this General Routing/Siting Process Manual. This is especially true if the

review revised routes with the public, if necessary. Individual meetings may also be held with neighborhood associations, special interest groups and public officials, as appropriate. These meetings may be held in a variety of formats, including open houses, presentation/question and answer, focus groups, and/or workshops. Additional information may be shared and exchanged with the public through newsletters, mailouts, project-based websites, and/or other medias.

8. **EVALUATION OF PRIMARY ALTERNATIVE ROUTES/SITES** - The primary alternative routes/sites will be evaluated/ranked by the consultant using a list of environmental criteria to build a matrix (table) comparing each of the criteria for each alternative route/site. An example list of the 25-35 environmental/land use criteria used to evaluate/compare alternatives is shown in Appendix C.

9. **PREFERRED ROUTE/SITE RECOMMENDED BY CONSULTANT**
   A. Based on environmental/land use factors present, the consultant will evaluate each primary alternative using staff with expertise in several different environmental disciplines (e.g., terrestrial ecology, land use, planning, cultural resources). Each person will independently analyze the routes from the perspective of their discipline. The consultant's environmental/land use project team will then discuss their independent results with one another in a meeting of the whole group. The relationship and relative sensitivity among the major environmental criteria will be determined by the group as a whole. An environmental/land use preferred route, and any ranked alternatives, will be determined by a consensus of the group, which will be presented to CPS in a draft environmental assessment report.

10. **PREPARATION OF ENVIRONMENTAL ASSESSMENT REPORT** - The consultant will prepare the final environmental assessment report, which will include a discussion of:
    A. Purpose and need for project
    B. Description of proposed design and construction
    C. Existing environment
    D. Alternative analysis
    E. Public/agency input
    F. Impacts of each alternative
    G. Local/state/federal permitting requirements
    H. Mitigation (if necessary)
    I. Costs for each alternative (as provided by CPS).

    An example Table-of-Contents for an Environmental Assessment/Alternative Route Analysis Report is shown in Appendix D.

11. **CPS SELECTION OF OVERALL PREFERRED ROUTE/SITE** - CPS will select the overall preferred route based on factors including, but not limited to:

4. The use of high strength conductors will be considered, particularly at road, waterway and canyon crossings to pick up the line sag and allow for straighter line profiles.
5. When lines are adjacent to highways, the use of guyed towers will be avoided, where possible.
6. In scenic areas and along roadways, lower structure heights and reduced structure spacing will be considered for aesthetic purposes.
7. In situations where there is a conflict between adherence to safety regulations and any of the above considerations, the safety regulations shall govern.

5. **PUBLIC INVOLVEMENT PROGRAM** - a public involvement program will be implemented for each new project. Landowners and interested parties will be notified by letter and/or newspaper advertisements (legal and metro sections) of the proposed project two (2) times; once two weeks prior to the event and once one week prior to the event. At a minimum, notification shall include landowners whose property is within 300'for a 138kV project and 500' for a 345kV project. A public, open-house meeting(s) will be held to explain the need for the project and to solicit input on preliminary alternative routes/sites.

   A series of information stations/booths will be set up which will include, but not be limited to, the following:

   - Welcome/Sign-in
   - Project Planning, Purpose and Need
   - Environmental/Routing and Siting
   - Transmission Engineering
   - Substation Engineering
   - Right-of-way

   An information handout and questionnaire to solicit public input will be developed for each project. The public open house meeting(s) will be held in the late afternoon/early evening at an appropriate location within or near the study area, and will generally be at least two hours in length.

6. **REFINE ALTERNATIVES** - The preliminary alternative routes/sites will be refined down to the primary alternative routes/sites The public and agency input will be evaluated and used to modify alternative routes, if appropriate.

7. **ADDITIONAL PUBLIC MEETINGS** - An additional public meeting(s) will be held to

easements, where possible. The site will not overlie any existing non-CPS easements or rights-of-way. The substation site will not infringe on evident future public developments such as roadways, waterways, etc.

j. Land Availability - Acquisition of property from a willing seller is preferred over condemnation.

k. Substations will be located with consideration to both their basic function and the preservation of public views of scenic, historic, natural, and recreation areas, parks, etc. Where possible, they will be located where they can be naturally or artificially screened (vegetation and/or terrain).

l. Where possible, locations near existing or proposed interstate or state primary highways will be avoided, except in commercial/industrial areas.

m. If possible, locations will avoid population areas, particularly scenic areas, wildlife refuges, hilltops, and historic man-made structures.

n. Potential noise will be considered when the location of substations is being determined.

o. The proposed location, layout, and design parameters will be coordinated with appropriate local planning agencies to assure maximum compatibility between the facilities and present and future land use.

B. Routing/siting opportunities
   1. The use of existing transmission line, distribution line, highway, roadway, and railroad ROW will be considered whenever possible.
   2. Paralleling existing ROWs will be considered whenever possible.
   3. The placement of routes/sites within commercial/industrial areas will be considered whenever feasible.

C. Engineering/right-of-way concerns
   1. To reduce the number of transmission lines constructed, the joint use of existing electric transmission facilities will be considered when feasible.
   2. Access roads will be located in a manner that will preserve natural beauty and minimize erosion. Existing roads will be used to the maximum extent possible.

D. Evaluation of structure types
   1. When possible, existing lower voltage transmission lines will be upgraded to allow the construction of higher voltage lines on the existing ROW instead of adding or widening the ROW.
   2. The materials used to construct transmission towers will harmonize with the natural surroundings, where possible. Self-protecting bare (rusted) steel may be appropriate in areas. Towers constructed of galvanized steel, concrete, and wood will also be considered.
   3. Choice of conductor material will be carefully considered so as to avoid sheen or too strong a silhouette and to provide the best selection for blending the conductors into any given setting through which the line must pass. Standard aluminum wire will dull with time as it oxidizes in the atmosphere.

(v) Protection of adjacent resources including avoiding fragmentation of larger natural areas that serve as wildlife habitat will be considered.

k. Consideration will be given to multiple uses of ROWs. Possible uses include nurseries/orchards for various economic plants such as Christmas trees, native plants for wildlife forage, wildlife management areas, general agriculture, and hike/bike trails.

2. Substations

a. General Area Selection - The general area for a new substation will be determined by the Planning Division based upon load and system requirements. Within this general area, the Substation Design Section will locate preliminary alternative sites.

b. Accessibility - The substation site requires public roadway access of sufficient quality to allow for normal operation and maintenance vehicle access during bad weather conditions and to allow for large construction vehicles during good weather conditions. A minimum of one access will not cross a floodplain.

c. Size - The minimum fenced dimensions for a four-unit substation is 420' x 420' (approximately 4 acres). Additional areas may be required for substation entrances, landscaping, buffering, etc.

d. Conditions

(1) Location - The substation site will not be located in existing defined flood hazard areas and will be located sufficiently above existing flood levels so that future development will not cause the flood plain to encroach upon the substation.

(2) Terrain - The substation site should be relatively flat, but be adequately sloped to allow for drainage of precipitation and evacuation of spill containment facilities.

(3) Soil - The substation site will be in a natural state, void of fill material unacceptable for construction activities.

e. Transmission Access - Where possible, the substation site will be located and oriented such that transmission line entrances are direct and do not require additional transmission structures to be located near or within the substation.

f. Distribution Access - Most substations are designed to support 16 distribution circuits. It is advantageous to locate the substation near a major intersection to facilitate access to the distribution system.

g. Environmental Issues - The substation site will be free from contaminants, will not contain any known historic or prehistoric features, will not be habitat to any endangered species, will not have any evidence of aquifer recharge features, and should have minimal vegetation that requires removal.

h. Neighborhood Impact - The substation site will be located to minimize impact on churches, schools, parks, residences, etc.

i. Land use - The substation site will be located adjacent to existing transmission

c. The delineation of alternative transmission line routes will be done to preserve the natural landscape and minimize conflict with present and known planned uses of the land
d. Routes will avoid heavily wooded areas, steep slopes, and scenic areas, where possible.
e. Known locations of endangered/threatened species, significant cultural resource sites, wetlands, and parks/recreation areas will be avoided whenever possible.
f. Where feasible, the use of natural screens (vegetation and/or terrain) to minimize the view of the transmission facilities from highways and other areas of public view, will be considered.
g. To avoid silhouetting transmission towers against the sky, they will not be constructed on top of hills, along ridgelines, or other high points, if possible. Instead, routes will be placed below the crest of a hill or in a saddle to carry the line over the ridge or hill.
h. When crossing wooded canyons, long-span towers will be considered to keep the conductors above the trees and to minimize the need to clear all vegetation from below the lines. Clearing in the canyon will be limited to that which is necessary to string the conductors.
i. Routing the transmission line across open expanses of water and marshland and particularly those used as flight lanes by migratory waterfowl and other birds will be avoided.
j. The types of vegetation, soil, geological formations, and topography will be considered to minimize the level of disturbance, cost, and/or maintenance. Factors include:
   (1) soil/rock stability which may contribute to erosion problems and/or increased turbidity/silting of streams
   (2) difficulty or expense in ROW creation (need for blasting) or maintenance (difficulty in establishing vegetative cover)
   (3) methods of clearing/grading that will minimize disturbance
      (i) Use of brush blades in place of dirt blades on bulldozers will preserve ground cover and avoid scarring and associated erosion
      (ii) Limit clearing to only those plants and features that pose a hazard to the transmission line (leave ground cover and low vegetation), i.e., clear only when necessary to provide clearance for transmission line reliability or suitable access.
      (iii) Areas that require grading will be contoured so as to minimize erosion. As a general rule, bulldozing will not be done on slopes which exceed 35%.
      (iv) Mechanized clearing and construction activities will not be performed within 100' of a stream bed. All activities will minimize damage to the natural condition of these areas.

Commission (TWC), Texas State Data Center (TSDC), Texas Department of Agriculture, Texas Water Development Board, National Oceanic and Atmospheric Administration (NOAA, 1998, 2000), Federal Aviation Administration (FAA), Texas Department of Transportation, Texas Outdoor Recreation Plan (TORP), Texas Outdoor Recreation Inventory (TORI), various maps, and site reconnaissance.

a. socio-economic
b. population, population trends, and population housing characteristics
c. area income data, labor force, and unemployment
d. economic indicators
e. agriculture -- cropland, livestock, non-agricultural sectors
f. forestry, trade, tourism
g. oil and gas production
h. political subdivisions and transportation network
i. major (public or military) and private airfields and other FAA-controlled facilities
j. microwave and communication towers (AM, FM, cellular, etc.)
k. churches, schools, and cemeteries
l. utility systems
m. parks and recreation facilities

3. Cultural resources - Previously recorded cultural resources sites will be located based upon a review of information from the Texas Archaeological Research Laboratory (TARL) at the University of Texas and the Texas Historical Commission (THC). Other sources of information will vary depending on project location.
   a. Cultural history of the area
   b. cultural resources, backgrounds, previous investigations, and results of investigations

D. Property boundary information obtained (not specific land ownership)
   1. City, county, state, and federal lands
   2. Private lands (boundary information from County Appraisal District office)

4. **DEVELOP PRELIMINARY ALTERNATIVE TRANSMISSION LINE ROUTES/SUBSTATION SITES** - Preliminary alternative transmission line routes/substation sites will be developed, considering:

A. Environmental/land use constraints, avoidance/exclusion areas, and opportunity areas.
   1. Transmission lines
      a. Existing residential areas and subdivisions will be avoided when possible. Habitable structures will be avoided wherever feasible.
      b. Alternative routes will utilize or parallel existing transmission line, distribution line, highway, roadway, or railroad right-of-way, etc., whenever feasible.

University of Texas at Austin, Geologic Atlas Sheets. ....karst features can be included here and/or with endangered and threatened species and sensitive habitats - sources include Veni and Associates reports (for karst information)

b. topographical formations - sources include U.S. Geological Survey (USGS) quads (7.5 minute series)

c. soil formations - sources include Soil Surveys (U.S.D.A. Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service)).
   (1) prime farmland soils , defined by the Secretary of Agriculture in 7 CFR 657 (Federal Register, Vol. 43, No. 21) as land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, or oilseed and is also available for these uses (i.e., the land could be used as cropland, pasturelands, rangeland, forestland, but not land that is developed or under water). Source of county information in Texas is Texas Prime and Potential Prime Farmland Soils Inventory (NRCS, 1979).
   (2) hydric soils - one of three criteria (vegetation, soil, hydrology), which the U.S. Army Corps of Engineers (USACE) uses to determine if a site is a jurisdictional wetland. Lists of these soils are available from NRCS local offices.

d. mineral resources - sources include Mineral Resources of Texas (BEG, 1979)

e. energy resources - sources include Energy Resources of Texas (BEG, 1976)

f. surface water - sources for information about the watershed and/or stream segments include the Texas Natural Resource Conservation Commission (TNRCC, 1996, 1997), the Texas Water Commission (TWC, 1992) and the Environmental Protection Agency (EPA) Web Site.

g. ground water formations - sources include Ashworth and Hopkins (1995), the Texas Water Development Board (1995, 2000), and TNRCC (undated).

h. vegetative regions including wetlands and other sensitive habitats - sources of information include the National Wetland Inventory quads (7.5 minute series), and Texas Parks and Wildlife Department's (TPWD) Biological and Conservation Data System (TXBCD) by USGS quad (Austin TPWD office).

i. ecological resources - biotic provinces of Texas including wildlife communities are described by Blair (1950).

j. sensitive and/or endangered and threatened plant and wildlife species and critical habitats (endangered, threatened, species of concern)
   (1). state - TXBCD by USGS 7.5 minute quad and county lists (available at TPWD office, Austin, TX, state-wide list available also on TPWD web site)
   (2) federal - U.S. Fish and Wildlife Service county lists

k. areas with high aesthetic values - determined from miscellaneous published documents and/or general reconnaissance of the study area.

2. Human resources - sources of data for following include the Texas Workforce

CPS ENERGY
ELECTRIC TRANSMISSION LINE ROUTING/SUBSTATION SITING
GENERAL PROCESS MANUAL

INTRODUCTION

On December 27, 1999, the City Public Service (CPS) Board of Trustees approved a CPS Facility General Routing/Siting Process for Electric Transmission Lines and Substations, which is presented in Appendix A. The purpose of this manual is to provide annotations for the General Routing/Siting Process which can be utilized by CPS staff for future projects. This manual is intended to be a dynamic document, to allow for new data sources and for changes and revisions necessary to accomplish future projects.

ANNOTATED GENERAL ROUTING/SITING PROCESS

1. **NEED FOR PROJECT** - CPS Planners/Engineers will determine/establish the need for the project. The following needs will be determined:
   A. Transmission line voltage needs
   B. Substation needs

2. **STUDY AREA DELINEATION** - The study area will be delineated based on end points for the proposed transmission line and/or the electrical load area for the substation. The substation vicinity will be selected based on load and system requirements. The study area will be large enough to allow flexibility in transmission line routing/substation siting. The study area will be depicted in a way to show any obvious natural or human- made obstacles.

3. **DATA GATHERING/CONSTRAINTS MAPPING** - Following the delineation of the study area will be the data-gathering phase and the development of land use and environmental constraints maps.
   A. Letters will be sent to federal, state, and local agencies/officials requesting information/ concerns about the study area and the project. An example agency contact list is shown in Appendix B.
   B. Aerial photographs of the study area will be obtained. If recent existing aerial photography is not available (i.e., 1-2 years old), new photography will be ordered. The minimum resolution should be 1" = 1,000' in order to determine locations of habitable structures, vegetation boundaries, and other important land use and environmental features.
   C. Information regarding sensitive/important natural, cultural, and human resources will be obtained and mapped as constraints. Sources of information may include, but not be limited to, the following list.

      1. Natural resources
         a. geological formations - sources include Bureau of Economic Geology-

ATTACHMENT A

CPS ENERGY

ELECTRIC TRANSMISSION LINE ROUTING/SUBSTATION SITING GENERAL PROCESS MANUAL

January 2001 (revised 2011)

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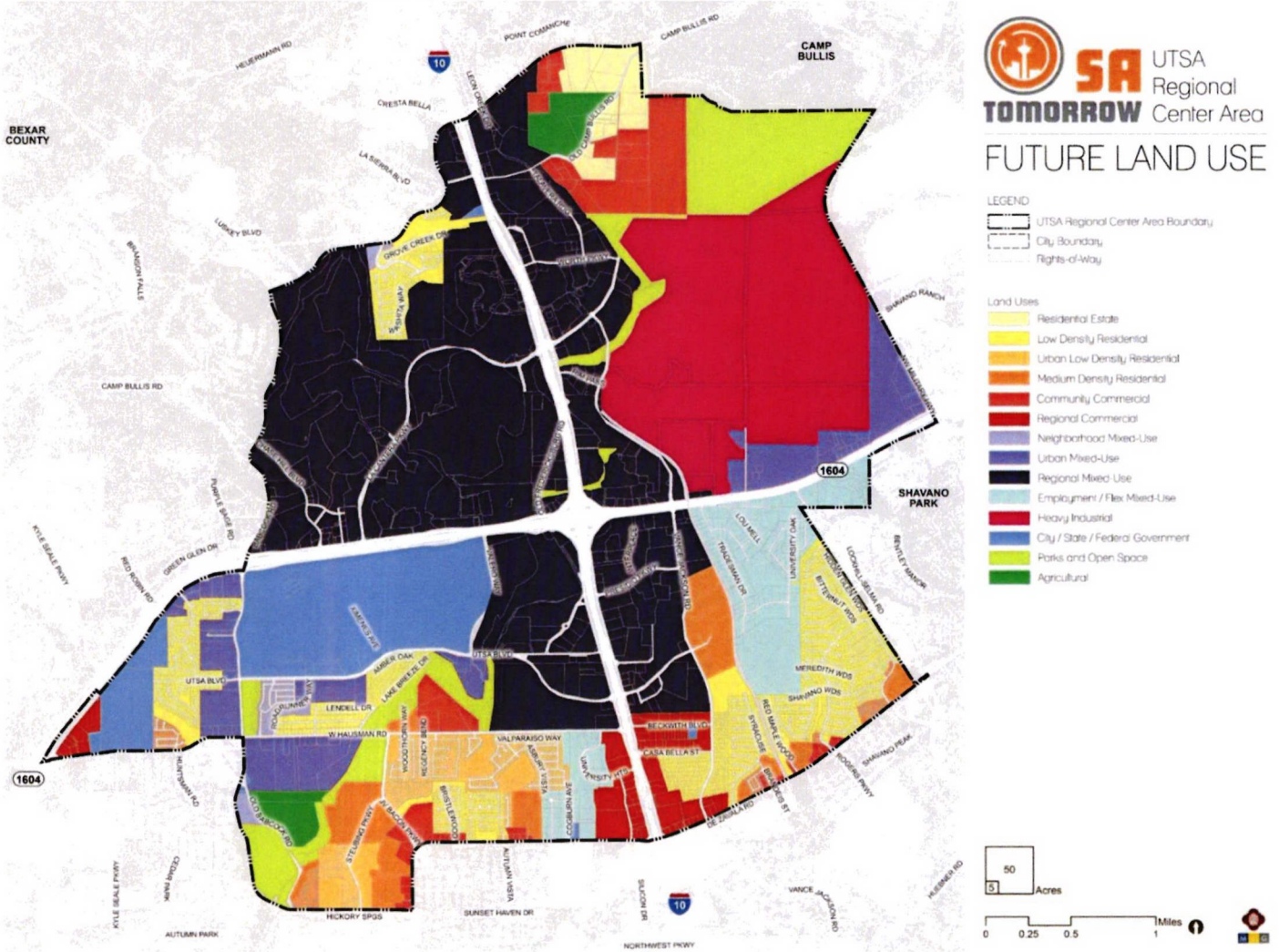
UTSA Area Regional Center's adopted Future Land Use Map.



SA TOMORROW UTSA Regional Center Area

FUTURE LAND USE

LEGEND

- UTSA Regional Center Area Boundary
- City Boundary
- Rights-of-Way

Land Uses

- Residential Estate
- Low Density Residential
- Urban Low Density Residential
- Medium Density Residential
- Community Commercial
- Regional Commercial
- Neighborhood Mixed-Use
- Urban Mixed-Use
- Regional Mixed-Use
- Employment / Flex Mixed-Use
- Heavy Industrial
- City / State / Federal Government
- Parks and Open Space
- Agricultural

50 Acres

0 0.25 0.5 1 Miles

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7. Appendix A: UTSA 2010-2040 Forecast for Residential Dwelling Units and Jobs

SA Tomorrow UTSA Area Regional Center

2010-2040 Forecast for Residential Dwelling Units and Jobs

Forecast, 2010-2040	Baseline Scenario[1]	Targeted Growth Scenario[2]
Dwelling Units		
Forecast Total	15,900	37,500
Forecast Annual	530	1,250
Remaining Capacity[3]	27,544	5,944
Percent of Capacity[3]	37%	86%
Jobs		
Forecast Total	39,700	48,000
Forecast Annual	1,323	1,600
Remaining Capacity[3]	67,690	59,390
Percent of Capacity[3]	37%	45%

Source: Economic & Planning Systems; City of San Antonio Planning Department

[1] Based on Alamo Area Metropolitan Planning Organization (AAMPO) 2040 TAZ forecasts

[2] Estimates for future growth in the centers and corridors assuming that denser development patterns can be attracted and supported by high-frequency transit service. The Targeted-Growth numbers assume a significant market shift towards the Regional Centers based on associated infrastructure such as fixed guideway, frequent transit service that facilitates denser, mixed-use development.

[3] Based on UTSA Land Capacity Analysis totals in Table: *Future Land Use Acreage and Forecast Dwelling Units, Jobs, and Commercial/Industrial Square Feet*

SA Tomorrow UTSA Area Regional Center

Future Land Use Acreage and Forecast Dwelling Units, Jobs, and Commercial/Industrial Square Feet

		Percent by Use		Acres by Use		Factors			UTSA Land Capacity			Forecast (2040)[3]		
Future Land Use Category	Acres[1]	Residential	Non-Residential	Residential	Non-Residential	*FAR*	*DU/Acre*[2]	*Sq. Ft. per Job*	Residential Dwelling Units	Commercial / Industrial Bldg Area	Commercial / Industrial Jobs	Residential Dwelling Units	Commercial/ Industrial Jobs	Commercial/ Industrial Building Area (SF)
Low Density Residential	57.2	100%	0%	57	0	0	5	0	286	0	0	105	-	-
Urban Low Density Residential	135.3	100%	0%	135	0	0	10	0	1,353	0	0	495	-	-
Medium Density Residential	29.4	100%	0%	29	0	0	20	0	587	0	0	215	-	-
High Density Residential	0.0	100%	0%	0	0	0	35	0	0	0	0	-	-	-
Neighborhood Mixed-Use	16.7	25%	75%	4	13	0.5	20	300	83	272,770	909	31	308	92,315
Urban Mixed-Use	295.6	50%	50%	148	148	0.5	35	300	5,172	3,218,730	10,729	1,893	3,631	1,089,335
Regional Mixed-Use	1,369.6	50%	50%	685	685	0.75	50	300	34,241	22,372,880	74,576	12,532	25,239	7,571,796
Employment/Flex Mixed-Use	245.8	20%	80%	49	197	0.5	35	500	1,721	4,283,222	8,566	630	4,832	1,449,598
Business/Innovation Mixed-Use	0.0	20%	80%	0	0	0.5	35	500	0	0	0	-	-	-
Heavy Industrial	1,276.7	0%	0%	0	0	0.3	0	1,000	0	0	0	-	-	-
Community Commercial	323.2	0%	100%	0	323	0.3	0	400	0	4,224,116	10,560	-	4,765	1,429,595
Regional Commercial	62.7	0%	100%	0	63	0.3	0	400	0	819,535	2,049	-	925	277,360
City/State/Federal Government	692.1	0%	0%	0	0	0.3	0	300	0	0	0	-	-	-
Parks/Open Space	560.7	0%	100%	0	561	0	0	0	0	0	0	-	-	-
Agricultural	0	10%	90%	0	0	0	0	0	0	0	0	-	-	-
Total	**5,065.1**	**22%**	**39%**	**1,108**	**1,988**				**43,444**	**35,191,252**	**107,390**	**15,900**	**39,700**	**11,910,000**

Source: Economic & Planning Systems; City of San Antonio Planning Department

[1] Based on the adopted Future Land Use Map in the UTSA Area Regional Center Plan [https://utsa-area.sacompplan.com/en/plan-framework/land-use/]

[2] Based on the stated range of typical densities for residential land use categories [*SA Tomorrow Land Use Classifications (Adopted October 11, 2018)* document found at https://www.sanantonio.gov/Planning/PlanningUrbanDesign/Future-Land-Use]

[3] The 2040 Forecast numbers should be considered "Net New" dwelling units, jobs, and building square footage beyond current levels

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6. Conclusion and Recommendation

As residential, commercial, and industrial development and associated electric demand increases in the northwestern region of Bexar County, CPS Energy has identified reliability violations in the Scenic Loop area today. Although few modifications of the existing distribution circuits will provide additional capacity and some short term improvements in reliability, the existing system will be inadequate to reliably serve the area by 2024 in accordance with CPS Energy's Distribution Planning Criteria. If additional capacity is not added to the system, it will become difficult for CPS Energy to provide reliable service, sufficient voltage support for normal summer load, and capacity for load shifts during maintenance or emergency conditions. By 2024 the distribution system will reach a point at which connection of new customers will lead to unacceptable levels of reliability. The addition of the Scenic Loop Substation will support existing, short-term, and long-term load growth in the region, increase system capacity and infrastructure support circuit ties, improve reliability, and decrease outage durations. The new substation will also reduce transformer loading at adjacent substations, providing for additional load growth in the regional area.

The reliability concerns, driven by continued load growth in the area, demonstrate the need for a new substation. Burns McDonnell conducted analysis that supports CPS Energy's recommendation that a new Scenic Loop Substation (Option B) is the preferred solution to address the short-term and long-term system needs of the northwestern Bexar County region.

The proposed new Scenic Loop Substation will meet the forecasted load growth and improve the reliability of the area with shorter circuits, strong backbones, and sufficient field circuit ties that will prevent major loss of customer load in faulted conditions (e.g. equipment failures, tree contact, lightning strikes, or vehicle incidents). The Scenic Loop Substation will be designed as a three unit site to accommodate two transformers and a spare position. An estimated 20-25 MW of load will be served by the new substation initially. The substation will be looped into the existing Ranchtown to Menger Creek 138 kV transmission line approximately five to seven miles to the west.

In addition to accommodating forecasted load growth, the Scenic Loop Substation will improve reliability in the northwestern region of Bexar County. Adding the proposed substation will reduce the total number of customer interruptions and duration of those interruptions.

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- Option F

In order to address reliability of the existing distribution circuits serving the Scenic Loop area, an alternative was evaluated that involved relocation of existing poor performing circuits from overhead to underground. While undergrounding distribution circuits can have a significant improvement on reliability, the cost to underground an entire circuit is typically 8-10 times[7] more expensive than overhead circuits (approximately $40M[8]). At least two of the existing circuits from the La Sierra and Fair Oaks Ranch substations (U114, R034) would need to be relocated underground to achieve the reliability benefits anticipated from construction of the proposed Scenic Loop Substation. An estimated cost of such undergrounding is reasonably estimated at approximately $80M.

In addition, the engineering and maintenance for underground distribution circuits is more complex and expensive and would take many years to complete (resulting in further decreasing reliability in the interim of the conversion). In addition, the expanded capacity on the new underground ground distribution circuits would result in further needed upgrades to equipment at the Fair Oaks Ranch and La Sierra substations, resulting in additional costs for this alternative.

In order to achieve the same reliability and capacity benefits of the Scenic Loop Substation alternative, the undergrounding alternative would cost more than twice the cost of a new substation and will not provide the same operational flexibility as a third substation (Scenic Loop) for the region. This alternative was rejected based on the significant expense of the alternative.

[7] https://emp.lbl.gov/sites/all/files/lbnl-1006394_pre-publication.pdf

[8] https://emp.lbl.gov/sites/all/files/lbnl-1006394_pre-publication.pdf - EEI (2013) reported a minimum overhead-to-underground distribution line conversion cost range of $158,100–$1,000,000/mile and a maximum conversion cost range of $1,960,000–$5,000,000. EEI (2013) also reported that installing new underground distribution lines costs from $297,200-$1,141,300/mile (minimum) to $1,840,000–$4,500,000/mile (maximum).

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resources to the distribution system and will not fully alleviate existing reliability issues that are directly associated with line length and overhead line length through significant terrain and vegetation since the existing distribution circuits would remain unchanged.

- Option D

Another DER option considered was construction and operation of gas-fired generation within the project area to replace the capacity of the proposed Scenic Loop Substation. The nearest available gas pipeline to the Scenic Loop area capable of serving a gas-fired generating station is approximately 5.0 miles away. In addition, any new fossil-fueled generation would require significant water usage and environmental permits.

Based on the review of the load growth in the region, a new substation is needed in the Scenic Loop area by 2025. It is highly unlikely that any new fossil-fueled generation could be permitted and constructed in order to address the need for the area within this time frame.

Also, it should be noted that adding a generation resource to the existing circuits will still require additional switchgear and transformers and the cost would be considerably similar to the cost of developing a new Scenic Loop Substation (in addition to the cost of the generation facility).

The cost to develop a new 50 MW peaking plant (aeroderivative engine) would be approximately $60M without considering the costs to develop a pipeline to the plant and the costs to mitigate other constraints to make this option a viable alternative to the Scenic Loop Substation. In addition to the significant cost of more than $60M (plus the Pipeline costs and interconnection costs), and depending on the location of the generation facility, it is also important to note that this solution may not fully alleviate existing reliability issues that are directly associated with distribution circuit line length and overhead line length through significant terrain and vegetation since the existing distribution circuits would remain unchanged if the new generator is not constructed in the area proposed for the new Scenic Loop Substation.

- Option E

An alternative to construction of the Scenic Loop Substation that was evaluated involves upgrading the existing transformers at the Fair Oaks Ranch Substation for 100 MVA operation and the construction of two new distribution circuits from that substation. The Ranchtown Substation is further west to Scenic Loop area it was determined that building new circuits from that substation was not a reasonable alternative to the project.

The Fair Oaks Ranch Substation is located on the east side of the I-10 with more than a mile of underground conduit to terminate cables into the station. The distribution corridor in the Scenic Loop area is very limited and would require converting the existing single circuit structures to double circuit structures and terminating the new circuits into Fair Oaks Ranch with additional undergrounding and utilizing existing trenching. The length of a new circuit is anticipated to be 30 miles long to pick up portions of the Scenic Loop area load and is anticipated to have a cost of more than $20M. Expansion of the capacity of the Fair Oaks Ranch Substation will provide some additional capacity for the distribution system in the Scenic Loop area. However, as can be seen on Figures 1 and 13, expansion of Fair Oaks Ranch will still leave the Scenic Loop area served by long distribution circuits many miles from the substation transformers at Fair Oaks Ranch and La Sierra. Thus, while there may be some benefit in the short term to some aspects of reliability and capacity expansion, the reliability to the Scenic Loop area will continue to deteriorate due to the distance from a strong substation in the vicinity. Further, at a total estimated cost of $45M (2 circuits with transformer and station upgrades), this option is nearly as costly as the Scenic Loop Substation alterative with significantly less improvement to the reliability and capacity flexibility for the area.

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Figure 21: Relative Plots of MWh Comparing Energy Supplied by Source

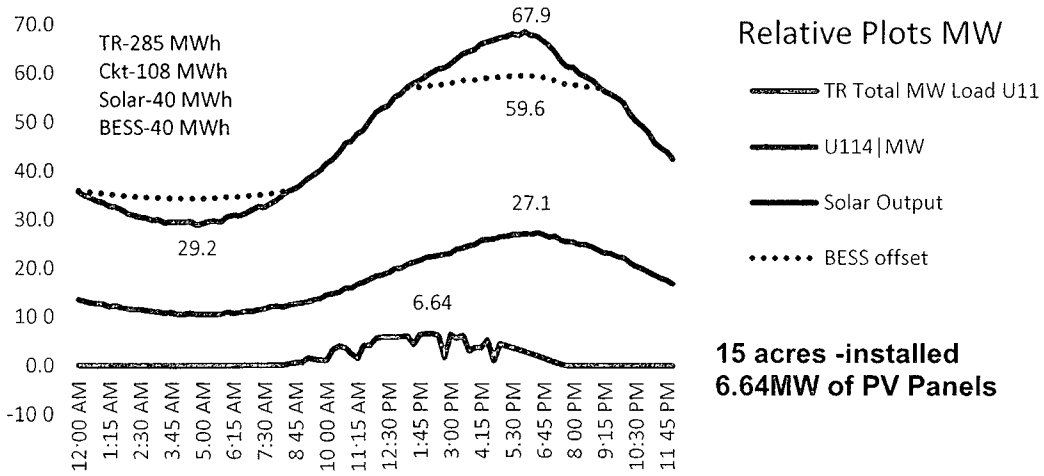

Figure 21 shows August 2019 Peak day demand of a transformer at La Sierra substation and one of the circuits (U114) to study the benefits and costs associated with a reduction of peak that is possible by including Solar PV and BESS as potential means to reduce circuit loadings. The plot shows an output of a 6.64 MW solar site and how including a 40MWh BESS on one of the circuits could perform in reduction of peak load on the transformer and provide adequate demand reduction. In this example, solar provided 40 MWh of energy during the day that is available to reduce the demand on the station. Because the solar PV generates energy in the afternoon rather than at evening peak, energy storage is required to shift the power to the evening when demand is the highest. Storage could perform the demand reduction without solar nearby if the energy is stored using the distribution system available capacity during low demand periods. The NREL study[6] is used to estimate battery capacity, solar power requirements and the costs. BESS offset illustrates a demand reduction of 8.3 MW with 40MWh of storage and the demand peak that may be flattened by applying a BESS.

Based on the example discussed above, the cost of providing a demand reduction of 8.3 MW is $15.2M ($0.38M/MWh (40MWh). The Scenic Loop Substation is anticipated to provide a system capacity benefit of 20-25 MW initially and the cost of BESS to provide a similar benefit would be approximately $45.0M. In addition, the typical functional life-span of BESS is currently limited to approximately 15 years (compared to the estimated 40 year lifespan of the proposed substation facilities). BESS also requires higher operating costs to maintain the BESS resource.

The estimated cost of single axis tracking solar panels with the inverters to produce 40MWh on a sunny day is approximately $7.5M. Replacing the 20-25MW initial capacity of the Scenic Loop Substation would cost approximately three times that amount. In addition, using a conservative estimate of 2.5 acres per MW of solar, such a facility would require approximately 50-60 acres of available property for operation of the solar PV facility. Thus, the total cost of the installation of a 25 MW PV resource would be approximately $25 - $30M and would require at least ten times the acreage of the proposed substation. In addition to the significant total cost of resources nearly $75M ($45M for BESS and $25M for PV), it is also important to note that this solution will require additional station costs to interconnect the DER

[6] https://www.nrel.gov/docs/fy19osti/71714.pdf

Table 21: Load Shift Design.

From				To				Load Shift				
CKT 1	CKT 1-kW	CKT 1-Nominal kW	CKT 1-%	CKT 2	CKT 2-kW	CKT 2-Nominal kW	CKT 2-%	Load Shift-kW	CKT 1 Adjusted-kW	CKT 1 New-%	CKT 2 Adjusted-kW	CKT 2 New-%
U114	28514	30577	93.25	R014	0	22806	0	7812	22765	74	14235	62
R034	22812	21799	110					6423	16389	75		

- Option B

Constructing a new Scenic Loop Substation will result in new transformer capacity (at the substation) directly connected to the existing transmission grid in an area where CPS Energy needs to significantly reduce distribution circuit length for reliability and increase overall system capacity (by more than 50 MW) for load growth. As proposed, locating a new substation geographically between the La Sierra and Fair Oaks Ranch substations significantly reduces the length and loading on many of the existing distribution circuits in the area. As discussed in greater detail above, shorter, less loaded distribution circuits will significantly decrease the exposure of the distribution system to potential outage events, which will directly relate to improved reliability. In contrast to Option A, which shifts some load, but cannot alter the distance of many of the distribution circuits in the area due to the geographic distance between La Sierra and Fair Oaks Ranch substations (approximately 11 miles), Option B places a new substation (with dual feed transmission service) geographically central to the area of increasing load growth (compare Figure 1 to Figure 13). Importantly, given the significant new load growth in the area generally, and specifically associated with the UTSA expansion and growth along the IH-10 corridor north of Loop 1604, a new substation in the in the Scenic Loop area will provide much needed operational flexibility that will allow CPS Energy to reliably serve capacity demands from the La Sierra, Fair Oaks Ranch, and Scenic Loop substations well into the future.

The customers connected downstream of the circuits from La Sierra will especially see a benefit from the new station in terms of improvements in reliability, as the additional station will offload circuits connected to La Sierra and Fair Oaks Ranch. The current estimated cost of the Scenic Loop Substation (including the transmission line project to connect the substation to the existing electric grid) is approximately $46.3M.

- Option C

Option C considers non-wire alternatives to traditional transmission and distribution facility investments. The concept behind Distributed Energy Resources (DER) is that these alternatives will ultimately result in savings for ratepayers as utilities are able to develop DER within communities to offset or relieve local grid needs at a potentially lower cost and lower impact to the community than installation of additional distribution or transmission infrastructure. Thus, for DER to be a viable alternative to the Scenic Loop Substation project, it will need to provide similar system improvements at a reasonably similar cost to ratepayers.

To assess the relative costs of DER as an alternative to the Scenic Loop Substation project, Solar photovoltaic (PV) generation operated in conjunction with battery storage (BESS) was compared to the CPS Energy La Sierra Substation facilities as a potential solution to reduce peak and relieve capacity on circuits.

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5. Alternatives Considered

Six options were considered to address the reliability and capacity concerns associated with the CPS Energy distribution system in northwestern Bexar County. Option A involves shifting load from existing circuits identified as overloaded. Option B involves the construction of a new Scenic Loop Substation. Option C involves adding a distributed generation power source as a non-wire solution for the area. Option D describes an alternative with inclusion of a simple cycle gas generating station within the footprint to relieve loadings on the transformers. Option E involves adding new circuits into the Fair Oaks Ranch Substation to pick up additional loads in the Scenic Loop region. Option F describes rebuilding existing low reliable circuits as underground circuits. These six options are described and analyzed below.

- ### Option A

Option A involves designing tie points and shifting load from the La Sierra Substation to surrounding available circuits to create greater capacity on the La Sierra circuits to pick up growing loads in the Scenic Loop area. Because of the geographic relief and the existing CPS Energy service territory boundary, the Fair Oaks Ranch circuits can only shift load with La Sierra circuits, which would not enhance the capacity in the Scenic Loop area. Specifically, as shown in Table 21, Option A would involve shifting approximately 14.24 MW of load from La Sierra circuit U114 and Fair Oaks Ranch circuit R034 onto Fair Oaks Ranch R014 to provide loading relief on those circuits. This would result in 13.22 MW of capacity on circuits U114 and R034. Of this additional capacity that is available, only 2.7 MW can be useful for planning purposes as per the CPS Energy planning criteria to maintain circuit loadings under 80% of their nominal rating. After load shifts, the circuit R014 will have a loading of 62% and can additionally accommodate 4 MW to keep the circuit loading under 80%. Option A would result in approximately 6.7 MW of additional capacity available for future load growth in the Scenic Loop area. Based on CPS Energy's current load forecasts, Option A would provide sufficient capacity for the area until approximately 2021. The cost for Option A is minimal as no additional equipment upgrades are needed but will not provide the desired capacity to meet the load forecast beyond 2021. The R014 circuit has been energized in June of 2020 and the Table 21 describes the loading on circuits and the shift in loads on to R014 circuit.

Although Option A would provide some temporary additional load serving capacity from the La Sierra Substation and possibly some short term reliability improvement, it will not significantly improve the reliability issues experienced in the Scenic Loop area (described in Section 2.3) over the longer planning horizon. Under the Option A scenario, the circuit lengths originating from the La Sierra and Fair Oaks Ranch substations will be the same or in some cases lengthened based on load shifts chosen. Further, Option A would not add additional capacity to the Scenic Loop area and any benefit provided by this is only operational flexibility and has a minor benefit in short term planning.

The La Sierra circuits currently serving the Scenic Loop area loads (current U114 circuit is an example) are already extremely long and heavily loaded. The length and loading configuration of these circuits has resulted in decreasing reliability performance. Although Option A is a low cost alternative, it will only temporarily decrease some of the circuit loading in the area and will not notably reduce circuit line length. Within a short period of time, Option A will exacerbate the poor reliability performance of the CPS Energy distribution system in the Scenic Loop area and will not be able to accommodate load growth beyond the next few years. Regardless of cost, Option A is not a viable alternative to address the significant reliability and capacity problems CPS Energy is experiencing in northwest Bexar County.

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To evaluate the robustness of the transmission options, power flow contingency analysis was conducted to determine the impact of serving 25 MW from the Scenic Loop Substation. Contingency[4] analysis based on contingencies within Kendall Zone[5] for LCRA Transmission Services Corporation along with CPS Energy contingencies and standard single element outage and double element outages along with ERCOT specific outages were simulated for the analysis and compared against ERCOT planning criteria and CPS planning criteria.

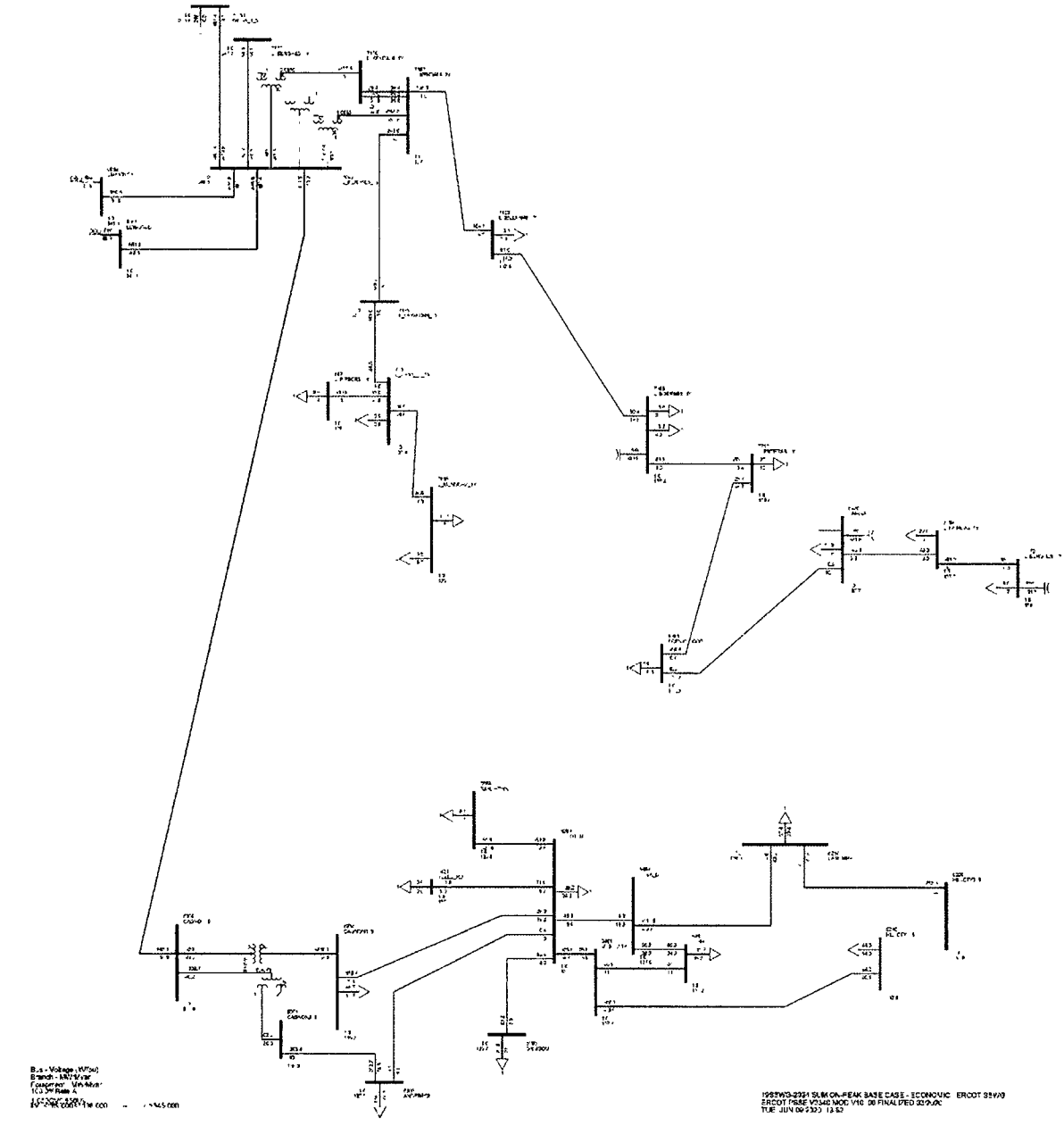
The results from the analysis indicate no thermal overloading problems for all the options analyzed. The screening of the voltages (Table 20) following contingency analysis indicate a few outages where Option 3 does not meet the planning criteria. Over all the analysis indicates that Option 1 is a better performing option.

Table 20: Voltage Performance of the Transmission Options

Contingency Type	Bus Number	Bus Name	KV	1st Con	Option1		Option2		Option3	
					V Init	V Con	V Init	V Con	V Init	V Con
P1	5363	SCENIC_LOOP	138	7169 L_FAIROA8_1Y - 7170 L_BERGHE8_1Y - 1*	0 987	0 986	0 997	0 996	0 993	0 933
	5470	FAIRRA	138	7169 L_FAIROA8_1Y - 7170 L_BERGHE8_1Y - 1*	1 001	0 977	1 001	0 978	0 997	0.931
P2	5363	SCENIC_LOOP	138	5470 - CAP* 5470 FAIRRA - 7169 L_FAIROA8_1Y - 1	0 987	0 986	0 997	0 996	0 993	0.919
	5470	FAIRRA	138	5470 - CAP* 5470 FAIRRA - 7169 L_FAIROA8_1Y - 1	1 001	0 957	1 001	0 957	0 997	0.912
ERCOT3	5363	SCENIC_LOOP	138	7770 L_BERGHE5_1Y - 7170 L_BERGHE8_1Y - 7771 L_BERGHE1_1Y – 1 Followed by 7152 L_KENDAL8_2Y - 7153 L_WELFAR8_1Y - 1 7770 L_BERGHE5_1Y - 7046 L_KENDAL5_1Y - 1	0 987	0 989	0 997	0 997	0 993	0.879
	5470	FAIRRA	138		1 001	0 935	1 001	0 935	0 997	0.892

Based on the cost and power flow analysis described above, connection of the Scenic Loop Substation to the existing interconnected transmission grid is most viable and less impacting to the community from a tie point on the Ranchtown to Menger Creek 138-kV transmission line located approximately five miles west of the area proposed for the Scenic Loop Substation.

[4] NERC TPL-001-4 P1 through P7 type contingencies
[5] submitted by LCRA published on 03/19/2020



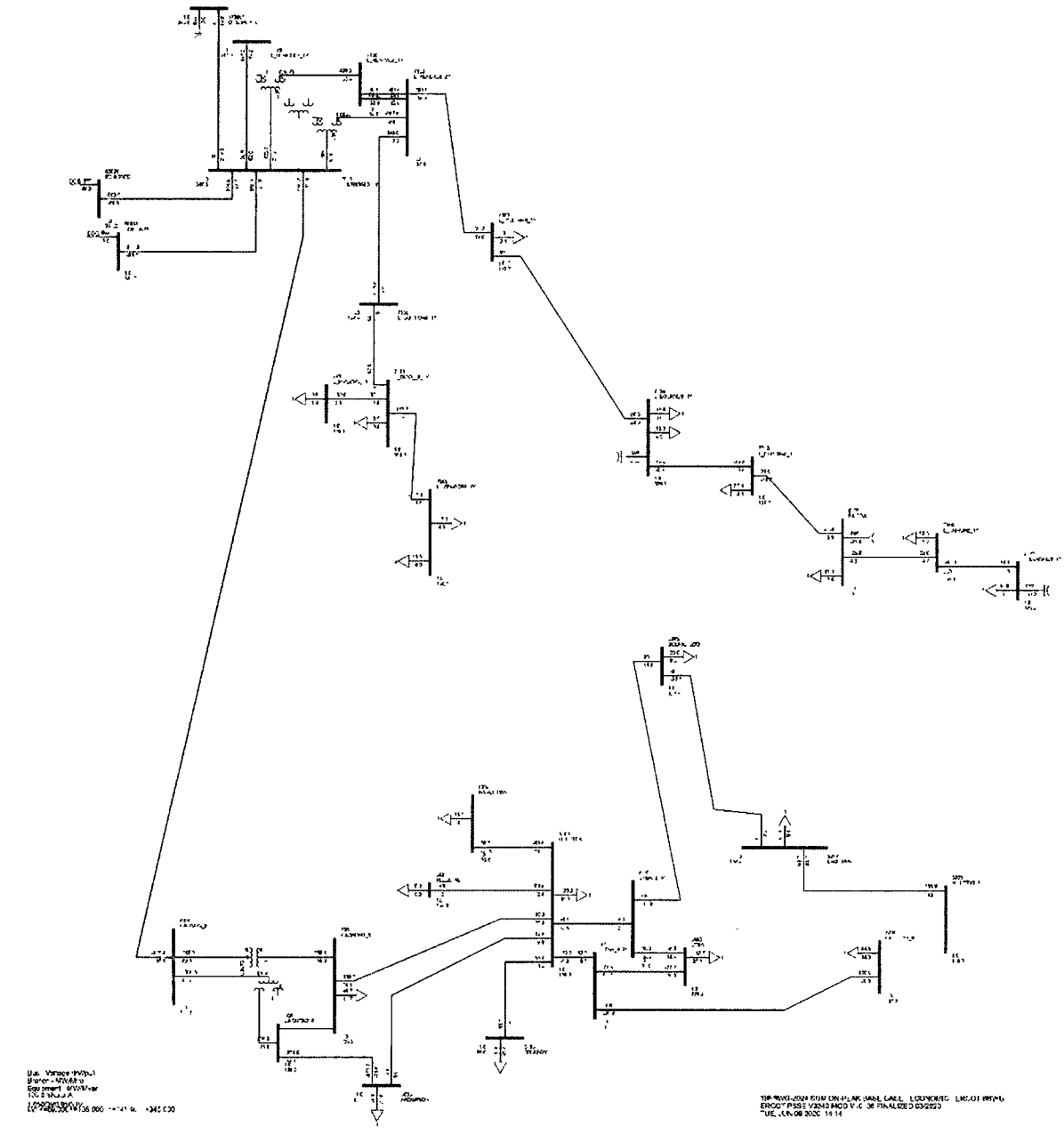


Figure 20 Option 3: Looping Fair Oaks to Esperanza transmission line into Scenic Loop

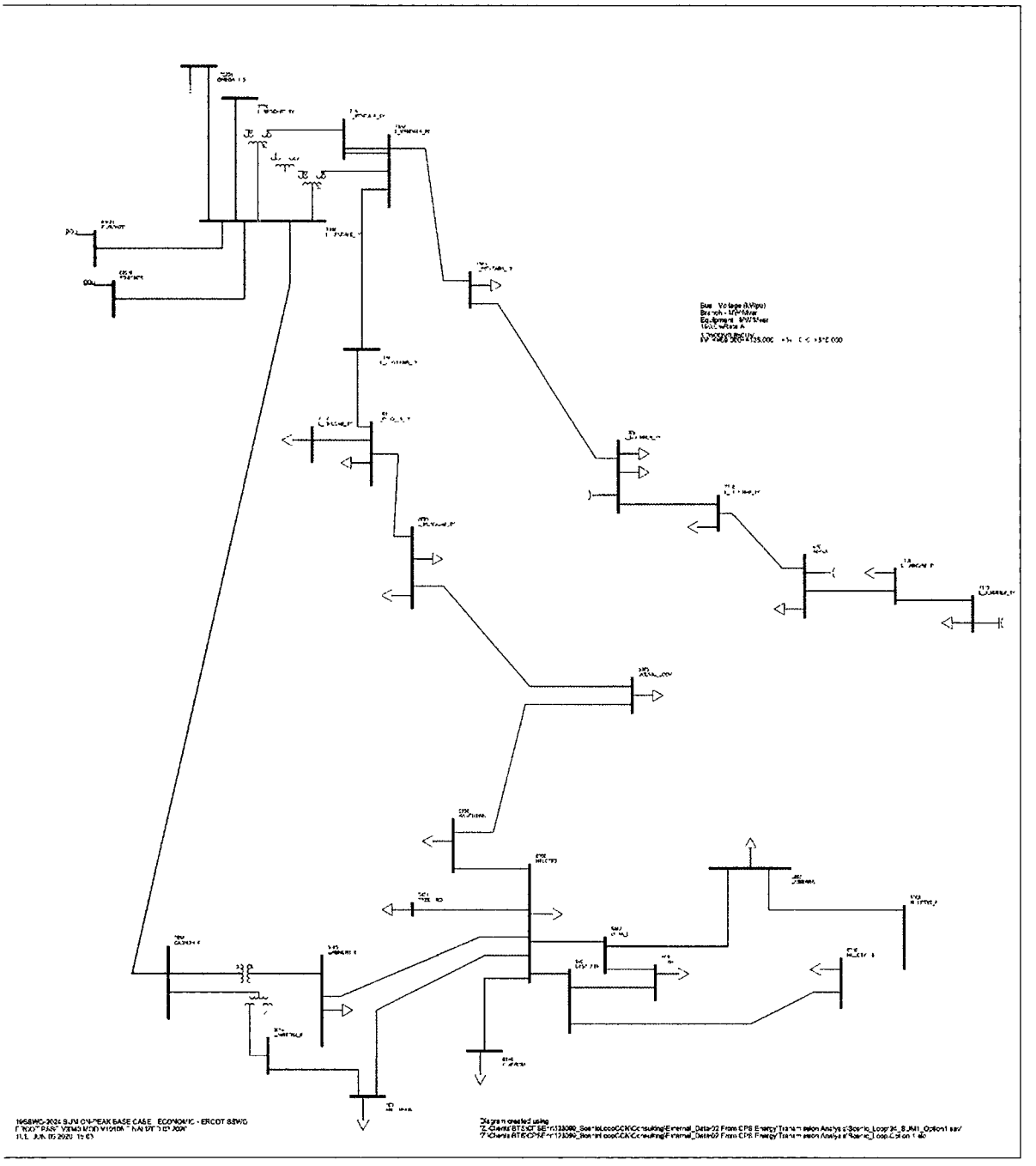


Figure 19 Option 2: Looping La Sierra to UTSA B Tap transmission line into Scenic Loop

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Power Flow Analysis:

To evaluate the performance of the considered transmission options, power flow analysis was conducted on a 2024 summer peak case published by ERCOT in March 2020. For this power flow case, the new Scenic Loop Substation was added along with the relevant transmission connections described above.

The following figures describe the power flows on the system based on the transmission options proposed.

Figure 18 Option 1: Looping Ranchtown to Menger Creek transmission line into Scenic Loop

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analysis, CPS Energy's estimated cost per mile for double circuit 138-kV structure for the study area of $ 6.9 million/mile was assumed for this analysis.

The following are the three options considered for the analysis:

- Option 1: Looping the Ranchtown to Menger Creek 138-kV transmission line into the Scenic Loop Substation.
- Option 2: Looping the La Sierra to UTSA BTap 138-kV transmission line into Scenic Loop Substation.
- Option 3: Looping Fair Oaks to Esperanza 138-kV transmission line into Scenic Loop Substation.

Figure 17 Transmission Options considered for analysis.

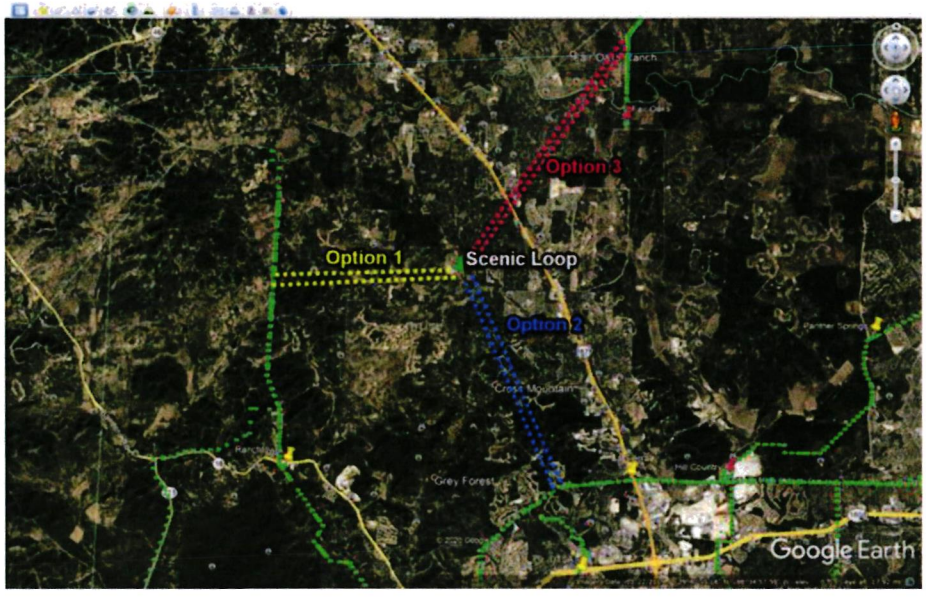

Table 19: Transmission options cost estimates

Study Options	Description	Conductor Type Modeled	Mileage (miles)	Substation ($M)	Transmission ($M)	Total ($M)
Option 1	Looping Ranchtown to Menger Creek transmission line into Scenic Loop	795 Drake ACSR (2-Bundled)	4.27 Straight line length+ 30% adder= 5.55	$ 8.0	$ 38.3	**$ 46.3**
Option 2	Looping La Sierra to UTSA B Tap transmission line into Scenic Loop	1272 Narcissus AAC (2-Bundled)	5.28 Straight line length+ 30% adder= 6.86	$ 8.0	$ 47.3	**$ 55.3**
Option 3	Looping Fair Oaks to Esperanza transmission line into Scenic Loop	795 Drake ACSR (Single)	6.65 Straight line length+ 30% adder= 8.65	$ 8.0	$ 59.7	**$ 67.7**

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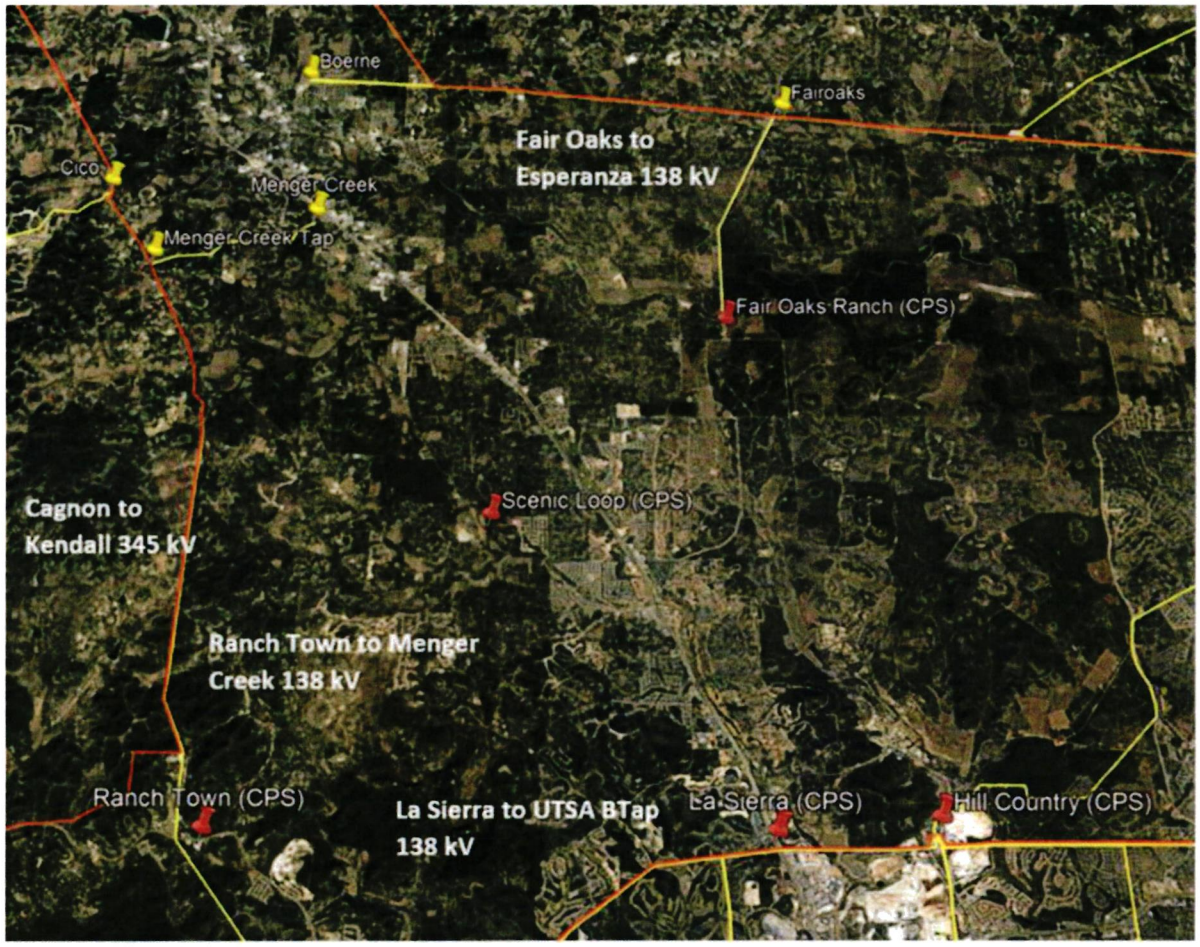
4. Transmission Interconnection

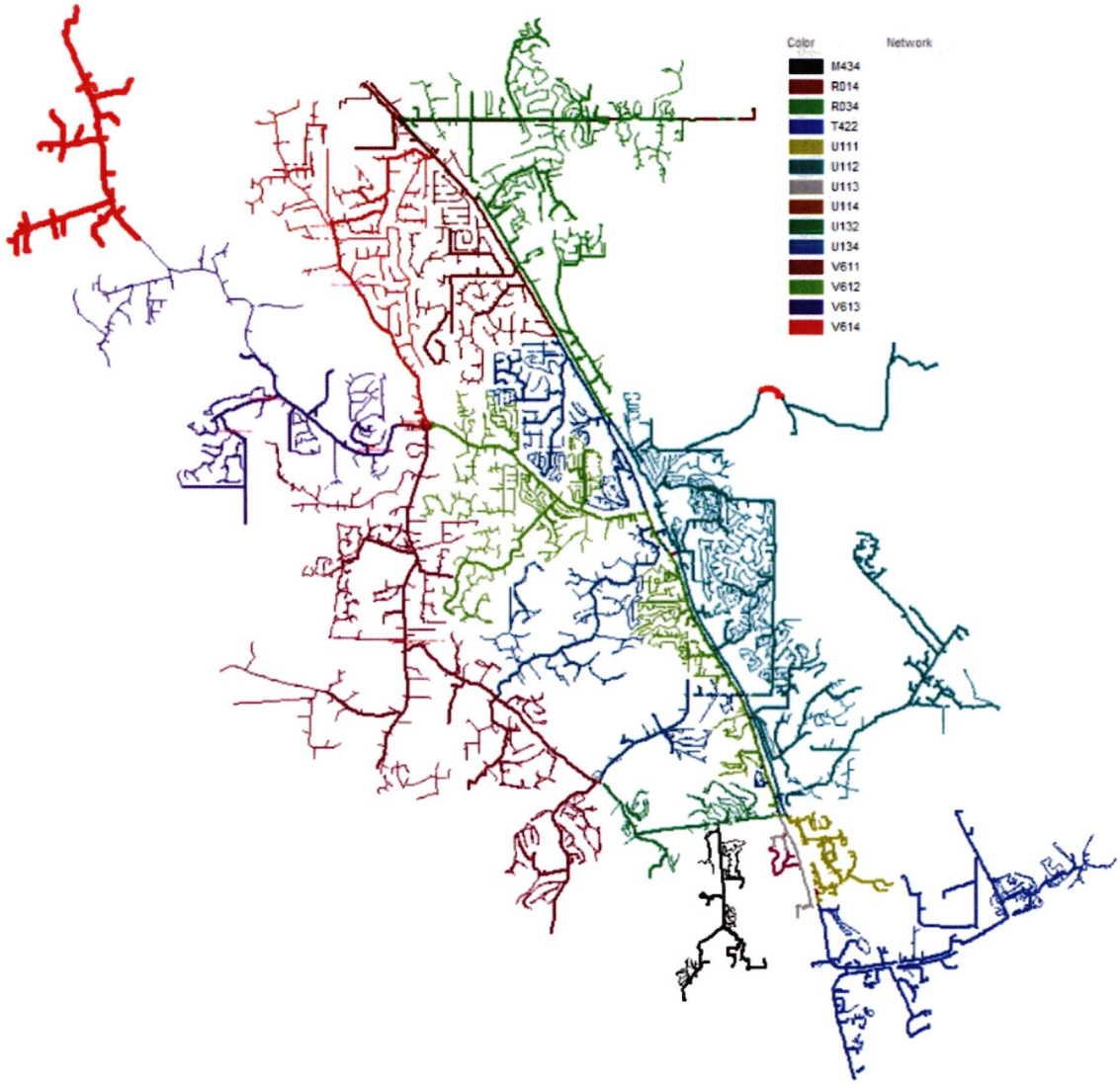
CPS Energy evaluated potential transmission options that are best capable to serve the proposed Scenic Loop Substation. CPS Energy's standard practice is to loop in 138-kV transmission lines for CPS Energy owned load serving stations and has arrived at three potential transmission options that connect the proposed Scenic Loop Substation to the existing interconnected transmission grid. Although there are 345-kV transmission lines in the vicinity of the proposed Scenic Loop Substation, because CPS Energy does not serve the distribution system load from 345 kV system, interconnection with such lines was not considered a viable alternative option. Figure 16 Transmission lines in the area surrounding the proposed Scenic Loop Substation provides an overview of the available transmission lines in the area, including substations within the region.

Figure 16 Transmission lines in the area surrounding the proposed Scenic Loop Substation



To determine the best option to serve and connect to the proposed Scenic Loop Substation, additional power flow analysis was conducted. This analysis coupled with the cost estimates to construct a looped 138-kV transmission circuit on mono pole structures determined the preferred transmission option. Figure 17 shows the three options considered and their possible connection to the area proposed for the Scenic Loop Substation. Table 19 provides the high level cost estimate considered in the analysis. To estimate the length of ROW, a straight line length with a 30% adder was used. For purposes of this

Figure 15: Circuit Loadings on a Case that Models Outage of Circuit U114 in Forecast Summer 2024 with 4% Growth and Scenic Loop Substation in Service



The distribution planning cases, and analysis indicate that the existing and planned system can be further optimized and circuit loadings can be well balanced by shifting loads onto other circuits such that the existing infrastructure will be well utilized under such outage conditions.

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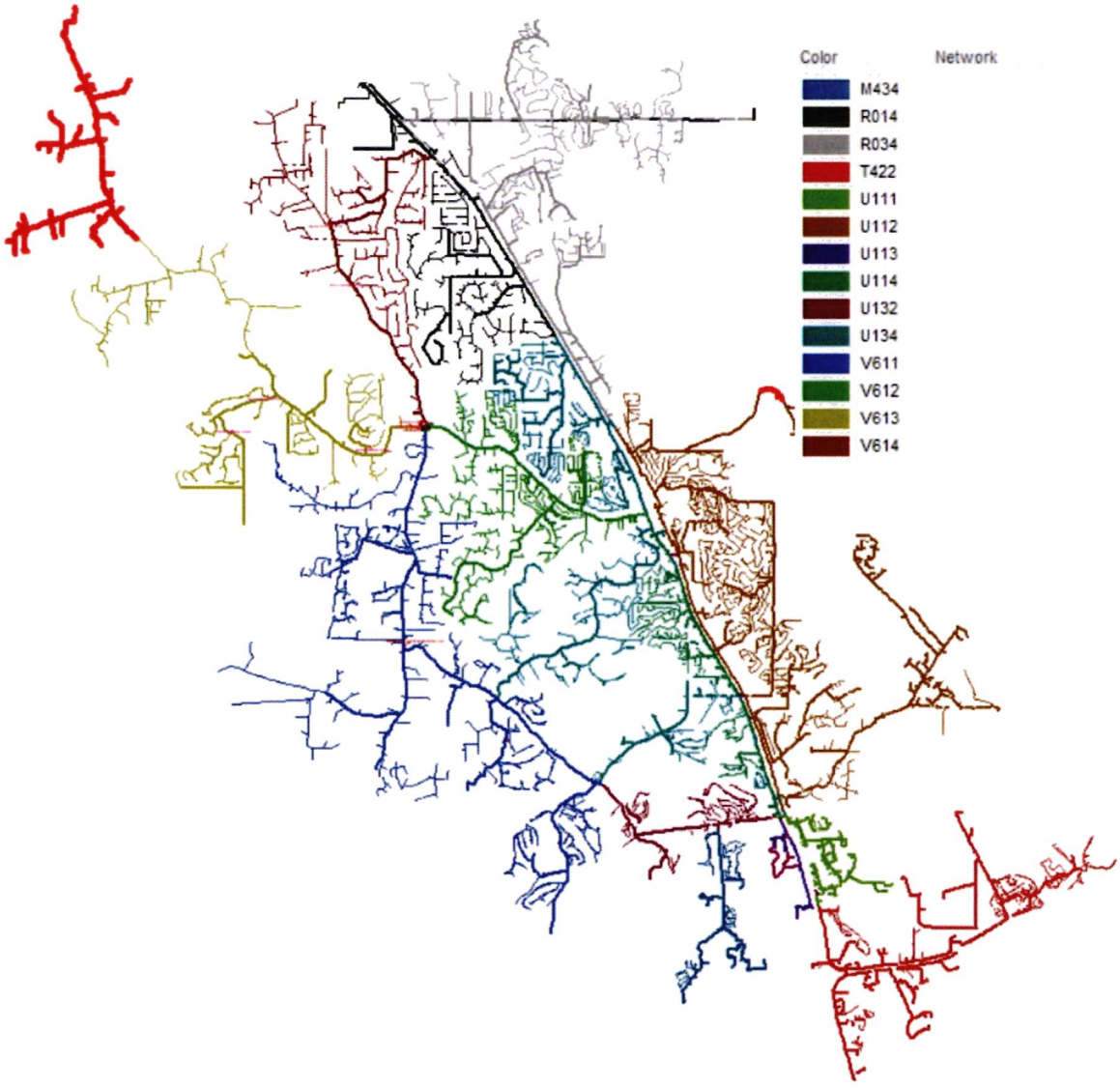
Table 18: Outage of Circuit U114 and Loads Getting Picked Up by Circuit V612

Scenic Loop Substation Circuits	Loading	Total Load		
	%	kW	kVAr	kVA
V611	30.86%	10925.01	-112.47	10925.59
V612	80.08%	24953.43	5839.71	25627.64
V613	19.66%	6516.88	1735.68	6744.06
V614	19.16%	6229.53	2104.14	6575.29
Total		48624.86	9567.06	49557.09
La Sierra Substation Circuits	**Loading**	**Total Load**		
	%	kW	kVAr	kVA
U111	74.10%	23076.39	9806.55	25073.66
U112	97.1%*	30089.77	7438.95	30995.68
U113	41.80%	11581.90	7140.82	13606.31
U114	-	14.10	-9.16	16.82
Total		64762.16	24377.16	69198.15
La Sierra Substation Circuits	**Loading**	**Total Load**		
	%	kW	kVAr	kVA
U132	17.40%	5942.39	1697.92	6180.2
U134	61.70%	19393.11	3634.74	19730.79
Total		**25335.5**	**5332.65**	**25890.63**
Fair Oaks Ranch Substation Circuits	**Loading**	**Total Load**		
Network ID	%	kW	kVAr	kVA
R014	9.44	9572.99	2324.3	9851.12

* loads on this circuit can be easily switched on to other circuits on La Sierra and this is not considered a violation for this planning analysis

Figure 14 : Performance Under Peak Load (Forecast Summer 2024 Peak Loads with 4% Growth) – No Outage Conditions



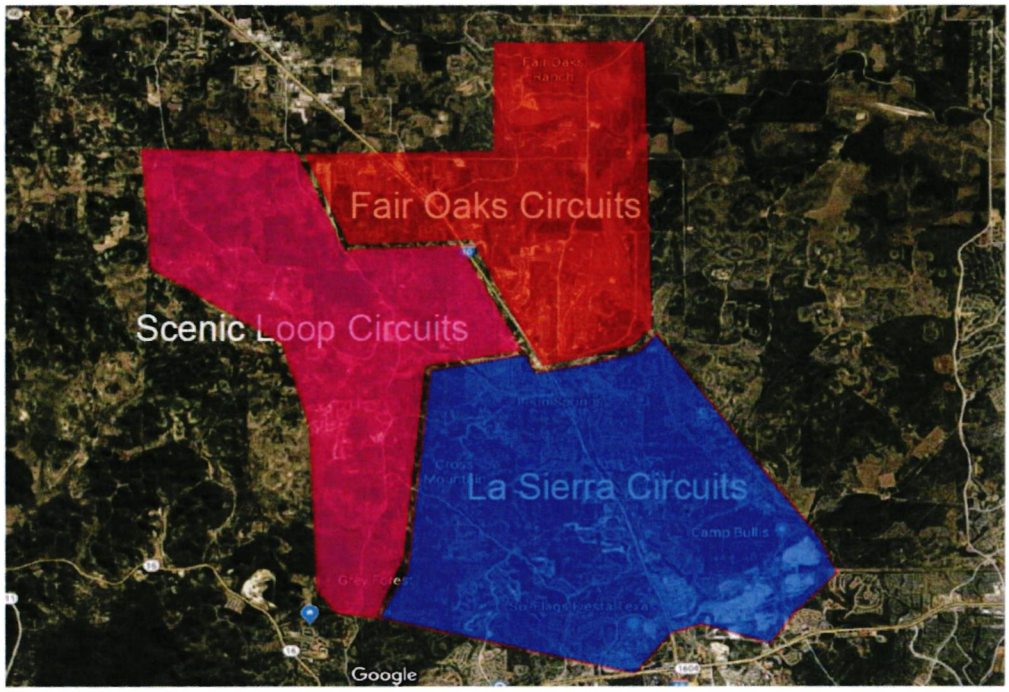
Additional analysis was conducted on the case with the Scenic Loop Substation in service under a severe outage that results in a loss of the main feed to circuit U114. The modelling tested the ability of Scenic Loop to pick up the service to loads connected to U114. The results indicate a feasible solution with acceptable thermal and voltage performance.

Table 17: Loading on Circuits in the Area after Including the New Scenic Loop Substation.

Scenic Loop Substation Circuits	Loading	Total Load		
	%	kW	kVAr	kVA
V611	30.80%	10925.01	-112.47	10925.59
V612	41.30%	12956.41	1945.47	13101.66
V613	19.62%	6516.88	1735.68	6744.06
V614	19.13%	6229.53	2104.14	6575.29
Total		**36627.83**	**5672.82**	**37064.53**
La Sierra Substation Circuits	**Loading**	**Total Load**		
	%	**kW**	**kVAr**	**kVA**
U111	74.10%	23076.39	9806.55	25073.66
U112	97.1%*	30089.77	7438.95	30995.68
U113	41.80%	11581.9	7140.82	13606.31
U114	38.70%	11844.05	3255.19	12283.23
Total		**76592.11**	**27641.52**	**81427.3**
La Sierra Substation Circuits	**Loading**	**Total Load**		
	%	**kW**	**kVAr**	**kVA**
U132	17.40%	5942.39	1697.92	6180.2
U134	61.70%	19393.11	3634.74	19730.79
Total		**25335.5**	**5332.65**	**25890.63**
Fair Oaks Ranch Substation Circuits	**Loading**	**Total Load**		
Network ID	**%**	**kW**	**kVAr**	**kVA**
R014	39.44	9572.99	2324.3	9851.12

* loads on this circuit can be easily switched on to other circuits on La Sierra and this is not considered a violation for this planning analysis

Figure 13: Ariel Imagery of Scenic Loop Region Indicating Boundaries of Circuits Serving Loads



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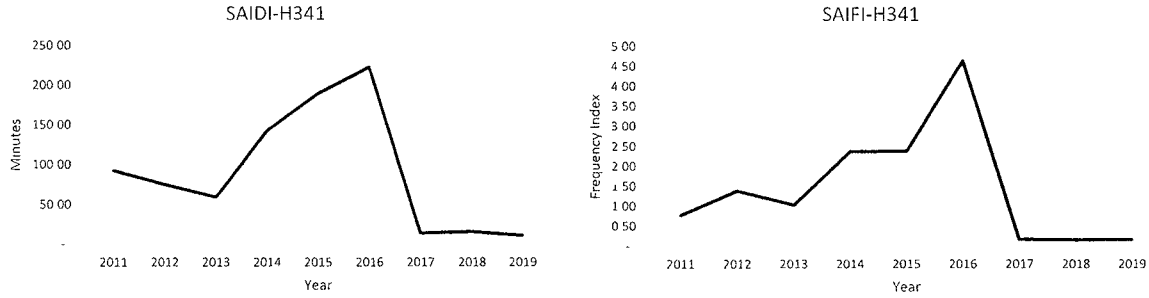
The following plots describe the SAIDI and SAIFI reliaiblity indices on the circuit H341 and it can be cleary seen that after the significant load shift to other circuits described above, there has been a dramatic improvement in reliability to the loads remaining connected to that circuit.



Following the reconfiguration of circuit H341, the reliability on the three new circuits K021, K022, K023 generally experienced reliability similar to the CPS system wide averages with a few exceptions due to extended outages during construction and other planned upgrades on these circuits. Table 16 lists the reliability values on these circuits for the past few years.

Table 16: Reliability values for circuits K021, K022 and K023 after shifting loads from H341

YEAR	K021		K022		K023	
	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI	SAIFI
2016	22.06	2.22	-	-	-	-
2017	1.37	0.01	26.15	0.52	5.3	0.07
2018	490.46	2.34	83.29	2.41	29.88	0.23
2019	128.15	1.82	154.15	1.43	72.23	0.33

A planning analysis was conducted to identify system reliability based on assumed load forecast under no outage and selected outage conditions after inclusion of the Scenic Loop Substation. The analysis shows that a new substation in the Scenic Loop area will improve reliability within the northwestern region of Bexar County and will provide additional capacity for the significant forecasted load growth for the area. The proposed project configuration does not add additional circuits initially, but rather terminates existing circuits at the new substation, thereby directly contributing to improvement of reliability to the loads connected to the new substation as well as the shorter and less loaded circuits that remain connected to the La Sierra and Fair Oaks Ranch substations.

It is anticipated that by shifting portions of circuits U114, U132, and R014 to the Scenic Loop Substation (thereby creating four circuits V611, V612, V613 and V614), would provide an improvement on the reliability to the loads on the underlying circuits and would improve the overall reliability within this region.

The following circuit loadings described in the Table 17 represent a scenario that models the year 2024 in the region with Scenic Loop substation and inclusion of V611, V612, V613, and V614 circuits.

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3. System Assessment with Scenic Loop Substation

As a result of the limitations on the existing system to reliably serve current and future load, CPS Energy considered reasonable alternatives, including the construction of a new substation near the intersection of Scenic Loop Road and Toutant Beauregard Road. A new Scenic Loop substation within the area will significantly improve reliability for the northwest region of Bexar County by reducing circuit length and loading on each circuit, which will reduce exposure for outages as well as the number of customers affected during an outage. The new circuits out of the proposed Scenic Loop Substation will also create strong backbones and sufficient field ties to adjacent substation circuits (La Sierra and Fair Oaks Ranch) that will prevent major loss of customer load in emergency conditions. The new substation will not create additional circuits initially, but rather will allow for portions of existing circuits in the area to terminate at the new station, essentially shortening circuits and providing a new source to meet load demand. The proposed configuration of the Scenic Loop Substation would connect portions of circuits U114, U132, and R014 to Scenic Loop, thereby creating circuits V611, V612, V613 and V614 as shown in Figure 13 and Figure 14 below.

The new substation will support the development and requirements of existing and future critical load customers. Initially, an estimated 20-25 MW of load will be served by this new substation. If the project is not completed, the distribution system capacity in the Scenic Loop area will be exceeded by 2024 and the La Sierra and Fair Oaks Ranch substations will have increased reliability concerns. Also, some contingency conditions may lead to customer load being at risk of lengthy outages due to exceeding emergency capacity limits.

CPS Energy has designed new substations to help loads on circuits showing poor reliability very similar to the loads served from circuits connected to the La Sierra and Fair Oaks Ranch substations. As an example, H341 is a circuit in the nearby Helotes Substation that was serving approximately 4,000 customers and experienced poor reliability. In 2016 it was split into three circuits (K021, K022, K023) with 1,600 customers served off a new transformer in the Ranchtown Substation. When the load was moved onto the new circuits, the remaining customers served from the H341 circuit connected to the Helotes Substation experienced improved reliability and a reduction of CMI by 95% and CA by 97%. The SAIDI and SAIFI values on the circuit H341 shown in Table 15 indicate significant improvement in reliability achieved by splitting a portion of the load from H341 onto three shorter circuits beyond 2016.

The circuit H341 is a good example of the reliability benefits that can be achieved with the Scenic Loop Substation project. H341 is located nearby the Scenic Loop Substation study area and traverses similar terrain. Prior to the reconfiguration that significantly shortened the circuit, for years customers served by H341 experienced outages and poor reliability similar to the circuits served off the La Sierra and Fair Oaks Ranch substations.

Table 15: Helotes H341 Substation Circuit

Year	Customers	CMI	SAIDI	SAIFI	CA
2011	3562	**329,619.53**	92.55	0.76	**2,708**
2012	3818	**286,261.77**	74.98	1.38	**5,279**
2013	4016	**237,979.13**	59.25	1.03	**4,136**
2014	3638	**517,724.22**	142.32	2.37	**8,631**
2015	3620	**683,906.21**	188.95	2.38	**8,611**
2016	2011	**447,157.68**	222.37	4.64	**9,335**
2017	1706	**23,537.00**	13.80	0.17	**298**
2018	1704	**26,470.12**	15.53	0.15	**262**
2019	1707	**18,032.17**	10.57	0.17	**290**

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Based on the reasonable growth and expected development described above, the current La Sierra and Fair Oaks substations will exceed capacity and cannot adequately serve the area by 2024.

The modelling reveals low voltages on portions of the system served by circuit U114. These low voltages are within the Scenic Loop Road area. In addition, a loss of circuit U114 results in a voltage collapse in the Scenic Loop Road area (and beyond) as there is not adequate capacity on adjacent feeders to pick the load from circuit U114. Under that circumstance, voltages at the loads drop to a point lower than what a regulator or a capacitor bank can do to push the voltage to a normal operating range. Shifting loads to adjacent circuits only provides additional operation flexibility or near term planning flexibility and would not improve system reliability or overall system capability to support additional load growth within this region.

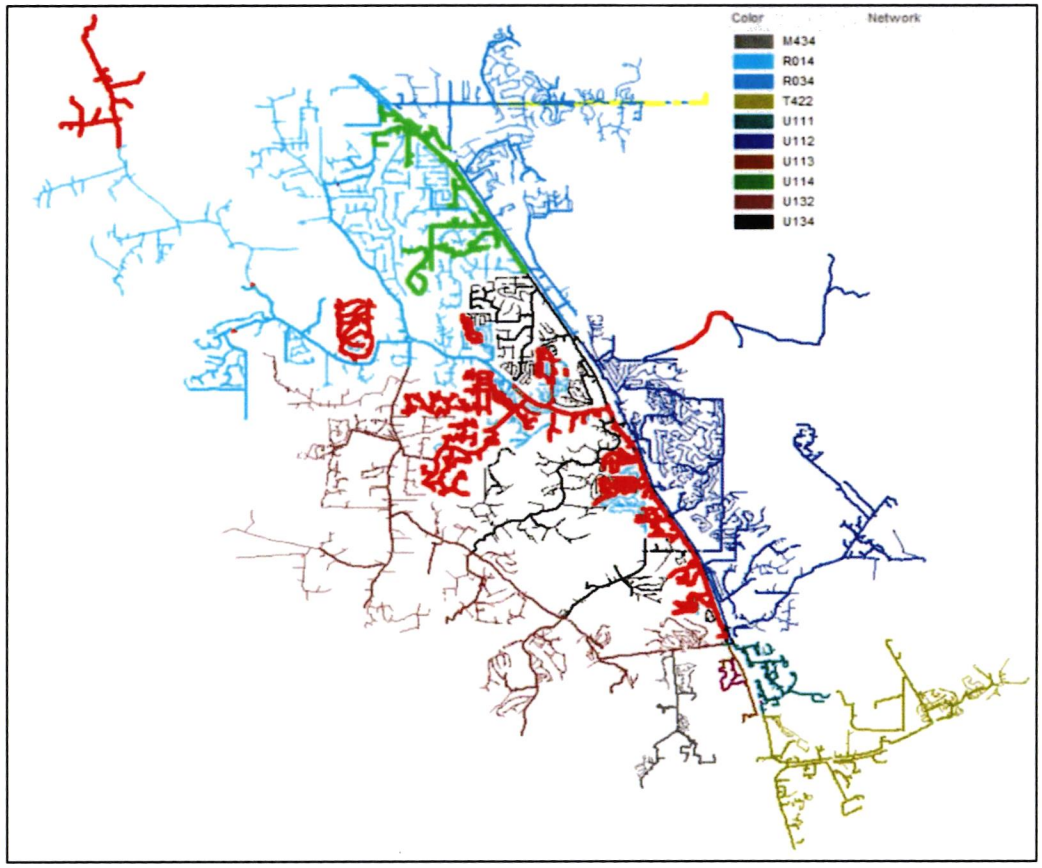
Importantly, CPS Energy's Distribution Planning Criteria includes limiting the loading on a distribution circuit to 80% of its capacity in order to ensure safe and reliable operation of the circuit and maintain quality service to customers. Circuit U114 recorded a peak loading of approximately 30 MW in 2019, which is approximately 98% of its rating. Circuit R014, which will be energized in summer 2020 will offload circuit U114 to under 70% of the rated capacity for a short time. However, the historical load growth in the region, and especially on circuit U114, is reasonably forecasted to remain at 4% (or higher). Thus, the loading on circuit U114 will again reach its reliable loading limit of 80% within four years. In addition, the load growth on the other circuits (within the entire northwestern region of Bexar County) will reasonably experience similar load growth and will not have adequate capacity on existing circuits by 2024.

Table 14: La Sierra Distribution Circuit Loadings with R014 (FY 2025 & N-1)

La Sierra Distribution Circuits	Loading	Total Load		
	%	kW	kVAr	kVA
U111	77.35	24007.96	10423.74	26173.2
U112	101.28*	31315.61	8081.35	32341.55
U113	43.54	12047.04	7445.16	14161.97
U114	0.047	14.67	-8.99	17.2
Total		**67385.28**	**25941.26**	**72206.12**
La Sierra Distribution Circuits	**Loading**	**Total Load**		
	%	**kW**	**kVAr**	**kVA**
U132	49.82	17371.29	3324.67	17686.58
U134	64.37	20180.17	4073.32	20587.16
Total		**37551.46**	**7397.99**	**38273.25**
Substation R0-1	**Loading**	**Total Load**		
Network ID	**%**	**kW**	**kVAr**	**kVA**
R014	224.87*	51900.61	21679.47	56246.54

* CPS Distribution Planning Criteria violations

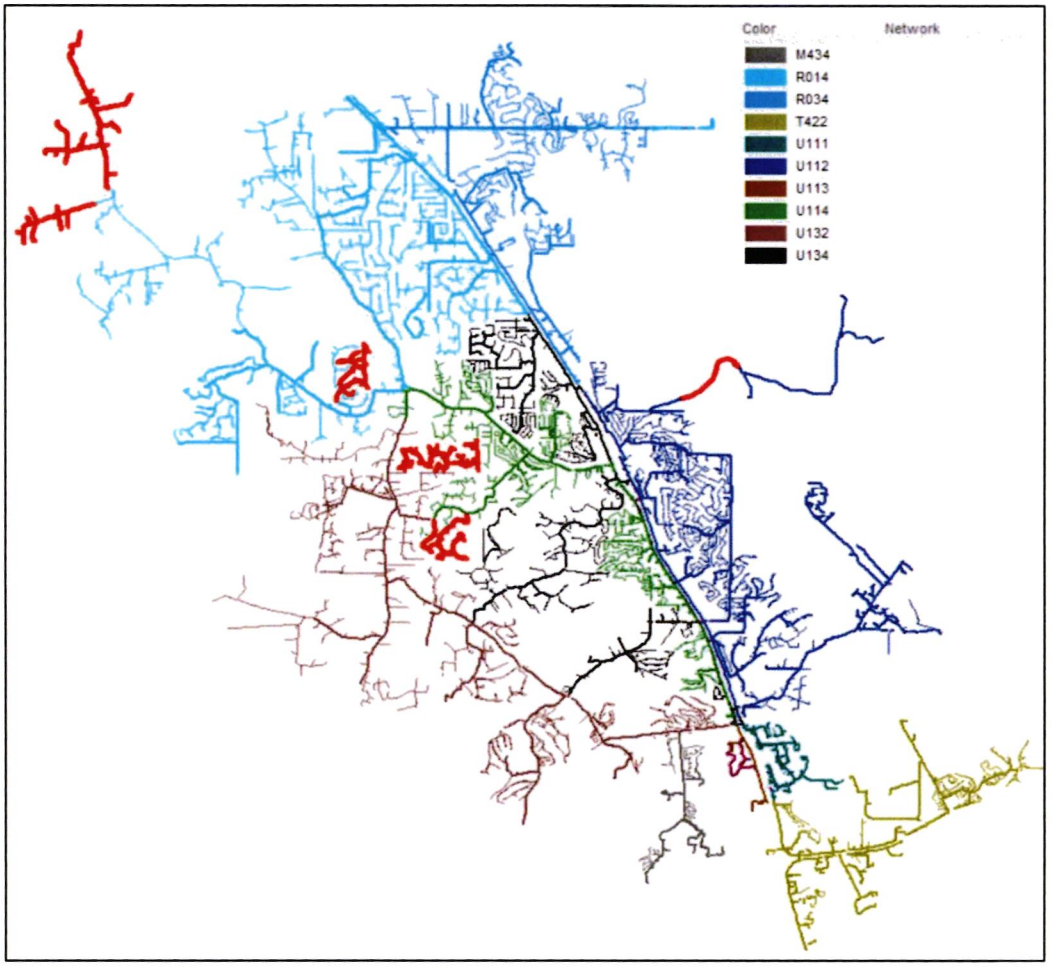
Figure 12: Outage of Circuit U114 with 4% Load Growth to Simulate a 2025 Case with Circuit R014 Energized



U113	43.54	12047.04	7445.16	14161.97
U114	84.41*	26336.08	6519.35	27131
Total		**93706.69**	**32469.6**	**99172.67**
Substation U1-3	**Loading**	**Total Load**		
Network ID	**%**	**kW**	**kVAr**	**kVA**
U132	49.832	17371.29	3324.67	17686.58
U134	64.37	20180.17	4073.32	20587.16
Total		**37551.46**	**7397.99**	**38273.25**
Substation R0-1	**Loading**	**Total Load**		
Network ID	**%**	**kW**	**kVAr**	**kVA**
R014	102.03*	23547.91	7689.13	24771.49

* CPS Distribution Planning Criteria violations

Figure 11: N-0 Model of La Sierra Circuits + Fair Oaks Circuit R014 with Peak Loads (Forecast FY 2025 with 4% Growth) Included in the Model.

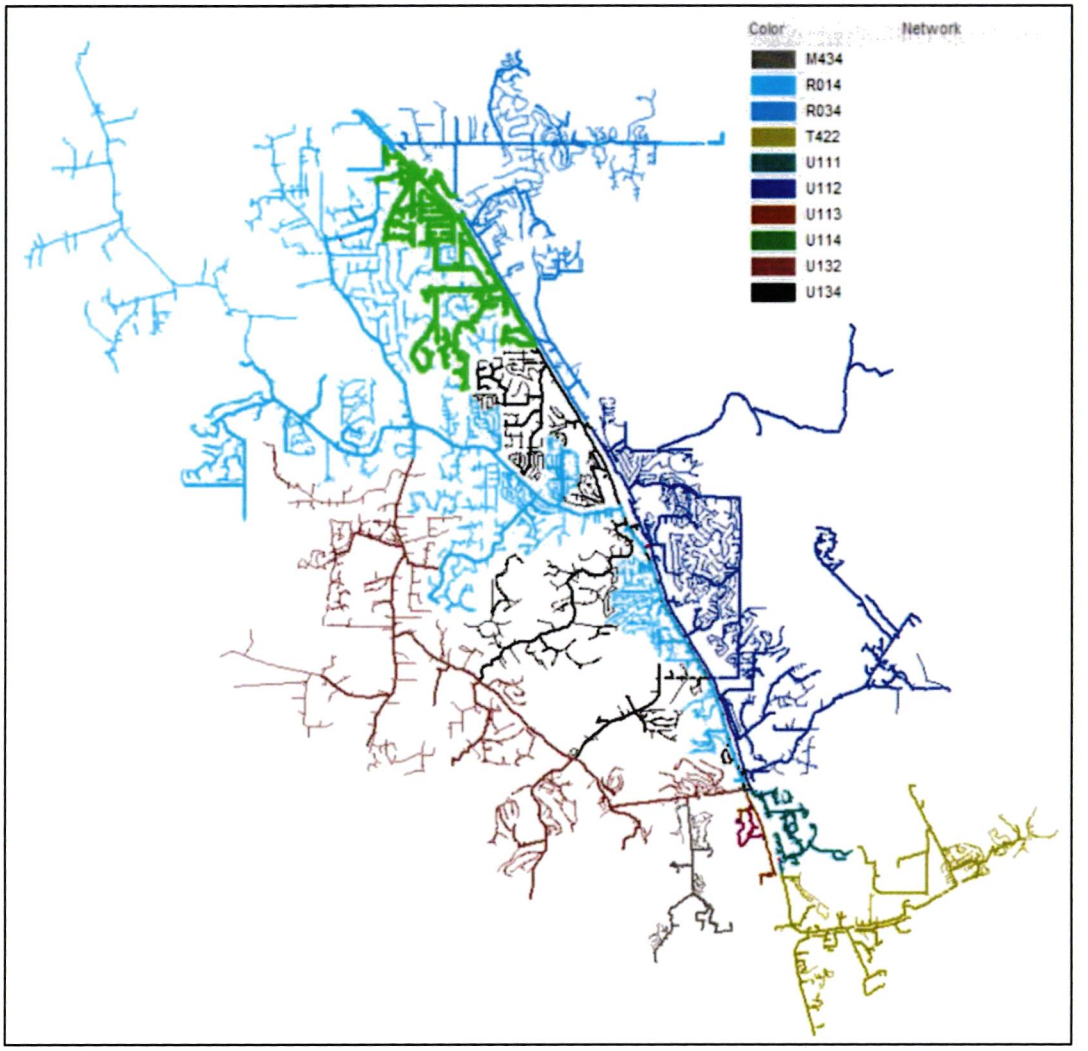


Next, the reconfigured circuit case was modelled with a loading scenario for year 2025 with the outage of circuit U114 where all its load is picked up by circuit R014. There is not adequate capacity available on other La Serra circuits and R014 to be able to pick up this load from U114.

Total		29089.75	3045.17	29248.7
Fair Oaks Ranch Distribution Circuits	Loading	Total Load		
Network ID	%	kW	kVAr	kVA
R014	155.34*	35861.26	8834.26	36933.37

* CPS Distribution Planning Criteria Violation

Figure 10: Outage of Circuit U114, R014 Included in the Model with Peak Loads (FY 2020)

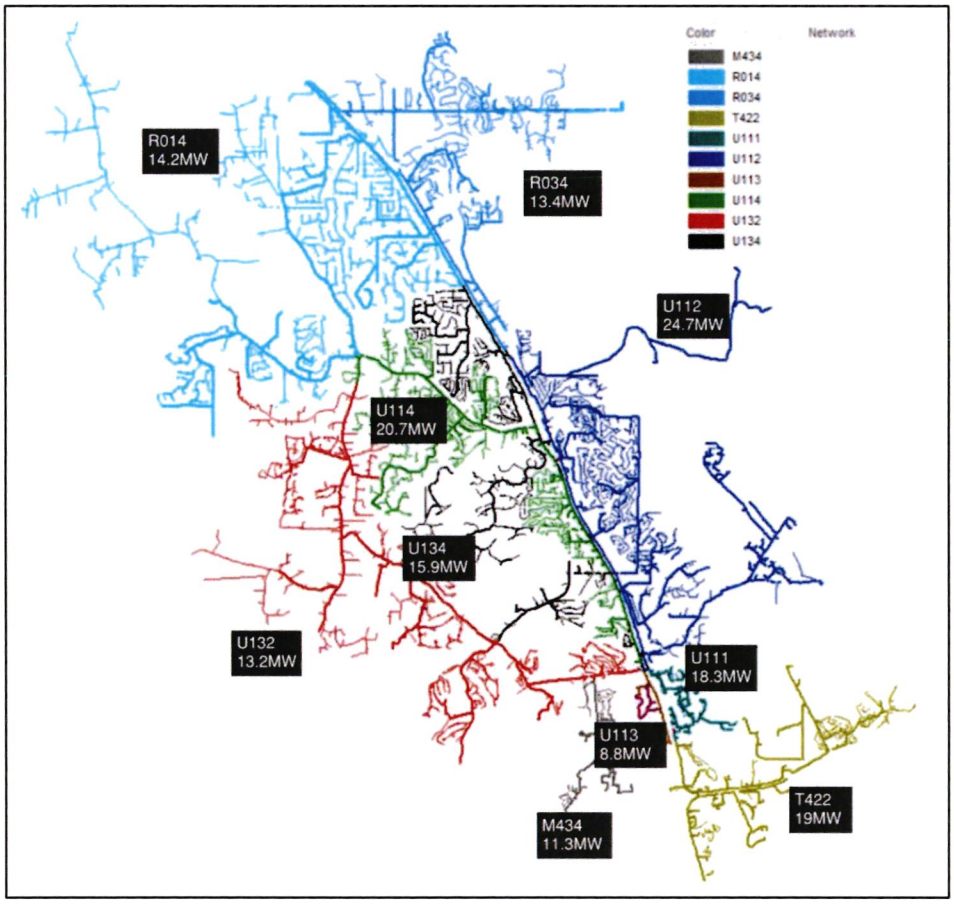


The reconfigured circuit case (without any outages) was also run to include additional loads to represent the year 2025 (assuming a reasonable average load growth of 4% each year). The following are the modelled loadings on the circuits.

Table 13: La Sierra Distribution Circuit Loadings with R014 (FY 2025)

Substation U1-1	Loading	Total Load		
Network ID	%	kW	kVAr	kVA
U111	77.35	24007.96	10423.74	26173.2
U112	101.28*	31315.61	8081.35	32341.55

Figure 9: N-0 Model of La Sierra Circuits + Fair Oaks Circuit R014 with Peak Loads (Forecast FY 2020) Included in the Model



As can be seen in the modelling results, shifting a portion of the load from circuit U114 to circuit R014 improves the power flow in the area. Due to the significant lengths of several of the circuits (including reconfigured circuits R014 and U114, the loads will still be subject to reliability concerns resulting from the circuit lengths. After the load shift to R014, an outage of the main feeder of U114 is simulated with the entire load being picked up by R014. Under that scenario, the loading on R014 will violate its ratings in 2020, which will result in an infeasible solution considering future load growth through 2024 and beyond.

Table 12: La Sierra Distribution Circuit Loadings with R014 (FY 2020 & N-1)

La Sierra Distribution Circuits	Loading %	Total Load kW	Total Load kVAr	Total Load kVA
U111	59.06	18331.07	6702.41	19517.95
U112	79.82	24682.79	4667.76	25120.27
U113	31.78	8792.21	5324.65	10278.85
U114	0.037	11.59	-9.94	15.27
Total		**51817.65**	**16684.87**	**54437.61**
La Sierra Distribution Circuits	**Loading %**	**Total Load kW**	**Total Load kVAr**	**Total Load kVA**
U132	37.79	13178.12	1317.49	13243.81
U134	50.75	15911.63	1727.68	16005.15

Figure 9 describes the R014 circuit along with other circuits in the region.

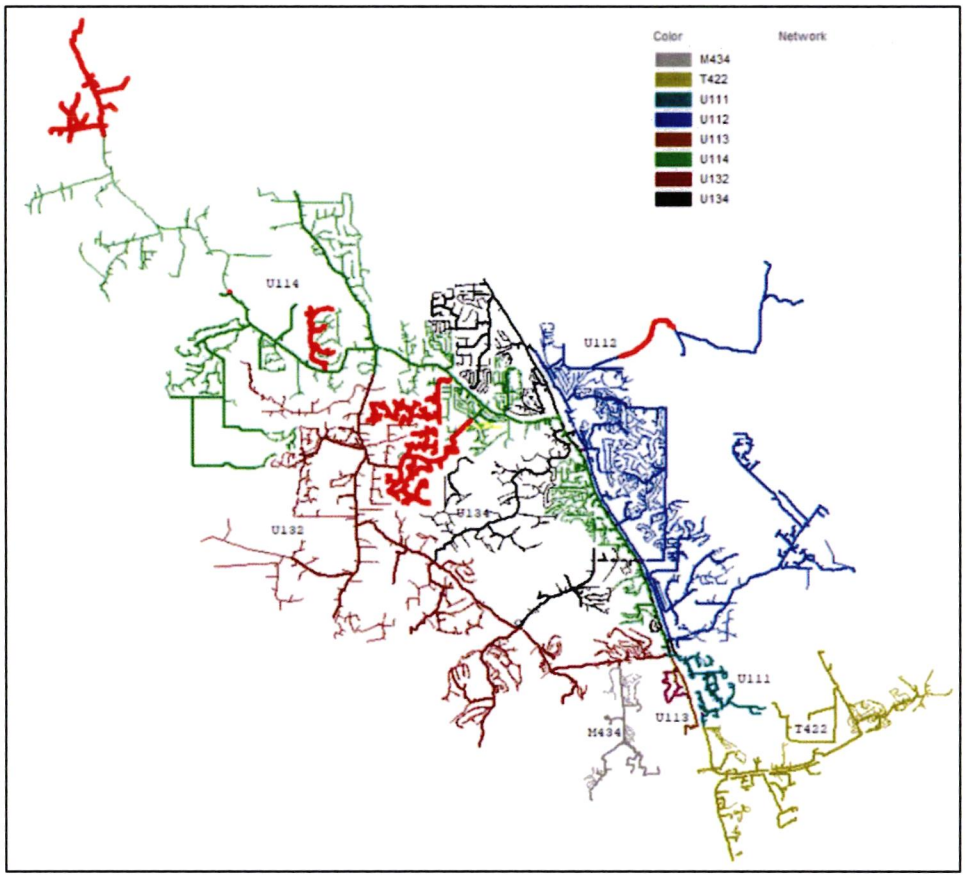
Table 11: La Sierra Distribution Circuit Loadings with R014

La Sierra Distribution Circuits	Loading	Total Load		
	%	kW	kVAr	kVA
U111	59.06	18331.07	6702.41	19517.95
U112	79.83*	24682.79	4667.76	25120.27
U113	31.78	8792.21	5324.65	10278.85
U114	66.35	20701.81	3878.69	21062.03
Total		**72507.86**	**20573.49**	**75370.15**
La Sierra Distribution Circuits	**Loading**	**Total Load**		
	%	**kW**	**kVAr**	**kVA**
U132	37.79	13178.12	1317.49	13243.81
U134	50.75	15911.63	1727.68	16005.15
Total		**29089.75**	**3045.17**	**29248.7**
Fair Oaks Ranch Distribution Circuits	**Loading**	**Total Load**		
Network ID	**%**	**kW**	**kVAr**	**kVA**
R014	61.67	14234.66	1791.57	14346.96

* Nearing CPS Distribution Planning Criteria violations

The modelling results indicate that the system problems in the area are exacerbated and voltage issues can be seen on multiple circuits in the region by 2024. Specifically, circuit U114 does not have adequate capacity to support the load and results in thermal and voltage violations as depicted in Figure 8.

Figure 8: N-0 Model of La Sierra Circuits with Peak Loading (Forecast FY 2025 with 4% Growth)



As discussed above, circuit U114 is currently greater than 85 miles long, which decreases reliability. As a result, CPS Energy has planned to shift a portion of the downstream network and load from circuit U114 to circuit R014 that is served from the Fair Oaks Ranch Substation.

2.3.2 La Sierra Distribution Circuits with R014 Energized – Power Flow Analysis

The forecasted peak load on circuit R014 in 2020 is estimated to be approximately 9.46 MW (41% loading of nominal rating). This circuit is served off the Fair Oaks Ranch Substation and serves load on the west side of IH-10. As discussed above, CPS Energy shifted approximately 6 MW of load from circuit U114 to circuit R014 in June of 2020 to reduce the length and loading on circuit U114. The following Table 11 provides the loads on the circuits in the area under this modelling scenario.