Southern California Edison
San Joaquin Cross Valley Loop Project A.08-05-039

DATA REQUEST SET SJXVL CPUC-ED-05

To: ENERGY DIVISION
Prepared by: Erika Wilder
Title: Environmental Coordinator
Dated: 11/26/2008

Question 01:

The PEA states that SCE requested CH2MHILL to model corona noise that would be produced during operation of the Proposed Project. Please provide a copy of the corona noise modeling report prepared by CH2MHILL.

Response to Question 01:

Please see the attached report.

Southern California Edison
San Joaquin Cross Valley Loop Project A.08-05-039

DATA REQUEST SET SJXVL CPUC-ED-05

To: ENERGY DIVISION
Prepared by: Glenn Sias
Title: Manager
Dated: 11/26/2008

Question 02:

Appendix B of the Application addresses EMF effects and mitigation for the Proposed Project only. An assessment of EMF effects has not been provided for the routes associated with Alternatives 2 and 3. Please provide an assessment of EMF effects and mitigation along these alternative routes.

Response to Question 02:

As a point of clarification, SCE's Field Management Plans (FMPs) do not address “EMF effects” as the question suggests because health effects from EMF exposures have not been established. In a recent review of EMF issues, the Commission stated in D.06-01-042 that, "at this time we are unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences." The FMP instead documents how SCE will incorporate no-cost or low-cost field reduction measures into the project design to comply with the Commission's EMF policies.

SCE’s FMPs usually include an analysis of possible field reduction measures for the proposed line route only. This is because
no-cost and low-cost magnetic field reduction options comparable to those in the FMP for the proposed line route can typically be applied to the alternative routes. This is the case for the Proposed Project. The field reduction measures included in the designs for the proposed line routes are applicable to Alternatives 2 and 3 as well. The FMP for the proposed line route splits the project into two segments. The Segment 1 consists of the portion of the line route where two existing, single-circuit 220 kV transmission towers would be replaced with two double-circuit structures heading north of SCE’s existing Rector Substation on existing right-of-way (ROW). Segment 2 consists of the portions of the line route where a new double-circuit 220 kV transmission line would travel east and northward on new ROW to connect with the Big Creek 3-Springville and Big Creek 4-Springville 220 kV transmission lines.

For portions of the line routes for Alternatives 2 and 3 that travel north on existing ROW from the Rector Substation, the FMP analysis for Segment 1 would apply. Specifically, EMF reduction measures would include:

- Using a “double-circuit” pole-head configuration for the proposed 220 kV transmission lines;

- Using 10 foot taller poles for homes immediately adjacent to the edges of ROW;
- Implementing phasing arrangements to reduce magnetic field levels at edges of ROW.

For portions of the line routes for Alternatives 2 and 3 that travel eastward on new ROW, the FMP analysis for Segment 2 would apply. Specifically, EMF reduction measures would include:

- Using a “double-circuit” pole-head configuration for the proposed 220 kV transmission lines;
- Using 10 foot taller poles for homes immediately adjacent to the edges of ROW;
- Implementing phasing arrangements to reduce magnetic field levels at edges of ROW.

Should Alternatives 2 or 3 be approved, a revised FMP will be prepared once final engineering has occurred to fully implement the CPUC’s EMF policy.

The Commission first established EMF policies in D.93-11-013. The Commission affirmed in D.06-01-042 that the Commission's EMF policy is one of prudent avoidance, with application of low-cost/no-cost mitigation measures to reduce EMF exposure for new and upgraded utility transmission and substation projects. The Commission has adopted a benchmark of 4% of total project cost for low-cost EMF reduction measures, with flexibility to allow expenditures above the 4% benchmark if justified by a project's unique circumstances. In D.06-01-042, the Commission stated that, as a guideline, low-cost EMF reduction measures should reduce EMF levels by at least 15% at the utility right of way.

Southern California Edison
San Joaquin Cross Valley Loop Project A.08-05-039

DATA REQUEST SET SJXVL CPUC-ED-05

To: ENERGY DIVISION
Prepared by: Susan J. Nelson
Title: Project Manager
Dated: 11/26/2008

Question 03:

Please provide a GIS shape file depicting the location/site boundary of the Big Creek #3 Substation.

Response to Question 03:

SCE does not have a GIS Shape file depicting the location/site boundary (Polygon) of the Big Creek #3 Substation. Big Creek #3 Substation was placed into service in October 1923, hence this predates the use of GIS. However, SCE does have a GIS Shapefile (Point) that depicts the general location (X,Y or Lat/Long Coordinates) of Big Creek #3 Substation. SCE will provide the Point GIS Shapefile for Big Creek #3 Substation.

Southern California Edison
San Joaquin Cross Valley Loop Project A.08-05-039

DATA REQUEST SET SJXVL CPUC-ED-05

To: ENERGY DIVISION
Prepared by: Steven K. Alford
Title: Project Manager
Dated: 11/26/2008

Question 04:

Due to the high public interest regarding potential impacts to orchards, we need to quantify the permanent as well as temporary impacts with as much detail as possible. Because mature tree heights in walnut and almond orchards are such that those crops may be incompatible within the ROW, whereas citrus and row crops may be compatible, we need to identify the acreage along the ROW associated with these different crop types. Accordingly, please provide GIS or other data differentiating the row crop, citrus, and walnut/almond orchards within the alignment of the Proposed Project as well as Alternatives 2 and 3.

Response to Question 04:

SCE is currently undertaking a crop and tree survey of Routes 1, 2, and 3. The results of these surveys should be available in spreadsheet and GIS formats shortly after January 1, 2009.

Cross Valley Transmission Line Project - Corona Noise Modeling

TO:	Ms. Erika Wilder/SCE
COPIES:	Liz Cutler/CH2M HILL
FROM:	Bob Pearson
DATE:	May 12, 2008
PROJECT NUMBER:	369791.CV.TS

Southern California Edison (SCE) requested that CH2M HILL, Inc. conduct corona noise modeling of existing and future corona noise for the Cross Valley Transmission Line Project. A discussion of corona noise, corona modeling, selection of corona noise modeling sites, and the results of the corona noise modeling are provided below.

Corona Noise

The electrical effects of high-voltage transmission lines fall into two broad categories: corona effects and electric and magnetic field effects.

Corona is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. The amount of corona produced by a transmission line is a function of the voltage of the line, the diameter of the conductor (or bundle of conductors), the elevation of the line above sea level, the condition of the conductor and hardware, and the local weather conditions. Corona typically becomes a design concern for transmission lines at 345 kilovolts (kV) and above and is less noticeable on lines operated at lower voltages. (EPRI, 2005)

The electric field gradient that causes corona is the rate at which the strength of the electric field changes with distance and is directly related to the line voltage. The electric field gradient is greatest at the surface of the conductor. Large-diameter conductors have lower electric field gradients at the conductor surface and, hence, lower corona than smaller conductors, everything else being equal. Irregularities (such as nicks and scrapes on the conductor surface) or sharp edges on suspension hardware concentrate the electric field at these locations and, thus, increase the electric field gradient and corona at these spots. Similarly, contamination on the conductor surface, such as dust or insects, can cause irregularities that are a source for corona. Corona also increases at higher elevations where the density of the atmosphere is less than at sea level.

Raindrops, snow, fog, hoarfrost, humidity, and condensation accumulated on the conductor surface are sources of surface irregularities that can increase corona. During fair weather, the number of these sources of surface irregularities is fewer and the corona effect is also low. However, during wet weather (including humid and foul weather conditions), the number of these sources of surface irregularities increases (for instance due to rain drops standing on the conductor and energized hardware) and corona effects are greater. During wet conditions, the conductor will produce the greatest amount of corona noise. However, during heavy rain, the ambient noise generated by the falling raindrops will typically be greater than the noise generated by corona.

Corona generates audible noise (AN) during operation of transmission lines. The noise is generally characterized as a crackling, hissing, or humming noise. The noise is most noticeable during wet conductor conditions such as rain or fog. Audible noise from transmission lines is often masked by the background noise at locations beyond the edge of the right-of-way (ROW) particularly where the line runs near a source of background noise such as a freeway.

Corona Noise Modeling

Various computer models have been written to predict the occurrence of corona on proposed transmission lines. Many of these models are based on research performed at the Bonneville Power Administration in Oregon and Washington in the 1980s and 90s. Much of this research was conducted by Mr. Vernon Chartier and others at Bonneville who took measurements of corona effects from operating transmission lines. These noise measurements were used to develop a computer model called Corona, which is used in the prediction of corona effects from transmission lines.

The Bonneville Corona model was first run on a mainframe computer and was converted to PCs in 1984. The version used for this report is a later, refined version of the model, version 3 (Corona 3 model), prepared in 1991 that is coded in FORTRAN language. The Corona 3 computer code in the model forms the basis of the corona calculations used in many computer models in the electric utility industry.

The Corona 3 model requires inputs for the locations and voltages of the energized and grounded conductors, the conductor diameters and their bundling dimensions and geometry, the elevation of the site, and several other parameters. The Corona 3 model can generate profiles of corona effects for audible noise, radio, and television interference and ozone production, as well as electric and magnetic fields.

EPRI has taken the calculation algorithms from Corona 3 and put them into a new MSWindows-based model (ENVIRO program) that is offered as part of their EMF Workstation series of EMF models. The ENVIRO program calculates lateral profiles for magnetic and electric fields and audible noise from user-defined conductor bundles that comprise power lines. A unique feature of this software is its ability to calculate induced current on shield wires. ENVIRO can incorporate certain effects of weather (fog, rain, snow) when calculating audible noise. Enhancements to ENVIRO include the ability to model up to 50 conductor bundles, usage of Windows™ common dialog boxes, an upgraded interface and the ability to read TLWorkstation input files. Using this software, a utility engineer can produce both tabular and graphical plots of magnetic and electric field profiles and audible noise profiles. Only tabular plots are available for conductor surface gradient electric fields. ENVIRO allows a user to produce electric and magnetic field profiles, audible noise profiles, and conductor surface gradient electric fields. ENVIRO can provide an estimate of induced shield wire current if shield wires are needed in a model (Takemoto-Hambleton, 1996).

Both the Corona and ENVIRO models were used to calculate the audible noise produced by these lines. Besides the way one operates each model (DOS- vs. MSWindows-application) the only difference between the model outputs is ENVIRO converts calculated audible noise below zero dBA to zero on the logarithmic dBA scale. Corona will provide negative numbers on the logarithmic scale. Any audible noise below 10 to 15 dBA is inaudible. The tabular output files from the EPRI ENVIRO modeling of corona noise at existing Site 1 (Site 2 does not currently have a transmission line) and future Site 1 and Site 2 and Corona 3 modeling of corona noise for existing Site 1 were plotted for display and both are provided in Appendix A. One model run using Corona 3 was completed for existing Site 1 to backcheck results for ENVIRO model results.

Selection of Corona Noise Modeling Sites

Two representative locations from the Cross Valley Transmission Line Project were selected for corona noise modeling. The sites were selected based on the following: adjacency to potential sensitive receptors (residences) and highest elevation along alignment for transmission ROW configuration with potential for highest level of corona noise (either two or four 220 kV lines within the ROW).

For the two selected locations, the dimensions of and phase arrangements for each transmission line, elevation, number of lines, ground wires, and conductors within the ROW were determined based on information provided by SCE. The locations of Site 1 - North/South-oriented Segment of Alternative 3 and Site 2 - East/West-oriented Segment of Alternative 1 are shown on Figure 1.

Existing Corona Noise Modeling Scenarios

The two existing corona noise modeling scenarios for the Cross Valley Transmission Line Project are as follows:

Site 1 – North/South-oriented Segment of Alternative 3

The Existing Scenario that was modeled for Site 1 consisted of two 220 kV single-circuit LSTs. Corona modeling inputs included 10 total conductors, of which 6 are energized phases and 4 are ground wires. Site 1 is located at 359 feet (ft) (approximately 109 meters [m]) above mean sea level (msl) (Figure 1).

Site 2 – East/West-oriented Segment of Alternative 1

No existing line is present in the corridor at Site 2; therefore, there is no corona-related noise, and modeling was not warranted. Site 2 is located at 595 ft (approximately 181 m) above msl (Figure 1).

Future Corona Noise Modeling Scenarios

The two future corona noise modeling scenarios for the Cross Valley Transmission Line Project are as follows:

Site 1 – North/South-oriented Segment of Alternative 3

The Future Scenario that was modeled for Site 1 consisted of two 220 kV double-circuit LSTs. Corona modeling inputs included 16 total conductors, of which 12 are energized rotated phases and 4 are ground wires. Site 1 is located at 359 feet (ft) (approximately 109 meters [m]) above msl (Figure 1).

Site 2 – East/West-oriented Segment of Alternative 1

The Future Scenario that was modeled for Site 2 consisted of one 220 kV double-circuit LST. Corona modeling inputs included 8 total conductors, of which 6 are energized rotated phases and 2 are ground wires. Site 2 is located at 595 ft (approximately 181 m) above msl (Figure 1).

Results of Corona Noise Modeling

A summary of the modeled existing and future corona noise for the two representative locations (Site 1 and Site 2) under fair (dry) weather and foul (wet) weather conditions are provided in Table 1. The output results of the corona noise modeling are provided in Attachment A.

TABLE 1: SUMMARY OF MODELED EXISTING AND FUTURE AUDIBLE CORONA NOISE - CORONA 3 AND ENVIRO MODEL RESULTS

Cross Valley Transmission Line Project

Location	Audible Existing Corona Noise at Edge of ROW (dBA)	Audible Future Corona Noise at Edge of ROW (dBA)
Site 1 - North/South-oriented Segment of Alternative 3 - 359 ft (approx. 109 m) above msl	Wet = 19.5 Dry = -5.5	Wet = 37 Dry =12
Site 2 - East/West-oriented Segment of Alternative 1 – 595 ft (approx. 181 m) above msl	Wet = N/A Dry =N/A	Wet = 35.4 Dry =10.4

dBA = A-weighted decibel
ROW = right-of-way
N/A = not applicable

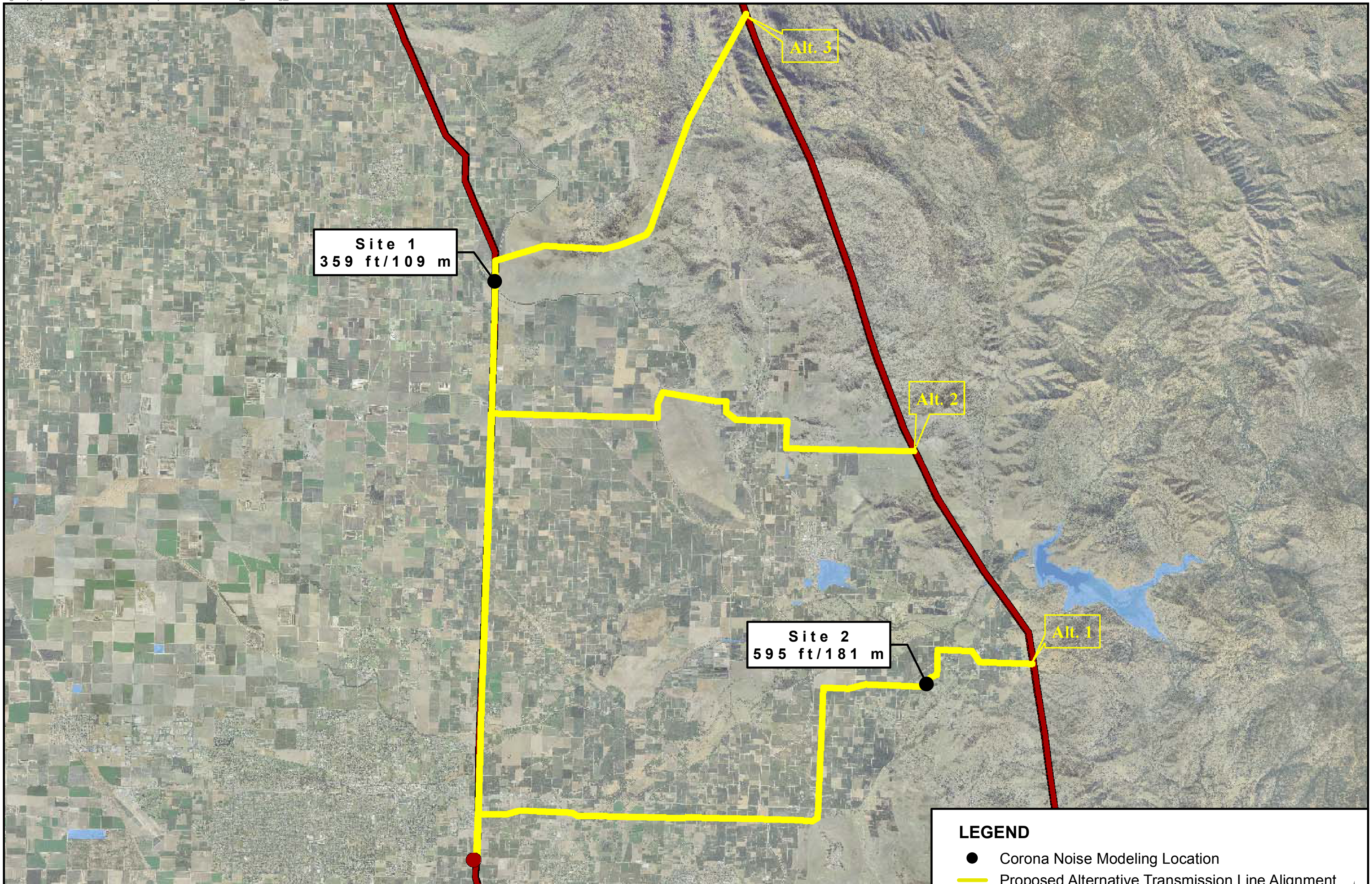
References

Electric Power Research Institute (EPRI). 2005. AC Transmission Line Reference Book—200 kV and Above, Third Edition. Final Report 1011974. December.

Takemoto-Hambleton, R, R. Pappa, and J. Stewart. 1996. EMFWorkstation 2.5: Computer Software for Studying Magnetic Field Scenarios. Presented at the Missouri Valley Electric Association 1996 Engineering Conference. EPRI. Palo Alto, CA 94304 USA.

ATTACHMENT A –
CORONA NOISE MODELING RESULTS

\\galt\proj\SoCalEDISON\358736\MapFiles\noise\corona_modeling_locs.mxd



SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL℠ Company

2008

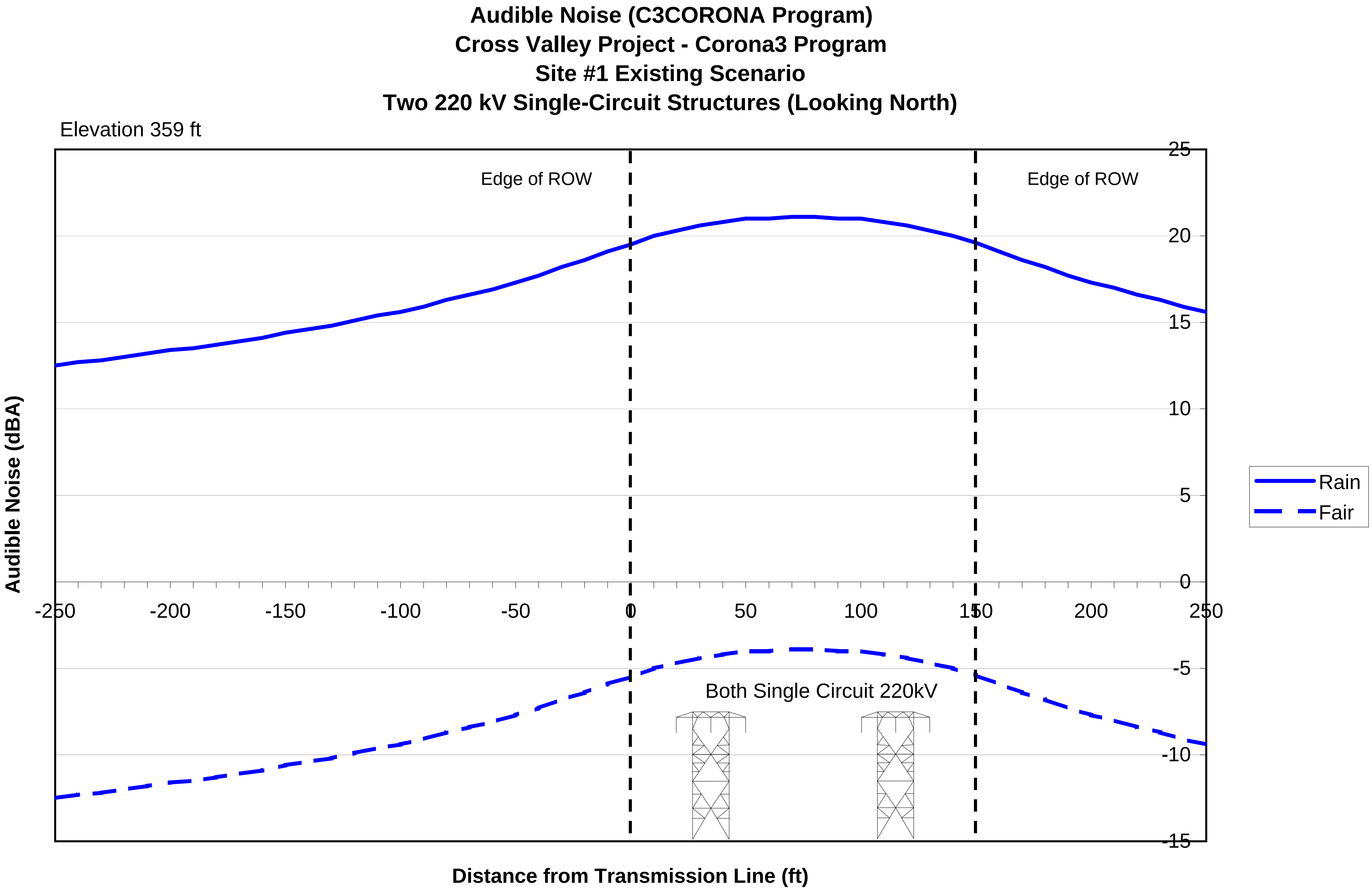
FIGURE 1. SAN JOAQUIN CROSS VALLEY LOOP ALTERNATIVES - CORONA NOISE MODELING LOCATIONS

Site Location #1 Existing Scenario

SCE: Cross Valley Project

Program: Corona3

Distance (ft)	Audible Noise (dBA)	
	Rain	Fair
-250	12.5	-12.5
-240	12.7	-12.3
-230	12.8	-12.2
-220	13	-12
-210	13.2	-11.8
-200	13.4	-11.6
-190	13.5	-11.5
-180	13.7	-11.3
-170	13.9	-11.1
-160	14.1	-10.9
-150	14.4	-10.6
-140	14.6	-10.4
-130	14.8	-10.2
-120	15.1	-9.9
-110	15.4	-9.6
-100	15.6	-9.4
-90	15.9	-9.1
-80	16.3	-8.7
-70	16.6	-8.4
-60	16.9	-8.1
-50	17.3	-7.7
-40	17.7	-7.3
-30	18.2	-6.8
-20	18.6	-6.4
-10	19.1	-5.9
0	19.5	-5.5
10	20	-5
20	20.3	-4.7
30	20.6	-4.4
40	20.8	-4.2
50	21	-4
60	21	-4
70	21.1	-3.9
80	21.1	-3.9
90	21	-4
100	21	-4
110	20.8	-4.2
120	20.6	-4.4
130	20.3	-4.7
140	20	-5
150	19.6	-5.4
160	19.1	-5.9
170	18.6	-6.4
180	18.2	-6.8
190	17.7	-7.3
200	17.3	-7.7
210	17	-8
220	16.6	-8.4
230	16.3	-8.7
240	15.9	-9.1
250	15.6	-9.4


Audible Noise (C3CORONA Program)
Cross Valley Project - Corona3 Program
Site #1 Existing Scenario
Two 220 kV Single-Circuit Structures (Looking North)
Elevation 359 ft
Edge of ROW
Edge of ROW
Both Single Circuit 220kV
Audible Noise (dBA)
Distance from Transmission Line (ft)
Rain
Fair
25
20
15
10
5
0
-5
-10
-15
-250
-200
-150
-100
-50
0
50
100
150
200
250

Site Location #1 Existing Scenario

SCE: Cross Valley Project

Modeling Program: ENVIRO

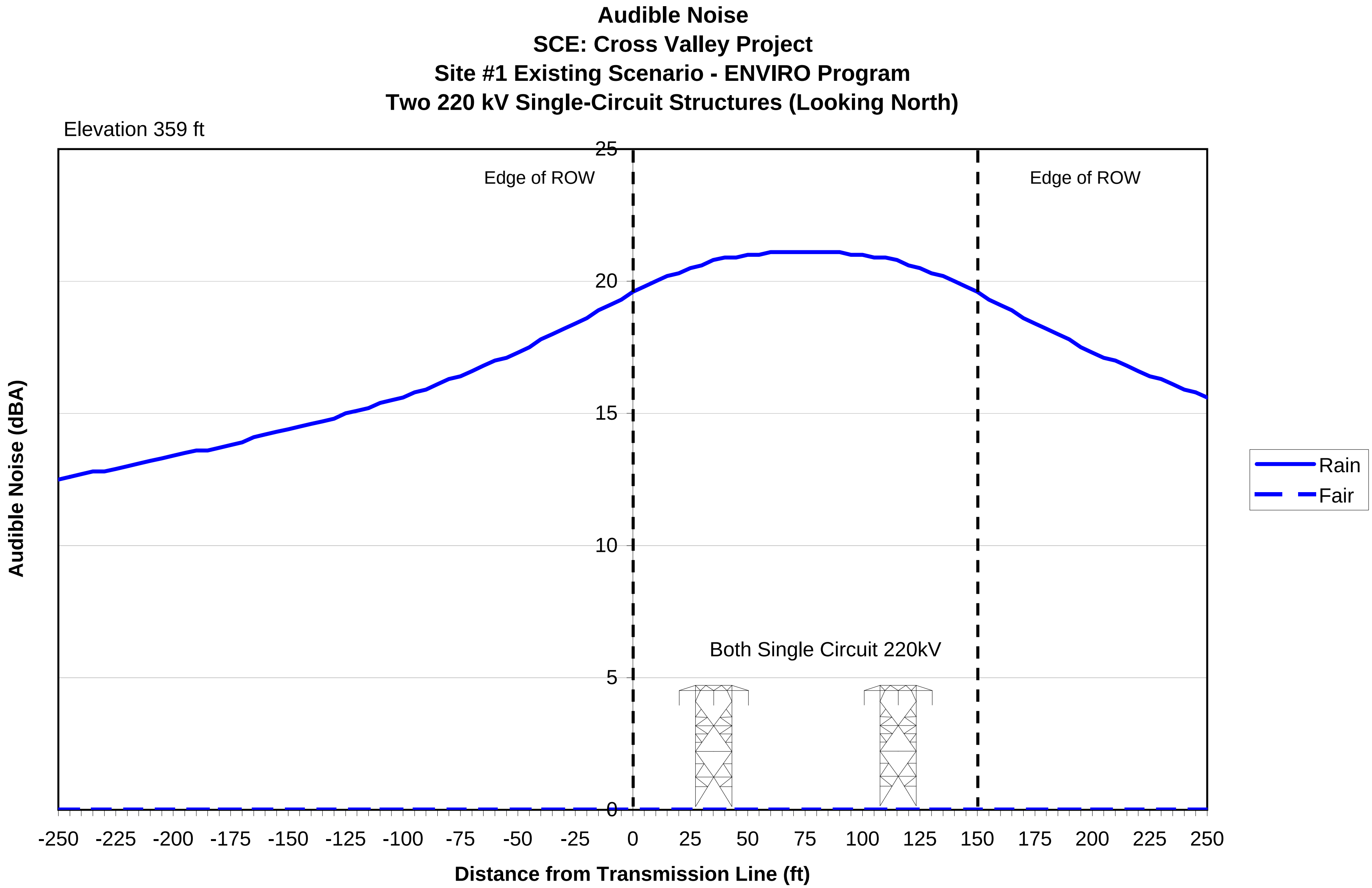
Distance (ft)	Audible Noise (dBA)	
	Rain	Fair
-250	12.5	0
-245	12.6	0
-240	12.7	0
-235	12.8	0
-230	12.8	0
-225	12.9	0
-220	13	0
-215	13.1	0
-210	13.2	0
-205	13.3	0
-200	13.4	0
-195	13.5	0
-190	13.6	0
-185	13.6	0
-180	13.7	0
-175	13.8	0
-170	13.9	0
-165	14.1	0
-160	14.2	0
-155	14.3	0
-150	14.4	0
-145	14.5	0
-140	14.6	0
-135	14.7	0
-130	14.8	0
-125	15	0
-120	15.1	0
-115	15.2	0
-110	15.4	0
-105	15.5	0
-100	15.6	0
-95	15.8	0
-90	15.9	0
-85	16.1	0
-80	16.3	0
-75	16.4	0
-70	16.6	0
-65	16.8	0
-60	17	0
-55	17.1	0
-50	17.3	0
-45	17.5	0
-40	17.8	0
-35	18	0
-30	18.2	0
-25	18.4	0
-20	18.6	0
-15	18.9	0
-10	19.1	0
-5	19.3	0
0	19.6	0
5	19.8	0
10	20	0
15	20.2	0
20	20.3	0
25	20.5	0
30	20.6	0
35	20.8	0
40	20.9	0
45	20.9	0
50	21	0
55	21	0
60	21.1	0
65	21.1	0
70	21.1	0
75	21.1	0
80	21.1	0
85	21.1	0
90	21.1	0

Site Location #1 Existing Scenario

SCE: Cross Valley Project

Modeling Program: ENVIRO

Distance (ft)	Audible Noise (dBA)	
	Rain	Fair
95	21	0
100	21	0
105	20.9	0
110	20.9	0
115	20.8	0
120	20.6	0
125	20.5	0
130	20.3	0
135	20.2	0
140	20	0
145	19.8	0
150	19.6	0
155	19.3	0
160	19.1	0
165	18.9	0
170	18.6	0
175	18.4	0
180	18.2	0
185	18	0
190	17.8	0
195	17.5	0
200	17.3	0
205	17.1	0
210	17	0
215	16.8	0
220	16.6	0
225	16.4	0
230	16.3	0
235	16.1	0
240	15.9	0
245	15.8	0
250	15.6	0


Audible Noise
SCE: Cross Valley Project
Site #1 Existing Scenario - ENVIRO Program
Two 220 kV Single-Circuit Structures (Looking North)
Elevation 359 ft
Edge of ROW
Edge of ROW
Both Single Circuit 220kV
Audible Noise (dBA)
0
5
10
15
20
25
-250
-225
-200
-175
-150
-125
-100
-75
-50
-25
0
25
50
75
100
125
150
175
200
225
250
Distance from Transmission Line (ft)
Rain
Fair

Site Location #1 Future Scenario

SCE: Cross Valley Project

Modeling Program: ENVIRO

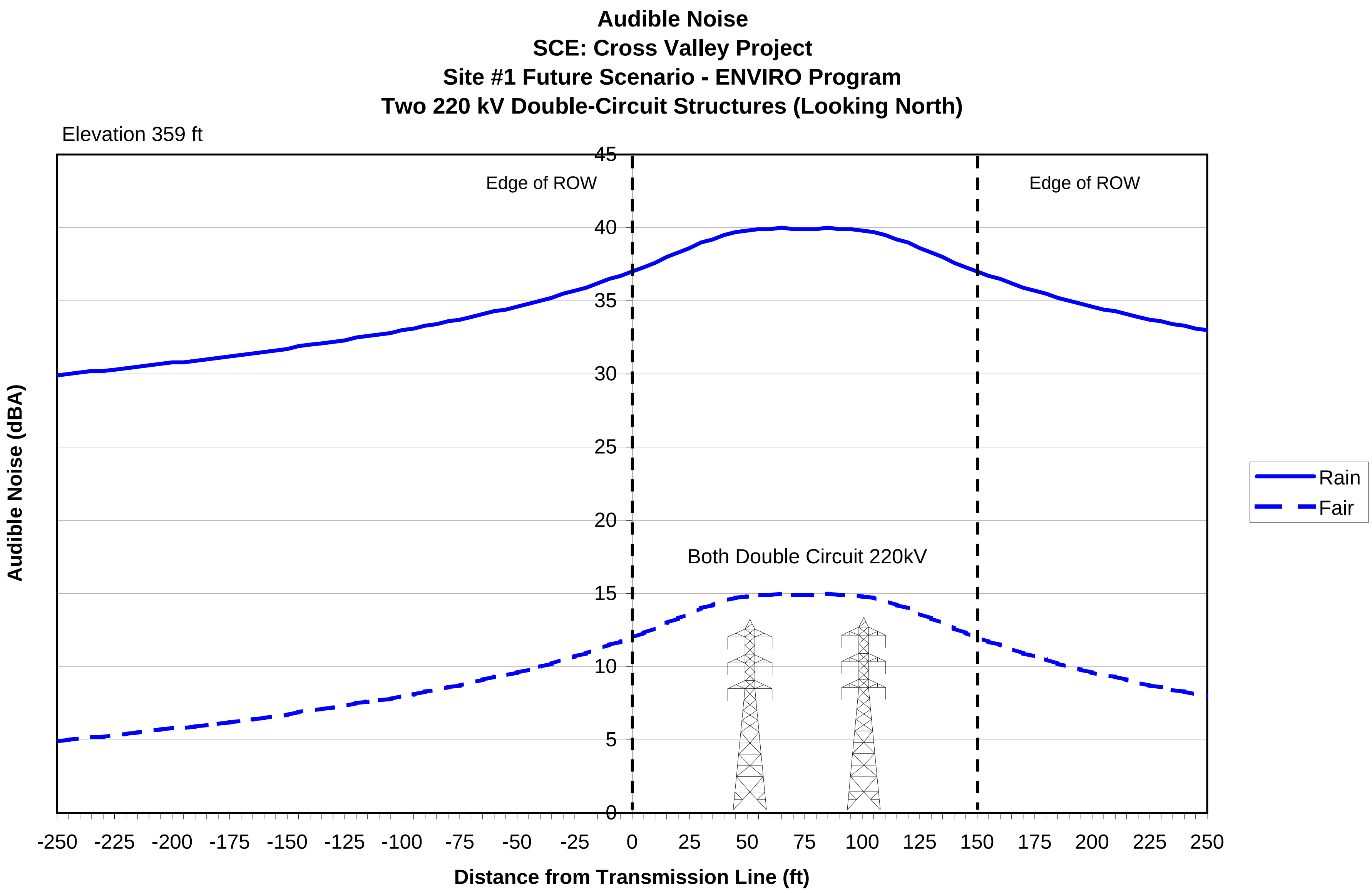
Distance (ft)	Audible Noise (dBA)	
	Rain	Fair
-250	29.9	4.9
-245	30	5
-240	30.1	5.1
-235	30.2	5.2
-230	30.2	5.2
-225	30.3	5.3
-220	30.4	5.4
-215	30.5	5.5
-210	30.6	5.6
-205	30.7	5.7
-200	30.8	5.8
-195	30.8	5.8
-190	30.9	5.9
-185	31	6
-180	31.1	6.1
-175	31.2	6.2
-170	31.3	6.3
-165	31.4	6.4
-160	31.5	6.5
-155	31.6	6.6
-150	31.7	6.7
-145	31.9	6.9
-140	32	7
-135	32.1	7.1
-130	32.2	7.2
-125	32.3	7.3
-120	32.5	7.5
-115	32.6	7.6
-110	32.7	7.7
-105	32.8	7.8
-100	33	8
-95	33.1	8.1
-90	33.3	8.3
-85	33.4	8.4
-80	33.6	8.6
-75	33.7	8.7
-70	33.9	8.9
-65	34.1	9.1
-60	34.3	9.3
-55	34.4	9.4
-50	34.6	9.6
-45	34.8	9.8
-40	35	10
-35	35.2	10.2
-30	35.5	10.5
-25	35.7	10.7
-20	35.9	10.9
-15	36.2	11.2
-10	36.5	11.5
-5	36.7	11.7
0	37	12
5	37.3	12.3
10	37.6	12.6
15	38	13
20	38.3	13.3
25	38.6	13.6
30	39	14
35	39.2	14.2
40	39.5	14.5
45	39.7	14.7
50	39.8	14.8
55	39.9	14.9
60	39.9	14.9
65	40	15
70	39.9	14.9
75	39.9	14.9
80	39.9	14.9
85	40	15
90	39.9	14.9
95	39.9	14.9

Site Location #1 Future Scenario

SCE: Cross Valley Project

Modeling Program: ENVIRO

Distance (ft)	Audible Noise (dBA)	
	Rain	Fair
100	39.8	14.8
105	39.7	14.7
110	39.5	14.5
115	39.2	14.2
120	39	14
125	38.6	13.6
130	38.3	13.3
135	38	13
140	37.6	12.6
145	37.3	12.3
150	37	12
155	36.7	11.7
160	36.5	11.5
165	36.2	11.2
170	35.9	10.9
175	35.7	10.7
180	35.5	10.5
185	35.2	10.2
190	35	10
195	34.8	9.8
200	34.6	9.6
205	34.4	9.4
210	34.3	9.3
215	34.1	9.1
220	33.9	8.9
225	33.7	8.7
230	33.6	8.6
235	33.4	8.4
240	33.3	8.3
245	33.1	8.1
250	33	8



Audible Noise
SCE: Cross Valley Project
Site #1 Future Scenario - ENVIRO Program
Two 220 kV Double-Circuit Structures (Looking North)
Elevation 359 ft
Edge of ROW
Edge of ROW
Both Double Circuit 220kV
Audible Noise (dBA)
Distance from Transmission Line (ft)
Rain
Fair
45
40
35
30
25
20
15
10
5
0
-250
-225
-200
-175
-150
-125
-100
-75
-50
-25
0
25
50
75
100
125
150
175
200
225
250

Site Location #2 Future Scenario

SCE: Cross Valley Project

Modeling Program: ENVIRO

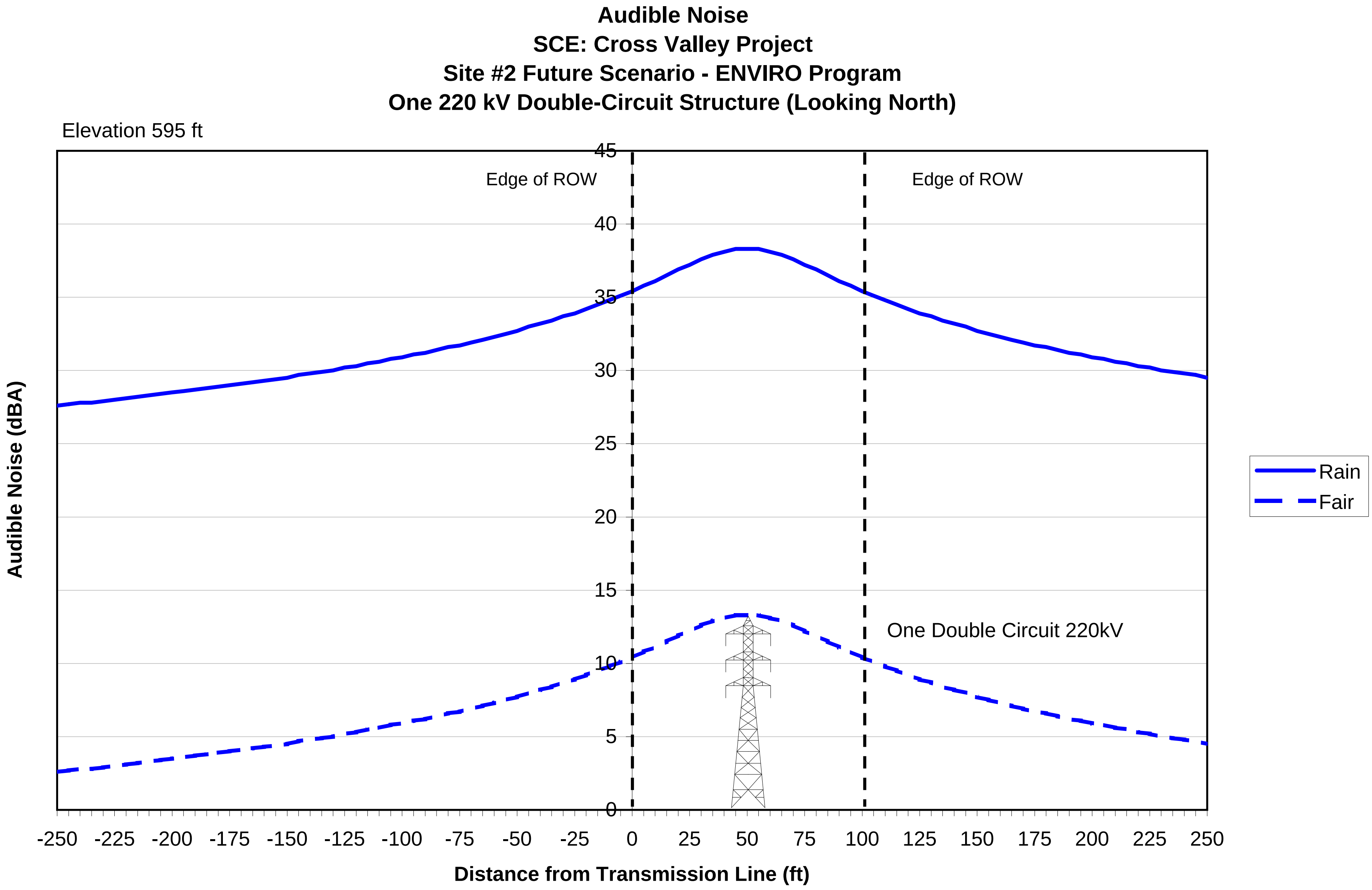
Distance (ft)	Audible Noise (dBA)	
	Rain	Fair
-250	27.6	2.6
-245	27.7	2.7
-240	27.8	2.8
-235	27.8	2.8
-230	27.9	2.9
-225	28	3
-220	28.1	3.1
-215	28.2	3.2
-210	28.3	3.3
-205	28.4	3.4
-200	28.5	3.5
-195	28.6	3.6
-190	28.7	3.7
-185	28.8	3.8
-180	28.9	3.9
-175	29	4
-170	29.1	4.1
-165	29.2	4.2
-160	29.3	4.3
-155	29.4	4.4
-150	29.5	4.5
-145	29.7	4.7
-140	29.8	4.8
-135	29.9	4.9
-130	30	5
-125	30.2	5.2
-120	30.3	5.3
-115	30.5	5.5
-110	30.6	5.6
-105	30.8	5.8
-100	30.9	5.9
-95	31.1	6.1
-90	31.2	6.2
-85	31.4	6.4
-80	31.6	6.6
-75	31.7	6.7
-70	31.9	6.9
-65	32.1	7.1
-60	32.3	7.3
-55	32.5	7.5
-50	32.7	7.7
-45	33	8
-40	33.2	8.2
-35	33.4	8.4
-30	33.7	8.7
-25	33.9	8.9
-20	34.2	9.2
-15	34.5	9.5
-10	34.8	9.8
-5	35.1	10.1
0	35.4	10.4
5	35.8	10.8
10	36.1	11.1
15	36.5	11.5
20	36.9	11.9
25	37.2	12.2
30	37.6	12.6
35	37.9	12.9
40	38.1	13.1
45	38.3	13.3
50	38.3	13.3
55	38.3	13.3
60	38.1	13.1
65	37.9	12.9
70	37.6	12.6
75	37.2	12.2
80	36.9	11.9
85	36.5	11.5
90	36.1	11.1
95	35.8	10.8

Site Location #2 Future Scenario

SCE: Cross Valley Project

Modeling Program: ENVIRO

Distance (ft)	Audible Noise (dBA)	
	Rain	Fair
100	35.4	10.4
105	35.1	10.1
110	34.8	9.8
115	34.5	9.5
120	34.2	9.2
125	33.9	8.9
130	33.7	8.7
135	33.4	8.4
140	33.2	8.2
145	33	8
150	32.7	7.7
155	32.5	7.5
160	32.3	7.3
165	32.1	7.1
170	31.9	6.9
175	31.7	6.7
180	31.6	6.6
185	31.4	6.4
190	31.2	6.2
195	31.1	6.1
200	30.9	5.9
205	30.8	5.8
210	30.6	5.6
215	30.5	5.5
220	30.3	5.3
225	30.2	5.2
230	30	5
235	29.9	4.9
240	29.8	4.8
245	29.7	4.7
250	29.5	4.5



Audible Noise
SCE: Cross Valley Project
Site #2 Future Scenario - ENVIRO Program
One 220 kV Double-Circuit Structure (Looking North)
Elevation 595 ft
Edge of ROW
Edge of ROW
One Double Circuit 220kV
Audible Noise (dBA)
45
40
35
30
25
20
15
10
5
0
-250
-225
-200
-175
-150
-125
-100
-75
-50
-25
0
25
50
75
100
125
150
175
200
225
250
Distance from Transmission Line (ft)
Rain
Fair