

APPENDIX AA
REVISED PROJECT COMPONENTS
DISTURBANCE DATA TABLES FOR FEIS

Table A-1 Summary of Temporary and Permanent Disturbance by TWE Transmission Line Route Segment

Route Segment ID	Total Line Length (miles)	Total ROW (acres)	Approximate Structures (number)			Structure Work Area (acres)			Structure Base (acres)			Pulling / Tensioning / Splicing Sites				Material Storage Yards		Batch Plants		Fly Yards / Staging Areas		Fiber Optic Comm. & Regen. Sites		Temporary Disturbance (acres)	Permanent Disturbance (acres)	New Access Roads Disturbance (acres)		
			Tangent	Angle	DE	Tangent	Angle	DE	Tangent	Angle	DE	Wire		Fiber		No.	Acres	No.	Acres	No.	Acres	No.	Acres				No.	Acres
												No.	Acres	No.	Acres													
N170A	8.00	242.42	29	0	3	33.3	0.0	3.4	0.6	0.0	0.1	10.7	30.7	2.3	2.7	0.3	5.3	0.5	2.7	1.6	11.2	0.2	0.0	89.3	0.7	18.6		
N175_S1	7.10	215.15	26	2	1	29.8	2.3	1.1	0.5	0.1	0.0	6.2	17.7	2.1	2.4	0.2	4.7	0.5	2.4	1.4	9.9	0.1	0.0	70.4	0.7	11.0		
N175_S2	0.27	8.18	2	0	0	2.3	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.1	0.1	0.0	0.2	0.0	0.1	0.1	0.4	0.0	0.0	3.5	0.0	0.4		
N175_S4	0.70	21.21	2	0	1	2.3	0.0	1.1	0.0	0.0	0.0	2.4	6.9	0.2	0.2	0.0	0.5	0.0	0.2	0.1	1.0	0.0	0.0	12.3	0.1	1.1		
Gyp_opn_Conn	0.17	5.15	0	0	1	0.0	0.0	1.1	0.0	0.0	0.0	2.1	6.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0	7.6	0.0	0.4		
Gyp_opn	0.41	12.42	0	1	1	0.0	1.1	1.1	0.0	0.0	0.0	2.2	6.4	0.1	0.1	0.0	0.3	0.0	0.1	0.1	0.6	0.0	0.0	9.8	0.1	1.0		
NRA-rt_S1	2.42	73.33	7	1	2	8.0	1.1	2.3	0.1	0.0	0.1	5.4	15.6	0.7	0.8	0.1	1.6	0.2	0.8	0.5	3.4	0.0	0.0	33.7	0.3	7.2		
NRA-rt_S2	2.77	83.94	9	0	3	10.3	0.0	3.4	0.2	0.0	0.1	7.6	21.9	0.8	0.9	0.1	1.8	0.2	0.9	0.6	3.9	0.1	0.0	43.2	0.3	7.9		

Notes: TUA - Temporary Use Areas (structure work sites, pulling/tensioning sites, material storage yards, batch plants, fly yards and staging areas)

- * All structures are self-supporting lattice.
- * Splicing areas are included with the Pulling/Tensioning Sites per common construction practices.
- * Material Storage Yards have a disturbance area of 20 acres.
- * Batch Plants have a disturbance area of 5 acres.
- * Fly Yards/Staging Areas have a disturbance area of 7 acres.
- * Temporary disturbance areas for Structure Work Areas and Pulling/Tensioning/Splicing Sites are within the 250 feet wide ROW.
- * Depending on the spacing of the facilities (i.e., storage yards) along the length of the proposed and alternative route segments, the same facility may serve more than one route segment. Therefore, the number of facilities associated with each route segment are fractions. This avoids overestimating the total disturbance area for these facilities when individual route segments are combined to form an end-to-end route

Structures per mile - Right-of-Way Width (ROW) -	Approximately	<u>4</u>		
Structure Work Area -	ROW	x	<u>200</u>	feet
Wire-Pulling, Tensioning, Splicing Site				
Dead-End (DE) Structure -	ROW	x	<u>500</u>	feet 2 @ every DE Structure
Mid-Span Conductor and Shield Wire -	ROW	x	<u>500</u>	feet Every <u>9,000</u> feet
Fiber Optic Cable Set-Up Sites -	<u>100</u>	x	<u>500</u>	feet Every <u>18,000</u> feet
Material Storage Yards -	Approximately	<u>20</u>	Acres	Every <u>30</u> miles
Batch Plant Sites - Stand-alone, Temporary -	Approximately	<u>5</u>	Acres	Every <u>15</u> miles
Fly Yards / Staging Areas -	Approximately	<u>7</u>	Acres	Every <u>5</u> miles
Structure Base (600 kV HVDC towers)				
Lattice Tower (Tangent) -	<u>30</u>	x	<u>30</u>	feet
Lattice Tower (Angle) -	<u>35</u>	x	<u>35</u>	feet
Lattice Tower (Dead End) -	<u>40</u>	x	<u>40</u>	feet
Regeneration Sites (most located on ROW) -	<u>100</u>	x	<u>100</u>	feet Every <u>50</u> miles

Table A-2 Summary of Permanent Access Road Disturbances within the TWE Corridors by Transmission Line Route Segment

Route Segment ID	Total Route Segment Line Length (miles)	Terrain Type 1 - Flat								Terrain Type 2 - Rolling								Terrain Type 3 - Steep								Terrain Type 4 - Mountainous								Route Segment Disturbance Totals							
		Route Segment Line Length in Terrain Type 1 - Flat (miles)		New Access Roads and Disturbance		New Access Roads and Disturbance Within ROW		New Access Roads and Disturbance Outside ROW		Route Segment Line Length in Terrain Type 2 - Rolling (miles)		New Access Roads and Disturbance		New Access Roads and Disturbance Within ROW		New Access Roads and Disturbance Outside ROW		Route Segment Line Length in Terrain Type 3 - Steep (miles)		New Access Roads and Disturbance		New Access Roads and Disturbance Within ROW		New Access Roads and Disturbance Outside ROW		Route Segment Line Length in Terrain Type 4 - Mountainous (miles)		New Access Roads and Disturbance		New Access Roads and Disturbance Within ROW		New Access Roads and Disturbance Outside ROW		New Access Roads and Disturbance		New Access Roads and Disturbance Within ROW		New Access Roads and Disturbance Outside ROW			
		Grnflid	Co-loc	miles	acres	miles	acres	miles	acres	miles	acres	Grnflid	Co-loc	miles	acres	miles	acres	miles	acres	Grnflid	Co-loc	miles	acres	miles	acres	miles	acres	Grnflid	Co-loc	miles	acres	miles	acres	miles	acres	miles	acres	miles	acres		
N170A	8.00	8.00	0.00	9.6	18.6	7.0	13.6	2.6	5.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	18.6	7.0	13.6	2.6	5.0
N175_S1	7.10	0.00	7.10	5.7	11.0	0.6	1.1	0.6	9.9	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	11.0	0.6	1.1	0.6	9.9
N175_S2	0.27	0.00	0.27	0.2	0.4	0.0	0.0	0.0	0.4	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.4
N175_S4	0.70	0.00	0.70	0.6	1.1	0.1	0.1	0.1	1.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.1	0.1	0.1	0.1	1.0		
Gyp_opn_Conn	0.17	0.17	0.00	0.2	0.4	0.1	0.3	0.1	0.1	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.1	0.3	0.1	0.1		
Gyp_opn	0.41	0.41	0.00	0.5	1.0	0.4	0.7	0.1	0.3	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0	0.4	0.7	0.1	0.3		
NRA-rt_S1	2.42	1.00	0.00	1.2	2.3	0.9	1.7	0.3	0.6	1.00	0.00	1.3	2.8	0.8	1.8	0.5	1.0	0.42	0.00	0.8	2.0	0.3	0.8	0.5	1.2	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	3.3	7.2	2.0	4.3	1.3	2.9		
NRA-rt_S2	2.77	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	2.77	0.00	3.6	7.9	2.3	5.0	1.3	2.8	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	3.6	7.9	2.3	5.0	1.3	2.8		

Notes:

Terrain Types	Greenfield		Co-Located	
	Ratio of Access Road Miles to One Mile of Transmission Line	Percentage of Access Road Miles Estimated Within and Outside ROW	Ratio of Access Road Miles to One Mile of Transmission Line	Percentage of Access Road Miles Estimated Within and Outside ROW
Terrain Type 1 - Flat Terrain (0 to 8 percent slope)	1.2	73%	0.8	10%
Terrain Type 2 - Rolling Terrain (8 to 15 percent slope)	1.3	64%	1.1	13%
Terrain Type 3 - Steep Terrain (15 to 25 percent slope)	1.8	38%	1.6	14%
Terrain Type 4 - Mountainous Terrain (greater than 25 percent slope)	2.7	18%	2.4	16%

Example: 10 miles of Terrain Type 2 line route results in 14 miles of estimated access road disturbance (10 x 1.3 = 13) 59% (.59 x 13 = 8.3 miles) of this access road disturbance is estimated to be within the 250 foot ROW
Terrain Type 2 contains both Category 2(B) and Category 4 access roads.

Backbone Access Road Network (GIS Shapefiles)

- Category 1 - Existing Improved Roads
- Category 2(A) - Existing Road Outside Corridor that Requires Improvement

New Access Roads Inside Corridor (Table 2)

- Category 2(B) - Existing Roads Inside Corridor that Require Improvement
- Category 3 - Construct New Access Road in Flat Terrain (0 to 8 percent slope)
- Category 4 - Construct New Access Road in Rolling Terrain (8 to 15 percent slope)
- Category 5 - Construct New Access Road in Steep Terrain (15 to 25 percent slope)
- Category 6 - Construct New Access Road in Mountainous Terrain (greater than 25 percent slope)

Access Road Disturbance Widths by Terrain Type

- Flat 16 feet
- Rolling 18 feet
- Steep 22 feet
- Mountainous 24 feet

These disturbance estimates are based on POWER's professional judgment and experience on past projects of similar scale and terrain conditions. These roads generally have a 14 foot wide bladed surface with 2-3 foot berms or ditches on either side, but can be wider in steep and mountainous terrain because of cut and fill requirements according to ground slope. Roads would be designed for one-way traffic; however, pullouts would be constructed to allow for oncoming vehicles to pass.

Table A-3 Summary of Northern and Southern Terminal Temporary and Permanent Disturbance

Terminals	Terminal Disturbance			Interconnection Line Voltage	Total Line Length	Interconnection Line Disturbance															Access Road Disturbance for Interconnection Line								Total Terminal Disturbance			
	Storage & Concrete Batch Plant	Converter Station & Switchyards	Terminal Access Road			Length of each line	Total ROW per line	Structures per line (number)			Structure Work Area per line (acres)			Structure Base per line (acres)			Pulling / Tensioning / Splicing Sites per line		Line Temporary Disturbance	Line Permanent Disturbance	Lines	Line Length in Terrain Type 1 - Flat	New Access Roads and Disturbance		New Access Roads and Disturbance Within ROW		New Access Roads and Disturbance Outside ROW		Total Temporary Disturbance	Total Permanent Disturbance		
								Tangent	Angle	DE	Tangent	Angle	DE	Tangent	Angle	DE	No.	Acres					No.	Acres	miles	acres	miles	acres			miles	acres
Northern	7.5	205	10	EGW 500 kV Loop in/out	4.0	2.0	60.6	2.0	3.0	3.0	2.3	3.4	3.4	0.1	0.1	0.1	7.2	20.6	0.6	0.7	60.9	0.6	2	4.0	5.2	10.1	3.7	7.2	1.5	2.9	270	249
				EGS 500 kV Loop in/out	4.0	2.0	60.6	2.0	3.0	3.0	2.3	3.4	3.4	0.1	0.1	0.1	7.2	20.6	0.6	0.7	60.9	0.6	2	4.0	5.2	10.1	3.7	7.2	1.5	2.9		
				230 kV Platte-Point of Rocks	4.0	4.0	48.5	18.0	3.0	3.0	16.5	2.8	2.8	0.0	0.0	0.0	8.3	19.2	1.2	1.3	42.5	0.0	1	4.0	5.2	10.1	3.7	7.2	1.5	2.9		
Southern Site 1 (Conceptual - 2012)	7.5	140	15	500 kV	10.0	2.5	303.0	30.0	5.0	5.0	34.4	5.7	5.7	0.8	0.2	0.2	11.5	32.9	1.8	2.1	323.7	5.0	4	10.0	34.0	66.0	24.5	47.5	9.5	18.5	331	226
Southern Site 2 (Alt Conceptual 2012)	7.5	140	20	500 kV	18.0	4.5	545.5	62.0	5.0	5.0	71.2	5.7	5.7	1.7	0.2	0.2	12.6	36.3	2.6	3.0	487.8	8.6	4	18.0	47.0	91.0	33.5	65.0	13.5	26.2	495	260

Table A-8 Summary of Northern Terminal & Series Compensation Station Temporary and Permanent Disturbance - System Alternative 2

Locations	Terminal / Substation / Series Compensation Station Disturbance			Interconnection Line Voltage	Total Line Length	Interconnection Line Disturbance															Access Road Disturbance for Interconnection Line								Total Terminal Disturbance			
	Storage & Concrete Batch Plant	Converter Station & Switchyards	Location Access Road			Length of each line	Total ROW per line	Structures per line (number)			Structure Work Area per line (acres)			Structure Base per line (acres)			Pulling / Tensioning / Splicing Sites per line		Line Temporary Disturbance	Line Permanent Disturbance	Lines	Line Length in Terrain Type 1 - Flat	New Access Roads and Disturbance		New Access Roads and Disturbance Within ROW		New Access Roads and Disturbance Outside ROW		Total Temporary Disturbance	Total Permanent Disturbance		
								Tangent	Angle	DE	Tangent	Angle	DE	Tangent	Angle	DE	No.	Acres					No.	Acres	miles	acres	miles	acres			miles	acres
Northern	7.5	190	10	EGW 500 kV Loop in/out	4.0	2.0	60.6	2.0	3.0	3.0	2.3	3.4	3.4	0.1	0.1	0.1	7.2	20.6	0.6	0.7	60.9	0.6	2	4.0	5.2	10.1	3.7	7.2	1.5	2.9	270	234
				EGS 500 kV Loop in/out	4.0	2.0	60.6	2.0	3.0	3.0	2.3	3.4	3.4	0.1	0.1	0.1	7.2	20.6	0.6	0.7	60.9	0.6	2	4.0	5.2	10.1	3.7	7.2	1.5	2.9		
				230 kV Platte-Point of Rocks	4.0	4.0	48.5	18.0	3.0	3.0	16.5	2.8	2.8	0.0	0.0	0.0	8.3	19.2	1.2	1.3	42.5	0.0	1	4.0	5.2	10.1	3.7	7.2	1.5	2.9		
AC/DC Converter & 500/345 kV Substation (near IPP)	7.5	70	10	345 kV	5.0	5.0	90.9	19.0	2.0	4.0	17.4	1.8	3.7	0.0	0.0	0.0	10.9	31.4	1.5	1.7	56.0	0.0	1	5.0	6.5	12.6	4.6	9.0	1.9	3.7	64	93
Modification to IPP Substation	---	20	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	25
Series Compensation Station	7.5	10	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	8	15

Table A-9 Summary of Northern Terminal & Series Compensation Station Temporary and Permanent Disturbance - System Alternative 3 - Phases 1 & 2

Locations	Terminal / Substation / Series Compensation Station Disturbance			Interconnection Line Voltage	Total Line Length	Interconnection Line Disturbance															Access Road Disturbance for Interconnection Line								Total Terminal Disturbance			
	Storage & Concrete Batch Plant	Converter Station & Switchyards	Location Access Road			Length of each line	Total ROW per line	Structures per line (number)			Structure Work Area per line (acres)			Structure Base per line (acres)			Pulling / Tensioning / Splicing Sites per line		Line Temporary Disturbance	Line Permanent Disturbance	Lines	Line Length in Terrain Type 1 - Flat	New Access Roads and Disturbance		New Access Roads and Disturbance Within ROW		New Access Roads and Disturbance Outside ROW		Total Temporary Disturbance	Total Permanent Disturbance		
								Tangent	Angle	DE	Tangent	Angle	DE	Tangent	Angle	DE	No.	Acres					No.	Acres	miles	acres	miles	acres			miles	acres
Northern	7.5	190	10	EGW 500 kV Loop in/out	4.0	2.0	60.6	2.0	3.0	3.0	2.3	3.4	3.4	0.1	0.1	0.1	7.2	20.6	0.6	0.7	60.9	0.6	2	4.0	5.2	10.1	3.7	7.2	1.5	2.9	270	234
				EGS 500 kV Loop in/out	4.0	2.0	60.6	2.0	3.0	3.0	2.3	3.4	3.4	0.1	0.1	0.1	7.2	20.6	0.6	0.7	60.9	0.6	2	4.0	5.2	10.1	3.7	7.2	1.5	2.9		
				230 kV Platte-Point of Rocks	4.0	4.0	48.5	18.0	3.0	3.0	16.5	2.8	2.8	0.0	0.0	0.0	8.3	19.2	1.2	1.3	42.5	0.0	1	4.0	5.2	10.1	3.7	7.2	1.5	2.9		
500/345 kV Substation (near IPP)	7.5	55	7	345 kV	5.0	5.0	90.9	19.0	2.0	4.0	17.4	1.8	3.7	0.0	0.0	0.0	10.9	31.4	1.5	1.7	56.0	0.0	1	5.0	6.5	12.6	4.6	9.0	1.9	3.7	64	75
Modification to IPP Substation	---	20	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23
Series Compensation Station	7.5	10	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	8	15
Southern Site 2 (Conceptual - 2012)	7.5	140	15	500 kV	10.0	2.5	303.0	30.0	5.0	5.0	34.4	5.7	5.7	0.8	0.2	0.2	11.5	32.9	1.8	2.1	323.7	5.0	4	10.0	34.0	66.0	24.5	47.5	9.5	18.5	331	226
Southern Site 3 (Alt Conceptual 2012)	7.5	140	20	500 kV	18.0	4.5	545.5	62.0	5.0	5.0	71.2	5.7	5.7	1.7	0.2	0.2	12.6	36.3	2.6	3.0	487.8	8.6	4	18.0	47.0	91.0	33.5	65.0	13.5	26.2	495	260

	230 kV - Double Circuit		345 kV		500 kV	
Structures per mile -	Approximately 6		5		4	
Right-of-Way Width (ROW) -	100 feet		150 feet		250 feet	
Structure Work Area -	200 x 200 feet		200 x 200 feet		ROW x 200 feet	
Wire-Pulling, Tensioning, Splicing Site						
Dead-End Structure -	250 x 500 feet		250 x 500 feet		2 @ every DE Structure	
Mid-Span Conductor and Shield Wire -	250 x 500 feet		250 x 500 feet		Every 9,000 feet	
Fiber Optic Cable Set-Up Sites -	100 x 500 feet		100 x 500 feet		Every 18,000 feet	
Structure Base						
Lattice Tower (Tangent) -	35 x 35 feet		35 x 35 feet		35 x 35 feet	
Lattice Tower (Angle) -	40 x 40 feet		40 x 40 feet		40 x 40 feet	
Lattice Tower (Dead End) -	45 x 45 feet		45 x 45 feet		45 x 45 feet	
Single Pole Tubular (Tangent) -	40 sq feet (~7 ft dia fdn)		50 sq feet (~8 ft dia fdn)		50 sq feet (~8 ft dia fdn)	
Single Pole Tubular (Angle) -	45 sq feet (~7.5 ft dia fdn)		60 sq feet (~8.5 ft dia fdn)		60 sq feet (~8.5 ft dia fdn)	
Single Pole Tubular (Dead-End) -	50 sq feet (~8 ft dia fdn)		65 sq feet (~9 ft dia fdn)		65 sq feet (~9 ft dia fdn)	

Table A-4 Summary of Temporary and Permanent Disturbance by Ground Electrode Siting Options

Ground Electrode Location	Ground Electrode Disturbance			Low Voltage (34.5 kV) Line Construction													Access Road Construction				Total Temporary Disturbance (acres)	Total Permanent Disturbance (acres)		
	Temp (acres)	Perm (acres)	Well Access (acres)	Total Low Voltage Line Length (miles)	Total ROW (acres)	Structures (number)			Structure Work Area (acres)			Structure Base (acres)			Pulling / Tensioning / Splicing Sites		Line Length (miles)			Terrain Category			Access Road	
						Tangent	Angle	DE	Tangent	Angle	DE	Tangent	Angle	DE	No.	Acres	From	To	Length				Length (miles)	Area (acres)
NORTHERN GROUND ELECTRODE																								
Bolten Ranch	65	0.5	5.0	15.0	91	249	6	15	28.6	0.7	1.7	0.1	0.0	0.1	39	8.7	0.0	2.5	2.5	Rolling	3.3	7.1	105	52
																	2.5	3.0	0.5	Steep	0.9	2.4		
																	3.0	6.5	3.5	Rolling	4.6	9.9		
																	6.5	7.5	1.0	Steep	1.8	4.8		
																	7.5	13.5	6.0	Rolling	7.8	17.0		
																	13.5	14.0	0.5	Steep	0.9	2.4		
Eight Mile Basin	65	0.5	5.0	5.0	30	86	1	3	9.9	0.1	0.3	0.0	0.0	0.0	9	1.5	0.0	1.0	1.0	Flat	1.2	2.3	77	18
																	1.0	2.5	1.5	Rolling	2.0	4.3		
																	2.5	5.0	2.5	Flat	3.0	5.8		
Separation Flat	65	0.5	5.0	12.0	73	213	0	3	24.4	0.0	0.3	0.1	0.0	0.0	13	2.2	0.0	4.0	4.0	Rolling	5.2	11.3	92	36
																	4.0	12.0	8.0	Flat	9.6	18.6		
Separation Creek	65	0.5	5.0	2.0	12	32	1	3	3.7	0.1	0.3	0.0	0.0	0.0	7	1.2	0.0	2.0	2.0	Rolling	2.6	5.7	70	11
SOUTHERN GROUND ELECTRODE																								
Mormon Mesa-Carp Elgin Rd (Applicant Proposed Route)	65	0.5	5.0	5.5	33	97	0	2	11.1	0.0	0.2	0.0	0.0	0.0	7	1.1	0.0	5.5	5.5	Flat	6.6	12.8	77	18
Mormon Mesa-Carp Elgin Rd (Agency Preferred Route)	65	0.5	5.0	8.0	49	142	0	3	16.3	0.0	0.3	0.1	0.0	0.0	11	1.8	0.0	8.0	8.0	Flat	9.6	18.7	83	24
Halfway Wash - Virgin River (Applicant Proposed Route)	65	0.5	5.0	4.0	24	70	0	2	8.0	0.0	0.2	0.0	0.0	0.0	6	0.9	0.0	4.0	4.0	Flat	4.8	9.3	74	15
Halfway Wash - Virgin River (Agency Preferred Route)	65	0.5	5.0	5.8	35	103	0	2	11.8	0.0	0.2	0.0	0.0	0.0	7	1.1	0.0	5.8	5.8	Flat	7.0	13.5	78	19
Halfway Wash East (Applicant Proposed Route)	65	0.5	5.0	7.8	47	136	2	3	15.6	0.2	0.3	0.0	0.0	0.0	11	1.8	0.0	7.8	7.8	Flat	9.4	18.2	83	24
Halfway Wash East (Agency Preferred Route)	65	0.5	5.0	10.0	61	174	2	4	20.0	0.2	0.5	0.1	0.0	0.0	14	2.6	0.0	10.0	10.0	Flat	12.0	23.3	88	29
Meadow Valley 2	65	0.5	5.0	21.5	130	375	6	6	43.0	0.7	0.7	0.1	0.0	0.0	25	4.8	0.0	3.5	3.5	Flat	4.2	8.1	114	61
																	3.5	13.0	9.5	Rolling	12.4	26.9		
																	13.0	20.0	7.0	Flat	8.4	16.3		
																	20.0	21.5	1.5	Rolling	2.0	4.3		
SYSTEM ALTERNATIVE 2																								
Near IPP	65	0.5	5.0	13.5	82	237	2	4	27.2	0.2	0.5	0.1	0.0	0.0	16	2.9	0.0	13.5	13.5	Flat	16.2	31.4	96	37

Notes:
 Temporary disturbance for ground electrodes includes trenching, well heads, equipment storage, batch plant, and material storage yard.
 All structures are assumed to be wood poles
 Splicing areas have been assumed to be included in the Pulling/Tensioning sites per common construction practices.
 Ground Electrode temporary disturbance includes material storage yard for the LV line
 Temporary disturbance areas for Structure Work Areas and Pulling/Tensioning/Splicing Sites are outside 50 feet wide ROW

Structures per mile - Right-of-Way Width (ROW) -	Approximately	<u>18</u>	feet
Structure Work Area -	ROW x	<u>100</u>	feet
<u>Wire-Pulling, Tensioning, Splicing Site</u>			
Dead-End Structure -	<u>75</u>	x	<u>150</u> feet
Mid-Span Conductor -	<u>75</u>	x	<u>100</u> feet
<u>Structure Base</u>			
Tangent -	<u>4</u>	x	<u>4</u> feet
Angle -	<u>5</u>	x	<u>5</u> feet
	<u>5</u>	x	<u>5</u> feet
Dead End -	<u>6</u>	x	<u>6</u> feet
	<u>5</u>	x	<u>5</u> feet
			per pole - <u>2</u> per str location
			per anchor - <u>1</u> per str location
			per pole - <u>2</u> per str location
			per anchor - <u>4</u> per str location
<u>Access Road</u>			
Terrain Type	Access Road Ratio		Width
Flat -	<u>1.2</u>	x	length of the line
Rolling -	<u>1.3</u>	x	length of the line
Steep -	<u>1.8</u>	x	length of the line
Mountainous -	<u>2.7</u>	x	length of the line
			<u>16</u> feet
			<u>18</u> feet
			<u>22</u> feet
			<u>24</u> feet

Table A-6 Summary of Temporary and Permanent Disturbance by TWE Transmission Line Route Segment - Design Option 2

Route Segment ID	Total Line Length (miles)	Total ROW (acres)	Approximate Structures (number)			Structure Work Area (acres)			Structure Base (acres)			Pulling / Tensioning / Splicing Sites				Material Storage Yards		Batch Plants		Fly Yards / Staging Areas		Fiber Optic Comm. & Regen. Sites		Temporary Disturbance (acres)	Permanent Disturbance (acres)	New Access Roads Disturbance (acres)
			Tangent	Angle	DE	Tangent	Angle	DE	Tangent	Angle	DE	Wire		Fiber		No.	Acres	No.	Acres	No.	Acres	No.	Acres			
												No.	Acres	No.	Acres											
NRA-rt_S1	2.42	73.3	7	1	2	8.0	1.1	2.3	0.2	0.0	0.1	5.4	15.6	0.7	0.8	0.1	1.6	0.2	0.8	0.5	3.4	0.0	0.0	33.7	0.3	7.2
NRA-rt_S2	2.77	83.9	9	0	3	10.3	0.0	3.4	0.3	0.0	0.1	7.6	21.9	0.8	0.9	0.1	1.8	0.2	0.9	0.6	3.9	0.1	0.0	43.2	0.4	7.9

Notes: TUA - Temporary Use Areas (structure work sites, pulling/tensioning sites, material storage yards, batch plants, fly yards and staging areas)

- * Rows highlighted in blue text indicate segments that are assumed to have a single circuit 500 kV AC configuration.
- * All structures are assumed to be Self Supporting Lattice.
- * Splicing areas are included with the Pulling/Tensioning Sites per common construction practices.
- * Material Storage Yards have a disturbance area of 20 acres.
- * Batch Plants have a disturbance area of 5 acres.
- * Fly Yards/Staging Areas have a disturbance area of 7 acres.
- * Temporary disturbance areas for Structure Work Areas and Pulling/Tensioning/Splicing Sites are within the 250 feet wide ROW

Structures per mile - Right-of-Way Width (ROW) -	Approximately	<u>4</u>			
Structure Work Area -	ROW	x	<u>250</u>	feet	
<u>Wire-Pulling, Tensioning, Splicing Site</u>					
Dead-End (DE) Structure -	ROW	x	<u>500</u>	feet	2 @ every DE Structure
Mid-Span Conductor and Shield Wire -	ROW	x	<u>500</u>	feet	Every <u>9,000</u> feet
Fiber Optic Cable Set-Up Sites -	<u>100</u>	x	<u>500</u>	feet	Every <u>18,000</u> feet
Material Storage Yards -	Approximately	<u>20</u>	Acres	Every	<u>30</u> miles
Batch Plant Sites - Stand-alone, Temporary -	Approximately	<u>5</u>	Acres	Every	<u>15</u> miles
Fly Yards / Staging Areas -	Approximately	<u>7</u>	Acres	Every	<u>5</u> miles
<u>Structure Base (600 kV HVDC Towers)</u>					
Lattice Tower (Tangent) -	<u>30</u>	x	<u>30</u>	feet	
Lattice Tower (Angle) -	<u>35</u>	x	<u>35</u>	feet	
Lattice Tower (Dead End) -	<u>40</u>	x	<u>40</u>	feet	
<u>Structure Base (Single Circuit 500 kV AC Towers)</u>					
Lattice Tower (Tangent) -	<u>35</u>	x	<u>35</u>	feet	
Lattice Tower (Angle) -	<u>40</u>	x	<u>40</u>	feet	
Lattice Tower (Dead End) -	<u>45</u>	x	<u>45</u>	feet	
Regeneration Sites (most located on ROW) -	<u>100</u>	x	<u>100</u>	feet	Every <u>50</u> miles

Table A-7 Summary of Temporary and Permanent Disturbance by TWE Transmission Line Route Segment - Design Option 3

Route Segment ID	Total Line Length (miles)	Total ROW (acres)	Approximate Structures (number)			Structure Work Area (acres)			Structure Base (acres)			Pulling / Tensioning / Splicing Sites				Material Storage Yards		Batch Plants		Fly Yards / Staging Areas		Fiber Optic Comm. & Regen. Sites		Temporary Disturbance (acres)	Permanent Disturbance (acres)	New Access Roads Disturbance (acres)
			Tangent	Angle	DE	Tangent	Angle	DE	Tangent	Angle	DE	Wire		Fiber		No.	Acres	No.	Acres	No.	Acres	No.	Acres			
												No.	Acres	No.	Acres											
N170	0.93	28.2	2	1	1	2.3	1.1	1.1	0.0	0.0	0.0	2.5	7.3	0.3	0.3	0.0	0.6	0.1	0.3	0.2	1.3	0.0	0.0	14.4	0.1	1.4
N170A	8.00	242.4	29	0	3	33.3	0.0	3.4	0.6	0.0	0.1	10.7	30.7	2.3	2.7	0.3	5.3	0.5	2.7	1.6	11.2	0.2	0.0	89.3	0.7	18.6
N175_S1	7.10	215.2	26	2	1	29.8	2.3	1.1	0.5	0.1	0.0	6.2	17.7	2.1	2.4	0.2	4.7	0.5	2.4	1.4	9.9	0.1	0.0	70.4	0.7	11.0
N175_S2	0.27	8.2	2	0	0	2.3	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.1	0.1	0.0	0.2	0.0	0.1	0.1	0.4	0.0	0.0	3.5	0.0	0.4
N175_S4	0.70	21.2	2	0	1	2.3	0.0	1.1	0.0	0.0	0.0	2.4	6.9	0.2	0.2	0.0	0.5	0.0	0.2	0.1	1.0	0.0	0.0	12.3	0.1	1.1
Gyp_opn_Conn	0.17	5.2	0	0	1	0.0	0.0	1.1	0.0	0.0	0.0	2.1	6.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0	7.6	0.0	0.4
Gyp_opn	0.41	12.4	0	1	1	0.0	1.1	1.1	0.0	0.0	0.0	2.2	6.4	0.1	0.1	0.0	0.3	0.0	0.1	0.1	0.6	0.0	0.0	9.8	0.1	1.0
NRA-rt_S1	2.42	73.3	7	1	2	8.0	1.1	2.3	0.1	0.0	0.1	5.4	15.6	0.7	0.8	0.1	1.6	0.2	0.8	0.5	3.4	0.0	0.0	33.7	0.3	7.2
NRA-rt_S2	2.77	83.9	9	0	3	10.3	0.0	3.4	0.2	0.0	0.1	7.6	21.9	0.8	0.9	0.1	1.8	0.2	0.9	0.6	3.9	0.1	0.0	43.2	0.3	7.9

Notes: TUA - Temporary Use Areas (structure work sites, pulling/tensioning sites, material storage yards, batch plants, fly yards and staging areas)

- * Rows highlighted in blue text indicate segments that are assumed to have 600 kV HVDC structures but the line operating as a single circuit 500 kV AC transmission line (Phase 1).
- * All structures are assumed to be Self Supporting Lattice.
- * Splicing areas are included with the Pulling/Tensioning Sites per common construction practices.
- * Material Storage Yards have a disturbance area of 20 acres.
- * Batch Plants have a disturbance area of 5 acres.
- * Fly Yards/Staging Areas have a disturbance area of 7 acres.
- * Temporary disturbance areas for Structure Work Areas and Pulling/Tensioning/Splicing Sites are within the 250 feet wide ROW

Structures per mile - Right-of-Way Width (ROW) -	Approximately	<u>4</u>	feet
Structure Work Area -	ROW	x <u>200</u>	feet
<u>Wire-Pulling, Tensioning, Splicing Site</u>			
Dead-End (DE) Structure -	ROW	x <u>500</u>	feet 2 @ every DE Structure
Mid-Span Conductor and Shield Wire -	ROW	x <u>500</u>	feet Every <u>9,000</u> feet
Fiber Optic Cable Set-Up Sites -	<u>100</u>	x <u>500</u>	feet Every <u>18,000</u> feet
Material Storage Yards -	Approximately	<u>20</u>	Acres Every <u>30</u> miles
Batch Plant Sites - Stand-alone, Temporary -	Approximately	<u>5</u>	Acres Every <u>15</u> miles
Fly Yards / Staging Areas -	Approximately	<u>7</u>	Acres Every <u>5</u> miles
<u>Structure Base (600 kV HVDC Towers)</u>			
Lattice Tower (Tangent) -	<u>30</u>	x <u>30</u>	feet
Lattice Tower (Angle) -	<u>35</u>	x <u>35</u>	feet
Lattice Tower (Dead End) -	<u>40</u>	x <u>40</u>	feet
<u>Structure Base (600 kV HVDC Line operated as Single Circuit 500 kV AC line)</u>			
Lattice Tower (Tangent) -	<u>40</u>	x <u>40</u>	feet
Lattice Tower (Angle) -	<u>45</u>	x <u>45</u>	feet
Lattice Tower (Dead End) -	<u>50</u>	x <u>50</u>	feet
Regeneration Sites (most located on ROW) -	<u>100</u>	x <u>100</u>	feet Every <u>50</u> miles