## Appendix A-2 Construction Workforce and Equipment



Table A-1 Construction Workforce Required for the Proposed Project

Project Component	Construction Activity	Total Estimated Workforce	Estimated Schedule (days)	Activity Production
	Survey	4	36	35.5 miles
	Construction yard	4		10.0 "
	Roads and landing work	5	101	18.0 miles, 258 pads
	Install guard structure	6	4	16 structures
	Remove existing conductors and OHGW	14	71	35.5 miles
	Remove existing structures	6	75	221 structures
	Remove existing foundations	8	67	208 H-frames 13 LSTs
	Remove existing wood poles	6	7	23 H-frames 6 poles
230-kV transmission	Install LST foundations	18	144	216 LSTs
line	LST steel haul	8	108	216 LSTs
	LST steel assembly	42	144	216 LSTs
	LST erection	16	108	216 LSTs
	Tubular steel H-frame foundations	7	42	42 H-frames
	Tubular steel H-frame haul	4	21	42 H-frames
	Tubular steel H-frame assembly	8	42	42 H-frames
	Tubular steel H-frame erection	8	42	42 H-frames
	Install conductor and optical ground wire	32	205	71.0 miles
	Remove guard structure	6	4	16 structures
	Restore	7	36	35.5 miles
	Survey	4	1	1.0 mile
	Roads and landing work	5	5	0. 5 miles 16 pads
115-kV	Remove existing H-frame poles	6	3	7 steel poles
subtransmission line	Remove existing H-frame foundations	4	2	7 steel poles
	Install steel pole foundations	7	2	4 TSPs
	Installing lightweight steel poles	4	4	16 steel poles
	Assembling lightweight steel poles	8	8	16 steel poles
115-kV	Erecting lightweight steel poles	8	8	16 steel poles
subtransmission line	Installing conductor and overhead shield wire	16 7	1	0.15 miles
	Restoration Trenching, structure excavation	4	<u> </u>	1.0 mile
33-kV distribution	Overhead line	4	3	
line	Underground cable pulling	4	2	
	Underground cable makeup	8	60	
Ivanpah Substation	Survey crew	2	15	
	Grading crew	5	40	

Table A-1 Construction Workforce Required for the Proposed Project

Table A-1 Constitut	ction worklorde Required for the Proposed P	Total Estimated	Estimated Schedule	Activity
Project Component	Construction Activity	Workforce	(days)	Production
	Civil crew	7	60	
	Electrical crew	8	60	
	Path 1	_		
	optical ground wire splice	3	30	30 splices
	Path 2 – Section 1	4		
	Marshalling yard	4	 10	OF miles
	Roads and landing work LST steel haul	5	13	25 miles
		4 14	45 45	45 LSTs 45 LSTs
	LST retrofit		45 70	
	Remove existing OHGW / install optical ground wire	15 7	72 25	25 circuit miles 25 miles
	Restoration	/	25	25 miles
	Path 2 – Section 2			
		4	Е	4.8 miles
	Installing underground cable	4	5 5	
	Pulling/installing fiber cable	4		6,000 feet/day
	Installing underground duct	4	66	400 feet/day
	Path 2 – Section 3 - Microwave Path Installing microwave site tower/shelter	4	0	
Telecommunication	Installing underground fiber cable	4 4	8 1	0.7 miles
	Pulling/installing fiber cable	4	1	6,000 feet/day
System	Installing underground duct	4	10	
	Path 3 – Section 3 - Golf Course Alternative	4	10	400 feet/day
	Installing underground fiber cable	4	0	0 "
		4	8 8	9 miles
	Pulling/installing fiber cable	4	119	6,000 feet/day
	Installing underground duct Installing ADSS fiber on pole line	4	7	400 feet/day
		4	7	6 miles
	Installing cross arms on poles Installing ADSS fiber on pole line	4	4	5,000 feet/day
	, ·	4	4	8,000 feet/day
	Path 3 - Section 3 - Mountain Pass		0	
	Alternative	4	9	6,000 feet/day
	Installing underground fiber cable	4	132	400 feet/day
	Pulling/installing fiber cable	4	8	7 miles
	Installing underground duct	4	8	5,000 feet/day
	Installing ADSS fiber on pole line	4	5	8,000 feet/ day
	Installing cross arms on poles	8	68	n/a
	Installing ADSS fiber on pole line			

Table A-2 Construction Equipment for the Activity and Equipment			CONSTRUCTIO	,	ration
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
Survey				36	
1/2-ton pickup truck, 4x4	200	Gas	2	36	8
Construction Yard					
1-ton crew cab, 4x4	300	Diesel	1		2
30-ton crane truck	300	Diesel	1	Project	2
10,000-pound rough-terrain fork lift	200	Diesel	1	duration	5
Truck, semi-tractor	350	Diesel	1		1
Roads and Landing Work				101	
1-ton crew cab, 4x4	300	Diesel	2	101	2
Road grader	350	Diesel	1	101	4
Track-type dozer	350	Diesel	1	101	6
Drum-type compactor	250	Diesel	1	101	4
Water truck	350	Diesel	2	Project duration	8
Lowboy truck/trailer	500	Diesel	1	51	2
Backhoe/front loader	350	Diesel	1	101	6
Installing Guard Structure				4	
3/4-ton pickup truck, 4x4	300	Diesel	2	4	6
1-ton crew cab flatbed, 4x4	300	Diesel	1	4	6
Compressor trailer	120	Diesel	1	4	6
Auger truck	500	Diesel	1	4	6
Pole truck/trailer	350	Diesel	1	4	6
80-foot hydraulic man-lift/bucket truck	350	Diesel	1	4	4
30-ton crane truck	500	Diesel	1	4	8
Removing Existing Conductor and OHGW				71	
1-ton crew cab, 4x4	300	Diesel	4	71	8
80-foot hydraulic man-lift/bucket truck	350	Diesel	3	71	8
Sleeving truck	300	Diesel	1	71	4
30-ton crane truck	300	Diesel	1	71	4
Flatbed trailer	N/A	N/A	3	64	2
Truck, semi, tractor	350	Diesel	1	64	1
Bull wheel puller	500	Diesel	1	48	4
Hydraulic rewind puller	300	Diesel	1	48	4
Removing Existing Structures				75	
1-ton crew cab, 4x4	300	Diesel	2	75	5
80-ton rough-terrain crane	350	Diesel	1	40	8
30-ton crane truck	300	Diesel	2	75	6
Compressor trailer	120	Diesel	2	40	8
Flatbed truck/trailer	350	Diesel	1	35	8
10,000-pound rough-terrain forklift	200	Diesel	1	35	4
Removing Existing Foundations	200	210001	·	67	,
1-ton crew cab flatbed, 4x4	300	Diesel	2	67	8
I TOTI OF OW OUD HULDOU, TAT	500	DIOSCI		07	

Table A-2 Construction Equipment for th Activity and Equip			e Constructio		ration
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
10-cubic yard dump truck	350	Diesel	2	67	8
Backhoe/front loader	350	Diesel	2	67	8
Compressor trailer	120	Diesel	2	67	8
Removing Existing Wood Poles				7	
3/4-ton pickup truck, 4x4	300	Diesel	2	7	5
1-ton crew cab flatbed, 4x4	300	Diesel	1	7	5
30-ton crane truck	300	Diesel	1	7	6
Pole truck/trailer	350	Diesel	2	7	8
Installing LST Foundations				144	
1-ton crew cab flatbed, 4x4	300	Diesel	4	144	2
30-ton crane truck	300	Diesel	2	144	5
Backhoe/front loader	200	Diesel	2	144	8
Auger truck	500	Diesel	2	144	8
10-cubic-yard dump truck	350	Diesel	4	144	8
4,000-gallon water truck	350	Diesel	2	144	8
10-cubic-yard concrete mixer truck	425	Diesel	6	144	5
Hauling LSTs				108	
1-ton crew cab flatbed, 4x4	300	Diesel	4	108	2
Flatbed truck/trailer	350	Diesel	2	108	8
10,000-pound rough-terrain fork lift	200	Diesel	2	108	6
Assembling LSTs				144	
3/4-ton pickup truck, 4x4	300	Diesel	6	144	4
1-ton crew cab flatbed, 4x4	300	Diesel	9	144	4
30-ton crane truck	300	Diesel	6	144	8
Compressor trailer	120	Diesel	6	144	6
Erecting LSTs				108	
3/4-ton pickup truck, 4x4	300	Diesel	4	108	5
1-ton crew cab flatbed, 4x4	300	Diesel	4	108	5
Compressor trailer	120	Diesel	2	108	6
80-ton rough-terrain crane	350	Diesel	2	108	6
Installing Tubular Steel H-Frame Foundations				42	
1-ton crew cab flatbed, 4x4	300	Diesel	3	42	2
30-ton crane truck	300	Diesel	1	42	5
Backhoe/front loader	200	Diesel	1	42	8
Auger truck	500	Diesel	1	42	8
10-cubic yard dump truck	350	Diesel	2	42	8
4,000-gallon water truck	350	Diesel	1	42	8
10-cubic yard concrete mixer truck	425	Diesel	3	42	3
Tubular Steel H-Frame Haul				21	
3/4-ton pickup truck, 4x4	300	Diesel	2	21	5
Flatbed truck/trailer	350	Diesel	2	21	8
80-ton rough-terrain crane	350	Diesel	1	21	6
Assembling Tubular Steel H-Frame				42	

Table A-2 Construction Equipment for the 230-kV Transmission Line Construction  Activity and Equipment Required  Duration					ration
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
3/4-ton pickup truck, 4x4	300	Diesel	2	42	5
1-ton crew cab flatbed, 4x4	300	Diesel	2	42	5
Compressor trailer	120	Diesel	1	42	5
80-ton rough-terrain crane	350	Diesel	1	42	6
Erecting Tubular Steel H-Frame Erection				42	
3/4-ton pickup truck, 4x4	300	Diesel	2	42	5
1-ton crew cab flatbed, 4x4	300	Diesel	2	42	5
Compressor trailer	120	Diesel	1	42	5
80-ton rough-terrain crane	350	Diesel	1	42	6
Installing Conductor and Optical Ground Wire				205	
1-ton crew cab flatbed, 4x4	300	Diesel	5	205	8
Wire truck/trailer	350	Diesel	6	205	2
Dump truck (trash)	350	Diesel	1	205	2
3/4-ton pickup truck, 4x4	300	Diesel	6	205	8
22-ton Manitex boom truck crane	350	Diesel	1	205	8
30-ton Manitex boom truck crane	350	Diesel	4	205	6
Splicing rig	350	Diesel	2	205	2
Splicing lab	300	Diesel	2	48	2
20,000-pound rough-terrain fork lift	350	Diesel	1	205	2
580 case backhoe	120	Diesel	1	205	2
Spacing cart	10	Diesel	3	51	8
Static truck/tensioner	350	Diesel	1	205	2
Conductor puller	300	Diesel	2	205	4
30-ton puller	525	Diesel	1	205	3
Sagging dozer with 2 winch	350	Diesel	2	205	2
Bulldozer (D8 cat)	300	Diesel	4	205	1
Hughes 500 E helicopter		Jet A	1	52	6
Fuel, helicopter support truck	300	Diesel	1	52	2
Lowboy truck/trailer	500	Diesel	1	205	2
Removing guard structure				4	
3/4-ton pickup truck, 4x4	300	Diesel	2	4	6
1-ton crew cab flatbed, 4x4	300	Diesel	2	4	6
Compressor trailer	120	Diesel	2	4	6
Pole truck/trailer	350	Diesel	2	4	6
80-foot hydraulic man-lift/bucket truck	350	Diesel	1	4	4
30-ton crane truck	500	Diesel	1	4	8
Restoration				36	
1-ton crew cab, 4x4	300	Diesel	2	36	2
Road grader	350	Diesel	1	36	6
Backhoe	350	Diesel	1	36	6
Front end loader	350	Diesel	1	36	6
Track type dozer	350	Diesel	1	36	6

Activity and Equipment Required				Duration	
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
Drum type compactor	250	Diesel	1	36	6
Water truck	350	Diesel	1	36	8
Lowboy truck/trailer	500	Diesel	1	36	3

Equipment Description per Construction Activity   Estimated Construction Activity   Fuel Type   Fuel Type   Fuel Type   Strimated Schedule (Days)   It	Activity and Equipment Required					Duration		
1/2-ton pickup truck, 4x4	Equipment Description per Construction Activity	Estimated			Schedule	Daily Usage		
Roads and Landing Work					1			
1-ton crew cab, 4x4	1/2-ton pickup truck, 4x4	200	Gas	2	1	8		
Road grader	Roads and Landing Work				5			
Track type dozer	1-ton crew cab, 4x4	300	Diesel	2	5	2		
Drum type compactor   250	Road grader	350	Diesel	1	5	4		
Water Truck	Track type dozer	350	Diesel	1	5	6		
Lowboy truck/trailer	Drum type compactor	250	Diesel	1	5	4		
Backhoe/front loader   350   Diesel   1   5   6	Water truck	350	Diesel	2		8		
Removing Existing H-Frame Poles	Lowboy truck/trailer	500	Diesel	1	5	2		
1-ton crew cab, 4x4   300		350	Diesel	1		6		
1-ton crew cab, 4x4   300   Diesel   2   3   5     30-ton crane truck   300   Diesel   2   3   6     Compressor trailer   120   Diesel   2   3   8     Flatbed truck/trailer   350   Diesel   1   3   8     10,000-pound rough-terrain forklift   200   Diesel   1   3   4     Removing Existing H-Frame Foundations   2     T-ton crew cab flatbed, 4x4   300   Diesel   1   2   8     10-cubic-yard dump truck   350   Diesel   1   2   8     11-cun crew cab flatbed, 4x4   300   Diesel   1   2   8     12-cubic-yard dump truck   300   Diesel   3   2   2     1-ton crane truck   300   Diesel   3   2   2   2     30-ton crane truck   300   Diesel   3   2   2   2     30-ton crane truck   300   Diesel   1   2   8     Backhoe/front loader   200   Diesel   1   2   8     Auger truck   500   Diesel   1   2   8     Auger truck   350   Diesel   1   2   8     10-cubic-yard dump truck   350   Diesel   1   2   8     10-cubic-yard concrete mixer truck   425   Diesel   3   2   3     30-ton pickup truck, 4x4   300   Diesel   2   4   8     30-ton pickup truck, 4x4   300   Diesel   2   4   8     40-foot flatbed truck/trailer   350   Diesel   2   8   5     50-ton rough-terrain crane   350   Diesel   2   8   5     50-ton rough-terrain crane   350   Diesel   1   8   5     50-ton rough-terrain crane   350   Diesel   1   8   5     50-ton rough-terrain crane   350   Diesel   1   8   5     60-ton rough-terrain crane   350   Diesel   1   8   5     70-ton rough-terrain crane   350   Diesel   2   8   5     70-ton rough-terrain crane   350	Removing Existing H-Frame Poles				3			
Compressor trailer		300	Diesel	2	3	5		
Flatbed truck/trailer   350   Diesel   1   3   8   10,000-pound rough-terrain forklift   200   Diesel   1   3   4     4   8   8   10,000-pound rough-terrain forklift   200   Diesel   1   3   4   8   8   10,000-pound rough-terrain forklift   200   Diesel   1   2   8   10-cubic-yard dump truck   350   Diesel   1   2   8   8   10-cubic-yard dump truck   350   Diesel   1   2   8   8   10-cubic-yard dump truck   350   Diesel   1   2   8   8   10-cubic-yard dump truck   350   Diesel   1   2   8   8   10-cubic-yard total faltbed, 4x4   300   Diesel   3   2   2   2   8   10-cubic-yard total faltbed, 4x4   300   Diesel   3   2   2   2   3   3   3   3   3   3	30-ton crane truck	300	Diesel	2	3	6		
10,000-pound rough-terrain forklift	Compressor trailer	120	Diesel	2	3	8		
Removing Existing H-Frame Foundations		350	Diesel	1	3	8		
1-ton crew cab flatbed, 4x4   300   Diesel   1   2   8	10,000-pound rough-terrain forklift	200	Diesel	1	3	4		
10-cubic-yard dump truck	Removing Existing H-Frame Foundations				2			
Compressor trailer	1-ton crew cab flatbed, 4x4	300	Diesel	1	2	8		
Compressor trailer	10-cubic-yard dump truck	350	Diesel	1	2	8		
Installing Tubular Steel Pole Foundations   2   2   3   3   3   2   2   2   3   3		120	Diesel	1	2	8		
1-ton crew cab flatbed, 4x4   300   Diesel   3   2   2   2   30-ton crane truck   300   Diesel   1   2   5   5   8   2   5   8   2   2   8   8   4   4   4   4   5   4   5   4   5   4   5   6   8   5   5   6   6   6   6   6   6   6   6	Backhoe/front loader	350	Diesel	1	2	8		
30-ton crane truck   300   Diesel   1   2   5	Installing Tubular Steel Pole Foundations				2			
Backhoe/front loader	1-ton crew cab flatbed, 4x4	300	Diesel	3	2	2		
Auger truck	30-ton crane truck	300	Diesel	1	2	5		
10-cubic-yard dump truck   350   Diesel   2   2   8	Backhoe/front loader	200	Diesel	1	2	8		
Water truck         350         Diesel         1         2         8           10-cubic-yard concrete mixer truck         425         Diesel         3         2         3           Tubular Steel Pole/ Light Weight Steel H-Frame Haul           3/4-ton pickup truck, 4x4         300         Diesel         2         4         5           40-foot flatbed truck/trailer         350         Diesel         2         4         8           80-ton rough-terrain crane         350         Diesel         1         4         6           Assembling Tubular Steel Pole/Light Weight Steel H-Frame         8         8         5           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5           1-ton crew cab flatbed, 4x4         300         Diesel         2         8         5           2-compressor trailer         120         Diesel         1         8         5           80-ton rough-terrain crane         350         Diesel         1         8         6           Erecting Tubular Steel Pole/Light Weight Steel H-Frame         3/4-ton pickup truck, 4x4         300         Diesel         2         8         5	Auger truck	500	Diesel	1	2	8		
10-cubic-yard concrete mixer truck	10-cubic-yard dump truck	350	Diesel	2	2	8		
Tubular Steel Pole/ Light Weight Steel H-Frame Haul         3/4-ton pickup truck, 4x4       300       Diesel       2       4       5         40-foot flatbed truck/trailer       350       Diesel       2       4       8         80-ton rough-terrain crane       350       Diesel       1       4       6         Assembling Tubular Steel Pole/Light Weight Steel H-Frame       8       8         3/4-ton pickup truck, 4x4       300       Diesel       2       8       5         1-ton crew cab flatbed, 4x4       300       Diesel       2       8       5         Compressor trailer       120       Diesel       1       8       5         80-ton rough-terrain crane       350       Diesel       1       8       5         80-ton rough-terrain crane       350       Diesel       1       8       6         Erecting Tubular Steel Pole/Light Weight Steel H-Frame       8       5       8       5         3/4-ton pickup truck, 4x4       300       Diesel       2       8       5	Water truck	350	Diesel	1				
Steel Haul   Steel H-Frame   Steel H-Frame		425	Diesel	3	2	3		
3/4-ton pickup truck, 4x4   300   Diesel   2   4   5					1			
40-foot flatbed truck/trailer   350   Diesel   2   4   8								
80-ton rough-terrain crane         350         Diesel         1         4         6           Assembling Tubular Steel Pole/Light Weight Steel H-Frame         8         8           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5           1-ton crew cab flatbed, 4x4         300         Diesel         2         8         5           Compressor trailer         120         Diesel         1         8         5           80-ton rough-terrain crane         350         Diesel         1         8         6           Erecting Tubular Steel Pole/Light Weight Steel H-Frame         8         8         5         8         5           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5								
Assembling Tubular Steel Pole/Light Weight Steel H-Frame         8           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5           1-ton crew cab flatbed, 4x4         300         Diesel         2         8         5           Compressor trailer         120         Diesel         1         8         5           80-ton rough-terrain crane         350         Diesel         1         8         6           Erecting Tubular Steel Pole/Light Weight Steel H-Frame         8         8         5           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5								
Weight Steel H-Frame         8           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5           1-ton crew cab flatbed, 4x4         300         Diesel         2         8         5           Compressor trailer         120         Diesel         1         8         5           80-ton rough-terrain crane         350         Diesel         1         8         6           Erecting Tubular Steel Pole/Light Weight Steel H-Frame         8         8         5           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5		350	Diesel	11	4	6		
1-ton crew cab flatbed, 4x4       300       Diesel       2       8       5         Compressor trailer       120       Diesel       1       8       5         80-ton rough-terrain crane       350       Diesel       1       8       6         Erecting Tubular Steel Pole/Light Weight Steel H-Frame       8       8       8         3/4-ton pickup truck, 4x4       300       Diesel       2       8       5	Weight Steel H-Frame							
Compressor trailer         120         Diesel         1         8         5           80-ton rough-terrain crane         350         Diesel         1         8         6           Erecting Tubular Steel Pole/Light Weight Steel H-Frame         8         8         8         8         5           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5								
80-ton rough-terrain crane 350 Diesel 1 8 6  Erecting Tubular Steel Pole/Light Weight Steel H-Frame 8  3/4-ton pickup truck, 4x4 300 Diesel 2 8 5								
Erecting Tubular Steel Pole/Light Weight Steel H-Frame 3/4-ton pickup truck, 4x4 300 Diesel 2 8 5								
Steel H-Frame         6           3/4-ton pickup truck, 4x4         300         Diesel         2         8         5		350	Diesel	11	8	6		
	Steel H-Frame							
		300	Diesel	2				
1-ton crew cab flatbed, 4x4 300 Diesel 2 8 5	1-ton crew cab flatbed, 4x4	300	Diesel	2	8	5		
Compressor trailer 120 Diesel 1 8 5	Compressor trailer	120	Diesel	1	8	5		

Activity and Ed	Activity and Equipment Required				tion
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
80-ton rough-terrain crane	350	Diesel	1	8	6
Installing Conductor				1	
3/4-ton pickup truck, 4x4	300	Diesel	3	1	8
1-ton crew cab flatbed, 4x4	300	Diesel	2	1	8
Wire truck/trailer	350	Diesel	2	1	2
Dump truck (trash)	350	Diesel	1	1	2
22-ton Manitex	350	Diesel	1	1	8
Splicing rig	350	Diesel	1	1	2
3 drum straw line puller	300	Diesel	1	1	4
Lowboy truck/trailer	500	Diesel	1	1	2
Restoration				1	
1-ton crew cab, 4x4	300	Diesel	2	1	2
Road grader	350	Diesel	1	1	6
Backhoe	350	Diesel	1	1	6
Front end loader	350	Diesel	1	1	6
Track type dozer	350	Diesel	1	1	6
Drum type compactor	250	Diesel	1	1	6
Water truck	350	Diesel	1	1	8
Lowboy truck/trailer	500	Diesel	1	1	3

Table A-4 Construction Equipment for the 33-kV Distribution Line Construction

Activity and Equi	Duration				
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
Trenching, Structure Excavation				8	
1-ton crew cab	300	Diesel	1		2
Backhoe front loader	300	Diesel	1		8
Overhead Line (2)				3	
1-ton crew cab, 4x4	300	Diesel	1	3	2
55-foot double-bucket truck	350	Diesel	1	3	7
50-foot digger derrick	350	Diesel	1	3	4
Underground Cable Pulling				2	
1-ton crew cab, 4x4	300	Diesel	1	2	2
Router placer truck	350	Diesel	1	2	6
Hydraulic rewind puller	300	Diesel	1	2	6
Underground Cable Makeup				60	10
1-ton crew cab, 4x4	300	Diesel	1	4	2
55-foot double-bucket truck	350	Diesel	1	4	4

Table A-5 Construction Equipment for the Ivanpah Substation

Activity and Eq	Dura	ition			
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
Survey Crew	, ,			15	10
¾-ton pickup truck, 4x4	300	Diesel	2	15	4
Utility vehicle	20	Gas	2	40	6
Grading Crew				40	10
¾-ton pickup truck, 4x4	300	Diesel	5	40	4
Bulldozer	350	Diesel	1	40	4
Dump truck	350	Diesel	1	40	6
Paddle graders	350	Diesel	3	40	8
Water truck	300	Diesel	1	40	4
Front end loader	350	Diesel	1	40	8
Maintenance truck	350	Diesel	1	40	4
Compactor	350	Diesel	1	40	8
Generator	20	Gas	1	40	4
Fuel truck	350	Diesel	1	40	2
Civil Crew				60	10
<sup>3</sup> / <sub>4</sub> -ton pickup truck, 4x4	300	Diesel	7	60	4
Bobcat	200	Diesel	1	60	8
Backhoe	200	Diesel	1	60	8
Drilling rig	350	Diesel	1	60	6
Water truck	350	Diesel	1	60	4
Compactor	200	Diesel	1	60	4
Utility vehicle	20	Gas	2	60	4
Generator	20	Gas	1	60	4
Electrical Crew				60	10
¾-ton pickup truck, 4x4	300	Diesel	8	60	4
45-foot man-lift	150	Diesel	1	60	6
60-foot man-lift	150	Diesel	1	60	6
80-ton crane	300	Diesel	1	45	8
Forklift	150	Diesel	1	60	6
Generator	20	Gas	1	60	4
Utility vehicle	20	Gas	2	60	4

Table A-6 Construction Equipment for the Telecommunication System

Table A-6 Construction Equipment for the Telecommunication System  Activity and Equipment Required Duration				
Equipment Description per Construction Activity	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
Path 1 – Optical Ground Wire Splice				T
Outside plant splicing lab vehicle		1	30	8
½-ton pickup truck, 4x4		1	30	8
Path 2 – Section 2				T
Installing underground fiber cable				
Pulling fiber cable  ½-ton pickup truck	 Diagol	 1	<b>5</b> 5	
4 x 4 Telsa cable-stringing truck	Diesel Diesel	1	5	8
Splicing van	Diesel	1	5	8
Installing underground duct	Diesei	ı	66	
Backhoe/front loader	Diesel	1	66	8
Dump truck	Diesel	1	66	8
½ ton pickup truck, 4x4	Diesel	1	66	8
Path 2 – Section 3 – Microwave Path	2.000.			
Installing microwave site tower	T		15	
1-ton crew cab 4x4	Diesel	1	15	4
Crane	Diesel	1	8	4
Flatbed truck	Diesel	1	3	2
Drill rig	Diesel	1	7	6
Dump truck	Diesel	1	7	6
2-ton truck	Diesel	1	15	4
Concrete truck	Diesel	1	2	6
Concrete pump	Diesel	1	2	6
Fork lift	Diesel	1	10	4
Backhoe/front loader	Diesel	1	10	6
Installing underground fiber cable				
Pulling fiber cable			1	_
½-ton pickup truck, 4x4	Diesel	1	1	8
Telsa cable-stringing truck	Diesel	1	4	10
Splicing van	Diesel	1	1	8
Installing underground duct  Backhoe/front loader	Diocal	1	10	0
Dump truck	Diesel Diesel	1	10 10	8
1/2-ton pickup truck, 4x4	Diesel	1	10	8
Path 2 – Section 3 – Golf Course Alternative	DIESEI	<u> </u>	10	
Installing underground fiber cable				
Pulling fiber cable	1		8	
½-ton pickup truck, 4x4	Diesel	1	8	8
Telsa cable-stringing truck	Diesel	1	8	8
Splicing van	Diesel	1	4	8
Installing underground duct			119	
Backhoe/front loader	Diesel	1	119	8

Table A-6 Construction Equipment for the Telecommunication System

Activity and Equipment Requi	Activity and Equipment Required			
Equipment Description per Construction Activity	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
Dump truck	Diesel	1	119	8
½-ton pickup truck, 4x4	Diesel	1	119	8
Installing ADSS				
Installing cross arms on poles			7	
½-ton pickup truck, 4x4	Diesel	1	7	8
Telsa cable-stringing truck	Diesel	1	7	8
Installing ADSS fiber on pole line			4	
½-ton pickup truck, 4x4	Diesel	1	4	8
Telsa cable-stringing truck	Diesel	2	4	8
Path 2 – Section 3, Mountain Pass Alternative				
Installing underground fiber cable				
Pulling fiber cable			9	
½-ton pick up truck, 4x4	Diesel	1	9	8
Telsa cable-stringing truck	Diesel	1	9	8
Splicing van	Diesel	1	9	8
Installing underground duct			132	
Backhoe/front loader	Diesel	1	132	8
Dump truck	Diesel	1	132	8
½-ton pickup	Diesel	1	132	8
Installing ADSS				
Installing cross arms on poles			8	
½-ton pickup truck, 4x4	Diesel	1	8	8
Bucket truck	Diesel	2	8	8
Installing ADSS fiber on pole line			5	
½-ton pickup truck, 4x4	Diesel	1	5	8
Telsa cable-stringing truck	Diesel	1	5	8
Splicing van	Diesel	1	2	8

Table A-7 Construction Equipment for Telecommunication Path 2, Section 1

Activity and Equipr	Activity and Equipment Required				
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
Construction Yard					
1-ton crew cab 4x4	300	Diesel	1	Construction period	2
30-ton crane truck	300	Diesel	1		2
10,000-pound rough-terrain fork lift	200	Diesel	1		5
Truck, semi, tractor	350	Diesel	1		1
Roads and Landing Work				13	
1-ton crew cab, 4x4	300	Diesel	2	13	2
Road grader	350	Diesel	1	13	4
Track-type dozer	350	Diesel	1	13	6
Drum-type compactor	250	Diesel	1	13	4
Water truck	350	Diesel	2	Construction period	8
Lowboy truck/trailer	500	Diesel	1	6	2
Backhoe/front loader	350	Diesel	1	13	6
LST Steel Haul				45	
1-ton crew cab flatbed, 4x4	300	Diesel	2	45	2
40-foot flatbed truck/trailer	350	Diesel	1	45	8
10,000-pound rough-terrain fork lift	200	Diesel	1	45	6
LST Retrofit				45	
3/4-ton pickup truck, 4x4	300	Diesel	3	45	4
1-ton crew cab flatbed, 4x4	300	Diesel	2	45	4
30-ton crane truck	300	Diesel	2	45	8
80-ton rough-terrain crane	350	Diesel	1	45	8
80-foot hydraulic man-lift/bucket truck	350	Diesel	1	45	6
Removing Existing OHGW, Installing Optical Ground Wire				72	
1-ton crew cab flatbed, 4x4	300	Diesel	2	72	8
3/4-ton pickup truck, 4x4	300	Diesel	4	72	8
Dump truck (trash)	350	Diesel	1	72	2
20,000-pound rough-terrain fork lift	350	Diesel	1	72	2
30-ton crane truck	300	Diesel	1	72	4
Bull wheel puller	500	Diesel	1	24	4
		l .	l	l	

Table A-7 Construction Equipment for Telecommunication Path 2, Section 1

Activity and Equipn	Duration				
Equipment Description per Construction Activity	Estimated Power (HP)	Fuel Type	Number of Units	Estimated Schedule (Days)	Estimated Daily Usage (Hrs/Day)
Splicing lab	300	Diesel	4	9	8
80-foot hydraulic man-lift/bucket truck	350	Diesel	1	36	6
Static truck/tensioner	350	Diesel	1	72	2
Hydraulic rewind puller	300	Diesel	1	24	4
Hughes 500 E helicopter		Jet A	1	24	4
Fuel, helicopter support truck	300	Diesel	1	24	2
Restoration				25	
1-ton crew cab, 4x4	300	Diesel	2	25	2
Road grader	350	Diesel	1	25	6
Backhoe	350	Diesel	1	25	6
Front end loader	350	Diesel	1	25	6
Track-type dozer	350	Diesel	1	25	6
Drum-type compactor	250	Diesel	1	25	6
Water truck	350	Diesel	1	25	8
Lowboy truck/trailer	300	Diesel	1	25	3