

Demolition Assumptions for

Substations for WAPA Con08

Code	# of Structures Demolished	Demolition per day (sf)
No Demolition		

Construction Schedule for

Substations for WAPA Connection

08

Subpackage

Phase	Code	Start Date	End Date	Working Days	Days/Week
08 Substations for WAPA Connection	Substations for WAPA Connection-08				
08.01 Three Breaker Substation	Substations for WAPA Connection-0801	8/27/2026	10/20/2027	300	5
08.02 Six Breaker Substation	Substations for WAPA Connection-0802	8/27/2026	10/20/2027	300	5

01

02

Offroad Equipment (Fossil Fuel) Inventory for

Substations for WAPA Connection 08

Code	Equipment Name	General Equipment Category	#/day	Hours/day/ equipment	Fuel Type	Engine Horsepower (if known)	Fuel (gal/day) (if known)
Substations for WAPA Connection-0801	Earth Auger, Truck-Mtd.	Other Construction Equipment	0.00	8	Diesel		
Substations for WAPA Connection-0801	Hyd. Crane, 25 Ton (Daily)	Cranes	0.83	8	Diesel		
Substations for WAPA Connection-0801	Hyd. Crane, 100 Ton (Daily)	Cranes	0.20	8	Diesel		
Substations for WAPA Connection-0801	Manual Fence Post Auger, Gas	Other Construction Equipment	0.02	8	Gasoline		
Substations for WAPA Connection-0801	A.T. Forklift, 31' reach, 45' lift	Forklifts	1.73	8	Diesel		
Substations for WAPA Connection-0801	Grader, 30,000 Lbs.	Graders	0.03	8	Diesel		
Substations for WAPA Connection-0801	Roller, Vibratory, 25 Ton	Rollers	0.01	8	Diesel		
Substations for WAPA Connection-0801	S.P. Scraper, 14 C.Y.	Scrapers	0.01	8	Diesel		
Substations for WAPA Connection-0801	Dozer, 300 H.P.	Rubber Tired Dozers	0.01	8	Diesel		
Substations for WAPA Connection-0801	F.E. Loader, Crl, 1.5 C.Y.	Tractors/Loaders/Backhoes	0.01	8	Diesel		
Substations for WAPA Connection-0801	F.E. Loader, W.M., 5.5 C.Y.	Tractors/Loaders/Backhoes	0.00	8	Diesel		
Substations for WAPA Connection-0801	Truck Tractor, 6x4, 380 H.P.	Off-Highway Tractors	0.07	8	Diesel		
Substations for WAPA Connection-0801	Truck Tractor, 6x4, 450 H.P.	Off-Highway Tractors	0.01	8	Diesel		
Substations for WAPA Connection-0802	Earth Auger, Truck-Mtd.	Other Construction Equipment	0.01	8	Diesel		
Substations for WAPA Connection-0802	Hyd. Crane, 25 Ton (Daily)	Cranes	0.83	8	Diesel		
Substations for WAPA Connection-0802	Hyd. Crane, 100 Ton (Daily)	Cranes	0.30	8	Diesel		
Substations for WAPA Connection-0802	Manual Fence Post Auger, Gas	Other Construction Equipment	0.02	8	Gasoline		
Substations for WAPA Connection-0802	A.T. Forklift, 31' reach, 45' lift	Forklifts	1.73	8	Diesel		
Substations for WAPA Connection-0802	Grader, 30,000 Lbs.	Graders	0.06	8	Diesel		
Substations for WAPA Connection-0802	Roller, Vibratory, 25 Ton	Rollers	0.03	8	Diesel		
Substations for WAPA Connection-0802	S.P. Scraper, 14 C.Y.	Scrapers	0.01	8	Diesel		
Substations for WAPA Connection-0802	Dozer, 300 H.P.	Rubber Tired Dozers	0.01	8	Diesel		
Substations for WAPA Connection-0802	F.E. Loader, Crl, 1.5 C.Y.	Tractors/Loaders/Backhoes	0.01	8	Diesel		
Substations for WAPA Connection-0802	F.E. Loader, W.M., 5.5 C.Y.	Tractors/Loaders/Backhoes	0.01	8	Diesel		
Substations for WAPA Connection-0802	Truck Tractor, 6x4, 380 H.P.	Off-Highway Tractors	0.13	8	Diesel		
Substations for WAPA Connection-0802	Truck Tractor, 6x4, 450 H.P.	Off-Highway Tractors	0.02	8	Diesel		

Note:

1. Number of equipment/day = Total Equipment Hours / 8 hours per day / Total number of days of the Sub-package.
2. Number of equipment in this table represents averages throughout each sub-package. It does not represent a typical day or peak day conditions.

Jacobs Calculations for #/days

Package			Equipment	total hours (Engineering Data)	hours per day	total equipment days @listed hours per day	total number of working days/phase	Number of equipment/day @ listed hours per day
			Earth Auger, Truck-Mtd.	10.67	8	1	300	0.00
			Hyd. Crane, 25 Ton (Daily)	2,000.00	8	250	300	0.83
			Hyd. Crane, 100 Ton (Daily)	480.00	8	60	300	0.20
			Manual Fence Post Auger, Gas	38.20	8	5	300	0.02
			A.T. Forklift, 31' reach, 45' lift	4,160.00	8	520	300	1.73
			Grader, 30,000 Lbs.	71.77	8	9	300	0.03
			Roller, Vibratory, 25 Ton	34.81	8	4	300	0.01
			S.P. Scraper, 14 C.Y.	17.60	8	2	300	0.01
			Dozer, 300 H.P.	18.09	8	2	300	0.01
			F.E. Loader, Crl, 1.5 C.Y.	13.69	8	2	300	0.01
			F.E. Loader, W.M., 5.5 C.Y.	9.63	8	1	300	0.00
			Truck Tractor, 6x4, 380 H.P.	157.95	8	20	300	0.07
			Truck Tractor, 6x4, 450 H.P.	24.36	8	3	300	0.01
			Earth Auger, Truck-Mtd.	16.00	8	2	300	0.01
			Hyd. Crane, 25 Ton (Daily)	2,000.00	8	250	300	0.83
			Hyd. Crane, 100 Ton (Daily)	720.00	8	90	300	0.30
			Manual Fence Post Auger, Gas	53.47	8	7	300	0.02
			A.T. Forklift, 31' reach, 45' lift	4,160.00	8	520	300	1.73
			Grader, 30,000 Lbs.	140.55	8	18	300	0.06
			Roller, Vibratory, 25 Ton	68.17	8	9	300	0.03
			S.P. Scraper, 14 C.Y.	34.51	8	4	300	0.01
			Dozer, 300 H.P.	35.44	8	4	300	0.01
			F.E. Loader, Crl, 1.5 C.Y.	26.81	8	3	300	0.01
			F.E. Loader, W.M., 5.5 C.Y.	18.88	8	2	300	0.01
			Truck Tractor, 6x4, 380 H.P.	309.75	8	39	300	0.13
			Truck Tractor, 6x4, 450 H.P.	37.48	8	5	300	0.02

Jacobs Equipment Types

Equipment	General Type	Fuel Type
Asphalt Paver, 130 H.P.	Pavers	Diesel
Horz. Boring Csg. Mch.	Bore/Drill Rigs	Diesel
Hyd. Excavator, 1.5 C.Y.	Excavators	Diesel
Hyd. Excavator, 2.5 C.Y.	Excavators	Diesel
Backhoe Loader, 48 H.P.	Tractors/Loaders/Backhoes	Diesel
Crawler Crane, 75 Ton	Cranes	Diesel
Hydraulic Crane, 25 ton	Cranes	Diesel
Hyd. Crane, 55 Ton	Cranes	Diesel
S.P. Crane, 4x4, 12 Ton	Cranes	Diesel
Grader, 30,000 Lbs.	Graders	Diesel
Concrete Pump (Small)	Pumps	Diesel
Grout Pump, 50 C.F./hr.	Pumps	Diesel
Roller, Vibratory, 25 Ton	Rollers	Diesel
Tandem Roller, 10 Ton	Rollers	Diesel
Roller, Pneum. Whl., 12 Ton	Rollers	Diesel
Sheepsfoot Roller, 240 H.P.	Rollers	Diesel
S.P. Scraper, 14 C.Y.	Scrapers	Diesel
Dozer, 200 H.P.	Rubber Tired Dozers	Diesel
Dozer, 300 H.P.	Rubber Tired Dozers	Diesel
F.E. Loader, Crl, 1.5 C.Y.	Tractors/Loaders/Backhoes	Diesel
F.E. Loader, W.M., 5.5 C.Y.	Tractors/Loaders/Backhoes	Diesel
Dump Truck, 12 C.Y., 400 H.P.	Off-Highway Trucks	Diesel
Water Tank Trailer, 5000 Gal.	Off-Highway Trucks	Diesel
Dump Trailer, 20 C.Y.	Off-Highway Trucks	Diesel
Truck Tractor, 220 H.P.	Off-Highway Tractors	Diesel
Truck Tractor, 6x4, 380 H.P.	Off-Highway Tractors	Diesel
Truck Tractor, 6x4, 450 H.P.	Off-Highway Tractors	Diesel
Gas Engine Vibrator	Other Construction Equipment	Gasoline
Welder, Electric, 300 amp	Welders	Electric
Welder, Gas Engine, 300 amp	Welders	Gasoline
Rammer/Tamper, Gas, 15"	Other Construction Equipment	Diesel
Trowel, 48" Walk-Behind	Other Construction Equipment	Diesel
Lattice Boom Crane, 40 Ton	Cranes	Diesel
Tandem Roller, 5 Ton	Rollers	Diesel
Clamshell Bucket, .5 C.Y.	Other Construction Equipment	Diesel
Crawler Crane, 15 Ton	Cranes	Diesel
20' Suction Hose, 6"	Pumps	Diesel
50' Discharge Hose, 6"	Pumps	Diesel
Centr. Water Pump, 6"	Pumps	Diesel
Clamshell Bucket, 1 C.Y.	Other Construction Equipment	Diesel
Crawler Crane, 25 Ton	Cranes	Diesel
Crawler Loader, 3 C.Y.	Tractors/Loaders/Backhoes	Diesel
Dist. Tanker, 3000 Gallon	Off-Highway Trucks	Diesel
Dump Truck, 8 C.Y., 220 H.P.	Off-Highway Trucks	Diesel
Dump Truck, Off Hwy., 65 Ton	Off-Highway Trucks	Diesel
Hyd. Crane, 12 Ton	Cranes	Diesel
Hyd. Excavator, .75 C.Y.	Excavators	Diesel
Lattice Boom Crane, 90 Ton	Cranes	Diesel
S.P. Crane, 4x4, 5 Ton	Cranes	Diesel
S.P. Scraper, 21 C.Y.	Scrapers	Diesel
Vibratory Roller, Towed, 23 Ton	Rollers	Diesel

A.T. Forklift, 31' reach, 45' lift	Forklifts	Diesel
Earth Auger, Truck-Mtd.	Other Construction Equipment	Diesel
Flatbed Trailer, 25 Ton	Off-Highway Trucks	Diesel
Flatbed Truck, Gas, 1.5 Ton	Off-Highway Trucks	Diesel
Flatbed Truck, Gas, 3 Ton	Off-Highway Trucks	Diesel
Hyd. Crane, 100 Ton (Daily)	Cranes	Diesel
Hyd. Crane, 25 Ton (Daily)	Cranes	Diesel
Lowbed Trailer, 75 Ton	Off-Highway Trucks	Diesel
Manual Fence Post Auger, Gas	Other Construction Equipment	Gasoline
Pickup Truck, 4x4, 3/4 Ton	Off-Highway Trucks	Diesel

Vehicle Inventory for

Substations for WAPA Connection 08

Code	Vehicle	Primary Trip Purpose/Location (within construction footprint vs. offsite)	# of Vehicles	One-Way Trips/Day	Miles per Trip	Fuel Type	Fuel (gal/day) (if known)
Substations for WAPA Connection-0801	Lowbed Trailer, 75 Ton	Onsite	1	0.4	1	Diesel	
Substations for WAPA Connection-0801	Flatbed Truck, Gas, 1.5 Ton	Onsite	1	1.3	1	Diesel	
Substations for WAPA Connection-0801	Flatbed Truck, Gas, 3 Ton	Onsite	1	0.4	1	Diesel	
Substations for WAPA Connection-0801	Pickup Truck, 4x4, 3/4 Ton	Onsite	1	16.7	1	Diesel	
Substations for WAPA Connection-0801	Flatbed Trailer, 25 Ton	Onsite	1	0.1	1	Diesel	
Substations for WAPA Connection-0801	Water Tank Trailer, 5000 Gal.	Onsite	1	0.5	1	Diesel	
Substations for WAPA Connection-0801	Dump Trailer, 20 C.Y.	Onsite	1	5.3	1	Diesel	
Substations for WAPA Connection-0802	Lowbed Trailer, 75 Ton	Onsite	1	0.4	1	Diesel	
Substations for WAPA Connection-0802	Flatbed Truck, Gas, 1.5 Ton	Onsite	1	1.8	1	Diesel	
Substations for WAPA Connection-0802	Flatbed Truck, Gas, 3 Ton	Onsite	1	0.5	1	Diesel	
Substations for WAPA Connection-0802	Pickup Truck, 4x4, 3/4 Ton	Onsite	1	24.7	1	Diesel	
Substations for WAPA Connection-0802	Flatbed Trailer, 25 Ton	Onsite	1	0.1	1	Diesel	
Substations for WAPA Connection-0802	Water Tank Trailer, 5000 Gal.	Onsite	1	0.9	1	Diesel	
Substations for WAPA Connection-0802	Dump Trailer, 20 C.Y.	Onsite	1	10.3	1	Diesel	
Substations for WAPA Connection-0801	Dump Truck - 20 cy	Offsite/Haul	1	0.51	25	Diesel	
Substations for WAPA Connection-0801	Equipment Hauling Trucks	Offsite/Haul	1	0.13	500	Diesel	
Substations for WAPA Connection-0802	Dump Truck - 20 cy	Offsite/Haul	1	1.01	25	Diesel	
Substations for WAPA Connection-0802	Equipment Hauling Trucks	Offsite/Haul	1	0.24	500	Diesel	

Note:

1. Onsite water truck and dump truck numbers and miles per trip were set to 1.
2. The one-way trips/day were estimated by dividing the total number of trips by the number of days of the sub-package.
3. Number of trips per day in this table represents averages throughout each sub-package. It does not represent a typical day or peak day conditions.

Equipment	total hours (Engineering Data)	total number of working days/phase	average hours/day	Miles/day (assume 10 miles/hour)
Lowbed Trailer, 75 Ton	10.67	300	0.04	0.4
Flatbed Truck, Gas, 1.5 Ton	38.20	300	0.13	1.3
Flatbed Truck, Gas, 3 Ton	10.67	300	0.04	0.4
Pickup Truck, 4x4, 3/4 Ton	501.07	300	1.67	16.7
Flatbed Trailer, 25 Ton	4.00	300	0.01	0.1
Water Tank Trailer, 5000 Gal.	13.69	300	0.05	0.5
Dump Trailer, 20 C.Y.	157.95	300	0.53	5.3
Lowbed Trailer, 75 Ton	10.67	300	0.04	0.4
Flatbed Truck, Gas, 1.5 Ton	53.47	300	0.18	1.8
Flatbed Truck, Gas, 3 Ton	16	300	0.05	0.5
Pickup Truck, 4x4, 3/4 Ton	741.07	300	2.47	24.7
Flatbed Trailer, 25 Ton	4	300	0.01	0.1
Water Tank Trailer, 5000 Gal.	26.81	300	0.09	0.9
Dump Trailer, 20 C.Y.	309.75	300	1.03	10.3
Total amount	Assumption	One-way trips total	Number of days	
1540	Assume 20 cy per load	154	300	
19	Large equipment	38	300	
3020	Assume 20 cy per load	302	300	
36	Large equipment	72	300	

Employees Required to Construct**Substations for WAPA Connec 08**

Code	Vehicle Type	# of Employees/Day	One-Way Trips/Day	Miles per Trip
Substations for WAPA Connection-0801	Employee	4	8	60.0
Substations for WAPA Connection-0802	Employee	4	8	60.0

Note:

1. Worker trips assumed that the trips would be from Sacramento (68 miles), Willows (19 miles), Williams (9 miles), and Red Bluff (60 miles). One-way distance of 60 miles.
2. Number of trips per day in this table represents averages throughout each sub-package. It does not represent a typical day or peak day conditions.

Jacobs Calculations

Subpackage	Total labor hours (Engineering Data)	Hours per employee/day	Total days of construction	#employees/d ay	one-way Trips/day
01	7768	8	300	4	8
02	8747	8	300	4	8

miles was used.

Earthmoving/Paving Assumptions for**Substations for WAP/08**

Code	<i>Daily</i>				
	Stripping or Grading (acres/day)	Borrow/Excavate (cy/day)	Dredge (cy/day)	Paving (sf/day)	Stripping or Grading (total acres)
Substations for WAPA Connection-0801	0.013	20.5	0.0	0.0	1.9
Substations for WAPA Connection-0802	0.0	40.3	0.0	0.0	3.7

Note:

1. Daily amounts were estimated using 50% of construction days.

Total

Borrow/Excavate (total cy)	Dredge (total cy)	Paving (total sf)
3080.0	0.0	0.0
6040.0	0.0	0.0

Jacobs Calculations

Total # days/subpackage	Total # days/earthmoving -paving
300	150
300	150