

Appendix I

GHG Worksheet

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Appendix I
Coneflower Solar GHG Worksheet

Coneflower Solar	From SPA- Section 5.2.8.8 Transportation	Traffic during construction of the solar facility is estimated to average 150-200 pickup trucks, cars, and/or other types of employee vehicles and approximately 10-20 semi-trucks per day for component delivery onsite for the 18 month duration of construction. Approximately 10-20 semi-trucks per day will be used for delivery of facility components. Semi-truck delivery will vary per day depending on time of construction and delivery timeline of equipment.						
Lyon County, MN	From SPA - Section 5.2.8.8 Transportation and Section 5.2.11 Socioeconomics	Typical onsite construction staff levels will depend on the number of concurrent tasks being performed and the phasing of the Project. The Project will create approximately 200 jobs during the peak construction and installation phases, and up to 3 full time jobs during the operations phase.						
8/15/2024		After construction is complete, traffic impacts during the operational phase of the Project are expected to be negligible. A small maintenance crew driving through the area in light duty trucks on a regular basis will monitor and maintain the facilities as needed; traffic function in the Project Area will not be impacted as a result						
Equipment Fuel Consumption Estimate								
Phase	Equipment Type	No. of Equipment	Days	Duration (hours/day)	Fuel Consumption (gal/hour)	Fuel Type	Est. Total Gallons	Notes/Assumptions
Construction	Bulldozer	4	90	8	7.6	Diesel	21,888	Caterpillar D6T Medium Load
Construction	Grader/scrapper	4	60	8	5.6	Diesel	10,752	Caterpillar 140M Medium Load
Construction	Backhoe	2	60	8	3.1	Diesel	2,976	Caterpillar 422F2 Low Load
Construction	Vibratory compactor	4	90	8	5	Diesel	14,400	Caterpillar CS56/CP56 High Load
Construction	100 HP Tractors	3	140	8	7	Diesel	23,561	Mowing, sitework, trench backfill
Construction	Dump Truck	15	100	8	10	Diesel	120,000	Tandem Axle 10-14 CY
Construction	Excavator	4	140	8	8.1	Diesel	36,352	Caterpillar 336D Medium Load
Construction	Concrete truck and boom	6	20	8	12	Diesel	11,520	Primarily Substation
Construction	High-reach bucket truck	0	0	0	0	Diesel	-	
Construction	Semi truck/trailer	6	105	8	10	Diesel	50,489	Standard size and weight semitruck for equipment deliveries (non-peak)
	Semi truck/trailer	12	105	8	10	Diesel	100,978	Standard size and weight semitruck - volume during peak delivery of modules and racking
Construction	Tracked Loader	3	160	8	4	Diesel	15,360	953 Tracked Loader
Construction	Skid steer	4	250	8	3.3	Diesel	26,400	Caterpillar 299D Medium Load
Construction	Fork lift (all terrain)	8	250	8	2.9	Diesel	46,400	JLG 1255 Medium Load or telehandler
Construction	Pile driver	5	155	8	7.1	Diesel	44,020	Vermeer PD10 Medium/High Load
Construction	Truck-mounted auger/drill	0	0	0	0	Diesel	-	
	Medium duty crane	2	30	4	18.8	Diesel	4,512	120T RT Telescopic Crane (This may end up being a 90 ton RTC or work split the a 120 & 90 ton)
Construction	Watering truck	4	175	9	11	Diesel	69,422	
Construction	Generator	10	115	8	1	Gasoline	9,200	Honda EB10000 Half Load Average
Construction	Light-duty pickup truck (on-site)	20	300	8	3.6	Gasoline	172,800	
Construction	ATVs	10	300	8	0.4	Gasoline	9,600	Club Car 4 Seater ATV
Construction	Construction contractor vehicles (commute to/from site)	150	360	0.7	2.5	Gasoline	90,000	Assume bulk of the workforce lives in Marshall and drive to the site. Workers in Marshall are about 20 minutes one way, 40 min round trip. Assume 75% carpool.
TOTAL GALLONS GAS (per year)							281,600	
TOTAL GALLONS DIESEL (per year)							599,030	
Phase	Equipment Type	No. of Equipment	Days/Year	Duration (hours/day)	Fuel Consumption (gal/hour)	Fuel Type	Est. Total Gallons	Notes/Assumptions
Operation	Light-duty pickup truck (commute to/from site) - 3 full time staff	3	228	0.5	2.5	Gasoline	855	3 Solar Technicians performing maintenance checks.
Operation	ATV (on-site) - 3 full time staff	3	152	8	0.4	Gasoline	1,459	Inverter Checks Twice/Yr. Assume 60 solar inverters and maintenance checks at 2/day (30 days) for Crew of 1. 2nd Crew of 2 will perform Tracker Maintenance in the same duration of 122 days at 60 trackers/day. Most trackers will require only a cursory visual inspection/routine maintenance; some are assumed to required additional maintenance.
Operation	O&M contractor vehicles (commute to/from site)	2	12	0.7	2.5	Gasoline	40	2 HV Technicians assumed from Marshall, MN, 40 min round trip.
Operation	O&M contractor vehicles (on-site)	1	12	8	1	Gasoline	96	1 HV Contractor performing monthly checks on Substation. 1 full 8hr day for Monthly Maintenance. Vehicle is parked at Substation and not used for maintenance checks.
TOTAL GALLONS GAS (per year)							2,450	
TOTAL GALLONS DIESEL (per year)							-	

Summary						
Construction	Annual Gallons	KG of CO2 per Gallon Diesel	KG of CO2 per Gallon Gas	Total KG	KG to Tons Conversion Factor	Total Short Tons
Total Gas	281,600		8.78	2,472,448	0.00110231	2725.4
Total Diesel	599,030	10.19		6,104,119	0.00110231	6728.6
						9454.0
Operation						
Total Gas	2,450		8.78	21,510	0.00110231	23.7
Total Diesel	-	10.19		0	0.00110231	0.0
						23.7

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