

# ENVIRONMENT | PLANNING | DEVELOPMENT SOLUTIONS, INC.

o: Rafik Albert  
From: Meghan Macias, TE  
CC:  
Date: 3/27/2019  
Re: California Correctional Institution - Tehachapi Solar Project Construction Trip Generation

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The purpose of this memo is to quantify the vehicle trips that would be generated during the construction of the proposed California Correctional Institution (CCI) – Tehachapi Solar Project. The project is located in an incorporated island of the City of Tehachapi at the western terminus of State Route (SR) 202 in Kern County. The project proposes to construct a 4,375 kW (AC) solar photovoltaic power generating facility comprised of 14,700 modules. The project site plan is shown in Figure 1.

## **Construction Trip Generation**

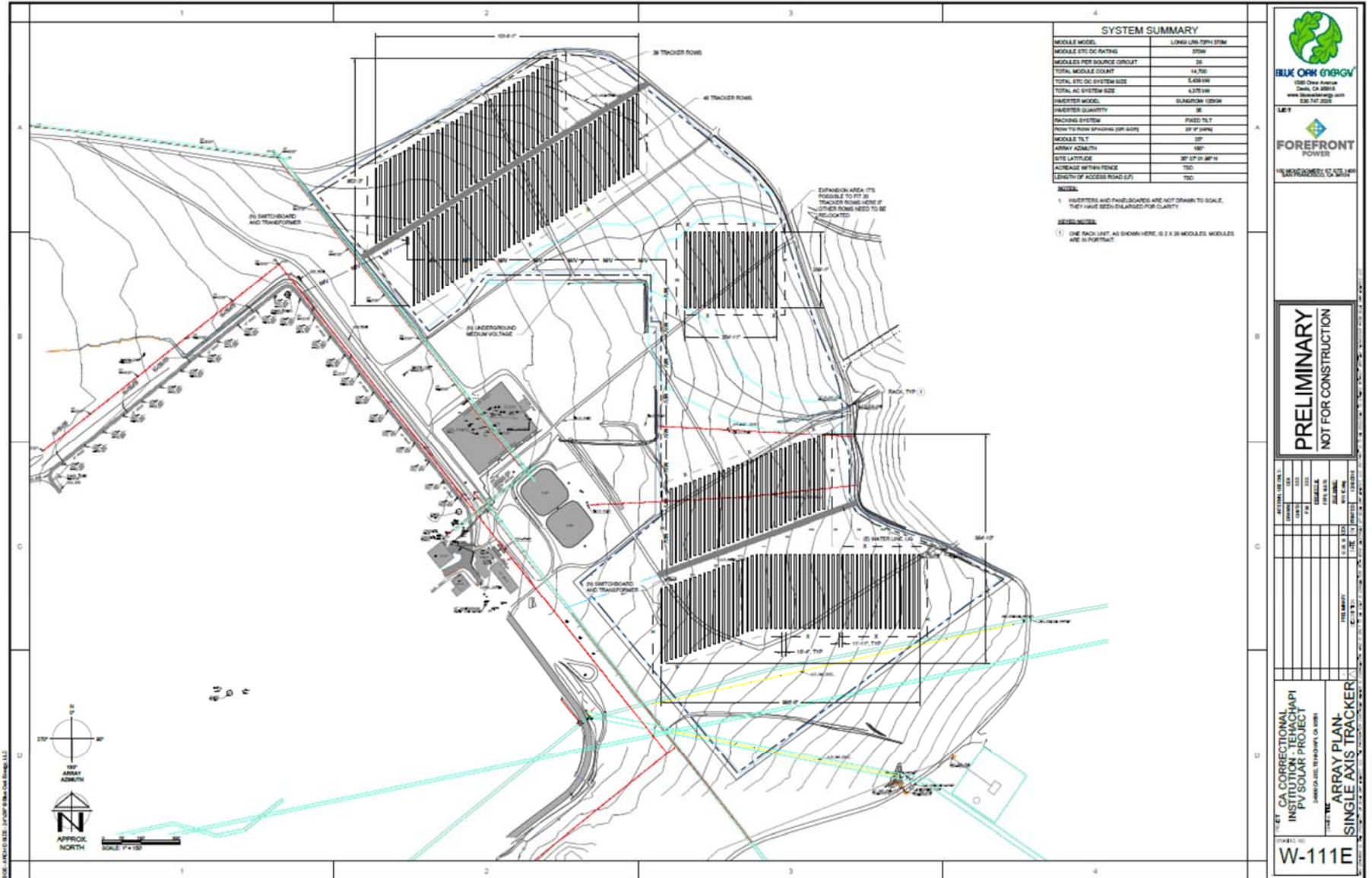
It is anticipated that construction activity would follow 3 major phases:

- Phase 1 – Mobilization
- Phase 2 – Site Improvements and Grading
- Phase 3 – Panel Installation and Connection

Heavy construction equipment would be moved on-site at the beginning of construction and would remain on-site throughout as needed. These trips have not been included in the construction trip generation calculation, as they would not occur on a daily basis during construction. It is anticipated that daily vehicle traffic would be primarily made up of worker's passenger cars/light trucks, flatbed delivery trucks, water trucks and porta let trucks. The highest number of trips would likely be from construction workers traveling to and from the site each day. The number of workers required during each phase has been estimated based on the required workers and construction equipment that were required for the construction of other similar solar projects.

The City of Tehachapi does not have a noise ordinance or standard construction hours in the Municipal Code. However, the project is located in an incorporated island of the City of Tehachapi and is surrounded by unincorporated Kern County. Per Chapter 8.36.020 of the Kern County Code of Ordinances, construction noise audible to a person with average hearing faculties at a distance of 150 feet from the construction site is prohibited between 9 PM and 6 AM on weekdays and 9 PM and 8 AM on weekends, unless the construction site is located farther than 1,000 feet from an occupied residence. It is anticipated that construction of the project would occur Monday through Friday and that construction workers would arrive on-site before 7 AM to start work at 7 and would depart prior to the 4 PM to 6 PM peak commute period. However, the trip generation assumes that 25 percent of workers may arrive during the peak period between 7 AM and 9 AM and could depart between 4 PM and 6 PM. Most construction and delivery trucks would arrive and depart the site throughout the day. For the trip generation, it has been assumed that at least one of each type of off-site construction vehicle would arrive or depart the site during the peak hours.

Figure 1: Project Site Plan



The construction trip generation is shown in Table 1 and has been calculated for total trips and for passenger car equivalent (PCE). A PCE factor is applied to truck trips to account for the fact that trucks utilize more capacity on the roadway than a passenger car due to larger size and slower acceleration. PCE factors of 2.0 for medium trucks and 3.0 for heavy trucks were used for this analysis and are conservative based on the guidance for passenger car equivalent factors found in the Highway Capacity Manual, 6<sup>th</sup> Edition.

As shown in Table 1, the phase with the highest construction trip generation would be during Phase 3 - On-Site Construction and Panel Installation with 202 daily and 24 peak hour trips. When adjusted to account for PCE, Phase 3 would generate 274 daily and 31 peak hour trips.

**Table 1. Construction Trip Generation**

	PCE	Vehicle Trips			PCE Trips		
		Daily	AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour	PM Peak Hour
<b>Phase 1 - Mobilization</b>							
Workers (estimated 20 workers)	1.0	40	5	5	40	5	5
Flatbed Delivery Trucks	3.0	10	2	2	30	6	6
Porta Let Trucks	2.0	4	1	1	8	2	2
<b>Phase 1 Total</b>		54	8	8	78	13	13
<b>Phase 2 - Site Preparation and Grading</b>							
Workers (estimated 60 workers)	1.0	120	15	15	120	15	15
Water Trucks	2.0	8	1	1	16	2	2
Porta Let Trucks	2.0	4	1	1	8	2	2
<b>Phase 2 Total</b>		132	17	17	144	19	19
<b>Phase 3 - On-Site Construction and Panel Installation</b>							
Workers (estimated 80 workers)	1.0	160	20	20	160	20	20
Flatbed Delivery Trucks	3.0	30	3	3	90	9	9
Water Trucks	2.0	4	1	1	8	2	2
Porta Let Trucks	2.0	8	0	0	16	0	0
<b>Phase 3 Total</b>		202	24	24	274	31	31

PCE = Passenger Car Equivalent

<sup>1</sup> Worker trips are assumed to be outside of the peak hours. However, it is estimated that 25 percent of workers may arrive or depart the site during the AM or PM peak commute periods.

**Operation Trip Generation**

Operation of the project would require significantly fewer trips than generated during the construction phase. The project would not be permanently staffed during operation. The site would be accessed by maintenance personnel a few times per month to perform ongoing repair and maintenance of the facility. It is anticipated up to 5 trips per week could be generated during maintenance of the project.

In addition to routine maintenance, the solar panels would be washed approximately once per quarter. A crew of approximately 5 to 10 maintenance workers would perform the quarterly panel washing. No heavy equipment would be required.

### **Site Access**

Local access to the project site would be at the western terminus of SR-202. SR-202 is a two-lane highway with a speed limit of 45 mph and provides access between the prison and SR-58. Regional access to the site is from SR-58. According to Caltrans 2016 traffic volume data, SR-202 at Cummings Valley Road (between the prison and SR-58) carries approximately 700 peak-hour and 8,850 daily trips. At the junction of SR-58, SR-202 carries approximately 1,200 peak-hour and 12,000 daily trips.

Approximately 59 percent of the peak hour trips travel in the peak direction during the both the AM and PM peak hour. As a result, the highest directional peak hour volume on SR-202 is approximately 708 trips. According to the Highway Capacity Manual, 6th Edition, the capacity of a two-lane highway is 1,700 passenger cars per hour (pc/h) in one direction with a limit of 3,200 pc/h for both directions. The peak hour volume of 708 vehicles near the project would result in the roadway operating at LOS A, well below the capacity of the roadway. The addition of 31 peak hour (PCE) trips would not cause a change in the LOS or the roadway to operate near its capacity.

### **Summary and Conclusions**

Construction of the proposed CCI – Tehachapi Solar project is forecast to generate 202 daily and 24 peak hour trips. When adjusted to account for PCE, Phase 3 would generate 274 daily and 31 peak hour trips. Operation of the project would not require any permanent staffing and would therefore not generate vehicle trips on a daily basis. Ongoing repair and maintenance of the project would require personnel to be on-site a few times per month and is anticipated to generate fewer than 5 trips per week. Access to the project is provided by SR-202, which currently operates at LOS A. The addition of 31 peak hour PCE trips would not cause a change in LOS on SR-202.