



Date: April 27, 2020
To: Mark Boissevain, EASE, LLC
From: Joe Bessman, PE
Project Reference No.: 1346
Project Name: Tax Lot 1228 Crook Flat Solar Farm



EXPIRES: 12/31/2021

This letter provides an assessment of the transportation impacts anticipated with the proposed solar farm located south of OR 126 with access from George Millican Road at the existing Portay quarry entrance in Crook County, Oregon. The overall tax lot (tax lot 1515000001228) is a 156.26-acre site zoned for Exclusive Farm Use (EFU-3), which per CCC 18.16.060(3) allows commercial photovoltaic energy systems *as a conditional use*. Figure 1 illustrates the overall location of the tax lot, the approximate solar facility boundaries, and the location of the proposed access route.

The proposed site is currently undeveloped but does include a paved access road that serves the Por-Tay Northwest gravel pit to the immediate west. The access road is located along the northernmost boundary of the property and is gated. The quarry site is active, and field observations noted dump trucks using the access road traveling to and from Millican Road.

Figure 2 illustrates the proposed site plan. This includes shared use of the Por-Tay paved entrance into the property, with the connection to this road adequately set back from Millican Road. A temporary laydown yard and substation facility would be located along the northern border to simplify haul needs, with photovoltaic panels located farther south on the property (not shown in Figure 2).



Figure 1. Site Vicinity Map.



Figure 2. Preliminary Site Layout. Source: EASE, LLC.

TRIP GENERATION

Within Crook County trip generation estimates are typically prepared using the standard reference *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE). However, this manual generally contains information applicable only in suburban and urban areas. Trip generation data for solar facilities is not available, and so in most jurisdictions is based on estimates of employee/maintenance trips when the facility is fully built-out. The highest impacts will occur during the construction period and so are also addressed within this report.

Based on information from other solar facilities, only nominal trip generation occurs with full build-out. These trips are typically associated with security, on-site maintenance of equipment, and inspections, and so vary little based on the specific acreage for this type of use. Inspections and maintenance occur throughout the year on both a scheduled and an as-needed basis. Accounting for both inbound and outbound trips, a solar facility will typically generate up to about four trips per day (one to two vehicles per day both in and out) as summarized in Table 1. There is likely little to no impact during the weekday p.m. peak hour as these trips do not occur on typical shift schedules. For transportation purposes it was assumed that one vehicle was exiting during the weekday p.m. peak hour as shown in Table 1; there will likely be several days with no peak hour trips generated.

Table 1. Trip Generation Summary (Full Build-out)

Land Use	ITE Code	Size	Weekday Daily Trips	Weekday PM Peak Hour		
				Total	In	Out
Solar Facility	n/a	<320 acres	4	1	0	1

Crook County Code 18.180 identifies the thresholds for when a formal Transportation Impact Analysis is required. This identifies the following conditions:

- The development generates 25 or more peak hour trips (or more than 250 daily trips)
- An access spacing exception is required for the site access driveway and the development generates 10 or more peak hour trips (or 100 or more daily trips)
- The development is expected to impact intersections that are currently operating at the upper limits of the acceptable range of level of service during the peak operating hour.
- The development is expected to significantly impact adjacent roadways and intersections that have previously been identified as high crash locations or areas that contain a high concentration of pedestrians or bicyclists (such as school zones)
- A change in zoning or a plan amendment designation.
- ODOT requirements.

The proposed solar facility generates less than the County trip thresholds, will conform with County access requirements (using the shared Por-Tay quarry entrance) and is not located near a high crash location. None of the County thresholds are met to require a Transportation Impact Analysis, and with the limited trip generation of the site conduct of a study would not identify any capacity needs. Accordingly, this transportation assessment focuses on construction needs to maintain safety at the access for the development of the site. This will conform with the County's Transportation Assessment Letter (TAL) requirements.

ACCESS CHARACTERISTICS

Access to the property is proposed from an existing permitted access to Millican Road that has already been designed to accommodate the turning needs of trucks as it serves a large quarry operation. With appropriate sweeping, use of this well-maintained paved access roadway will help prevent dirt and rocks from entering Millican Road. This roadway addresses construction and emergency access needs to the site. Figure 3 shows a photo of the existing access which includes a posted speed of 35 miles per hour.



Figure 3. Existing Por-Tay Quarry Access from Millican Road.

The location of the proposed access onto Millican Road provides adequate sight lines in the northbound and southbound directions. Field review showed that Intersection Sight Distance as outlined within the standard reference *A Policy on Geometric Design of Highways and Streets, 6th Edition*, published by the American Association of State Highway and Transportation Officials (AASHTO) is currently satisfied for a 65 mile per hour design/operating speed (see Figure 4). Figures 5 and 6 illustrate the current views.

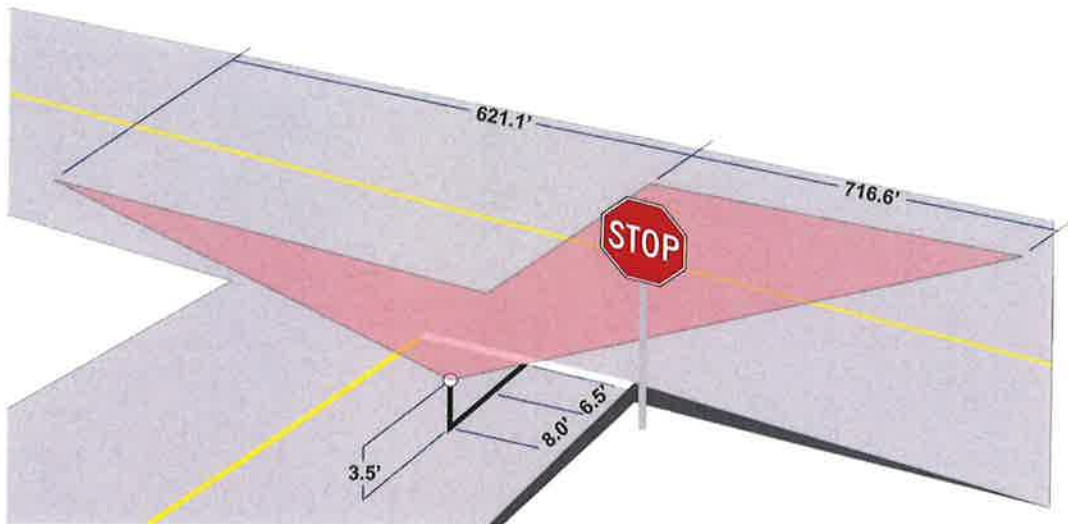


Figure 4. AASHTO Recommended Minimum Intersection Sight Distance Dimensions for Passenger Vehicles Entering OR 126 based on a 65 mph design speed.



Figure 5. Por-Tay access facing north along Millican Road.



Figure 6. Por-Tay access facing south along Millican Road.

TEMPORARY CONSTRUCTION CONDITIONS

To address construction traffic needs, information was also obtained and summarized to provide trip generation estimates throughout the construction process. Construction on the solar facility is anticipated to begin in 2023 with specific timelines not yet defined. Construction will be initiated with on-site grading and access improvements. Following site preparation, the majority of trucks that will be used to deliver construction materials for the solar facility will be standard tractor trailers with 40-foot long shipping containers.

The peak of the construction activity spans 5 months for the highest amount of construction related traffic both in terms of larger trucks (for materials) and passenger vehicles for commuting laborers. This five-month span is when the actual installation of the solar photovoltaic (PV) modules will occur. During this installation period, the facility site is conservatively estimated to generate 15 to 20 truck trips per day for material transport and 75 to 100 passenger car trips per day for commuting laborers (assuming very little carpooling and no shuttle/bus usage).

Construction traffic (both material and labor) will arrive from major population centers surrounding this site. This includes the City of Prineville to the east and Bend-Redmond area to the west. Laborers will not be permitted to remain on the premises overnight. With the new roundabout at the OR 126/Tom McCall intersection a safe connection is available back onto the highway.

As the entrance already functions as the access to the quarry there is already an expectation of trucks entering and exiting Millican Road by those familiar with the area. However, to increase visibility and awareness for deliveries and laborer trips that may be unfamiliar with the area the following summarizes the recommended construction mitigation measures:

- “Trucks Entering Highway” temporary construction signage should be installed on either side of the access throughout the construction period to warn motorists of construction activity.
- Regardless of the solar facility development, periodic sweeping of the Por-Tay entrance is recommended as it appears that there is a substantial amount of gravel on the asphalt entrance due to the quarry operations.
- While presumably already in place, if not formally documented a shared use agreement should be completed with the Por-Tay rock quarry.
- Separate on-site areas should be designated for passenger vehicle parking and truck staging.
- The applicant should coordinate with the Crook County road master on any permits that may be required to support the solar facility along internal site roadways and secondary access roads. As the Por-Tay road is private no permits are assumed to be required, but the spacing of the connection into the solar facility should provide adequate spacing from Millican Road as currently shown in the site layout.

We trust this letter provides a general understanding of the long-term build-out and construction needs of the proposed Crook Flat Solar Farm. The operations of the facility will not trigger the County's formal Transportation Impact Analysis requirements. If you have any questions or need any additional information on this traffic letter please contact me at (503) 997-4473 or via email at joe@transightconsulting.com.