

MEMORANDUM

To: Brendan Grajewski – Hexagon Energy, LLC
From: Nicholas Robertson, P.E. – Kimley-Horn
Date: January 16, 2022
Subject: Sweet Spring Solar – Traffic Memorandum

1 INTRODUCTION

1.1 Project Background

As requested by Hexagon Energy, LLC., Kimley-Horn and Associates, Inc. (Kimley-Horn) has prepared a traffic memorandum to support the future, proposed Solar Photovoltaic (PV) Generation Facility located on the Sweet Spring Solar Site in Orange County, Virginia. The project site is approximately three (3) miles east of the Town of Orange on State Route 625.

This memorandum is based on publicly available data from VDOT and from information provided by Hexagon Energy, LLC.

The purpose of this memorandum is to address potential concerns related to traffic generated by the construction of the proposed project. The memorandum includes analysis of the following:

- Review of existing transportation facilities (i.e., roadways) providing access and/or adjacent to the proposed solar site
- Compiling available traffic data for the roadways
- Discussing trip generation and traffic impacts for the proposed site during construction operations

2 EXISTING CONDITIONS

2.1 ADJACENT ROADWAYS

State Route 625 (Porter Road) is a north-south thoroughfare that will serve as the primary route to access the site via State Route 20 (Constitution Highway). The following provides a brief description of existing roadway characteristics for each facility:

2.1.1 State Route 625 (Porter Road)

State Route 625 is a local roadway that connects to State Route 20 (Constitution Highway) to the north and dead ends approximately 1.4 miles south. Traffic counts from the 2020 Virginia Department of Transportation (VDOT) Annual Average Daily Traffic (AADT) and Vehicle Classification Estimates data indicates that State Route 625 carries approximately 570 vehicles per day (vpd) within the section of the roadway where the proposed site entrance is located. The roadway serves residential traffic as well as traffic associated with the landfill. There is no posted speed limit for State Route 625 so the statutory speed limit of 55 MPH and 45 MPH for

trucks applies.

2.1.2 State Route 20 (Constitution Highway)

State Route 20 is a two-lane, undivided major collector that runs in an approximate east/west direction within the study area. It serves residential, commercial, and agricultural land uses adjacent to the project site. The 2020 VDOT AADT and Vehicle Classification Estimates data indicate that State Route 20 carries approximately 8,000 vpd, including 3% heavy vehicles within the study area. State Route 20 has a posted speed limit of 55 MPH at the intersection with State Route 625.

2.2 STUDY INTERSECTIONS

The route to the site for construction and operations/maintenance is proposed to travel through the intersection of State Route 20 and State Route 625. Access to the proposed development site will utilize a proposed access road located off State Route 625 approximately 0.43 miles south of the intersection with State Route 20.

2.2.1 State Route 20 at State Route 625

The unsignalized intersection of State Route 20 and State Route 625 is located to the north of the proposed Sweet Spring Solar development. There is an approximately 250-foot-long right turn lane for vehicles traveling east on State Route 20 to turn onto State Route 625. There appears to be sufficient sight distance at this intersection and there are “Industrial Intersection” warning signs to alert drivers as they are approaching from both directions on State Route 20. However, “Trucks Entering Highway” (VDOT Work Area Protection Manual W11-V4) warning signs are recommended to be used in advance of State Route 625 on State Route 20 during the construction period of the proposed site. A search of the previous five years of VDOT crash data for this intersection showed one rear end collision in 2017 and one angle collision with property damage only in 2019. This intersection appears to be able to safely support the Sweet Spring Solar development traffic which is shown below in Section 3.

2.2.2 Site Driveway

The site will be accessed via a proposed entrance on State Route 625 approximately 0.43 miles south of the intersection with State Route 20. There does not appear to be sufficient sight distance at this intersection. It is recommended that coordination with VDOT is initiated to see if they will approve the proposed intersection location. It is also recommended that “Trucks Entering Highway” (VDOT Work Area Protection Manual W11-V4) warning signs be used in advance of the driveway on State Route 625 during the construction period of the proposed site.

3 SITE-GENERATED TRAFFIC

General construction traffic will consist of the following:

- Component deliveries (i.e., solar panels, earthwork equipment, construction waste removal, modules, etc.) via single-unit and/or low-boy trucks
- Passenger vehicles carrying personnel, tools, and minor equipment to and around the proposed development site

Construction is anticipated to last approximately three to four months with the intensity of trucks and employees accessing the site varying over the course of construction. The first and final

months of construction are anticipated to average less than one truck per day. The peak construction period is expected to occur during the one-to-two-month period in the middle of construction. During the first half of the peak construction period, the site is estimated to experience one truck per day (i.e., weekdays Monday – Friday) delivering materials. Deliveries are anticipated to be staggered to meet construction needs and will attempt to occur during the non-peak travel periods for school bus traffic.

In addition, the construction site is expected to have an estimated 20 employees during the peak period of construction. It's expected that some employees will carpool to the site; an average vehicle occupancy of 1.5 was assumed. As a result, 14 passenger vehicle trips will access the site per day during the peak period of construction. All construction staging, parking, and assembly areas are anticipated to be within the project boundaries.

Following the construction of the site, maintenance of the site will occur on a monthly, quarterly, and annual basis for different circumstances. Panel washings and general maintenance are anticipated to occur a few times a year. This will require the presence of approximately 2 workers at the site occasionally throughout the year. During the growing season, it is anticipated that a maximum of one vehicle per week will access the site for lawn maintenance. Therefore, operation and maintenance of the site is not expected to generate significant traffic volumes or volumes to the level expected during the construction phase of the project.

All the site generated trucks and the majority of the employee traffic are expected to travel to/from the site entrance on State Route 625 via State Route 20. The study area roadways have adequate capacity to support the increase in trips during the site construction and ongoing maintenance.

4 CONCLUSIONS AND RECOMMENDATIONS

Based on the proposed site access driveway location and anticipated traffic operations associated with the proposed Sweet Spring Solar development, we offer the following conclusions and recommendations:

- The State Route 20 and State Route 625 intersection can safely support the Sweet Spring Solar development traffic.
 - Warning signs are recommended along State Route 20 in advance of the State Route 625 intersection to advise drivers (i.e., to advise drivers approaching the intersection from both directions) of potential turning vehicles during construction of the site.
- Site traffic will access the site via the proposed driveway located along State Route 625.
 - It is recommended that the construction entrance driveway be constructed wide enough to accommodate WB-67 trucks accessing the site.
 - It is recommended that coordination with VDOT be performed to resolve the site distance requirements.
- A Construction Traffic and Access Management Plan should be developed in advance of the construction phase of the project to establish safe and feasible routing, signage, and other measures to address the findings in this memorandum. Preparation of the plan shall include consideration of the following: (i) prescribing truck routes to/from the project site,

(ii) details of traffic safety signage plan, (iii) limiting impacts to residents and community events, and (iv) Emergency services access to the site.

- Up to 20 employees are anticipated during the peak period of construction. Approximately 1 truck per day is also anticipated to deliver materials to the site during the peak period of construction. The study area roadways have adequate capacity to support this increase in traffic volume during the construction of this site.
- Prior to beginning construction, it is suggested to coordinate with VDOT to perform a field assessment to document existing conditions of the construction route roadways and intersections. In addition, it is important to coordinate closely with VDOT and the County throughout the construction phase to mitigate potential impacts to traffic operations on the local streets and/or to travel through the area by residents.
- VDOT will require a surety bond to be posted to protect the integrity of the roadway pavement and the developer will be responsible for ongoing maintenance during construction as well as repairs post construction.