GARNET ENERGY CENTER

Case No. 20-F-0043

1001.25 Exhibit 25

Effect on Transportation

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Exhibit 25: Effect on Transportation

This Exhibit will track the requirements of Stipulation 25, dated March 5, 2021, and therefore, the requirements of 16 New York Codes, Rules and Regulations (NYCRR) § 1001.25.

25(a) Conceptual Site Plan

Preliminary Design Drawings, including the Conceptual Site Plans for the Project, are included in Appendix 11-1. These plans identify the proposed solar panel locations, access road locations and widths, and other related Project plans and details.

Details specific to Project access roads and driveway and roadway intersections showing horizontal and vertical geometry, number of approach lanes, lane widths, shoulder widths, and traffic control devices by approaches are included in Appendix 11-1. Intersection sight distances at the proposed access roads are discussed below and additional information is included in Appendix 25-1. According to the requirements of 16 NYCRR § 1001.25(2), characterization of public road intersection suitability is required for Projects that include wind turbines. Due to the nature of the Project, expected size of the material, and lack of turbines, characterization of the public road intersection suitability outside of the Project Area is not applicable.

Sight distance diagrams were developed for the proposed access roads at the entrance/exit for the Site entrances at the following locations illustrated in Appendix 25-1:

A. Schooley Road – west side, west of Slayton Road
B. Slayton Road – north side, south of Schooley Road
C. Slayton Road – north side, south of Schooley Road
D. Slayton Road – north side, south of Schooley Road
E. Egypt Road – north side, south of Slayton Road
F. Montana Road – east side, north of Lemon School Road
G. Montana Road – west side, north of Lemon School Road
H. Montana Road – east side, north of Lemon School Road
I. O'Neil Road – north side, south of Emerson Road
J. Spook Woods Road – west side, south of Slayton Road
K. Spook Woods Road – west side, south of Slayton Road

L. Slayton Road – north side, west of Spook Woods Road

M. Slayton Road – north side, west of Spook Woods Road

N. Slayton Road – south side, west of Spook Woods Road

O. Drake Road – west side, north of Slayton Road

P. Cooper Street – east side, northeast of New York Route (NY) 38

Q. Cooper Street – north side, east of NY 38

R. Cooper Street – east side, northeast of NY 38

S. Cooper Street – west side, northeast of NY 38

T. Cooper Street – east side, east of NY 38

U. Cooper Street – south side, east of NY 38

V. Cooper Street – north side, east of NY 38

W. NY 38 – west side, north of Cooper Street

X. NY 38 – west side, south of Cooper Street

Y. NY 38 – east side, south of Cooper Street

Z. Montana Road – east side, south of Slayton Street

AA. Cooper St – west side, east of NY 38

AB. NY 38 – west side, north of Cooper Street

The recommended setback for the decision point is 14.5 feet from the edge of the roadway, plus half the distance to the required travel lane.

The New York State Department of Transportation (NYSDOT) Highway Design Manual (HDM) Chapter 5, Appendix 5C, Table 5C-3 and Table 5C-4, recommend sight distances for left-turning vehicles and for right-turning vehicles for passenger cars and for combination trucks based upon the Design Speed. These recommended distances reduce significantly at lower speeds. These tables are shown below.

Table 25-1. Design Intersection Sight Distance for Left-Turning Vehicles

Table 5C-3 Design Intersection Sight Distance (in feet) - Case B1 - Left Turn From Stop

Design speed (mph)	Passenger Car Lanes Crossed			Single-Unit Truck Lanes Crossed			Combination Truck Lanes Crossed		
	1	2	3	1	2	3	1	2	3
15	170	180	190	210	225	245	255	270	285
20	225	240	250	280	300	325	340	360	380
25	280	295	315	350	375	405	425	450	475
30	335	355	375	420	450	485	510	540	570
35	390	415	440	490	525	565	595	630	665
40	445	475	500	560	600	645	680	720	760
45	500	530	565	630	675	725	765	810	855
50	555	590	625	700	750	805	850	900	950
55	610	650	690	770	825	885	930	990	1045
60	665	710	750	840	900	965	1015	1080	1140
65	720	765	815	910	975	1045	1100	1170	1235
70	775	825	875	980	1050	1125	1185	1260	1330

Table 25-2. Design Intersection Sight Distance for Right-Turning Vehicles

Table 5C-4 Design Intersection Sight Distance (in feet) - Case B2 - Right Turn From Stop and - Case B3 - Crossing Maneuver

Design Speed (mph)	Passenger Car Case B2-- Lane Entered Case B3 – Lanes Crossed			Single-Unit Truck Case B2-- Lane Entered Case B3 – Lanes Crossed			Combination Truck Case B2-- Lane Entered Case B3 – Lanes Crossed		
	1	2	3	1	2	3	1	2	3
15	145	155	170	190	205	220	235	250	265
20	195	210	225	250	275	295	310	330	350
25	240	260	280	315	340	365	390	415	440
30	290	310	335	375	410	440	465	495	525
35	335	365	390	440	475	510	545	580	615
40	385	415	445	500	545	585	620	660	700
45	430	465	500	565	610	655	695	745	790
50	480	515	555	625	680	730	775	825	875
55	530	570	610	690	745	805	850	910	965
60	575	620	665	750	815	875	930	990	1050
65	625	670	720	815	880	950	1005	1075	1140
70	670	725	775	875	950	1020	1085	1155	1225

Additional Sight Distance Tables from the American Association of State Highway and Transportation Officials (AASHTO) – A Policy on Geometric Design of Highways and Streets, Seventh Edition, 2018, which forms the basis for the NYSDOT Sight Distances referenced above are contained in Appendix 25-1. The AASHTO tables show the Stopping Sight Distances (SSDs), which are the minimum Sight Distances and are the required Sight Distances. It is noted that some of the sight distances were determined based upon photos and aerials. There are limited Speed Limit signs in the area, so the roads were generally considered to be 55 mph for sight

distance purposes to be conservative although the majority of the roads in the Project Area would have much lower travel speeds due to the roadway widths and curvature. The following are the standard SSDs as per AASHTO for level roadways, with the additional information contained in Appendix 25-1:

Design Speed: 30 mph	SSD Design: 200 feet
Design Speed: 35 mph	SSD Design: 250 feet
Design Speed: 40 mph	SSD Design: 305 feet
Design Speed: 45 mph	SSD Design: 360 feet
Design Speed: 50 mph	SSD Design: 425 feet
Design Speed: 55 mph	SSD Design: 495 feet

All SSDs and most Design Sight Distances will be met for each of the access points. Thus, the minimum required sight distances will be met for all conditions. There are some locations that may require trimming and/or removal of some vegetation to provide the proper sight distances. There are some locations where the roadway curvature somewhat limits the sight distance but there could be an increase in the sight distance by the trimming and/or clearance of some vegetation along the roadway. In addition, because of the height of the seated truck driver and the height of the trucks, truck drivers can generally see a farther distance and trucks can generally be seen at a farther distance, thus farther increasing the available Sight Distance. If the driver pulls up closer to the road, the sight distance is improved. Signage could be added if deemed necessary and each location should be field checked prior to/during construction to determine if any signage is needed or if any vegetation is needed to be cleared or if the driveway location should be slightly shifted, particularly at Driveway locations G, P and Q. If any minor modifications are necessary, they will be performed during construction.

25(b) Description of the Pre-construction Characteristics of Roads in the Vicinity of the Project

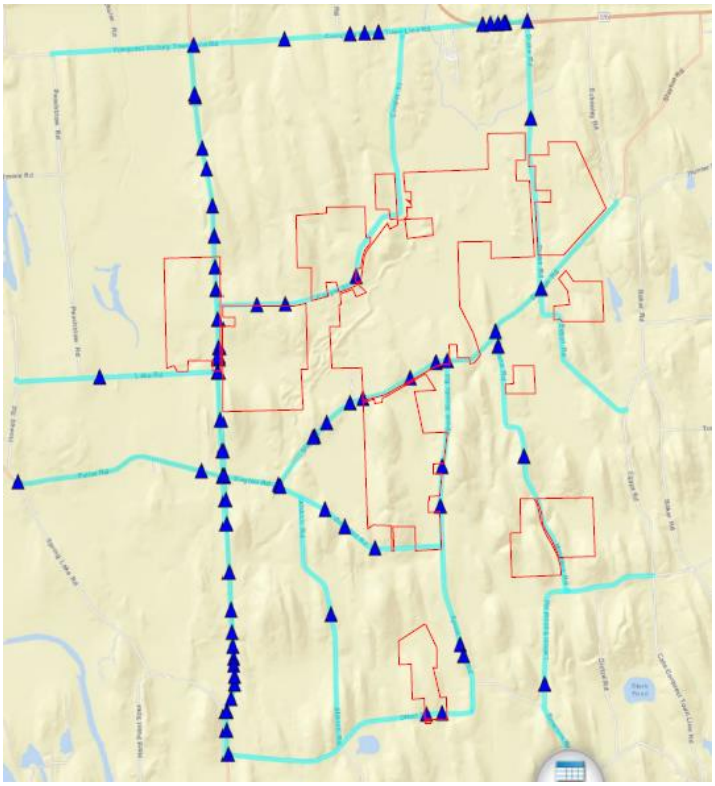
(1) Traffic Volumes and Accident Data

Existing traffic volume data along the proposed approach and departure routes for the Project were obtained from the NYSDOT Traffic Data Viewer and NYSDOT Highway Data Services Bureau, where historical traffic count data is available online. Average Annual Daily Traffic (AADT) volumes for roads within the Project Area are provided by route in Appendix 25-2. Additional

detailed information is also contained in Section 25(d)(2) below including vehicle traffic and use levels.

Existing accident data for the Project Area was obtained from NYSDOT from the Accident Location Information System (ALIS) through a Freedom of Information Law (FOIL) Request. Accident data was obtained for segments in the vicinity of the Project Area and the locations of the accidents are illustrated on Graphic 25-1 for a three-year period from 2017 to 2019. The details of the accident data by case number are summarized in Appendix 25-3. During the three-year period, there were a total of 79 accidents, with 40 (51%) accidents involving a deer or other animal, 15 (19%) involving a rear end, 22 (28%) involving a fixed object, and 1 (1%) other. Of the 79 accidents, 56 (71%) accidents were listed as property damage only, 13 (16%) accidents involved some type of injury, and 8 (10%) accidents were non-reportable.

Graphic 25-1. Project Area Accident Map



(2) Transit Facilities and School Bus Routes

There are limited public transit routes traveling through the County, including some by Centro. Transit routes and schedules are included in Appendix 25-4. Cayuga County also provides a Senior Citizen's Aid to Transportation (SCAT) Van for disabled residents and residents over age

60. A Cayuga Medical (CAM) Van is also provided on limited days for medical transportation. There is also a VetVan provided by the County's Veteran's Service Agency, and Mozaic bus services, a state chapter of The Arc. While transit vehicles and some construction related vehicles may share some of the same roadways, impacts to the local transit routes during construction are expected to be minimal. The Applicant will coordinate with the County to avoid any impacts and delays of routes throughout the construction process.

Bus Transportation information, regarding the bus routes, number of buses, and pick up and drop off times, was obtained from the following School Districts:

- Cato-Meridian Central School District
- Port Byron Central School District
- Weedsport Central School District

Though road closures are not anticipated, should any local roadways need to be temporarily closed during construction for a short period of time, the contractor (or Applicant) will contact the appropriate local agencies to provide notifications including the Port Byron Central School District Transportation Department, Weedsport Central School District Transportation Department, and the Cato Meridian School District Transportation Department, who establish the school bus routes for their respective School Districts. Construction of the Garnet Energy Center (the Project) is not expected to impact school bus stop locations. However, in the event that any stops are impacted, the contractor (or Applicant) will provide safe accessible waiting areas. There is a signed School Bus Stop on Montana Road. Additional information regarding the school transportation and bus routes is contained in Appendix 25-4.

(3) Emergency Service Approach and Departure Routes

Emergency services, if necessary, would be provided by various entities including, but not limited to:

- Conquest Fire Department
  10351 Slayton Rd
  Port Byron, NY 13140

- Port Byron Police Department
  52 Utica St
  Port Byron, NY 13140
- Cato, Ira, Meridian, Victory Ambulance Corps, Inc. (CIMVAC) Ambulance
  2496 W Main St
  Cato, NY 13033
- Cayuga County Sheriff's Office
  Public Safety Building
  7445 County House Rd
  Auburn, NY 13021
- Cayuga County Office of Emergency Offices
  Public Safety Building
  160 Genesee Street
  Auburn NY 13021
- New York State Division of Homeland Security and Emergency Services
  1220 Washington Avenue
  Albany, NY 12242
- New York State Police, Troop E
  1569 Rochester Road
  Canandaigua, NY 14425

In the event of an emergency, the local emergency service providers will take the most direct/fastest available route to the Project Area, depending upon current conditions and their starting locations as their origin points may change due to other emergencies, whether a police vehicle is on patrol at the time, and the location of the incident at the Site. Descriptions and illustrations of the routes to/from each of the above Emergency Services facilities are contained in Appendix 25-5. Locations of emergency service providers in the vicinity of the Project Site are depicted on Figure 15-1.

The Applicant will reach out and coordinate with the local emergency service providers throughout the development and construction process, so that they are aware of road closures (if necessary) that may impact their routing decisions. They will also be kept informed of expected Site work and number of workers so they can plan accordingly.

(4) Load Bearing Structural Rating Information

No bridges with weight restrictions that vehicles traveling to or from the Project Site would utilize were identified in the Project Area. However, the NYSDOT may issue weight and speed restrictions when weather conditions dictate.

Some bridges with weight restrictions in the general area were identified. However, it is assumed that no construction traffic would utilize these routes. There are four identified posted bridge weight limits within the vicinity of the Project Site based upon information obtained from the NYSDOT. The location of these bridges is contained in Appendix 25-6. One posted bridge is bridge identification number (BIN) 2206720 which is located along Hamilton Road over North Brook in the Town of Brutus, one mile west of Weedsport and has a posted limit of 16 tons. Another posted bridge is BIN 2206750 which is located along Ditmar Road over Muskrat Creek in the Town of Cato, two miles northeast of Weedsport and has a posted limit of 18 tons. The third posted bridge is BIN 3311510 which is located along Jericho Road over Putnam Brook in the Town of Brutus, 2 miles southeast of Weedsport and has a posted limit of 18 tons. The fourth posted bridge is BIN 4431020 which is located along Bonta Bridge Road over the Erie Canal/Seneca River in the Town of Brutus, 2.3 miles east of the junction of SH34 and Canal and has a posted limit of 9 tons. There are also some bridges that are closed, as indicated in Appendix 25-6. These were not projected to be utilized for the Project. There was no available description of existing culverts in poor condition or with a posting that would be impacted by the Project, as discussed below.

Additional information on bridges including Posted Bridges and Non-Posted Bridges obtained from the NYSDOT is provided in Appendix 25-6.

The only road observed posted is Conquest Victory Town Line Road, just west of NY Route 38, which is posted for a Weight Limit of 12 tons.

(5) Existing Culverts

As discussed above, there was no available information of existing culverts in poor condition requiring improvement or replacement along the construction or delivery routes. The New York State Department of Transportation (NYSDOT) maintains an inventory of Bridges and Large Culverts. The NYSDOT only lists Load Posts Bridges and Large Culverts that have a span greater than 20 feet.

The following are the Bridge and Large Culvert Inspection Ratings Scales as per the NYSDOT Bridge and Large Culvert Inventory Manual and the NYSDOT Culvert Inventory and Inspection Manual/Culvert Field Instruction Guide:

Inspection Rating Scale for Individual Culvert Items

9 - Condition and/or existence unknown.

8 - Not applicable. Used to rate an item the culvert does not have.

7 - New condition. No deterioration.

6 - Used to shade between ratings of 5 and 7.

5 - Minor deterioration but functioning as originally designed.

4 - Used to shade between ratings of 3 and 5. Functioning as originally designed.

3 - Serious deterioration or not functioning as originally designed.

2 - Used to shade between ratings of 1 and 3.

1 - Totally deteriorated or in failed condition. Potentially hazardous.

Inspection Rating Scale for Entire Culvert Structure

7 - Like new condition. No repairs required.

6 - May require very minor repairs to pavement, guiderail, shoulders, etc.

5 - May require minor repairs to the headwalls or wingwalls. May require removal of light vegetation growth around culvert openings.

4 - Pavement may require replacement with the addition of backfill material to correct minor roadway settlement problems yet the structure shows no signs of deformation or settlement. Wingwalls and headwalls may require significant repair work. Some minor work to the channel may be required.

3 - Significant repairs to the pavement are required due to settlement. Slight deformation and settlement of the structure exists. Significant deterioration of wingwalls and/or headwalls exists. Extensive work on the culvert is required. Replacement could be considered a better long-term option.

2 - Replacement of the structure is necessary due to serious deformation and settlement of

the structure. Short-term, remedial action such as pavement replacement or installation of additional backfill material is required. Temporary shoring may be needed or already exist. A vehicle load restriction is probably posted. Replacement of wingwalls and/or headwalls is required. Alignment of waterway is such that significant, measurable and progressive, general and /or localized scour is occurring. Constriction or obstruction of the culvert opening greatly restricts water flow.

1 - Pavement has settled as a result of significant structure deformation or settlement. Structure has collapsed or collapse is likely. Culvert opening is closed or nearly closed due to embankment soil failure, structure deformation, channel sedimentation, debris accumulation, or vegetation growth. Roadway should have traffic restrictions or be closed to traffic entirely.

Appendix 25-6 contains a map of the culverts along the State Roads in the vicinity of the Site or on possible Haul Routes for the Site as provided by the NYSDOT. These roads are not necessarily to be used by the Project traffic but are included for reference purposes. A State Culvert Attribute Table of the culverts referenced on the map, as provided by the NYSDOT, includes the culvert identification number along with various information including, but not limited to, the year built, the feature crossed, the material type, the design type, the inspection date, the location, and the condition rating.

The following is a list of the culverts identified along County Roads in the vicinity of the Site or on the portions of the roadways that are possible Haul Routes for the Site. The County Road number along with the location and feature crossed are provided. A review of the available information did not indicate any posted culverts and there was no available information indicating any needed repair.

A. As noted above, the extension of Conquest Victory Town Line Road west of NY 38 towards CR 24B has a 12-ton weight limit, but this section is not under County jurisdiction. There is a culvert on this section that crosses an unnamed stream approximately 300 feet east of Schuler Road. The following are the culvert locations along CR 129 between NR 38 and NY 370:

    1) Crosses Little Sodus Creek 975 feet east of Cooper Street

    2) Crosses unnamed stream 2,770 feet east of NY 38

B. CR 17B: The following are the culvert locations along CR 17B between NY 38 and Schooley Rd:

1) Crosses unnamed stream 650 feet east of NY 38

2) Crosses unnamed stream 2,775 feet northeast of Drake Rd

C. CR 132: The following are the culvert locations along CR 132 between O'Neil and CR 17B

1) Crosses unnamed stream 200 feet north of Emerson Road (CR 19B)

D. CR 133A: There are no culvert locations along CR 33A between Emerson Road (CR 19B) and Egypt Lane.

(6) Urbanized Areas Traffic Volume Summary

The Project is not within a congested urbanized area. Therefore, 24-hour traffic volume counts and peak turning movement counts for typical weekday morning, weekday afternoon, and Saturday peaks at representative critical intersections are not applicable and are not included in this Application.

25(c) Route Evaluation Study/Project Trip Generation

(1) Number, Frequency and Timing of Vehicle Trips

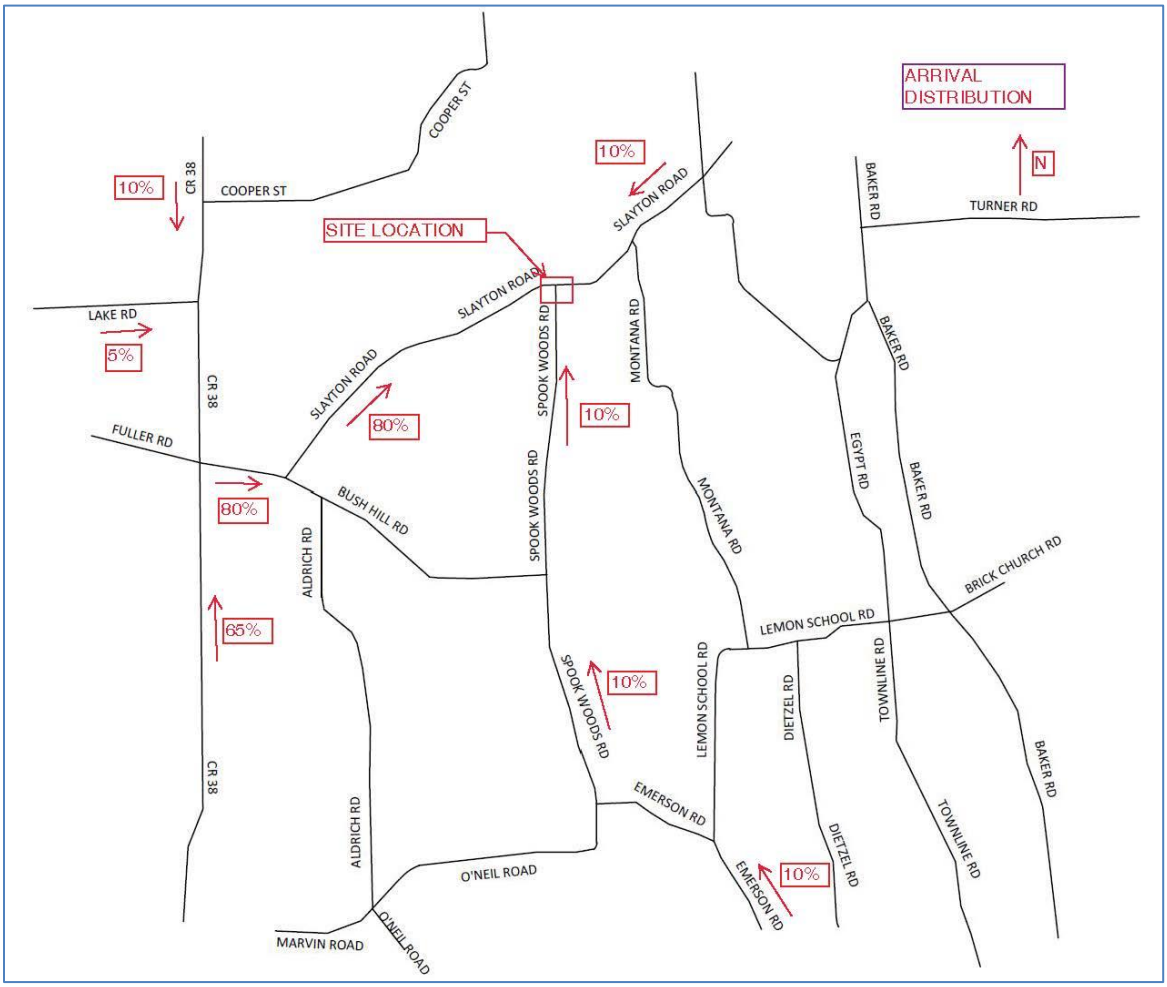
To better understand how the construction of the Project will potentially impact the adjacent roadway system, trips were generated for the Project Area based on the peak construction workforce and construction equipment deliveries. Typically, these trips would be calculated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, where data from similar sites has been collected and aggregated to provide estimates for peak hour and daily site traffic volumes. However, there are no published trip generation rates for solar farm construction or similar type construction. The peak construction workforce for this Project is conservatively expected to be approximately 247 workers which will be distributed to/from the Project Area, conservatively assuming one worker per vehicle per day. This estimate was based on previous experience with other projects. In addition to construction workforce trips, construction equipment delivery trips were included in the traffic analysis for the construction period. Table 25-3 provides a detailed summary of the expected construction and Project material delivery vehicles with a brief overview in the subsequent section. Load trips for the "Equipment and Installation" phase (69 trips) were added to the peak construction workforce to conservatively simulate the worst-case traffic operation scenario during the construction period. Graphic 25-2 shows the estimated distribution percentages used in calculating construction worker trips and construction equipment

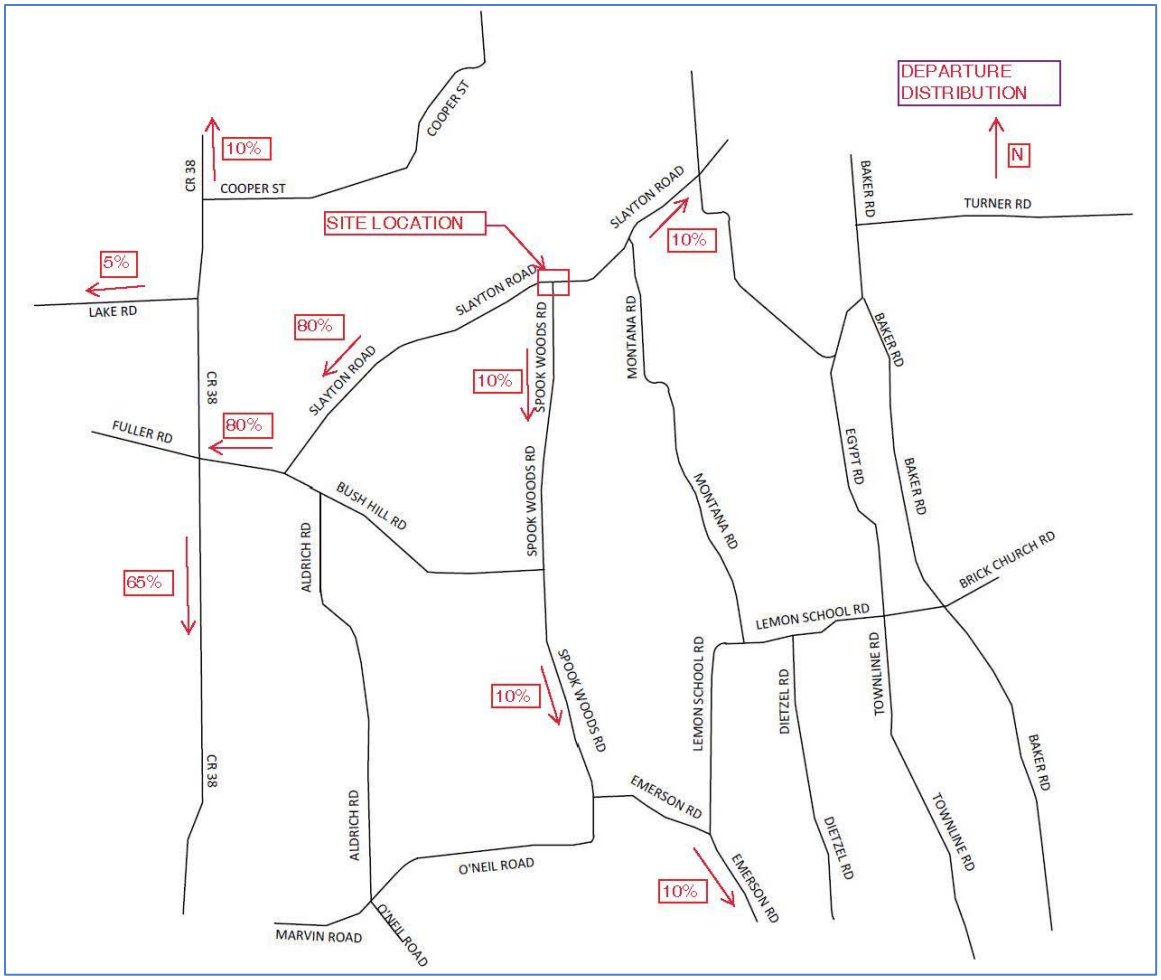
deliveries to and from the Project Area. There are other potential routes that some vehicles may take but the routes illustrated were utilized to be conservative in the Traffic Analyses. For Traffic Analyses purposes, to be conservative, all traffic was directed to one location. Additional details regarding these routes are described in Section 25(c)(4) below.

During the operational phase of the Project, only two employees will be on-Site periodically for vegetation management and routine Project Component maintenance. Heavy vehicles/equipment will not be traveling to and from the Site regularly. This workforce will not affect traffic around the Project Area and will have no impacts on adjacent roadways. Details on frequency of employee visits to the Project for operations and maintenance is provided in Appendix 5-3, Preliminary Operation and Maintenance (O&M) Plan.

Construction of the Project will comply with the substantive requirements of the Town of Conquest and Cayuga County local laws and ordinances as they relate to transportation and construction vehicle deliveries. The Applicant anticipates entering into road use agreements with the Town and County concerning repairs to any roads damaged by construction of the Project. Agreements with these agencies will need to be reached in regard to any weight restrictions or truck restrictions on certain roadways. The hours of construction are to be determined but are likely to be 7:00 AM to 7:00 PM Monday through Saturday. The peak construction trips were combined with the roadway peak hours for analysis purposes to be conservative.

Graphic 25-2. Project Area Site Distribution Percentages





Site Preparation and Grading Equipment

As described above, the hours of construction are to be determined but will be within 7:00 AM to 7:00 PM Monday through Saturday, consistent with Siting Board precedent. The actual time of day and day of the week for the equipment to be delivered will be determined when the construction schedule is finalized. To be overly conservative, the capacity analyses contain a high percentage of trucks/equipment in the peak hour calculations to ensure that there is no traffic impact, as illustrated in 25(d)(2) below. Most of the equipment described below will stay on the Site for the days needed, and thus would not be going back and forth to the Site each day.

Graders – It is expected that there will be two graders used for the Site preparation and grading of the Project. Each grader will have a 174-horsepower engine and have an approximate weight of 43,000 pounds per vehicle.

Rubber-Tired Loaders – It is expected that there will be two rubber-tired loaders in use. Each loader will have a bucket capacity of approximately 2.1 to 5.0 cubic meters and a maximum horsepower of 164. The weight of the rubber-tired loader is approximately 31,000 pounds.

Scrapers – It is anticipated that there will be three scrapers used with approximately 313 horsepower each. The approximate operating weight is 80,000 pounds for each scraper.

Water Trucks – It is expected that there will be two water trucks in use at the Project Area. Each truck will be equipped with a 189-horsepower engine. Depending on the size of the tank, the average weight can be 50,000 pounds to 75,000 pounds. For every 2,500 gallons of liquid, the average approximate weight will be an additional 25,000 pounds over the weight of the vehicle carrying the tank, which can range from 17,000 pounds to 25,000 pounds.

Generator Sets – Two generator sets will be delivered and used for the construction of the Project.

Trenching and Road Construction Equipment

Excavators – Three excavators will be delivered and used for the construction of the Project. It is approximated that each excavator will weigh roughly 50,000 pounds. The net power for the excavator will be approximately 168 horsepower.

Trencher – There will be four trenchers used at the Project Area. These trenchers will have an operating power of approximately 63 horsepower and weigh approximately 8,000 pounds.

Equipment Installation

Crane – It is expected that a Lattice Crawler Crane will be used to construct the Project. Typical transportation of these cranes requires disassembly and placement on a trailer. It is expected that each crane set up will require approximately seven trailer loads with the main transport load weighing approximately 80,000 pounds.

Forklifts – Eight forklifts will be in operation during construction of the Project. The weight of each forklift is approximately 25,000 pounds. The horsepower of each forklift is approximately 145 horsepower.

Pile Drivers – It is estimated that ten pile drivers will be in use at the Project Area. Each pile driver will have an approximate weight of 30,000 pounds.

Pickup Trucks/ATVs – There will be approximately 45 pickup trucks and ATVs entering the Project Area during construction. Each pickup truck will weigh approximately 3,000 pounds and each ATV will weigh approximately 700 pounds.

Construction Equipment and Materials

Aggregate Trucks – Temporary and permanent access roads will be constructed at the Project Area to provide access from the existing roadways. The access roads will be constructed of 15,070 cubic yards gravel aggregate material while 9,280 cubic yards will be used for the inverter pads, battery pads, and substation/switchyard pads. A total of 1,107 large dump trucks with an approximate carrying capacity of 22 cubic yards and a weight of 80,000 pounds will be used to deliver the materials to the Project Area. Construction is expected to occur during the first three to four months, which equates to approximately 15 truck trips per day.

Based on the preliminary cut and fill calculations performed in Exhibit 21, no soil is expected to be removed during construction and 1,238 cubic yards of soil fill will be brought in. Topsoil will be distributed throughout the Site.

Concrete Trucks – Concrete will be necessary for perimeter fencing and substation foundations associated with the Project. Approximately 4,143 cubic yards of concrete will be needed for fencing and an additional 270 cubic yards of concrete for the switchyard and 220 cubic yards for the substation foundations. Trucks with an approximate capacity of 8 cubic yards and a weight of 70,000 pounds will be used to deliver the material to the Project Area. These vehicles will be of legal size and weight, not exceeding 80,000 pounds load limits and the switchyard and substation foundation trucks are included in the equipment calculations. Construction of the perimeter fencing is not expected during the peak construction period but is expected to occur during the last couple of months of construction, and therefore were not included in the traffic analysis but equates to approximately 13 truck trips per day.

Conventional Semi-Trailers – Semi-Trailers will be used to transport the solar array components and construction equipment to the Project Area. These vehicles will be of legal size and weight, not exceeding 80,000 pound load limits.

Special equipment Components including substation/switchyard control rooms, substation poles, generator step-up unit (GSU), inverters, etc. will exceed the legal weight and/or size up to 200,000

pounds. Special hauling permits and/or road use agreements along the Project haul routes will be obtained prior to delivery.

Based on the expected transportation methods and proposed construction work, Table 25-3, below, summarizes the expected number of loaded trips generated entering the Project Area.

Table 25-3. Expected Number of Loaded Trips

Equipment/Activity	Construction Equipment	Trips
Site Preparation and Grading	Graders (174 hp)	2
	Rubber Tired Loaders (164 hp)	2
	Scrapers (313 hp)	3
	Water Trucks (189 hp)	2
	Generator Sets	2
	Roller/Compactor	1
Trenching and Road Construction	Excavators (168 hp)	3
	Graders (174 hp)	3
	Water Trucks (189 hp)	2
	Trencher (63 hp)	4
	Rubber Tired Loader (164 hp)	2
	Generator Sets	2
Equipment and Installation	Crane (399 hp)	1
	Crane (165 hp)	1
	Forklifts (145 hp)	8
	Pile Drivers	10
	Pickup Trucks/ATVs	45
	Water Trucks (189 hp)	2
	Generator Sets	2
Commissioning	Pickup Trucks/ATVs	5
Access Roads	Dump Trucks (22 yd^3)	1,107

Table 25-3. Expected Number of Loaded Trips

Equipment/Activity	Construction Equipment	Trips
Fencing & Substation	Concrete Trucks	5,808

Earthwork activity, construction of access roads, and fencing installation will not occur at the same time as the peak workforce and equipment installation construction period. Added trips for these activities are expected to be approximately 15 trips per day during the first three months and 13 trips per day during the final two months, which does not exceed the conservative peak workforce of 247 trips per day and equipment/installation phase of 69 trips. Therefore, dump trucks for earthwork/access roads and concrete trucks for fencing were not factored into the traffic analysis, which only analyzed the peak construction traffic volumes.

(2) *Approach and Departure Routes for Trucks Carrying Water, Fuels, Chemicals, or Hazardous Materials*

During Project construction, no trucks carrying fuels, chemicals, or hazardous materials are proposed to be utilized for deliveries. If any were to be proposed, such as water trucks, they will utilize the same delivery routes used by other construction vehicles/Component delivery haulers as illustrated in Appendix 25-7. Section 25(c)(4) of this Exhibit below provides detailed routes to the Project Area from every direction which applies to the haul routes as well as construction worker commuter trips.

(3) Cut and Fill Activity

As described above, the hours of construction will be within 7:00 AM to 7:00 PM Monday through Saturday. The actual time of day and day of the week for the delivery/removal of any cut and fill will be determined when the construction schedule is finalized. Trucks carrying any cut/fill would handle 22 cubic yards of material and weigh 80,000 pounds. To be overly conservative, the capacity analyses contain a high percentage of trucks/equipment in the peak hour calculations to ensure that there is no traffic impact, as illustrated in 25(d)(2) below.

Estimates using the Preliminary Design Drawings (Appendix 11-1) indicate approximately 1,238 cubic yards of soil fill (not gravel) will be required and placed. The fill is derived from excavations associated with Project construction. Excess material from excavations will be distributed across the disturbed areas and blended into existing topography to return each area to its approximate

original condition or proposed grade elevation. Thus, some fill may be transported on local roads between the Project Entrances. As described above, approximately 24,350 cubic yards of gravel fill will be imported to the Project Area for roads, inverter pads, battery pads, and substation/switchyard pads. There will also be approximately 4,143 cubic yards of concrete for the fence posts and 490 cubic yards of concrete for the substation and switchyard. Please see Appendix 11-1 for the Preliminary Design Drawings and Exhibit 21 for additional information on cut and fill activity.

(4) Conceptual Haul Routes and Employee Approach and Departure Routes

To Garnet Energy Center – There are various regional routes to reach and depart from the Project. In the vicinity of the Site, there are different State Routes including NY 370, NY 38, and NY 34. There are also different County Routes including CR 17B, CR 132, CR 129, and CR 133A, as well as local roadways.

The only Interstate Highway in the immediate vicinity of the Site is Interstate 90, located approximately six miles to the south of the Site.

Illustrations of preliminary potential key routes from major centers are contained in Appendix 25-7. These include details of the possible routes including turn by turn movements and account for other locations along the routes. For consistency purposes, all of the routes are shown to end at the intersection of NY-38 and Cooper Street.

25(d) Route Evaluation Study/Traffic and Transportation Impacts

(1) Analysis of Future Traffic Conditions

The majority of potential traffic impacts will be short-term and primarily due to the temporary influx of personnel and investment during construction. Potential long-term effects to maintain and operate the solar farm are anticipated to be minimal. As mentioned previously in section 25(c)(1), two employees will be on-Site periodically for various management/maintenance work, which is significantly fewer trips than the peak construction period of 316 additional trips, combined with construction employee trips and equipment trips; Therefore, no impacts on future traffic conditions are anticipated as a result of the operation of the Project. Refer to Appendix 5-3, Preliminary O&M Plan, for details on frequency of employee visits to the Project for operation and maintenance.

Based upon a preliminary review of the Project Area, no existing culverts were considered to be in poor condition requiring upgrading or replacing at this time.

(2) Evaluation of the Road System to Accommodate the Projected Traffic

With additional trips generated by the construction of the solar farm, the level of service (LOS) will be evaluated for both the existing traffic volumes and construction level traffic volumes to express the performance of the existing roadway facilities. Identification of the anticipated delivery routes is described in 25(c)(1) above. As illustrated below, the extent and duration of traffic interferences during construction of the Facility and any interconnections will be minimal.

Existing Traffic Data

Existing traffic volume data was obtained from the NYSDOT Traffic Data Viewer and NYSDOT Highway Data Services Bureau, where historical traffic count data is available. AADT volumes are provided by route for some of the County and State Routes in the area. Traffic count data was sporadically available for some of the local roads within the Project Area. The table below summarizes the available traffic data within the Project Area:

Table 25-4. Available Traffic Data within the Project Area

Site No.	Route/ Road Name	From	To	AADT	Count Station	Count Year
A	CR-129	Victory TL	SR 370	424	315070	2015
B	Fuller Road	RT 38	CR 23	550	312213	2009
C	Lake Road	RT 38	Howell Road	204	315000	2015
D	NY-38	CR 22 Conquest	RT 370 Victory	924	310072	2015
E	NY-34	Cayuga/Oswego County Line	RT 104 END RT 34	2143	340021	2019
F	Ditmar Road	NY-34	Bonta Bridge Road	428	316005	2019
G	Conger Road	West Main Street	W Mechanic Street	31	315036	2019
H	Bell Road	Westbury Road	NY 370	56	315031	2019
I	Follett Road	Keysor Road	Ira Station Road	180	315032	2019

Table 25-4. Available Traffic Data within the Project Area

Site No.	Route/ Road Name	From	To	AADT	Count Station	Count Year
J	Weatherby Road	Old State Road	People Road	83	315033	2019
K	White Road	NY 38	Johnnycake Hill Road	53	315034	2019

Roadway Characteristics

Existing roadways within the Project Area fall into three functional classifications as defined by NYSDOT Office of Technical Services and Federal Highway Administration (FHWA).

Principal Arterial Interstate – There are no Principal Arterial Interstates located within the Project Area. Principal Arterial Interstates are roadways classified as an interstate that carry multiple travel lanes and are designated for high rates of speed between major points. Interstate I-90 is located approximately six miles south of the Site.

Principal Arterial Other – The only Principal Arterial Other found within the Project Area is NY Route 370. Principal Arterials Other are roadways classified as a non-interstate that consist of a connected rural network of continuous routes that serve corridor movement having trip length and travel density characteristics indicative of substantial statewide or interstate travel and provide an integrated network without stub connections except where unusual geographic or traffic flow conditions dictate otherwise.

Minor Arterial – There is one Rural Minor Arterial roadway classified by the NYSDOT in the vicinity of the Project Area: NY 34. Minor Arterials are often moderate length and usually provide a connection to a higher-level roadway, such as a Principal Arterial. In rural areas, such as the Project Area, Minor Arterials provide high travel speeds with minimal disruption to the through traveling vehicles.

Major Collector – The only Major Collector roadway within the Project Area as classified by the NYSDOT is NY 38. Major Collectors generally have few driveways and also allow for minimal disruption to the through traveling vehicles. Major Collectors can be shorter in length and have less daily traffic than Minor Arterials.

Minor Collector – The Minor Collector roadways within the Project Area as classified by the NYSDOT are Fuller Road, CR 17B and CR 17A. Minor Collectors generally are spaced at intervals to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road, while providing service to the remaining smaller communities and linking the locally important traffic generators with their rural areas.

Local Road – The rest of the roadways within the Project Area are identified as Local Roads including CR 129, CR 19A, CR 19B, Lake Road, Slayton Road, Spook Woods Road, Cooper Street, and Drake Road. Local roads account for the largest percentage of total roadway miles. These roadways are short and are intended for specific local access. Local roads primarily facilitate direct access to adjacent property owners with many driveways and access points.

In addition to the classifications, most of the roadways in the Project Area are generally rural in nature and generally provide one travel lane in each direction with limited shoulder and roadside treatments. The majority of the existing intersections are stop-controlled. There are limited signalized intersections.

Performance Methodology

Based on the functional classifications of the roadways in the Project Area, roadway performance was analyzed by methods described in Chapter 12 and Chapter 15 of the Highway Capacity Manual 6th edition (HCM). Chapter 12 covers the guidance necessary for determining the performance of Multilane Highways, defined as highways with two (2) or more lanes of travel in one direction. Chapter 15 of the HCM provides guidance for determining the performance of Two-Lane Highways, defined as roadways where passing maneuvers take place in the opposing lane of traffic and where segments are in excess of two miles from the nearest signalized intersection. Chapter 15 was recently amended by the National Cooperative Highway Research Program (NCHRP) and calculations for the LOS of two-lane highways were performed using the methodology from their findings.

Chapter 12 of the HCM states that multilane highways can be characterized by three performance measures. Each of the three measures are indicators of how well traffic is being accommodated by the multilane highway segment. The three measures are listed below.

- Density in passenger car per mile per lane
- Space mean speed in miles per hour

- Ratio of demand flow rate to capacity (v/c)

Exhibit 12-15 from the HCM visually depicts the ranges of the density of the multilane highway that determines the LOS. This is illustrated below.

Table 25-5. LOS Criteria for Multilane Highway Segments

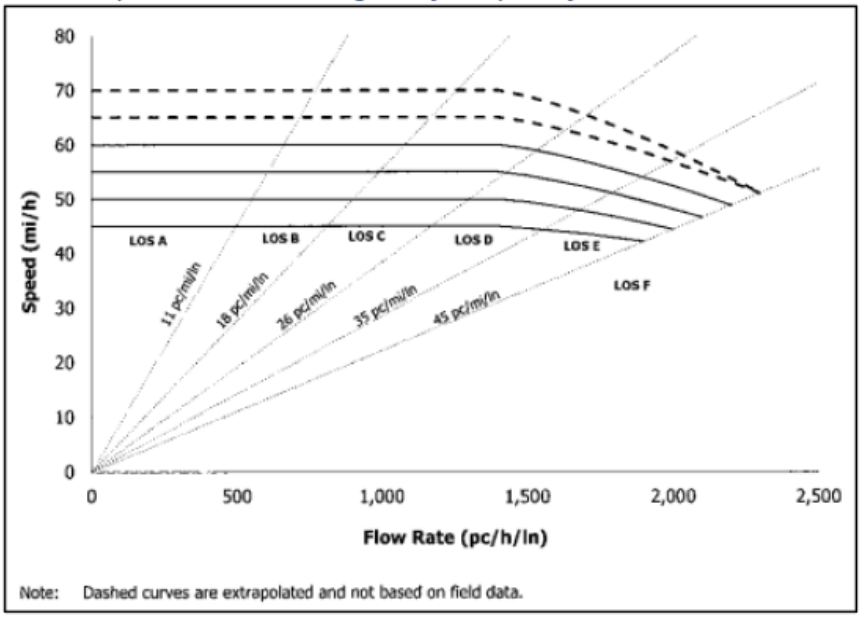
[Taken from Chapter 12 of the Highway Capacity Manual 6th Edition (HCM)]

LOS	Density (pc/mi/ln)
A	≤11
B	>11–18
C	>18–26
D	>26–35
E	>35–45
F	Demand exceeds capacity OR density > 45

Exhibit 12-17 from the HCM graphically represents the speed of the passenger car verses flow rate of the multilane highway segment. This graphic can be seen below.

Graphic 25-3. LOS Criteria and Speed-Flow Curves for Multilane Highway Segments

[Taken from Chapter 12 of the Highway Capacity Manual 6th Edition (HCM)]



Two-lane highway LOS calculations were recently updated within Highway Capacity Software (HCS) 7 based on new studies performed by the NCHRP and published in the *"Improved Analysis of Two-Lane Highway Capacity and Operational Performance (2018)"*. Calculating the LOS for a two-lane highway includes the analysis of the "Follower Density" (FD). FD is calculated by examining the percent follower in the analysis direction and multiplied by the ratio of the flow rate vs. average speed in the analysis direction. This formula is illustrated below in Graphic 25-4. When calculated, the LOS can be determined by comparing the FD value received to the range of values for the LOS as seen in Table 25-6 below.

Graphic 25-4. Follower Density Equation

[Taken from "Improved Analysis of Two-Lane Highway Capacity and Operational Performance (2018)"]

Follower density, for use with Table F-35 is calculated as follows.

$$FD = \frac{PF}{100} \times \frac{v_d}{S} \quad \text{(F-25)}$$

where:

FD = follower density in the analysis direction (followers/mi),
PF = percent follower in the analysis direction,
v_d = flow rate in the analysis direction (veh/h), and
S = average speed in the analysis direction (mi/h).

Table 25-6. Follower Density Thresholds

[Taken from "Improved Analysis of Two-Lane Highway Capacity and Operational Performance (2018)"]

Table F-35. Follower Density Thresholds

LOS	Follower Density (followers/mi/ln)	
	High-Speed Highways Posted Speed Limit ≥ 50 mi/h	Low-Speed Highways Posted Speed Limit < 50 mi/h
A	≤ 2.0	≤ 2.5
B	> 2.0 – 4.0	> 2.5 – 5.0
C	> 4.0 – 8.0	> 5.0 – 10.0
D	> 8.0 – 12.0	> 10.0 – 15.0
E	> 12.0	> 15.0

Existing Level of Service

Based on the existing traffic volumes and existing roadway characteristics, the existing LOS was calculated. It was assumed that the design hour of the roadway accounts for 10% of the AADT and that the directional distribution is 60% of the combined two-way design hour volume.

As shown in Table 25-7 below, under base conditions all roadways within the Project Area are currently operating as LOS A during the design hour which indicates that there are no capacity problems.

Table 25-7. Existing Traffic Volumes & Characteristics for Two-Lane Highways

Site No.	Route/Road Name	Speed Limit (MI/HR)	Design Hour Volume (V/H)	Opposing Direction Volume (V/H)	Follower Density (FOLLOWERS/MI/LN)	LOS
A	CR-129	55	10	36	0.0	A
B	Fuller Road	55	21	33	0.0	A
C	Lake Road	55	13	6	0.0	A
D	NY-38	55	59	41	0.1	A
E	NY-34	55	184	123	0.9	A
F	Ditmar Road	55	52	35	0.1	A
G	Conger Road	55	2	1	0.0	A
H	Bell Road	55	3	2	0.0	A
I	Follett Road	55	11	7	0.0	A
J	Weatherby Road	55	5	3	0.0	A
K	White Road	55	3	2	0.0	A

Construction Level of Service

To evaluate the impacts that construction of the solar farm will have on the roadway system, roadways within the Project Area were evaluated with the additional construction traffic, which can then be compared to the existing roadway traffic capacity analysis. The previously developed 247 peak hour construction worker trips and 69 equipment delivery trips were added to the existing design hour traffic volumes to develop the total traffic volumes during construction. Table 25-8 below summarizes the HCS outputs for two-lane highways. Refer to Appendix 25-8 for additional information on HCS outputs for two-lane highways.

Table 25-8. Traffic Volumes and Characteristics for Two-Lane Highways During Construction

Site No.	Route/Road Name	Speed Limit (MI/HR)	Design Hour Volume (V/H)	Opposing Direction Volume (V/H)	Follower Density (FOLLOWERS/MI/LN)	LOS
A	CR-129	55	10	36	0.0	A
B	Fuller Road	55	21	33	0.0	A
C	Lake Road	55	29	22	0.0	A
D	NY-38	55	265	247	0.9	A
E	NY-34	55	184	123	0.9	A
F	Ditmar Road	55	52	35	0.1	A
G	Conger Road	55	2	1	0.0	A
H	Bell Road	55	3	2	0.0	A
I	Follett Road	55	11	7	0.0	A
J	Weatherby Road	55	5	3	0.0	A
K	White Road	55	3	2	0.0	A

It is expected that all roadways will continue to operate at LOS A within the Project Area during the construction period. Additional construction related vehicles traveling the roadways will have little impact on the roadways due to the minimal existing demand. Future traffic analysis for the operating condition was not performed since that period is expected to have significantly fewer daily trips than the construction period. The construction period represents the absolute worst case in terms of total traffic volumes. Given that the construction period is not expected to have any traffic impacts, with LOS A at each segment analyzed, Project operation will function equivalent to the pre-construction LOS A.

(3) Route Evaluation - Over-Size Load Deliveries and Roadway Restrictions

In Cayuga County, the NYSDOT has placed large truck restrictions on portions of three roadways:

- NY 90 between I-81 Exit 12 and US 20
- NY 41A between NY 41 and US 20

- NY 38 between NY 96 and US 20

None of these impact truck traffic to/from the Site.

As mentioned at the beginning of this Exhibit, no bridge weight limits were identified within the vicinity of the Project Area that construction vehicles would utilize. Turning template diagrams for trucks are contained in Appendix 25-9. The roadway system is adequate to accommodate oversize and overweight vehicles without additional mitigation. If a proposed oversize/overweight route is not feasible, then the condition and load rating of the roadway will be checked during the haul route evaluation. Should the review find reason for concern, the structure will be temporarily reinforced for the oversize/overweight Component delivery or a different route will be utilized. No other improvements are necessary to accommodate oversize/overweight vehicles that will be used.

(4) Measures to Mitigate for Impacts to Traffic and Transportation

Transit and School Busing – The Applicant will coordinate with local school districts to avoid impacts and delays to bus routes throughout the construction process. Local school districts will be advised in advance of any road closures so that alternatives routes can be developed. It is expected that overall impacts to the local school districts busing program will be minimal and no significant mitigation exceeding ongoing coordination is recommended.

Emergency Response – The Applicant will coordinate with local emergency service providers throughout the construction process so that they are aware of any sporadic road closures (if necessary) that may impact their routing decisions during the duration of the closure. They will also be kept informed of expected Site work and number of workers so that emergency response can be planned for in advance. It is expected that overall impacts to the local emergency service providers will be minimal and no significant mitigation exceeding ongoing coordination is recommended.

Traffic Impacts – It is expected that all roadways will operate at LOS A within the Project Area during the peak hour of the day. The results of the traffic analysis indicate that no new traffic control devices (such as road signage) are required and that there will be minimal impacts to the traveling public during the peak construction period and virtually no impact to the traveling public during off-peak periods. Thus, measures such as timing restrictions are not required. No capacity improvements or roadway upgrades are required to accommodate the construction of the

proposed facilities. Construction of the Project will comply with the substantive requirements of the Town of Conquest and Cayuga County local laws and ordinances as they relate to transportation and construction vehicle deliveries. The Applicant anticipates entering into road use agreements with the Town and County concerning repairs to any roads damaged by construction of the Project. If road use agreements cannot be obtained, the Applicant commits to repairing any damage it may cause to roads as part of the Article 10 certificate conditions. If any overweight/oversize permitting and road feasibility issues arise, local permitting will be pursued subject to the certificate conditions adopted by the Siting Board, as described below in Section 25(d)(5).

(5) Road Use and Restoration Agreements

The Applicant has met with local officials in the Project Area. During these meetings the Applicant has briefed the local and county representatives about the Project, construction operations, the application process, and discussed road use agreements/permits. No major road projects or future plans were identified by any of the representatives.

The Applicant anticipates that the large dimension and weight of several Components (switchyard control rooms, substation poles, GSU, etc.) will require special hauling permits and/or road use agreements along the Project haul routes. The types of NYSDOT and County permits required depend on the characteristics of the vehicle and its cargo, number of trips, distance traveled, and trip duration. NYSDOT defines oversize/overweight vehicles as those exceeding the dimensions provided in Table 25-9 below (e.g., overall, inclusive of load, bumpers, etc.).

Any vehicle exceeding 16 feet wide, 160 feet long, 15 feet 11 inches high or 199,999 pounds will require a superload permit. The application/permit process can be done online through the NYSDOT website. The fee structure for the superload permit is also published online and is cumulative based on load configuration and weight.

Table 25-9. NYSDOT Oversize/Overweight Vehicle Dimensions

		State Highway	Qualifying or Access Highway
A.	Width of Vehicle, inclusive of load	8 feet	8 feet, 6 inches
B.	Height of vehicle from underside of tire to top of vehicle, inclusive of load	13 feet, 6 inches	13 feet, 6 inches

Table 25-9. NYSDOT Oversize/Overweight Vehicle Dimensions

		State Highway	Qualifying or Access Highway
C.	Length of single vehicle inclusive of load and bumpers	40 feet	40 feet
D.	Length of a combination of vehicles inclusive of load and bumpers	65 feet	Unlimited
E.	Length of a single trailer	48 feet	53 feet
F.	Length of a single twin trailer	28 feet, 6 inches	28 feet, 6 inches

Prior to construction, the Applicant and/or contractor will obtain all necessary permits from the NYSDOT. Road use agreements with the Town of Conquest and Cayuga County will be sought, as applicable. The final transportation plan will be provided to the Secretary or in the Compliance Filing prior to construction, and will specify the local, County, and State roads to be used as delivery routes (both within and outside of the Project Area) by construction/transportation vehicles.

The Applicant is requesting in this Application delegation by the Siting Board to NYSDOT for any required NYSDOT highway work/use/hauling permits. The Applicant plans to enter into road use agreements with the Town of Conquest and Cayuga County for the installation of collection lines, as applicable. Exhibits 31 and 32 provide a further discussion of any potential approvals. As noted above, if road use agreements cannot be obtained, then the Applicant will commit to repair any damage to roads that it causes as part of the Article 10 certificate conditions.

In accordance with the anticipated road use agreements and applicable certificate conditions, prior to construction, a survey of the local roadways used to access the Project Area will be carried out by appropriately qualified engineers (and NYSDOT, County Highway, and Town Highway Departments as available) to assess and document current existing road conditions. Any extraordinary damage or over-run caused by vehicles during the construction period is to be documented and repaired. The Applicant will repair damage done to roads affected by heavy equipment or construction activities thereby restoring the affected roads to a condition equal to or better than documented by the pre-construction survey. Roads will also be maintained in good working order during construction and operation. The Project Sponsor will establish a road use

reparation fund or purchase a reparation bond as financial assurance that the roads damaged by the activities of the Project's construction will be repaired.

25(e) Public Transportation, School Bus Routes, Aeronautical and Military Operations

The Project is designed to avoid and minimize impacts to mass transit, and aeronautical and military operations. Mass transit systems, aside from some bus routes, are limited within the Project Study Area. Therefore, impacts are not anticipated, and additional minimization measures will not be required.

As noted above, the Applicant will coordinate with local school districts to avoid impacts and delays to bus routes throughout the construction process.

The Federal Aviation Administration (FAA) evaluates potential impacts on air navigation for proposed structures that exceed certain criteria, such as heights greater than 200 feet above ground level and in close proximity to public use and military airports (14 Code of Federal Regulations [CFR] §77.9(a-e)). The proposed facility will not trigger notification to the FAA. There were no airports or heliports identified within the Study Area. There is one airport in the general area, Whitford's Airport which is located approximately 5 miles southeast of the Site, east of NY Route 34, at 3027 Ditmar Road in Weedsport.

25(f) Federal Aviation Administration Review

As part of the construction of the Project, no construction or alteration is proposed that requires a Notice of Proposed Construction to be submitted to the administrator of the FAA in accordance with 14 CFR, Part 77 pursuant to 49 United States Code, Section 44718.

25(g) Off-Site Improvements

No off-Site improvements are anticipated to be necessary for the Project.

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