MEMORANDUM

To: Planning Commission

From: Austin R. Mitchell, Zoning and Subdivision Administrator *ARM*

CC: Paul Harvey, Community Development Director

Subject: Special Use Permit Request #PL-19-126 (Gladys Road)

Date: September 13, 2019

BACKGROUND: This request is from Ken Niemann with Caden Energix Gladys LLC, agent for Plum Creek Timberlands LP, for a special use permit to construct a solar facility on property zoned Agricultural.

Public hearings scheduled: P/C: September 23, 2019; B/S: November 7, 2019

Location / Election District: Gladys Road, Gladys, VA 24554 / Brookneal Election District

Tax map number(s) / total acreage: 72-A-36 & 72-10-9 / 1,107.7 +/- acres

Magisterial District and Population: Patrick Henry; 7,121 in 2010 increasing to 7,384 by 2020.

Owner/ Applicant contact information: Caden Energix Gladys LLC, 11 South 12th Street, Suite 317, Richmond, VA 23219; 703-801-0412.

Comments: Caden Energix Gladys LLC proposed to construct, operate, and maintain a 60MW PV solar energy facility on approximately 660 acres of the property. The solar facility would contain approximately 181,600 photovoltaic (PV) solar panels and the amount of energy generated over the course of one year would be enough to power approximately 12,000 single-family homes. The solar facility would connect to an existing Dominion Virginia Power 69kV transmission line that runs through the property. A new, small 3-breaker substation would be constructed on-site, but no off-site electric lines or structures would be required. The project includes an approximate 100-foot setback on all sides and would be enclosed with a fence. The applicant states that the project would be adequately screened from any neighboring properties. A decommissioning plan is included in the request. The PEC met on September 3, 2019 to discuss the plan. Comments from that meeting are included in this packet.

DISCUSSION:

Land Use/Floodplain: The area is mostly rural in nature. Zoning in the vicinity is Agricultural. A portion of the property does lie within the FEMA 100-yr. floodplain, however no improvements are proposed in the 100-yr. floodplain.

Access and Traffic: The project is proposed to be accessed from an existing entrance onto Gladys Road (Route 699 – avg. daily traffic 1300 vehicles). A Traffic & Route Evaluation Study is included with the application. The study concludes that the roadway facilities have the available capacity to accommodate traffic both during construction and operation/maintenance activities.

Utilities: No occupied structure is proposed, therefore water and sewer facilities are not applicable.

Conditions: The Planning Commission may recommend, and the Board of Supervisors may impose any reasonable conditions upon approval of the permit. Staff recommends the following conditions:

1. The applicant utilizes the site in conformance with the use described in the narrative and shown on the site plan submitted with this request;

2. The applicant show a vegetative buffer on the final site plan to adequately screen the site from any adjoining properties and the County inspect the vegetative buffer and require further screening if the County determines additional screening is necessary; and
3. The applicant follow the decommissioning plan, including providing a performance bond of other agreed-upon secured funding source, as approved by the Board of Supervisors.

Comprehensive Plan: Property is located in an area designated as rural.

RECOMMENDATION: This request can be generally consistent with the Comprehensive Plan if the Commission finds that there is a public need or convenience provided by the facility. If the Commission chooses to recommend approval, the motion should include a determination that the development of the project is substantially in accord with the Comprehensive Plan under Section 15.2-2232 of the Code of Virginia.

For reference: Excerpts from Code of Virginia -Zoning

§ 15.2-2200. Declaration of legislative intent.

This chapter is intended to encourage localities to improve the public health, safety, convenience and welfare of its citizens and to plan for the future development of communities to the end that transportation systems be carefully planned; that new community centers be developed with adequate highway, utility, health, educational, and recreational facilities; that the need for mineral resources and the needs of agriculture, industry and business be recognized in future growth; that residential areas be provided with healthy surroundings for family life; that agricultural and forestal land be preserved; and that the growth of the community be consonant with the efficient and economical use of public funds.

§ 15.2-2283. Purpose of zoning ordinances.

Zoning ordinances shall be for the general purpose of promoting the health, safety or general welfare of the public and of further accomplishing the objectives of § 15.2-2200. To these ends, such ordinances shall be designed to give reasonable consideration to each of the following purposes, where applicable: (i) to provide for adequate light, air, convenience of access, and safety from fire, flood, crime and other dangers; (ii) to reduce or prevent congestion in the public streets; (iii) to facilitate the creation of a convenient, attractive and harmonious community; (iv) to facilitate the provision of adequate police and fire protection, disaster evacuation, civil defense, transportation, water, sewerage, flood protection, schools, parks, forests, playgrounds, recreational facilities, airports and other public requirements; (v) to protect against destruction of or encroachment upon historic areas; (vi) to protect against one or more of the following: overcrowding of land, undue density of population in relation to the community facilities existing or available, obstruction of light and air, danger and congestion in travel and transportation, or loss of life, health, or property from fire, flood, panic or other dangers; (vii) to encourage economic development activities that provide desirable employment and enlarge the tax base; (viii) to provide for the preservation of agricultural and forestal lands and other lands of significance for the protection of the natural environment; (ix) to protect approach slopes and other safety areas of licensed airports, including United States government and military air facilities; (x) to promote the creation and preservation of affordable housing suitable for meeting the current and future needs of the locality as well as a reasonable proportion of the current and future needs of the planning district within which the locality is situated; and (xi) to provide reasonable protection against encroachment upon military bases, military installations, and military airports and their adjacent safety areas, excluding armories operated by the Virginia National Guard. Such ordinance may also include reasonable provisions, not inconsistent with applicable state water quality standards, to protect surface water and ground water as defined in § 62.1-255.

CADEN ENERGIX GLADYS LLC

GLADYS SOLAR PROJECT
CAMPBELL COUNTY, VIRGINIA

APPLICATION for SPECIAL USE PERMIT
LETTER OF INTENT

Date: August 14, 2019

Submitted by:
Caden Energix Gladys, LLC
11 South 12th Street
Suite 317
Richmond, VA 23219

Caden Energix Gladys LLC is a limited liability company that is indirectly owned by Caden Energix LLC. Caden Energix Gladys LLC respectfully requests approval of a Special Use Permit to construct, operate and maintain a 60MW PV solar energy facility off Gladys Road approximately 4 miles SW of Gladys. We submit this request on behalf of the property owner, Weyerhaeuser Company/Plum Creek Timberlands, LP.

The project site is located on two parcels totaling 1,107.7 acres and is currently zoned Agricultural. The site location was carefully selected with specific evaluation criteria, including topography, current land-use, and an in-depth evaluation of the local electric transmission and distribution system.

Caden Energix LLC will provide the financial backing and technical expertise to ensure the success of the Gladys Solar project. We are pleased to have the opportunity to provide Campbell County and Virginia with a long-term source of clean, renewable energy and its economic and environmental benefits. Thank you for your consideration, and we look forward to working together with the County to develop, permit, and construct the project.

Regards,

Kenneth Niemann
SVP Development
Caden Energix LLC

Weyerhaeuser

SUSTAINABLE FORESTRY INITIATIVE SFI 00008

Corporate Headquarters • 220 Occidental Ave South • Seattle, WA 98104

May 6, 2019

Campbell County
Community Development Department Planning, Zoning, & Subdivision Office
85 Carden Lane
P.O. Box 100
Rustburg, VA 24588

Re: Caden Energix Special Use Permit Application

To whom it may concern:

Weyerhaeuser Company, as the owner of the following parcels in Campbell County, Virginia, does hereby authorize Caden Energix Gladys LLC, and any of its agents, to file a Special Use Permit application with Campbell County, Virginia for a PV solar electric facility.

Tax map parcels:

- 72-A-36. 649 acres
- 72-10-9. 459 acres

Sincerely,

Anthony Chavez
Senior Manager, Renewable Energy

CADEN ENERGIX GLADYS LLC

GLADYS SOLAR PROJECT
CAMPBELL COUNTY, VIRGINIA

APPLICATION for SPECIAL USE PERMIT
SUPPORTING INFORMATION

Property Owner: Weyerhaeuser/Plum Creek Timberlands, LP
Tax ID #: 72-A-36 and 72-10-9

Date: August 14, 2019

Project Description

Caden Energix Gladys LLC is proposing to build a 60MWac solar photovoltaic electric farm on two parcels of land located on Gladys Road, Seneca Creek neighborhood, Brookneal district, approximately 4 miles southwest of the town of Gladys. The parcels total 1,107.7 acres; 1) #72-A-36 (649 acres), and 2) #72-10-9 (458.7 acres), and are zoned Agricultural. They are currently used for timber harvesting. Both parcels are owned by Weyerhaeuser Company (dba Plum Creek Timberlands LP). Caden Energix Gladys LLC entered into a solar ground lease agreement with Weyerhaeuser in March 2019 that granted Gladys Solar the exclusive right to proceed with the development of the solar project on the properties and a long-term lease.

The solar farm will connect to an existing Dominion Virginia Power 69kV transmission line that runs E-W through the center of the properties. A new, small 3-breaker substation will be constructed on-site, but no off-site electric lines or structures will be required. Gladys Solar submitted an application for interconnection with PJM Interconnection in April 2019 and was assigned queue #AE2-283.

The Project will have rated capacity of 60MWac and utilize approximately 181,600 photovoltaic (PV) solar panels covering roughly 660 acres. The amount of energy generated over the course of one year is enough to power approximately 12,000 typical central-Virginia homes. The solar panels will be mounted on a single-axis tracking system utilizing galvanized steel frames and extend approximately 8 feet above ground at their full-tilt position. The panels will track the sun during the day; moving from east to west facing as the sun travels. The

project will include associated auxiliary equipment including interconnection and metering equipment, and control and instrument panels. There are approximately 22 pad-mounted DC-to-AC inverters and step-up transformer units (the inverters transform the direct-current produced by the solar panels into alternating current. The output of the inverters is at 600V and is then stepped up to 34.5kV by the transformers. A single 34.5-to-69kV step-up transformer then feeds the Dominion transmission line).

The only building contemplated is a prefabricated shed that will store miscellaneous maintenance equipment.

The site is in a remote area, with natural vegetation and topography which limits visibility from neighboring parcels. The Project designs include an approximate 100-foot setback on all sides, plus additional setbacks and supplemental vegetation in select areas to minimize visual impacts.

The existing site entrance off Route 669 - Gladys Road will be utilized and improved as directed by VDOT.

The Project will be decommissioned in accordance with a plan included with this SUP application and the lease agreement with the property owner. Prior to start of construction, a bond or letter of credit will be posted to protect the landowner and County against decommissioning costs. The land will be return to a condition that will allow for future agricultural uses.

Project Impacts

The project will not use any water in the electric generation process, will generate no air emissions or wastewater, and will produce minimal sound that will not be heard by neighboring residences. There will be no additional burden to the County's infrastructure including roads, water, sewer, schools, fire, police and EMS services.

The Project will operate year-round while generating electricity during the day-light hours only. The electric inverters, which convert the DC current produced by the solar panels to AC current for distribution to the Virginia Power transmission system, will produce noise levels of approximately 60db at a distance of 30 feet. There will not be any outdoor light fixtures operating within the solar farm area except during emergency situations or unplanned maintenance. By design, solar panels absorb sunlight and produce no glare, glint or heat reflection. The solar

panels are non-toxic and non-hazardous and will be designed to withstand winds in excess of 110 MPH. The impervious area is expected to be no greater than 1-2%.

The required erosion-control and storm-water management systems will comply with applicable State and County permit requirements. There will not be any disturbance of wetlands on the properties. Clearing of some of the existing wooded areas will be required. There will be a 6-8' high security fence surrounding the site, with a security gate to allow access to maintenance crews and others as required, including local Fire and EMS. Once the project is operational, it is anticipated that maintenance crews will visit the site once or twice each month, otherwise there will be no other regular vehicular traffic.

The project will comply with all applicable building, electrical, fire-protection and safety codes. Setbacks, buffering and landscaping will meet County zoning and related ordinances and will adequately screen the site from any neighboring properties.

A traffic study is included with this application. A temporary increase in vehicle traffic during the 8 to 10-month construction period is anticipated. However, traffic patterns are not anticipated to be impacted. Additionally, there will be no significant increase to traffic once the facility is operational, with 4-6 vehicles anticipated to visit the site on a monthly basis.

Caden Energix Gladys LLC will develop, construct, own and operate the solar project. Subject to receiving all required local, State and Federal permits and approvals, construction is expected to take 8-10 months. The anticipated service life of the Project is 35 years. The construction of the project will not prevent any adjacent land from being developed in accordance with the adopted land use plans or zoning ordinances.

Preliminary Site Plan

Timmons Group has prepared a preliminary site plan depicting the proposed layout of the Gladys Solar project and dated July 23, 2019. The site plan provides the location of the site entrance, preliminary layout of the solar panel arrays, point of interconnection with the existing transmission line, and various proposed setbacks. Several streams are located on the property which will be avoided and protected as part of permitting and design.

Compliance with Zoning Ordinance

This solar project will comply with the purpose of the County zoning ordinance which allows the owners of land zoned A-1 (Agricultural) to derive additional income from their land in a manner consistent with surrounding uses. The proposed project is a low-impact development activity that will not harm the land for future use. The solar farm will be fully dismantled and all equipment, including foundations, wiring, and panel mounting beams will be removed from the property the end of the project life. Upon restoration of the property, the land can be utilized for agriculture and related uses, thus retaining its characteristics and "… *protecting existing and future farming operations*…" which is the purpose of the A-1 zone or district.

Section 19.6-67(A) of the County code also states that the A-1 zone or district "*is intended to minimize the demand for unanticipated public sewer, public water, and new roadways, by reducing development densities and discouraging large-scale development*". The project will require no public sewer and water services, nor the construction of new roadways. The project site is well screened along Gladys Road and surrounding areas.

Compliance with Comprehensive Plan

The Property is designated as Rural in the Campbell County Comprehensive Plan. The characteristics of Rural area includes farming, forestry, and low-density residential. The County has no plans to extend public water or sewer lines into the rural areas and access is limited. The Rural designation indicates these areas are expected to remain rural for the foreseeable future and growth is anticipated to be slow. By permitting certain uses with a SUP, the County can carefully control how properties are developed.

Because the SUP is for a "public utility," under Section 15.2-2232 of the Code of Virginia a Planning Commission determination that development of the Project would be substantially in accord with the Plan is required. That section of the Code provides that any "*public utility facility or public service corporation facility ... whether publicly or privately owned, shall [not] be constructed, established or authorized, unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the [applicable Planning Commission] as being substantially in accord with the adopted comprehensive plan or part thereof.*"

The Plan provides that the County's Board of Supervisors "encourages … private companies" to take "a proactive approach to improve the facilities and services under [their] control" and that "Campbell County will continue to work with the appropriate companies to ensure an acceptable level of service for businesses and individual citizens of the County". Furthermore, although the Plan does provide that "rural areas are expected to remain so for the foreseeable future [and] … growth in rural areas is very slow by design," the Plan also provides that "there may be certain isolated industries that rely on local raw materials such as stone and timber…industrial zoning can be appropriate on a limited basis, if it is not in conflict with the rural nature of the surrounding area" [p. 4-5]. The Project is a utility facility that is best compared to an "isolated" industry relying on the local raw material of sunlight and that would not conflict with the rural nature of the surrounding area. As such, the proposed Project substantially complies with the Plan.

The project will provide up to approximately 150 jobs during the 8-10-month construction phase, additional full-time employment to maintain the solar farm over the life of the project, and ongoing income during the life of the project that will inure to the benefit of Campbell County. The Project will also provide the highest and best economic use of the property. Because of its location, the property is not well suited for other development, such as retail.

The Project will not cause adverse environmental impacts, but instead will provide environmental benefits by reducing air emissions while generating clean, carbon-free electricity.

DEQ Permit-by-Rule

Large-scale solar projects in Virginia less than 150MW require a separate and detailed permit through the Virginia Department of Environmental Quality (DEQ) Permit by Rule (PBR) program. The regulations require detailed information about the project and its potential impact on the environment and provide for public participation. Required pre-construction analyses relating to environmental impacts include natural and cultural resource analyses, natural heritage and scenic resources studies, and mitigation plans (if necessary). There is a requirement for public comment, and DEQ will consult with other state agencies including Natural Resources (such as the Department of Historic Resources, the Department of Conservation and Recreation, and the VDGIF) in its determination of whether an application is complete and whether it meets the requirements of the regulations.

Construction of the Project cannot begin until the PBR is issued by DEQ, and PBR application cannot be filed until the local zoning approvals are completed.

Economic Benefits

The Project represents an initial capital investment of approximately $90 million, and would make a significant economic contribution to Appomattox County:

• Estimated one-time economic impact during construction of about 170 full-time-equivalent jobs and $5 million in associated labor income, and $17 million in economic output.

• Estimated annual economic impact during its ongoing operational phase of approximately 4 full-time-equivalent jobs and $150,000 in associated labor income.

• Significant property tax revenues will be generated throughout the project's operating lifetime. The 60MW Gladys Solar project is expected to contribute in excess of $55,000 per year in property and other taxes to Campbell County over the 35-year life.

Electricity generated by the Project may be purchased by Virginia's utility companies (such as Appalachian Power and Dominion Virginia Power), but due to the Project's connection to the PJM Interconnection System, the power generated is available for purchase by many different customers. Over the past few years, demand for renewable energy has grown dramatically, driven in part by companies with sustainability goals. Well over 100 companies worldwide have made commitments to procure 100% of their electric needs from renewable sources. As these and other companies look for new areas to expand, they are targeting locations with access to renewable energy. The Project will provide the Economic Development Authority of Campbell County the opportunity to attract capital investments and jobs from companies that have a corporate commitment to procuring electricity from renewable energy sources, including high-technology manufacturing and data centers.

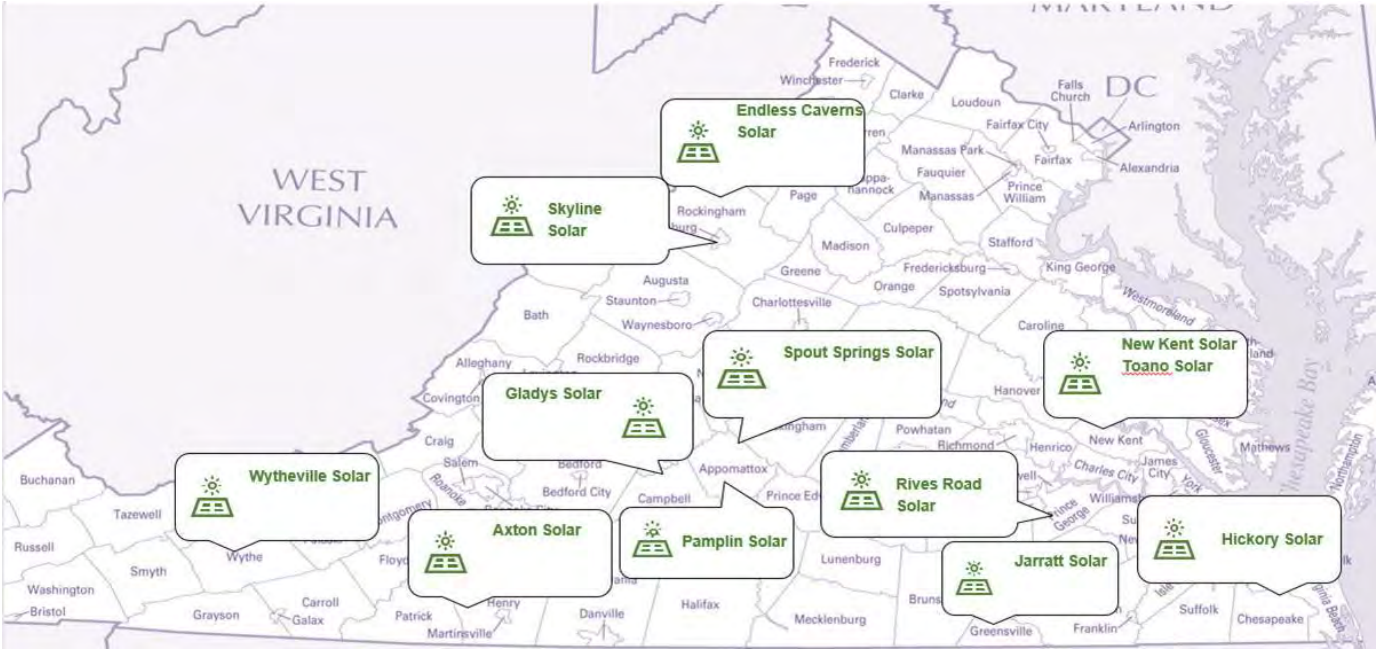
Background on Caden Energix

Caden Energix LLC is a Richmond, Virginia based renewable energy company with over 600 megawatts of utility-scale solar projects in various stages of development in Virginia and the U.S. Caden Energix is developing, constructing, financing, owning and operating its solar projects for the long-term, and as such works to maintain a close partnership with landowners, communities, regulators and lenders. Caden Energix owns a portfolio of nearly 400 megawatts in Virginia

in various stages of development, including 3 projects with a total capacity of 68MW that are about to commence construction (August 2019).

Caden Energix parent company is Energix Renewables, an Israeli publicly traded company and one of the largest renewable energy companies in Israel. It trades on the Tel Aviv Stock Exchange with market value of over $790 million. Energix owns 258 MW of solar and wind projects in commercial operation, 150 MW of projects under construction, and more than 1,000 MW under development in 3 major territories: Israel, Poland, and the United States.

For more information, visit : https://www.cadenenergix.com/



Community Outreach

On June 26, 2019, Caden Energix hosted a community information meeting from 5:30 to 7 PM at the Gladys Community Center/Ruritan Club on Long Island Road. All adjacent and nearby property owners were mailed invitations to the meeting, and notices were posted in the Lynchburg News and Advance and Brookneal Union Star. The meeting was conducted by Kenneth Niemann, SVP, Caden Energix. A total of 6 people attended the meeting, including Paul Harvey and Austin Mitchell. The project was reviewed in detail, including the proposed site plan, utilizing a Power Point presentation and high-resolution projector, and all questions and concerns were thoroughly addressed. Caden Energix agreed to work with one of the adjacent property owners regarding the possible use of some of the leased land for their farming operations. All attendees were encouraged to contact Mr. Niemann with any follow-on questions or concerns.

Gladys Solar Project

Legend

947

701

920

697

Gladys Solar Site

Dominion transmission line

Site entrance

Lambs Church Rd

Marysville Rd

Organ Ln

696

699

Gladys Rd

Gilbert Ln

N

5000 ft

Traffic & Route Evaluation Study

Gladys Solar Project

Campbell County, Virginia

August 9, 2019

Prepared For:

Gladys Solar LLC

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Contact: Scott Dunn, AICP, PTP

1001 Boulders Parkway, Suite 300 • Richmond, VA 23225
(804) 200-6500 phone • (804) 560-1438 fax
www.timmons.com

Traffic & Route Evaluation Study

Gladys Solar Project

Campbell County, Virginia

Prepared For:

Caden Energix Gladys Solar LLC
11 S. 12th Street, Suite 317
Richmond, VA 23219

Prepared By:

Timmons Group
1001 Boulders Parkway
Suite 300
Richmond, Virginia 23225
(804) 200-6500

August 9, 2019

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1 PROJECT OVERVIEW

Timmons Group, at the request of Caden Energix Gladys Solar LLC, completed a transportation assessment for the proposed Gladys Solar Project. This work has been prepared in conjunction with the site's preliminary evaluation to identify any potential issues and recommend solutions. The tasks associated with this assessment included:

- Reviewing existing transportation facilities adjacent to the proposed solar site;
- Documenting existing structures, existing posted and advisory signage and roadway widths, existing roadway geometry and intersection traffic control;
- Compiling available traffic data for the adjacent roadways;
- Analyzing recent crash data along the study area roads;
- Identifying any future planned and/or funded roadway projects surrounding the project site;
- Developing trip generation estimates for the proposed site, both during construction and operation; and
- Identifying potential intersection improvements aimed at addressing operations and safety.

2 EXISTING CONDITIONS

Timmons Group compiled information on the existing roadway conditions for facilities adjacent to the proposed Gladys Solar Project using available aerial imagery and photographs provided by the owner. The proposed 75 MW site is located approximately 4.25 miles west of Gladys in Campbell County, Virginia. The conceptual site layout is shown on Figure 2-1 (all figures are located at the end of the study).

ADJACENT ROADWAYS

Route 699 (Gladys Road; Road A)

Route 699 is a 2-lane undivided, east/west major collector with a posted speed limit of 55 mph in the vicinity of the proposed site. A truck speed restriction of 45 mph is posted along Route 699. Counts from the 2018 VDOT Count Book indicate that Route 699 carries approximately 1,300 ADT; 6% of these are heavy vehicles (i.e. trucks).

Route 699 serves primarily residential and agricultural uses. There is limited commercial activity in the area; it is anticipated that those traveling on Route 699 are primarily residents.

With respect to roadway conditions, travel lanes are approximately 11' wide in either direction and no auxiliary left or right turn lanes are present within the study area. Some locations along the southern portion of the proposed development have sharp curves, however no posted cautionary speeds were identified. The existing roadway has white edgelines and double yellow centerline striping present.

Overall, development in the area is light; however, it should be noted that existing logging operations are present within the study area. These operations are associated with the subject property and factor into the previously cited heavy vehicle traffic percentage; this will ultimately minimize the overall increase of heavy vehicle traffic in the study area.

Eastern Local Road (Potential Secondary Access; Road B)

This is a local, unpaved/gravel road that lies approximately 0.67 miles east of the Route 699/Hone Road intersection and borders the eastern property boundary; on some maps the road is identified as Gladys Road, too. No traffic data is available from the 2018 VDOT Count Book. Based on available information, this road is approximately 14' wide with notable vertical and horizontal curvature at the intersection of Route 699. No posted speed limit data is available for Road B.

Road B serves primarily residential and agricultural uses. It is anticipated that those travelling on this road are residents of the immediate area.

For the purposes of clarity, the report will continue to refer to Route 699 (Gladys Road) as "Road A" and the unpaved local road along the eastern property line as "Road B".

INTERSECTION CONTROL

An existing entrance that is anticipated to serve the proposed site is located approximately 100' west of the Road A/Hone Road intersection. The Road A/Hone Road intersection is unsignalized/stop-controlled.

The Route 699 (Road A)/Road B intersection, which is approximately 0.67 miles (3,540') east of Road A/Hone Road, intersection, is also unsignalized/stop-controlled.

Based on the existing/available ADT numbers above, it is not anticipated that either of these locations currently warrant/require the installation of a traffic signal now, or in the immediate future in conjunction with anticipated construction/operation of the proposed solar facility.

Overall, the existing roadways are acceptable for use by local traffic.

3 TRANSIT

Public transit is not provided in the vicinity of the solar facility, therefore there should be no conflicts.

There are two (2) Campbell County Public Schools that serve residents in the surrounding area – Brookneal Elementary School and William Campbell Combined School. Representatives from Campbell County schools were unable to provide specific bus route and stop location information at this time. No bus stop signage or physical indications were noted along Road A that indicate the presence of a dedicated bus stop.

Based on the site location relative to the aforementioned schools and the lack of signage, the potential for site-generated traffic to interact with Campbell County Public School traffic along Road A is limited.

4 CRASH DATA

Crash data for a five-year period from May 1, 2014 through April 31, 2019 was pulled from the VDOT database.

The data set indicated six (6) crashes occurred within 500' of the project site limits during the five-year study period. Timmons Group mapped all the crashes onto existing aerial photography, shown on Figure 4-1.

Please note, four (4) of the six (6) crashes are a result of the driver running off the road or involved a deer/animal. The crashes were analyzed below by collision type, severity, lighting conditions, surface conditions, weather conditions, and day of week.

Table 1 shows the number of crashes per year by collision type. Deer collisions were the most common crash type during the five-year study period, comprising 50% of all reported crashes.

Table 1: Crash Summary by Collision Type

Collision Type	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	%
Non-Collision	0	0	0	0	1	17%
Fixed Object - Off Road	0	0	1	0	0	17%
Deer	1	1	0	0	1	50%
Other - Animal	0	0	0	0	1	17%
Total Crashes	*1*	*1*	*1*	*0*	*3*	*100%*

Table 2 shows the number of crashes per year by crash severity. During the 5-year study period, there was one (1) fatality, one (1) injury-only crash, and four (4) property damage only crashes. The fatality crash occurred most recently and involved alcohol, therefore the crash was not considered as a reason for a safety improvement. It is important to note that 67% of the collisions resulted in property damage only, reflecting the low-severity of crashes along the high-speed travelways.

Table 2: Crash Summary by Severity

Crash Severity	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	%
Fatal Crashes	0	0	0	0	1	17%
Injury Only Crashes	0	0	1	0	0	17%
Prop. Damage Only Crashes	1	1	0	0	2	67%
Total Crashes	*1*	*1*	*1*	*0*	*3*	*100%*
Persons Killed	0	0	0	0	1	17%
Persons Injured	0	0	1	0	0	17%

Table 3 shows the number of crashes per year by lighting condition. All crashes over the 5-year study period occurred during nighttime hours along a roadway that provides no lighting.

Table 3: Crash Summary by Lighting Condition

Lighting Condition	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	%
Dawn	0	0	0	0	0	0%
Daylight	0	0	0	0	0	0%
Darkness - Road Not Lighted	1	1	1	0	3	100%
Total Crashes	*1*	*1*	*1*	*0*	*3*	*100%*

Table 4 shows the number of crashes per year by surface condition. All of the crashes occurred when the roadway surface was determined to be "dry". In addition, all six (6) crashes occurred while there were no adverse weather conditions in the area (i.e. when it was sunny and clear/cloudy).

Table 4: Crash Summary by Surface Conditions

Surface Condition	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	%
Dry	1	1	1	0	3	100%
Wet	0	0	0	0	0	0%
Total Crashes	*1*	*1*	*1*	*0*	*3*	*100%*

Table 5 shows the number of crashes per year by day of week. Approximately two-thirds of all crashes occurred on a weekend (Friday through Sunday), with Friday and Sunday with the highest number of crashes.

Table 5: Crash Summary by Day of Week

Day of Week	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	Total	%
Monday	0	0	0	0	0	0	0%
Tuesday	0	1	0	0	0	1	17%
Wednesday	0	0	0	0	0	0	0%
Thursday	1	0	0	0	0	1	17%
Friday	0	0	1	0	1	2	33%
Saturday	0	0	0	0	0	0	0%
Sunday	0	0	0	0	2	2	33%
Total Crashes	*1*	*1*	*1*	*0*	*3*	*6*	*100%*

In summary, due to the low volume of crashes over the 5-year period, no safety concerns related to existing roadway conditions are present.

5 SITE ACCESS

Access to the proposed site, for both construction and operations/maintenance is proposed via a single access point on Road A. Primary access for traffic entering/exiting the site lies approximately 100' west of the unsignalized Road A/Hone Road intersection. A potential secondary access point for the eastern portion of the site, identified as Road B, is approximately 0.67 miles east of the unsignalized Road A/Hone Road intersection and will serve limited construction activity, if necessary. The proposed entrance locations are shown on Figure 2-1.

On-site traffic will generally utilize existing and new gravel access roads throughout the site to facilitate construction and subsequent operations/maintenance traffic within the solar project. Temporary staging and assembly areas will be used during the construction period for the storage of construction vehicles and equipment, as well as staging of components of the solar facility. All temporary staging, parking, and assembly areas will be located within the project area boundaries.

EXTERNAL TRAFFIC ROUTES

Based on the existing road network and types of traffic associated with the site, it is anticipated that all construction equipment, aggregate, supplies and general construction traffic will access the site via the primary entrance along Road A. Road A is a collector road that (1) serves predominantly residential and agricultural uses, (2) will provide construction access for deliveries and routine maintenance, and (3) is recommended as an employee entrance/staging access.

6 SITE-GENERATED TRAFFIC

General construction traffic will consist of the following:

- Component deliveries (i.e. solar panels, inverters, concrete trucks, construction equipment, etc.) via single-unit heavy vehicles; and
- Passenger vehicles (pick-up trucks) carrying personnel, tools and minor equipment to and around the construction site.

The following assumptions were used in calculating a truck load estimate for the proposed solar site:

- Approximately 620 developable acres;
- 182,000 total solar panels;
- Approximately 5 linear miles of internal site roadways; and
- An anticipated construction period of 8-10 months –
    - 3-4 months of grading and site preparation;
    - 3-4 months of solar panel installation; and
    - 2 months of mechanical/electrical work and inspection.

Based on the above information and an assumed carrying capacity of 80,000 pounds for a standard tractor trailer (WB-50 or WB-62) and 15 cubic yards/dump truck for gravel, it is estimated that over the 8-10 month construction period, the project will generate a total of approximately 750 truck trips.

Once the 750 truck trips are separated across the three (3) construction phases, site preparation (initial 15% of site-generated traffic), site construction (70% of site-generated traffic), and mechanical/electrical work/inspection (15% of site-generated traffic), it is estimated that the site will generate approximately 5 truck trips/day during site preparation and electrical inspection periods, and up to 10 truck trips/day during solar panel installation.

Construction employees will consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. It is anticipated that there will be an average of 100-150 workers on-site during the construction period with maximum 200 workers for the limited periods. Construction work generally will occur during daylight hours, with non-daylight hour work relating to the completion of critical construction activities that could not be completed during daylight hours. Employees trips are anticipated to generate a maximum of approximately 600 vehicles per day (vpd).

Following construction of the site, during full operation and maintenance of the Gladys Solar project, an average of 2-6 workers will conduct site visits every 2-4 months, which will not generate significant volumes of traffic (i.e. less than 50 vehicle trips per day).

TRAFFIC MITIGATION

Throughout construction of the site, Gladys Solar LLC will coordinate with the representatives from Campbell County and VDOT to determine appropriate transportation management procedures which may include, but are not limited to, traffic control, lane closures, road access restrictions, truck restrictions, and temporary/short-term road closures.

Based on the existing roadway conditions, the locations for the proposed access point, and the available average daily traffic number for the transport roads, the anticipated construction traffic volumes will not exceed available roadway capacities; the roadways should not be significantly impacted by standard construction traffic. It is estimated that the site will generate approximately 5 truck trips/day during site preparation and electrical inspection periods, and up to 10 truck trips/day during solar panel installation.

Construction-related traffic will access the Gladys Solar site via state-maintained roadways and the identified main access point on Road A. Given the existing posted speeds and anticipated slower entering/exiting heavy vehicle traffic speeds, temporary traffic control (TTC) measures are encouraged. It is recommended that TTC-63.1 (Logging Operations) of the *Virginia Work Area Protection Manual* be referenced for traffic mitigation procedures along Road A; refer to Figure 6-1 for the control plan and associated notes. Pertinent signage should be installed prior to the site preparation work and removed when mechanical/electrical work/inspections begin. It is not anticipated that daily vehicular traffic following construction will disrupt local traffic flows during normal peak hours.

Since Road A is a major collector, it is recommended that traffic entering and exiting the site predominately occur during off-peak hours (outside of the AM and PM peak hour), to maintain local travel conditions for surrounding residents and possible bus routes along the corridor.

Outside of the previously noted mitigation efforts, should a traffic issue arise during construction, Gladys Solar LLC will work the County and VDOT to appropriately address the specific concern.

7 CONCLUSIONS

Based on our review of the compilation of available data relating to the site, existing conditions, and estimated traffic, the following is offered:

- The proposed 75 MW Gladys Solar site is located southwest of Gladys in Campbell County, VA.

- Truck traffic associated with the site is estimated to range from 5 trucks/day (during the site preparation and electrical/inspection stages) to 10 trucks/day during the peak construction period.

- Construction employee traffic associated with the site is estimated to range from 100-125 vehicles per day (vpd), with a maximum of 200 vpd during the construction period.

- The amount of traffic generated by the site is not sufficient to meet VDOT's 5,000 ADT threshold for the requirement of traffic impact study.

- Access to the site will be available via a main entrance off of Route 699 (Road A), with a potential secondary access to the east (Road B) that would support limited construction traffic.

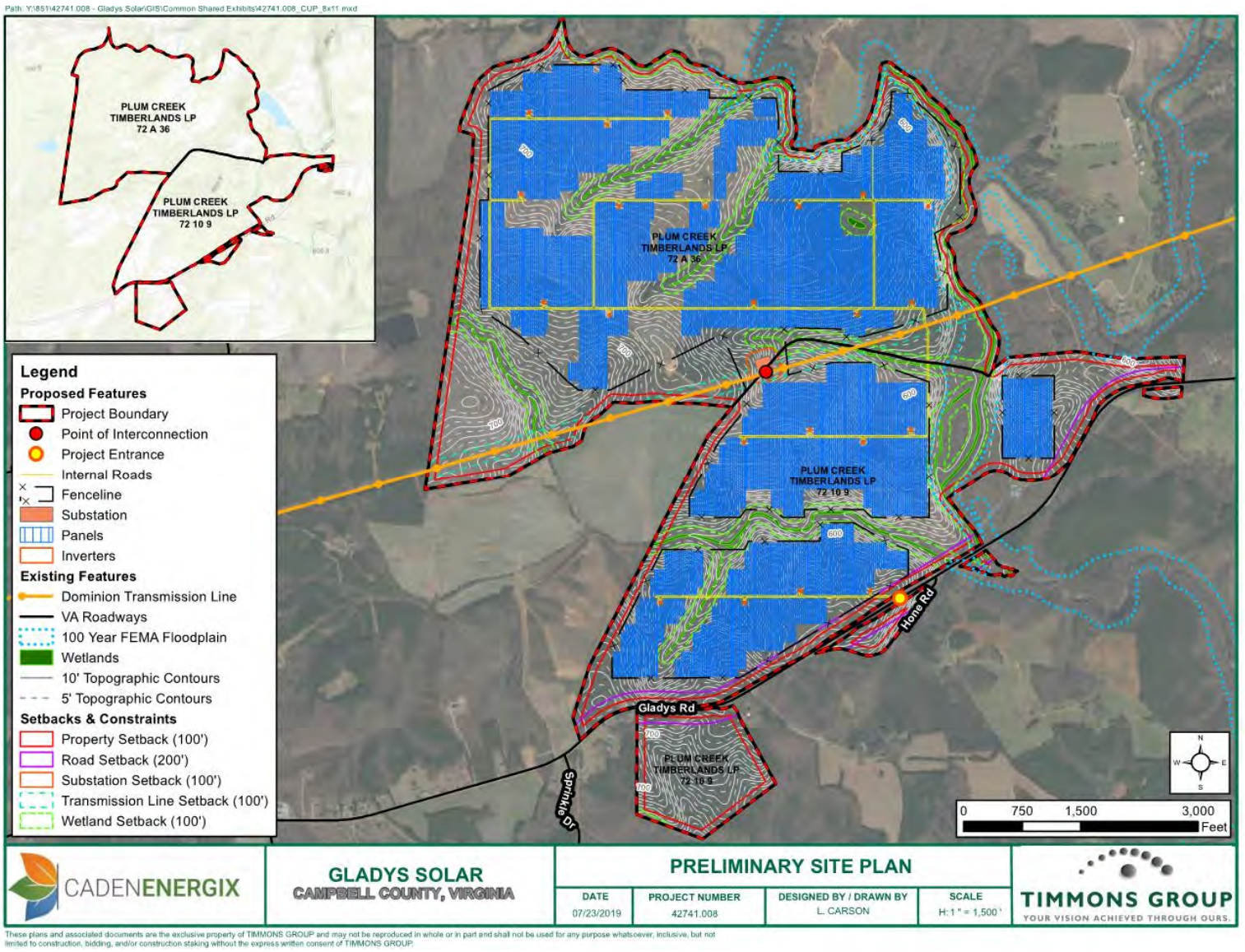
- Road A has the available capacity to accommodate site generated traffic, both during construction and operations/maintenance activities based on existing ADTs.

- Road B has approximately 14' of gravel travelway and is not recommended for significant amounts of through traffic and heavy vehicles. It is recommended that access to Road B be restricted to construction employees/site equipment staging.

- Road A is functionally classified as a major collector road. While the pavement appears to be in good condition, there is the possibility that the pavement cross section is not designed to accommodate of heavy vehicle traffic.

- Baed on the 5-year crash history, the low volume of crashes do not raise safety concerns related to the existing roadway conditions.

- Assuming site-traffic is focused on Road A, no improvements are necessary/anticipated to accommodate site-generated traffic. However, it is recommended that temporary traffic control measures are in place for the duration of the site preparation/construction phase.



N

NOT TO SCALE

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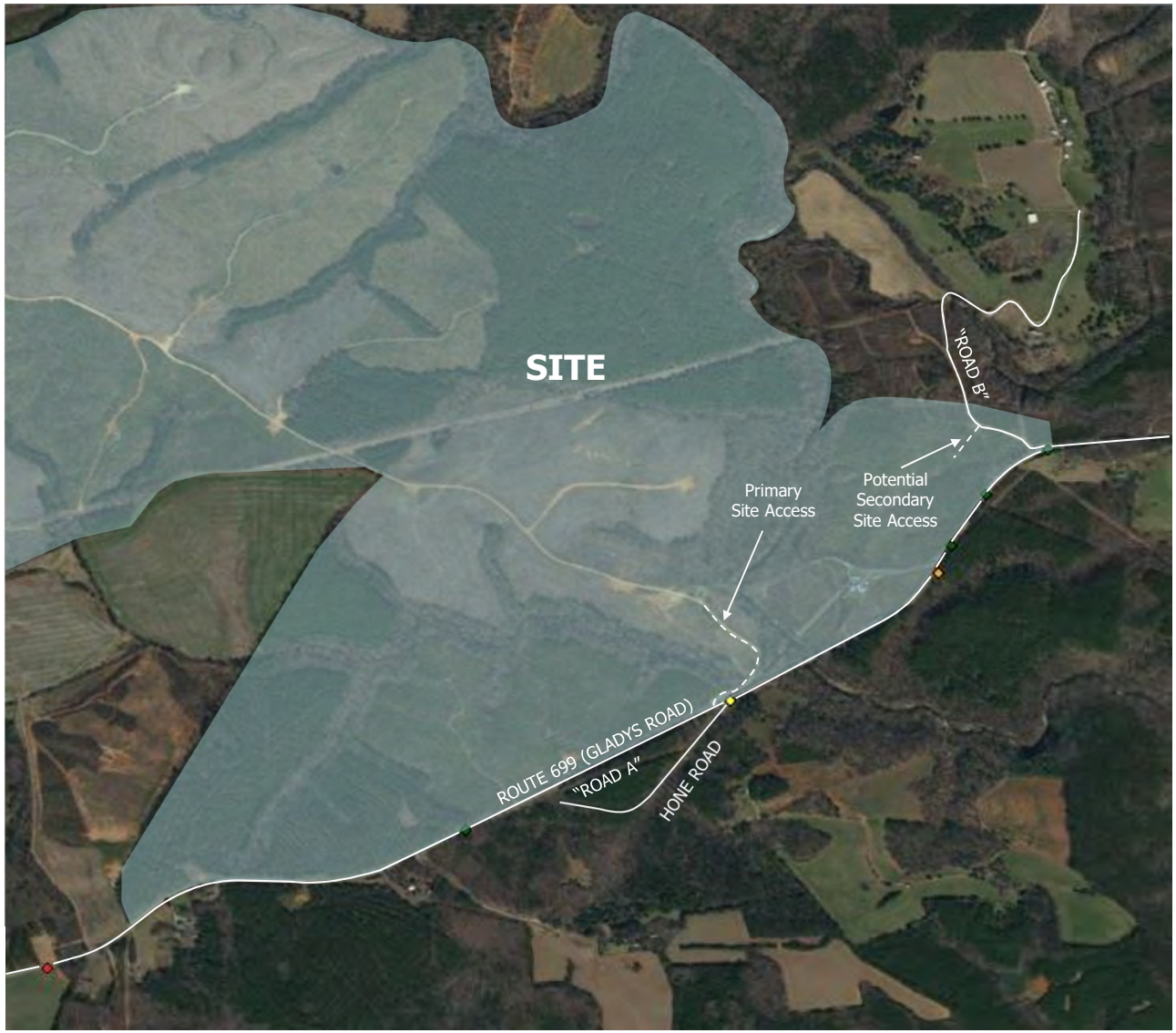
Conceptual Site Layout
Dragonfly Solar Project
Campbell County, Virginia

Figure
2-1



NOT TO SCALE

LEGEND – Crash Severity:

- K. Fatal Injury
- A. Ambulatory Injury
- B. Visible Injury
- C. Non-visible Injury
- D. PDO Property Damage Only

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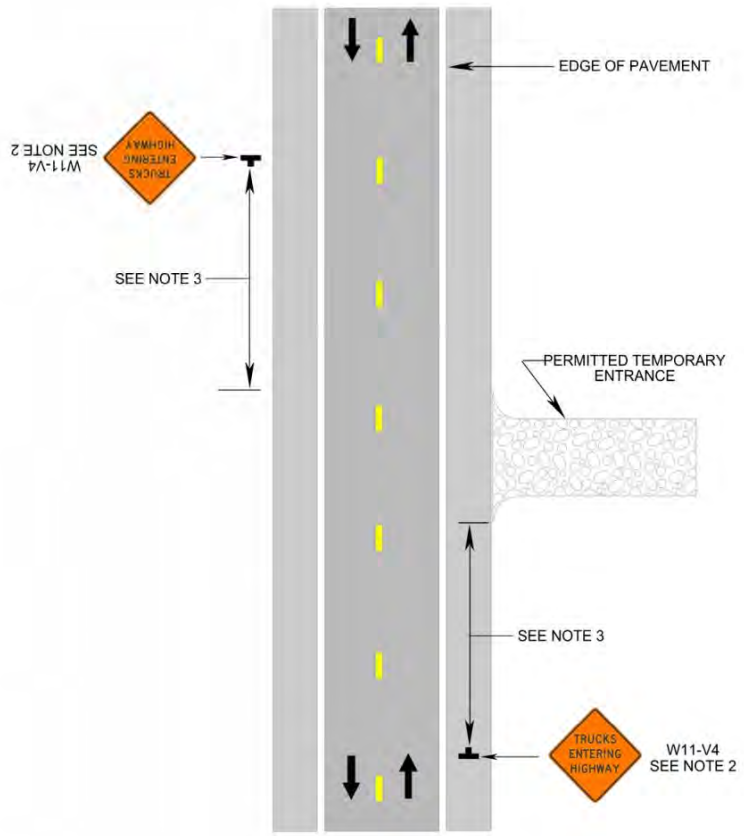
5-Year Crash Data Summary Map
Gladys Solar Project
Campbell County, Virginia

Figure
4-1

Logging Operations
(Figure TTC-63.1)



Typical Traffic Control
End of Day Signing for Surface Treatment,
Slurry Seal and Latex Emulsion Treatment Operations[1]
(Figure TTC-64.0)

NOTES

Standard:

1. **LOOSE GRAVEL (W8-7) signs shall be installed on surface treated roadways and shall be removed when the roadway has been swept or loose gravels have been removed from the roadway.**
2. **NO CENTER LINE (W8-12) signs shall be installed whenever the centerline has been obliterated or until permanent pavement markings have been installed. The sign shall be installed in both directions when the centerline is not present. In addition, NO CENTER LINE signs shall be installed every mile if the unmarked area is less than 3 miles, or every 2 miles if the unmarked area is longer than 4 miles.**
3. **A DO NOT PASS (R401) sign shall be used when the centerline has been obiliterated or until permanent pavement markings have been installed. The DO NOT PASS sign shall be installed after the NO CENTER LINE sign and their sign stand shall be supported with a sand bag weighting approximately 25-pounds on each leg or two (2) drum collar weights positioned on the center of the sign stand. Thereafter, the DO NOT PASS sign installed every mile if the unmarked area is less than 3 miles, or every 2 miles if the unmarked area is longer than 4 miles.**
4. **Signs shall be post-mounted at locations after 72 consective hours of non-work activities.**
5. **If temporary construction or permanent pavement markings cannot be installed in accordance with Road and Bridge Specification 704, then yellow flexible temporary pavement markers (FTPMs) spaced at 20-foot centers for two-way traffic shall be placed along the centerline for lane division. No edge markers will be required.**

Guidance:

6. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, 500'-800' where the posted speed limit is greater than 45 mph.*

Option

7. Only traffic control signing for surface treatment/slurry/latex emlusion treatment operations is shown. Other traffic contro; devices may be used for the control of traffic through the work area.
8. The advanced warning signs shown may also be used on multi-lane roadways, replacing the NO CENTER LINE signs with UNMARKED PAVEMENT AHEAD (W8-V4) signs and adding a ROAD WORK AHEAD (W20-1) sign as the first advanced warning sign.

1: Revision 1 – 4/1/2015

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TTC-63.1 Logging Operations
Gladys Solar Project
Campbell County, Virginia

Figure
6-1

Gladys Solar Project

Campbell County, Virginia

Decommissioning Plan

Prepared for:

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Prepared by:

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August 8, 2019

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1.0 Decommissioning Plan

1.1 General

The following provisions are intended to ensure that facilities are properly removed after their useful life. The plan includes provisions for removal of all structures and foundations, restoration of soil and vegetation, and a plan ensuring financial resources will be available to fully decommission the site. The Contractors shall comply with requirements of all permits during the decommissioning process.

1.2 Decommissioning and Reclamation

At the end of commercial operations, or when the facility has not produced electricity for a continuous period of twelve months, the Owner will be responsible for removal of all above ground equipment and roads and the equipment pad foundations found at the substation to a depth of 36". The owner will restore and reclaim the site to pre-construction topography and topsoil quality to the extent practical, for the access roads. The Owner reserves the right to extend the Project instead of decommissioning at the end commercial operations with landowner permission and upon obtaining all necessary permits. If the Owner seeks to extend the life of the Project, they will decide whether to continue operation with existing equipment or to retrofit solar panels and power system with upgrades based on new technologies.

Decommissioning includes removing the solar panels, solar panel racking, steel foundation posts and beams, inverters, transformers, overhead and underground cables and lines, equipment pads and foundations, equipment cabinets, and ancillary equipment. The civil facilities, access road, security fence, and any drainage structures are included in the scope. Standard decommissioning practices would be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements.

After all equipment is removed, any holes or voids created by poles, concrete pads and other equipment will be filled in with soil to the surrounding grade and seeded with a previously approved seed mix. All access roads and other areas compacted by equipment will be de-compacted to a depth of 18 inches from finished grade prior to fine grading and seeding. This may include re-vegetation as meadows, returning the site to use consistent with this Decommissioning Plan, or re-development of the land for other beneficial uses, based on consultation with the landowner.

1.3 List of Decommissioning Activities

1.3.1 Timeline

Decommissioning is estimated to take 30 to 40 weeks to complete and the decommissioning crew(s) will ensure that all equipment and materials are recycled or disposed of properly.

1.3.2 Removal and Disposal of Site Components

The removal and disposal details of the site components are found below.

Modules: Modules will be inspected for physical damage, tested for functionality, and disconnected and removed from racking. Functioning modules will be packed and shipped to an offsite facility for reuse or resale. Non-functioning modules will be packed, palletized and shipped to the manufacturer or a third party for recycling or disposal.

Racking: Racking and racking components will be disassembled and removed from the steel foundation posts, processed to appropriate size, and sent to a metal recycling facility.

Steel Foundation Posts: All structural foundation steel posts will be pulled out to full depth, removed, processed to appropriate size, and shipped to a recycling facility. During decommissioning, the area around the foundation posts may be compacted by equipment and, if compacted, the area will be de-compacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent with meadow or woodland uses.

Overhead and Underground Cables and Lines: Underground cables and conduits contain no materials known to be harmful to the environment. As part of the decommissioning of the project, all cable and conduit buried deeper than 36 inches, if any, will be left in place and abandoned. Topsoil will be segregated and stockpiled for later use prior to any excavation and the subsurface soils will be staged next to the excavation. The subgrade will be compacted to a density of approximately 90 percent of Standard Proctor density. Topsoil will be redistributed across the disturbed area. Overhead lines will be removed from the project and taken to a recycling facility.

Inverters, Transformers, and Ancillary Equipment: All electrical equipment will be disconnected and disassembled. All parts will removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Owner's sole discretion, consistent with applicable regulations and industry standards.

Equipment Pads and Ancillary Foundations: Topsoil will be removed from an area surrounding the foundation and stockpiled for later use/replacement, as applicable. Foundations will be excavated to a depth sufficient to remove all conduits, cables, aggregate, and concrete to a depth of 36 inches below grade. The remaining excavation will be filled with clean subgrade materials of quality comparable to the immediate surrounding area. All unexcavated areas compacted by equipment used in decommissioning will be de-compacted in a manner to adequately restore the topsoil and sub-grade material to a density of approximately 90 percent of Standard Proctor density. All materials will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the owner's sole discretion, consistent with applicable regulations and industry standards.

Fence: All fence parts and foundations will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the owner's sole discretion, consistent with applicable regulations and industry standards. The surrounding areas will be restored to pre-construction conditions to extent feasible.

Access Roads: Facility access roads will be used for decommissioning purposes, after which removal of roads will be discussed with the Landowner, using the following process:

1) After final clean-up, roads may be left intact through mutual agreement of the landowner and the owner unless otherwise restricted by Federal, State, or Local Regulations.

2) If a road is to be removed, aggregate will be removed and shipped from the site to be reused, sold, or disposed of appropriately, at the Owner's sole discretion, consistent with applicable regulations and industry standards. Clean aggregate can often be used as "daily cover" at landfills for no disposal cost. Geotextile fabric will be removed and disposed of appropriately off site. Ditch crossings connecting access roads to public roads will be removed unless the landowner requests they remain. The subgrade will be de-compacted to a depth of approximately 18 inches using a chisel plow. Topsoil that was stockpiled during the original construction will be distributed across the open area. The access roads and adjacent areas that are compacted by equipment will be de-compacted.

1.3.3 Restoration/Reclamation of Site

The Owner will restore and reclaim the site to approximately the pre-construction condition consistent with the site lease agreement. The owner assumes that most of the site will be returned to grassland after decommissioning, and will implement appropriate measures to facilitate such uses. If no specific use is identified, the Owner will vegetate the site with a grassland seed mix approved by the local soil and water

conservation district or similar agency. The goal of restoration will be to restore natural hydrology and plant communities to the greatest extent practicable while minimizing new disturbance and removal of native vegetation. The decommissioning effort will implement best management practices (BMP's) to minimize erosion and to contain sediment on the Project to the extent practicable with the intent of meeting this goal include:

1. Minimize new disturbance and removal of native vegetation to the greatest extent practicable.

2. Removal of solar equipment and access roads up to three feet below surrounding grade, backfill with subgrade material and cover with suitable topsoil to allow adequate root penetration for plants, and so that subsurface structures do not substantially disrupt ground water movements.

3. Any topsoil that is removed from the surface for decommissioning will be stockpiled to be reused when restoring plant communities. Once decommissioning activity is complete, topsoil will be re-spread to assist in establishing and maintaining plant communities.

4. Stabilize soils and re-vegetate with regional plants appropriate for the soil conditions and adjacent habitat and use local seed sources where feasible, consistent with landowner objectives. Reseeding with native plants will not be performed for site that will be returned to agricultural use or other more intensive beneficial uses.

5. During and after decommissioning activities, install erosion and sediment control measures, such as silt fences, bio-rolls, and ditch checks in all disturbance areas where potential for erosion and sediment transport exists, consistent with storm water management objectives and requirements.

6. Remediate any petroleum product leaks and chemical releases prior to completion of decommissioning.

Decommissioning and restoration activities at each site will be completed within 12 months after the date the site ceases to operate.

1.4 Post-Restoration Monitoring

Decommissioning of the site will comply with permits for NPDES/SDS CSW Permit, Spill Containment and Countermeasure (SPCC) Plan, and SWPPP, if grading activities are necessary and exceed applicable permit thresholds. Decommissioning may include post-restoration monitoring as required by the NPDES/SDS CSW Permit and SWPPP and other applicable requirements. In addition, the Owner's Field Representative assigned to decommissioning monitoring will stay in contact with landowners, including onsite check-ins until the NPDES/ SDS CSW permit is closed.

1.5 Estimated Net Decommissioning Costs

The decommissioning costs are calculated using current pricing. In keeping with the requirements of many jurisdictions the estimate of net costs should be updated periodically to recognize price trends for both decommissioning costs and the salvage and resale values of the components. This estimate is based on the first five years of operation.

There is currently an active market for scrap steel, aluminum, and copper, used transformers and electrical equipment, and used solar panels. Scrap metal prices have been discounted from posted spot prices found on www.scrapmonster.com. Pricing for used panels has been discounted from prices posted by Solar Biz on its website. The pricing of the used panels has incorporated the degradation from five years of use as warrantied the manufacturer (not more than 0.5 percent per year).

For additional detail on the assumptions made see Section 1-6.

Cost estimate next page:

Project Size	75.36	MW-DC	60.00	MW-AC
	Quantity	Unit	Unit Cost	Total Cost
Mobilization/Demobilization	1	Lump Sum	$424,500.00	$424,500
Mobilization was estimated to be approximately 7% of total cost of other items.				
Permitting				
State Permits	1	Lump Sum	$10,000.00	$10,000
Subtotal Permitting				$10,000
Decommissioning will require a SWPPP and SPCC plan, cost is an estimate of the permit preparation cost				
Civil Infrastructure				
Removal Gravel Surfacing from Road	5,973	Cubic Yards (BV)	$3.73	$22,256
Haul Gravel Removed from Road	7,466	Cubic Yards (LV)	$9.75	$72,796
Disposal of Gravel Removal from Road	9,676	Tons	$0.00	$0
Removal Geotextile Fabric from Road Area	53,811	Square Yards	$1.40	$75,336
Haul Geotech Fabric Removed from Beneath Access Roads	53,811	Square Yards	$0.20	$10,762
Disposal of Geotech Fabric Removed from Beneath Access Roads	53,811	Square Yards	$0.10	$5,381
Grade Road Corridor (Re-spread Topsoil)	24,215	Linear Feet	$1.20	$29,156
Erosion and Sediment Control for Road Restoration	41,187	Linear Feet	$1.87	$77,020
Turf Establishment on Removed Road Area	13.34	Acres	$1,241.00	$16,557
Removal of Security Fence	46,391	Linear Feet	$6.00	$278,346
Subtotal Civil Infrastructure				$587,609
Structural Infrastructure				
Removal Fixed-Tilt Steel Foundation Posts	25,280	Each	$13.00	$328,640
Haul Fixed-Tilt Steel Post	1,706	Tons	$5.60	$9,556
Removal Fixed Racking	2,492	Each	$248.40	$619,013
Haul Fixed Racking	2,526	Ton	$5.60	$14,147
Subtotal Structural Infrastructure				$971,356
Steel removal costs were calculated by using information from array manufacturers for installation rates and using the sar				
rates to calculate total days to remove equipment. Hauling calculations are based on the locations of metals recyclers.				
Electrical Collection/Transmission System				
Removal of PV Panels	181,584	Each	$15.53	$2,819,092
Removal of Combiner Boxes	312	Each	$60.00	$18,690
Removal of PCU Station (Inverters/Panelboard/Transformer)	22	Each	$4,000.00	$88,000
Removal of Substation	1	Each	$250,000.00	$250,000
Removal of Scada Equipment	1	Each	$5,000.00	$5,000
Removal of DC Collector System Cables (copper)	75.4	Per MW	$3,000.00	$226,072
Removal of Underground (AC) Collector System Cables	75.4	Per MW	$5,000.00	$376,787
Load and Haul Cables for Recycling	162.8	Ton	$21.60	$3,516
Removal of Fiber Optic Cable	75.4	Per MW	$1,000.00	$75,357
Subtotal Electrical Collection/Transmission System				$3,862,514
Site Restoration				
Stabilized Construction Entrance	3	Each	$2,000.00	$6,000
Perimeter Controls	16,143	Linear Feet	$1.87	$30,188
Permanent Seeding on area within Removed Array	669	Acres	$891.09	$596,317
Subtotal Site Restoration				$632,505
Site restoration costs are based on past solar project experience.				
Subtotal Demolition/Removals				$6,488,484

Salvage				
Fencing	232	Tons	$221.25	$51,320
Steel Posts	1,706	Tons	$221.25	$377,541
Module Racking	2,526	Tons	$221.25	$558,947
PV Modules	181,584	Each	$25.90	$4,702,299
Inverters and Transformers	22	Each	$4,533.75	$99,743
Substation	1	Each	$75,000.00	$75,000
Scada Equipment	1	Each	$1,000.00	$1,000
DC Collection Lines	227,881	Pounds	$0.52	$117,359
AC Collection Lines	97,663	Pounds	$0.26	$25,148
Subtotal Salvage				$6,008,357
Total Demolition Minus Salvage				$480,128
Notes:				
1. Prices used in analysis are estimated based on research of current average costs and salvage values.				
2. Prices provided are estimates and may fluctuate over the life of the project.				
3. Contractor means and methods may vary and price will be affected by these.				

1.6 Decommissioning Assumptions

To develop a cost estimate for the decommissioning of the Gladys Solar Project, Westwood engineers made the following assumptions and used the following pricing references: Costs were estimated based on current pricing, technology, and regulatory requirements. The assumptions are listed in order from top to bottom of the estimate spreadsheet. When publicly available bid prices or Virginia Department of Transportation (VDOT) bid summaries were not available for particular work items, we developed time and material based estimates considering composition of work crews and equipment and material required using RS Means data. When materials may have a salvage value at the end of the project life, the construction activity costs and from the hauling/freight cost are separated from the disposal costs or salvage value to make revisions to salvage values more transparent.

1. Decommissioning year is based on a 5 year initial period for the financial security. The projected life of the project is 35 years.
2. This Cost Estimate is based on the Solvida Preliminary Site Layout dated 6/11/19.
3. A project of this size and complexity requires a full time project manager or support staff.
4. Common labor will be used for the majority of the tasks except for heavy equipment operation. Since VDOT unit prices are used, where possible, the labor rates will reflect union labor rates.
5. Mobilization was estimated at approximately 7% of total cost of other items.
6. Permit applications required include the preparation of a Storm Water Pollution Protection Plan (SWPPP) and a Spill Prevention Control and Countermeasure (SPCC) Plan.
7. Road gravel removal was estimated on a time and material basis using a 20 foot width and a 4 inch thickness. Since the material will not remain on site, a hauling cost is added to the removal cost. The recycling costs for road aggregate are volatile varying from approximately $10 per ton for disposal to $10 per ton for recycling. Many landfills will accept clean aggregate for use as “daily cover” and do not charge for the disposal.
8. Grade Road Corridor reflects the cost of mobilizing and operating light equipment to spread and smooth the topsoil stockpiled on site to replace the aggregate removed from the road.
9. Erosion and sediment control along road reflects the cost of silt fence on the downhill side of the road and surrounding all on-site wetlands.
10. Topsoil is required to be stockpiled on site during construction, therefore this top soil is available on site to replace the road aggregate, once removed. Subsoiling cost to decompact roadway areas is estimated as $350 per acre (based on state DOT bid prices), and Turf Establishment on removed road area, which includes seed, fertilizer, mulch, and care until grass is established is $1,241 per acre. The majority of the area is “over-seeded” since the decommissioning activities are not expected to eliminate the existing grasses and vegetation under the arrays.
11. Fence removal includes loading, hauling, and recycling or disposal. Fence and posts weigh approximately 10 pounds per foot.
12. Array support posts are generally lightweight “I” beam sections installed with a backhoe-like piece of specialized equipment. (No structural details are available at the time of decommissioning cost estimating.) Crew productivity is approximately 150 posts per day, and the same crew and equipment should have a similar productivity removing the posts, resulting in a per post cost of approximately $13.00.
13. A metal recycling facility (Gerdau metals) is located in Lynchburg, VA, 20 miles from the project site. Pricing was acquired from www.scrapmonster.com. The posts weigh approximately 150 pounds each, and we estimate the hauling costs at approximately $0.28 per ton mile. The pricing from Scrapmonster is adjusted to 75 percent of the published price to reflect the processing required for the posts to fit recycling requirements and Gerdau Metals margin.

14. Based on the review of a manufacturer's details of the array support structures the structures weigh approximately one pound per square foot. Each solar panel has an area of 26.6 square feet. The facility has 181,584 modules, 4.84 million square feet of array, for a total module 7,264 tons. The frames are made of light weight steel and/or aluminum extrusions so a crew with hand tools can disassemble and cut the pieces to sizes for recycling at a rate of about 400 pounds per person per hour, or about $245 per ton.
15. Hauling the steel to Lynchburg at $0.28 per ton mile costs about $5.60 per ton.
16. The solar panels rated at 415 watts measure approximately 4 feet by 6.5 feet and weigh 80 pounds (depending on the manufacturer) so they can easily be disconnected, removed, and packed by a three person crew at a rate we estimate at 20 panels per hour.
17. Based on preliminary design information that 2.750 MW inverters will be used on this project. Pad mounted Inverters are medium sized enclosures (9'-10" wide, 8'-6" tall, and 8'-0" deep that are mounted on a concrete slab. They weigh 7500 pounds, and can be disconnected by a crew of electricians. They must be lifted by a truck mounted crane for transport to the recycler. They contain copper or aluminum windings.
18. Transformers for this project will likely be mounted on the same concrete pads as the inverters. The transformers weigh approximately 8000 pounds and contain either copper, or more commonly, aluminum windings that have significant salvage value. They are typically oil filled, but most transformer recyclers will accept the transformers with oil. The estimated costs include removal of the concrete pads and conduits feeding the equipment.
19. Medium voltage (MV) equipment and SCADA equipment are mounted on the same concrete pad as the transformer and enclosed in weather proof cabinets. Their size requires light equipment to remove them. The costs shown include the removal of the concrete pads.
20. The underground collector system cables are placed in trenches, inside of PVC conduits, with a minimum of 4 feet of cover.
21. To reduce tracking of sediment off-site by trucks removing materials, we have included a rock construction entrance priced based on state DOT bid prices.
22. Perimeter control pricing is based on a sediment fence placed on the downgrade side of the work area perimeters, and protecting wetlands and drainage swales within the project area. Pricing is based on VDOT unit prices.
23. No topsoil is planned to be removed from the site during decommissioning and most of the site will not have been compacted by heavy truck or equipment traffic so the site turf establishment cost is based on VDOT unit prices for applying lime, fertilizer, seed, and mulch at the Road and Bridge Specifications of Section 603 of $1,000 per acre plus an allowance for some areas to be decompacted.
24. Metal salvage prices (steel, aluminum, copper) are based on quotes from www.scrapmonster .com for the U.S. East Coast in April 2019. These prices are based on delivery to the recycling facility with the material prepared to meet size, thickness, cleanliness and other specifications. A reduction of 25% has been taken from this price to reflect the difficulty of realizing the full spot prices posted. The prices are three months old at the time they are displayed on the website.
25. The steel posts and array racking are priced based on #1 HMS (high melt steel). ($295)
26. Solar module degradation is approximately 0.50% per year, or 98% of capacity remaining after 5 years, and 84% capacity remaining after 35 years. The manufacturer guarantees that panels will have 98 percent the rated capacity when new, so combining the guaranteed capacity and the degradation, the estimate uses 96 percent capacity after five years. There is currently a robust market for used solar panels and pricing can be found on, Solar Biz, eBay and other sites. We

have assumed that as long as the modules are producing power they will have economic value. To avoid unconservative pricing for the used modules we used a pricing of $0.065 per watt which is 10 percent of lowest panel prices published on the Solar Biz website on July 23, 2019. The price is based on the buyer transporting panels placed on pallets from the project site.

27. There is an active market for reselling and recycling electrical transformers and inverters with several national companies specializing in recycling. We have assumed that the electrical equipment will be obsolete at the time of decommissioning so we have based the pricing on a percentage of the weight that reflects the aluminum windings that can be salvaged. Pricing was obtained from scrapmonster.com in April 2019. We have assumed a 25% recovery of the weight of the transformers and inverters for copper or aluminum windings.
28. The collection lines are priced assuming copper conductor wire for the DC circuits, which is typical. The prices used reflect a reduced yield of the copper resulting from the insulation and other materials that must be stripped from the wire so that the copper can be recycled. The estimate uses the East Coast price of #2 copper wire with a 50% recovery rate as found on www.scrapmonster.com in April 2019, which is $1.03 per pound. For the salvage value we have assumed 50 percent of the published price.
29. The underground collection lines are assumed to be aluminum conductor. The majority of the length of the collection lines will be buried deep enough so that it does not have to be removed. Those sections coming up out of the ground at junction boxes, or otherwise, can be salvaged. The salvage value is based on the East Coast price of E.C. Aluminum Wire as found on www.scrapmonster.com in April 2019, which is $0.83 per pound. We have reduced the price to 25% of the quoted price to reflect the complications of stripping insulation and separating the materials.
30. Care to prevent damage and breakage of equipment, PV modules, inverters, capacitors, and SCADA must be exercised, but removal assumes unskilled common labor under supervision.
31. All salvage will be for bulk material or equipment.

Special Use Permit: Gladys Solar Project. Weyerhaeuser-Plum Creek Timberlands. Parcels adjacent to 72-A-36 and 72-10-9

ACCOUNT	LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP CODE
73-1-1B		Bedford Four Inc	PO Box 3413	Lynchburg	VA	24503
72-10-8, 10-8A	Waller	Catherine & Clyde	1782 Gladys Rd	Gladys	VA	24554
72-10-7, 10-7C	Gowen	Clarence & Sandra	2193 Gladys Rd	Gladys	VA	24554
72-10-7A	Holland	Cornelia	1700 Gladys Rd	Gladys	VA	24554
72-A-38A	Price	Douglas	1799 Gladys Rd	Gladys	VA	24554
72-12-6, 72-12-7, 11-4A, 12-7	Carroll	Dustin & Jade	1331 Pigeon Run Rd	Gladys	VA	24554
72-11-3B	Clark	Elaine	3364 Gladys Rd	Gladys	VA	24554
72-10-5	Hunt	Harold & Irene	7399 Brookneal Hwy	Gladys	VA	24554
72A-1-8		Henry Logging & Chipping INC	1536 Mohawk Rd	Gladys	VA	24554
72-A-43	Hunt	Howard	2842 Gladys Rd	Gladys	VA	24554
72-A-38, A-38	Balough	Ibironke	203 Yoakum Pwky #208	Alexandria	VA	22302
72-A-44, A-44A	Sprinkle	James	244 Sprinkle Dr	Gladys	VA	24554
72-10-7B	Nash	James	2592 Sunburst Rd	Evington	VA	24550
72-A-37	Scott	James & Cecilia	5083 East Ferry Rd	Gladys	VA	24554
72-A-9	Carhart	Jeffrey & Shannon	1659 Crows Rd	Gladys	VA	24554
72-10-5A	Thurman	John & Marilyn	3026 Gladys Rd	Gladys	VA	24554
72-A-8	Brown	Lyle	376 Turkey Trot Ln	Gladys	VA	24554
72-A-15		Marysville Farm LLC	PO Box 638	Lynchburg	VA	24505
72-11-3B, 11-4	Miller	Nancy	3450 Gladys Rd	Gladys	VA	24554
72-10-6	Thurman	Randy & Mary	10 Hone Rd	Gladys	VA	24554
72-11-4A	Lowe	Stephen & Lucille	3322 Gladys Rd	Gladys	VA	24554
72-1A-1b	Willis	Thomas & Joann	121 Turkey Trot Ln	Gladys	VA	24554
72-A-6	Ford	Travis	959 Mitchell Mill Rd	Gladys	VA	24554
72-11-3A	Crews	Velma	3384 Gladys Rd	Gladys	VA	24554
72-11-2	Robinson	Vicky	201 Smyth St	Lynchburg	VA	24501
72-11-1A	Miller	Walter & Martha	5726 Atkins Ave	Bristol	PA	19007
73-3-1	Scott	Willie & Nell	1505 Gladys Rd	Gladys	VA	24554

Caden Energix LLC
11 South 12th Street
Suite 317
Richmond, VA 23219

June 7, 2019

Gladys Solar Project
Invitation to Attend a Community Information Meeting

Dear Property Owner or Resident;

Caden Energix LLC has scheduled a community information meeting at which we will be discussing our plans to develop, construct and operate a solar electric farm on approximately 500 acres of land located off Gladys Road, approximately 3.5 miles southwest of Gladys. The attached drawing shows the location of the proposed project and the surrounding area.

The meeting will be held on Wednesday, June 26, 2019 from 5:30 to 6:30 PM at the Gladys Community Center - Ruritan Club, 135 Long Island Road, Gladys, VA.

The meeting will provide an opportunity for you to learn about solar energy and the proposed project, become familiar with the development process, ask questions, and provide us with initial feedback. Your attendance is encouraged and your participation welcomed.

If you have any questions prior to the meeting, please do not hesitate to contact me.

Sincerely,

Kenneth Niemann

Ken Niemann
Sr. Vice President
Caden Energix
Alexandria, Virginia
Phone: 703-801-0412
E-Mail: ken.niemann@cadenenergy.com
Website: https://www.cadenenergy.com

Gladys Solar Project Site

Legend

Gladys Solar Site

Dominion transmission line

Site entrance

Gladys

501

699

761

N

1 mi

Google Earth

From: Mitchell, Austin R.
To: Kenneth Niemann (Ken@cadenenergix.com)
Subject: PEC Meeting Summary - Gladys Solar Project
Date: Wednesday, September 4, 2019 10:37:00 AM

Dear Mr. Niemann,

The Project Evaluation Committee met on Tuesday, September 3, 2019 at 2:00 PM to discuss the plan for the Gladys Solar Project. The following is a synopsis of the meeting; it does not necessarily reflect all comments or indicate all requirements of the permitting process.

Present:

Ken Niemann	Caden Energix Gladys LLC
Clifton Tweedy	Deputy County Administrator
Paul Harvey	Director of Community Development
Brandon Dillard	Building Official
Ronnie Guthrie	Building Inspector
Brian Stokes	Environmental Manager
Randall Johnson	Fire Marshal
Austin Mitchell	Zoning and Subdivision Administrator
Sarah Johnson	Economic Development Program Manager
Carrie Shepheard	Virginia Dept. of Transportation (VDOT)
Dean Monroe	Planning Commission, Brookneal District

Overview

Caden Energix is headquartered in Richmond and constructs, owns, and operates solar projects. There are nine other projects under development in Virginia. Dominion may buy power from the project. The project consists of two parcels, four miles west of Gladys, which are currently in timber. There is an existing 69kV transmission line through the site and it is relatively isolated. There is an option agreement in place with Weyerhaeuser for a minimum of three years. The facility would be 60MWac and very similar to other permitted solar projects. Buffers and screening will be done as needed. After local approval will follow the permit by rule process and pursue an interconnection agreement. Ideally would start construction in 1 ½ to 2 years with an approximately 8-month construction period. Would have 150-200 workers on-site at any one time with an average of 100 per day. Local source of labor likely. There was a community information meeting. The site is 1100 acres total and would have approximately 650 acres fenced and 100 acres of actual panels. Will maintain a 50-foot minimum buffer from wetlands. Slopes greater than 15% would not be used. Will improve existing logging entrance. A small substation will be built on-site. A decommissioning plan is included and everything will be removed. There will be a bond posted with the owner and County. 35-year project.

VDOT

One entrance with internal access road. Will need design elements for entrance. Once operational the project will have very limited traffic. Will most likely treat the entrance as a work zone situation during construction.

Building Inspections

Submit application and two sets of hard copies or submit digitally.

Fire Marshal

Concerned with access throughout site. Roads within the site will be able to handle trucks for maintenance and be built with crushed stone. Access to the site will be available with a Knox box and the site is remotely monitored. There will be coordination as the project moves forward with public safety officials. Provide signage for weight limit for bridge over creek.

E&S

Need to know the area of actual land disturbance. VSMP permit will be required. Mounting structures, access roads, and manage turf planted around panels count towards impervious area. Existing roads on the site likely don't meet stormwater requirements. Permanent BMPs require long-term maintenance agreements that run with the land and must be signed by Weyerhaeuser as the owner. Removal of stormwater facilities need to be part of the decommissioning. Bond required for stormwater, released upon completion of construction. Digital submittal. Follow state fee schedule.

Community Development Director

Substation will preferably be built be Caden Energix and constructed within the fence for the solar project.

Planning/Zoning

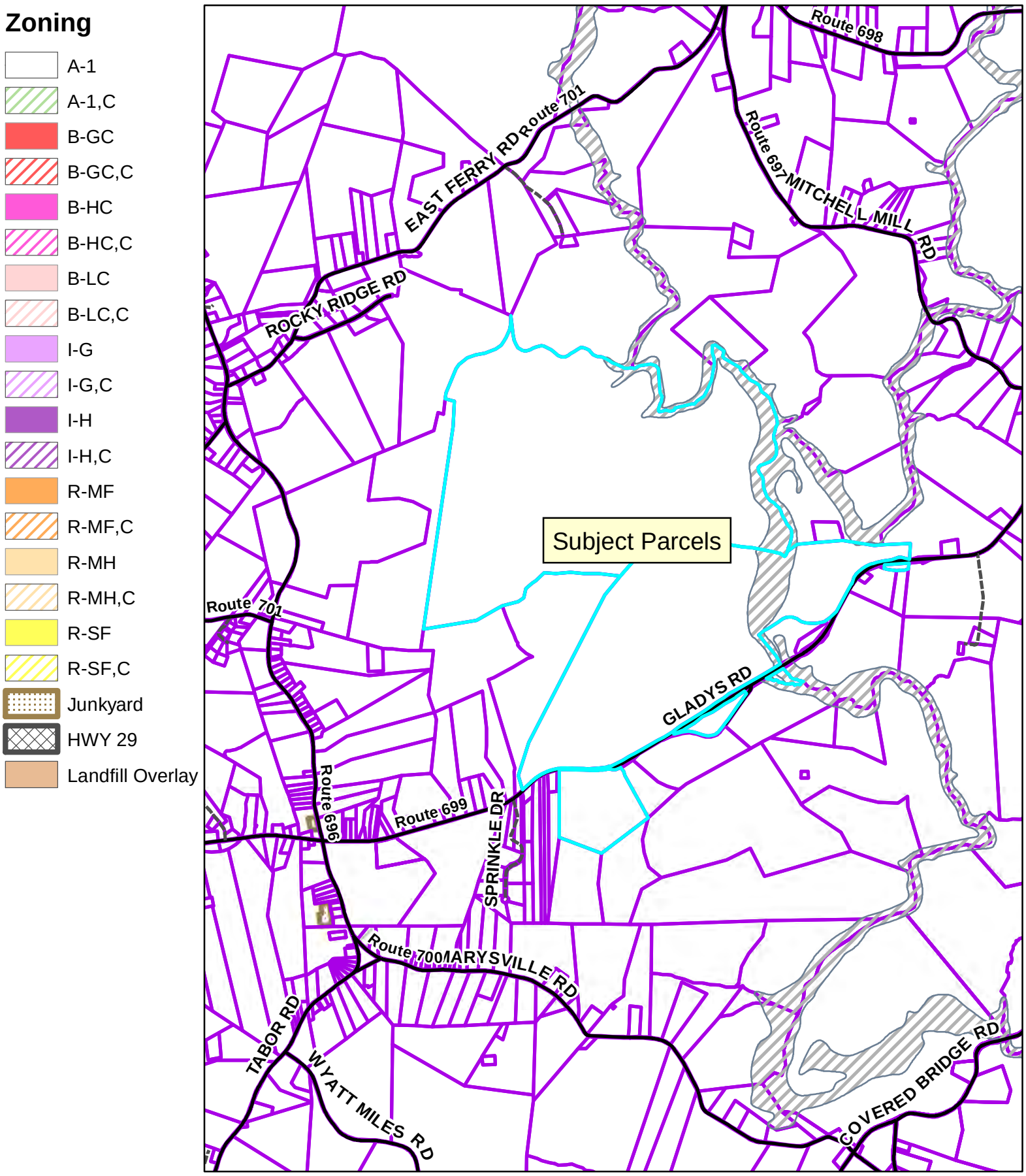
Survey with lot dimensions and property monuments for final site plan. Show owners of record of all abutting properties on final site plan. Include a note stating that portions of the property are within the Smith Mountain dam break inundation zone. Show proposed buffering and screening including a detailed list of the materials to be used, plant species, height or size at time of planting, and mature height or size.

Regards,

Austin Mitchell
Zoning and Subdivision Administrator
Campbell County, Virginia
434-332-9780
armitchell@campbellcountyva.gov

Special Use Permit Request #PL-19-126 - Plum Creek Timberlands LP						
ACCOUNT	**LAST NAME**	**FIRST NAME**	**ADDRESS**	**CITY**	**STATE**	**ZIP CODE**
72 11 4A	LOWE	STEPHEN W C SR & LUCILLE M	3322 GLADYS RD	GLADYS	VA	24554-0000
72 10 6	THURMAN	RANDY M & MARY A	10 HONE RD	GLADYS	VA	24554-0000
73 3 1	SCOTT	WILLIE R & NELL A	1505 GLADYS RD	GLADYS	VA	24554-0000
72 12 6 & 7	CARROLL	DUSTIN L & JADE B	1331 PIGEON RUN RD	GLADYS	VA	24554
72 10 5	HUNT	HAROLD R & IRENE S	7399 BROOKNEAL HWY	GLADYS	VA	24554-0000
72 10 7A	HOLLAND	CORNELIA C	1700 GLADYS RD	GLADYS	VA	24554-0000
72 11 1A	MILLER	WALTER L & MARTHA C	5726 ATKINS AVE	BRISTOL	PA	19007-0000
72 A 38A	DOUGLAS	CAREY PRICE	1799 GLADYS RD	GLADYS	VA	24554-0000
72 10 8A	WALLER	CATHERINE R & CLYDE H	1782 GLADYS RD	GLADYS	VA	24554
72 10 8	WALLER	CATHERINE	1782 GLADYS RD	GLADYS	VA	24554
72 A 44 & 44A	SPRINKLE	JAMES R	244 SPRINKLE DR	GLADYS	VA	24554
72 11 4	EVANS	NANCY MILLER	3450 GLADYS RD	GLADYS	VA	24554
72 11 3B	CLARK	ELAINE M	3364 GLADYS RD	GLADYS	VA	24554-0000
72 A 43	HUNT	HOWARD E	2842 GLADYS RD	GLADYS	VA	24554-0000
72 10 5A	THURMAN	JOHN D & MARILYN S	3026 GLADYS RD	GLADYS	VA	24554-0000
72 11 2	ROBINSON	VICKY C	201 SMYTH ST	LYNCHBURG	VA	24501
72 11 3A	CREWS	VELMA	3384 GLADYS RD	GLADYS	VA	24554-0000
73 3 1B	BEDFORD FOUR INC		PO BOX 3413	LYNCHBURG	VA	24503-0000
72 10 7B	NASH	JAMES H	2592 SUNBURST RD	EVINGTON	VA	24550-0000
72 10 7 & 7C	GOWEN	CLARENCE E & SANDRA O	2193 GLADYS RD	GLADYS	VA	24554-0000
72 A 38	BALOUGH	IBIRONKE A	203 YOAKUM PKWY #208	ALEXANDRIA	VA	22304
72 A 15	BROWN	MARYSVILLE FARM LLC & CILLA P	PO BOX 638	LYNCHBURG	VA	24505
72 A 9	CARHART	JEFFREY A & SHANNON K	1659 CROWS RD	GLADYS	VA	24554
72 A 1B	WILLIS	THOMAS L & JOANN E	121 TURKEY TROT LN	GLADYS	VA	24554
72 A 37	SCOTT	JAMES L & CECILIA E	5083 EAST FERRY RD	GLADYS	VA	24554-0000
72 A 8	BROWN	LYLE	376 TURKEY TROT LN	GLADYS	VA	24554
72 A 6C	FORD	BRANDON B	5030 EAST FERRY RD	GLADYS	VA	24554
72 A 6B	FORD	MICAH B	180 SCOTTS BRANCH RD	AMHERST	VA	24521
72 A 6	FORD	TRAVIS D	959 MITCHELL MILL RD	GLADYS	VA	24554

SUP Request #PL-19-126 - Plum Creek Timberlands LP

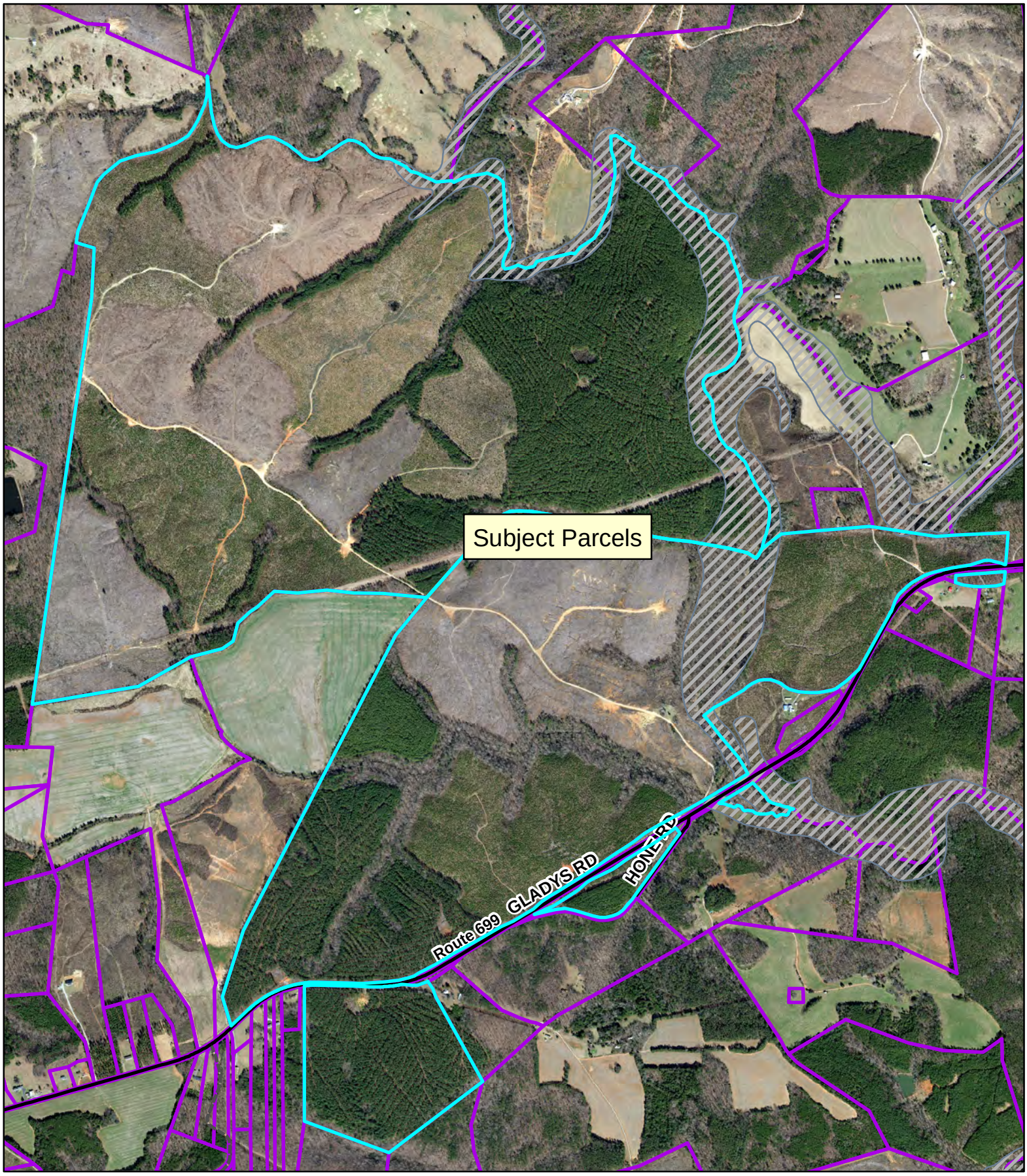


Aerial Imagery © Commonwealth of Virginia

Campbell County Virginia

Planning & Zoning: 8/20/2019

SUP Request #PL-19-126 - Plum Creek Timberlands LP



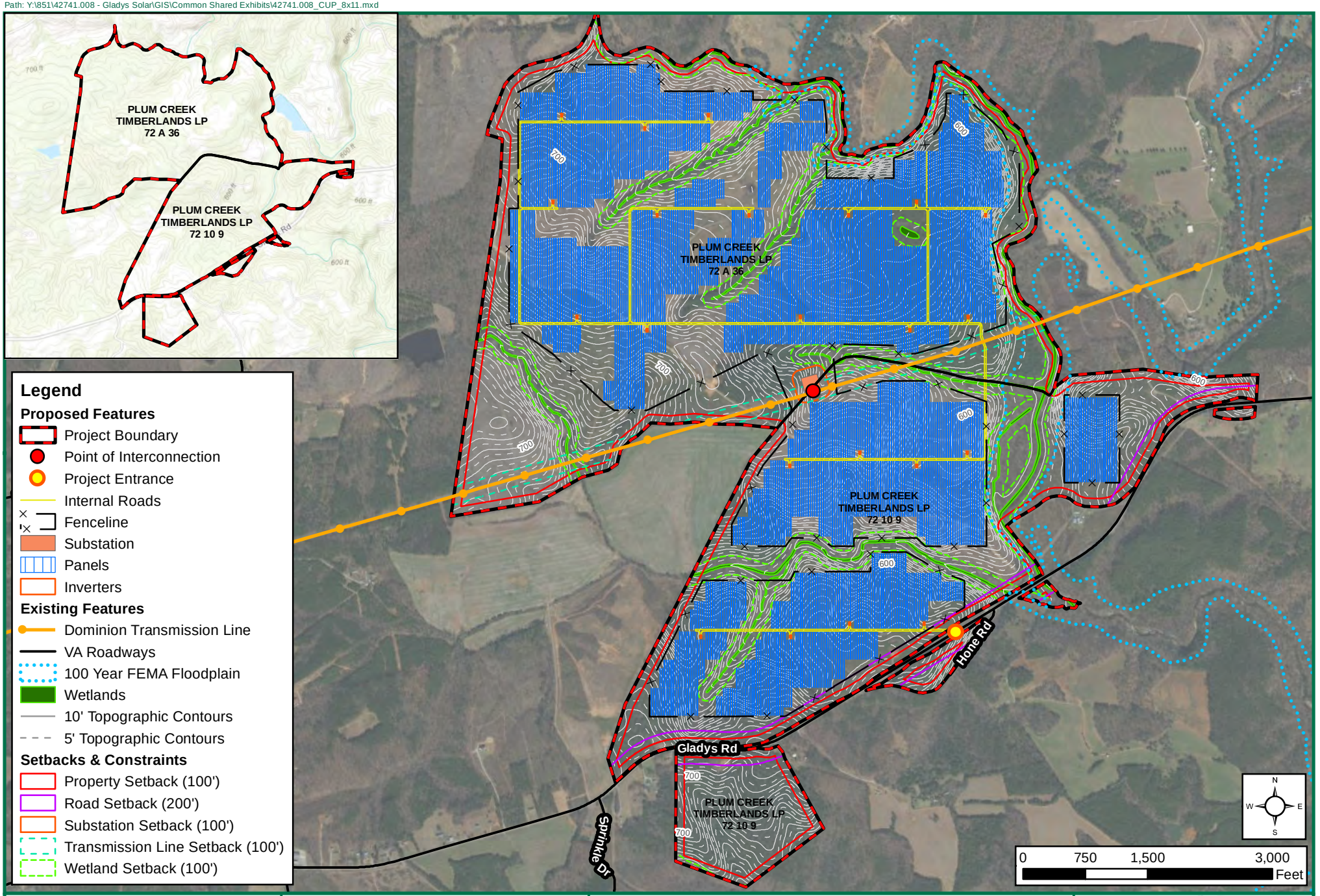
0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1,250 feet

Campbell County Virginia

Planning & Zoning: 8/20/2019

Path: Y:\851\42741.008 - Gladys Solar\GIS\Common Shared Exhibits\42741.008_CUP_8x11.mxd



CADENENERGIX

GLADYS SOLAR

CAMPBELL COUNTY, VIRGINIA

PRELIMINARY SITE PLAN

DATE	PROJECT NUMBER	DESIGNED BY / DRAWN BY	SCALE
07/23/2019	42741.008	L. CARSON	H: 1 " = 1,500 '

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.