Richmond Highway Solar

Conditional Use Permit

Pamplin, VA 23958

PREPARED FOR

Appomattox County Administration
153A Morton Lane
PO Box 863
Appomattox, VA 24522
434.352.2637

PREPARED BY

115 South 15th Street
Suite 200
Richmond, VA 23219
804.343.7100

3/15/2024

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Appomattox County Development Application

APPOMATTOX COUNTY
Department of Community Development
P. O. Box 863
Appomattox, VA 24522
Telephone: (434) 352-8183 Fax: (434) 352-4214

Development Application

☐ Conditional Use Permit ☐ Rezoning ☐ Conditional Rezoning

☒ Rezoning with concurrent Conditional Use Permit

General Information:

Conditional uses are uses, which are generally compatible with the other land uses in the zoning district, but require individual review for their intensity, location, design, and configuration. Conditions may be imposed by the Board of Supervisors in order to ensure the appropriateness of the use and to mitigate concerns that may otherwise make the use incompatible in the zoning district.
Conditional Use Permits may be approved upon a finding by the Board of Supervisors that the use will not be detrimental to the character and development of the adjacent land and will be in harmony with the purpose and intent of the Zoning Ordinance.

Rezoning, or the amendment to the zoning classification of a parcel, must be justified in need and effect on the property, surrounding property, and public services. The appropriateness of the change as it is set forth at the beginning of the zoning district classification shall be considered, as well as, the general planning program of the county and whether the rezoning will further the purposes of the zoning ordinance and the general welfare of the community.

Each application for Conditional Use and/or Rezoning is forwarded to the Planning Commission for consideration. The Planning Commission will hold a public hearing on the petition. The applicant or a representative is required to attend the public hearing. After the public hearing, the Planning Commission will make a recommendation and forward this recommendation to the Board of Supervisors. The Board of Supervisors will hold a second public hearing on the petition. The applicant or a representative is required to attend the public hearing. After the public hearing, the Board of Supervisors may approve or deny the petition. If the petition is a conditional use, the Board may impose conditions, which in its opinion will mitigate the impacts of the requested conditional use. If the petition is a rezoning, the applicant may voluntarily proffer conditions, which may mitigate the impacts of the rezoning petition. If proffers are voluntarily submitted, then this is known as a Conditional Rezoning.

Any previously approved conditional use permit may be revised by the Board of Supervisors following the same process of public hearings and recommendations.

Application Procedure:

1. **Consultation with Planning Staff:** You are required to meet with County staff to discuss the feasibility of your request prior to submission.

2. **Completion of Application:** Fill out, sign and date the application form. If the applicant is not the property owner, attach a notarized letter of consent from the property owner authorizing the applicant to act as the owner's agent for the application.

3. **Boundary Survey:** The applicant must provide a copy of a boundary survey of the land for which the conditional use or rezoning is proposed.

4. **Adjacent Property Owners:** The applicant must provide the names and addresses for all adjacent property owners, including those immediately across the street(s) from the property. This list is used for the notification to the adjacent owners for the public hearing.

5. **Concept Plan:** A concept plan (minimum 8.5" X 11") is required in accordance with §19.6-45 of the Appomattox County Zoning Ordinance. The petitioner may prepare the Concept Plan or have a professional engineer, architect, or surveyor assist them. The plan shall meet the minimum standard, as described by the checklist on page 4 of this application.

6. **Impact Statements:** If necessary, the applicant is responsible for submitting impact statements with the application. Impact studies may address traffic volumes, public utility capacities, noise, dust, smoke emissions or any other relevant matter that may arise during the initial consultation with planning staff. A Traffic Impact Analysis (TIA) is required should the site meet the VDOT requirements for TIA's under 24 VAC 30-155.

7. **Planning Commission:** The Planning Commission will hold a public hearing and review the application in order to make a recommendation to the Board of Supervisors.

8. **Board of Supervisors:** The Board of Supervisors will hold a public hearing and review the application in order to make a decision on the request. In the case of a conditional use permit, the Board may attach any conditions necessary to insure that the proposal meets the specific and general standards for the proposed use.

9. **Application Fee:** The application fee is $550. Please make checks payable to Appomattox County Treasurer.

APPLICATION CHECKLIST

N/A	Complete	
	☒	Consultation with Staff
	☒	Project Information and Contacts
	☒	Project Description
	☒	Project Justification
	☒	List of Adjoining Property Owners
☐	☒	Impact Statements (if necessary)
☐	☒	Owner's Authorization Letter (if necessary)
	☒	Boundary Survey
	☒	Concept Plan
	☒	Certification and Statement of Understanding

FOR OFFICIAL USE ONLY
RECEIVED

_____ _____
Date Initials

CHECKED FOR COMPLETENESS

_____ _____
Initials Date

Checklist for Concept Plan

In accordance with §19.6-45 of the Appomattox County Code, a Concept Plan is required for new development in every zoning district, including uses reviewed by the Planning Commission for conditional use or rezoning. A Concept Plan is a Site Development Plan drawn to slightly lesser detail that does not address impacts such as erosion and sediment control, landscaping or stormwater management. The petitioner may prepare the Concept Plan. However, the petitioner may opt to have the Concept Plan prepared by a professional engineer, architect, or land surveyor registered by the Commonwealth of Virginia, depending on the complexity of the project, or if the petitioner cannot provide a level of detail needed for the Planning Commission to adequately evaluate the project.

N/A	Complete	
	☒	Date of drawing
	☒	North Arrow
	☒	Scale
	☒	Legend of all symbols used
☒		Location/vicinity map showing the general location
	☒	Boundary lines of the property covered by the application
	☒	Name and Address of property owner, applicant and person preparing the drawing
	☒	Tax Map Identification Number
	☒	Tax Map Identification Number and name(s) of adjoining property owners
	☒	Current and proposed land use
	☒	Current zoning district of parcel and adjoining parcels
	☒	Names, Route Numbers, location of streets adjacent to or within the development
	☒	Access point(s), driveways, crossovers, etc.
	☐	Parking accommodations, including number of spaces and Handicapped spaces, loading spaces, or aisles
	☐	Building(s) location, setbacks, height of building(s) for proposed and/or existing building(s)
☒	☐	Location of proposed signs, utilities, lighting
☐	☒	Buffer yards, screening, or fencing

SQ Applicant/Agent/Professional Initial(s) to acknowledge checklist items are provided.

PROJECT INFORMATION

Note: If the applicant is not the property owner, then an owner's authority letter must be submitted with the application.

Richmond Highway Solar
PROJECT NAME

AC
ZONING DISTRICT

16228 Richmond Highway, Pamplin, VA 23958
ADDRESS, IF AVAILABLE, OR STREET LOCATION

36.64
TOTAL SITE ACRES

101-A-1
TAX MAP INDENTIFICATION NUMBER

APPLICANT/AGENT

☐ Agent
☒ Primary Contact

Richmond Hwy, LLC - Jake Clark
NAME

50 Lakeside Avenue, Suite 110	Burlington	VT	05401
ADDRESS	CITY	STATE	ZIP

802-540-8304
PHONE

caity@encore.eco
EMAIL

OWNER (IF DIFFERENT)

☐ Same As Applicant

Jon Aubrey & Sue T. Ranson
NAME

P O Box 175	Evergreen	VA	23939
ADDRESS	CITY	STATE	ZIP

434-610-6877
PHONE

jaranson@acpsweb.com
EMAIL

PROFESSIONAL (ENGINEER, SURVEYOR, ETC.)

☒ Primary Contact

Stephen Quina, Jr., PE
NAME

VHB
COMPANY

115 South 15th Street	Richmond	VA	23219
ADDRESS	CITY	STATE	ZIP

804-441-7440
PHONE

squina@vhb.com
EMAIL

PROJECT DESCRIPTION

CURRENT ZONING DISTRICT: Agricultural

IF REZONING, PROPOSED ZONING DISTRICT: _____

CURRENT LAND USE: Agricultural

PROPOSED LAND USE: Solar Energy Facility

PLEASE DESCRIBE THE PROJECT IN DETAIL:

A 5 MW AC solar energy facility within approximately 22.5 acres of fence enclosed site located on Parcel Tax Map No. 101-A-1 totaling 36.18 acres. See the Project Narrative for more information.

PROFFERS: (IF CONDITIONAL REZONING)
The applicant may proffer, in writing, reasonable conditions in addition to the requested zoning district regulations. All proffered conditions must be in writing, signed, and presented prior to the start of the Board of Supervisor's public hearing.

Are proffers being proposed? ☐ **YES** ☒ **NO**
(If yes, please submit proffer statement to staff.)

JUSTIFICATION

The Planning Commission and Board of Supervisors will study the request to determine the need and justification for the change in terms of public health, safety, and general welfare. Attach additional information, if necessary.

Please explain how the request furthers the purpose of the Zoning Ordinance and the zoning district classification for which the project is proposed. You may find a copy of the Appomattox County Zoning Ordinance at www.appomattoxcountyva.gov, navigate to the Community Development Page.

See the Project Narrative for more information.

Please explain how the project conforms to the general guidelines and policies contained in the Appomattox County Comprehensive Plan. You may find a copy of the plan at www.appomattoxcountyva.gov, navigate to the Community Development page.

See the Project Narrative for more information.

Please describe the impact(s) of the request on the property itself, the adjoining properties, and the surrounding area, as well as, impact(s) on the public services and facilities, including water, sewer, roads, schools, parks/recreation, and fire/rescue.

See the Project Narrative for more information.

CERTIFICATION AND STATEMENT OF UNDERSTANDING

I, as owner/agent of the property subject to this application, do hereby certify that I have read and understand the requirements for the submission of a conditional use permit petition or rezoning petition as provided under the Appomattox County Code, and further, that this application is complete, in compliance with the requirement of the Appomattox County Code, and accurate to the best of my knowledge.

Signature of Owner/Agent	Date	Printed Name
Jon A. Ranson	3/12/24	JON A. RANSON
Jake Clark	03/18/24	Jake Clark

Right of Entry

I, as owner/agent of the property subject to this application, do understand and hereby grant permission to the staff, Planning Commission and/or Board of Supervisors of Appomattox County, Virginia for the right of entry to the subject property for the purpose of study and analysis of this petition.

Signature of Owner/Agent	Date	Printed Name
Jon A. Ranson	3/12/24	JON A. RANSON
Jake Clark	03/18/24	Jake Clark

OWNER'S AUTHORITY LETTER

STATE OF VIRGINIA
CITY/COUNTY OF Appomattox

This 12 day of MARCH, 2024,

I, JON A. RANSON, the owner of

Richmond Hwy. Pamplin VA 23958
(*Describe land by Parcel Identification Number, address, etc.*)

make, constitute, and appoint Encore Renewable Energy my true and lawful agent and in my name, place, and stead giving unto said person full power and authority to do and perform all acts and make all representation necessary, without any limitations whatsoever, to make application for said rezoning/conditional use permit.
(*circle one*)
The right, powers, and authority of said agent herein granted shall commence and be in full force and effect on MARCH 12, 2024, and shall
(*date*)
remain in full force and effect thereafter until actual notice, by certified mail, return receipt requested, is received by the Appomattox County Department of Community Development stating that the terms of this power have been revoked or modified.

Jon A. Ranson
Owner

COMMONWEALTH OF VIRGINIA:

County of Appomattox
Subscribed and sworn to before me this 12 day of March, in my County and State aforesaid, by the aforenamed Principal.

Mary Elizabeth Watson
Notary Public

My Commission Expires: Aug 31 2024

Mary Elizabeth Watson
NOTARY PUBLIC
Commonwealth of Virginia
Reg. # 7835905
Com. Exp. Aug. 31, 2024

LIST OF ADJOINING PROPERTY OWNERS

The applicant is required to provide a list of owners as shown on the current real estate tax assessment books of all abutting properties and properties immediately across the street or road from the property to be rezoned or issued a Conditional Use Permit. This information can be found at the Commissioner of Revenue's office or by utilizing the County's GIS website. If necessary, use additional pages.

91-A-25	Miller James M	
Tax Map Number	Name	
15967 Richmond Highway		
Mailing Address (Street, Post Office Box)		
Pamplin	VA	23958
City	State	Zip

91-A-26	Webber Lawrence Jr.	
Tax Map Number	Name	
148 Loblolly Hill Road		
Mailing Address (Street, Post Office Box)		
Pamplin	VA	23958
City	State	Zip

101-A-5 and 101-A-6	Baldwin Donald Dewitt	
Tax Map Number	Name	
101 Plum Branch Road		
Mailing Address (Street, Post Office Box)		
Lynchburg	VA	24504
City	State	Zip

ADJOINING PROPERTY OWNERS CONTINUED

101-A-1B and 101-A-1C	Ranson John H Jr Et Als	
Tax Map Number	Name	
P O Box 175		
Mailing Address (Street, Post Office Box)		
Evergreen	VA	23939
City	State	Zip

101-A-10A	Rocks Precinct Voting Hall	
Tax Map Number	Name	
Mailing Address (Street, Post Office Box)		
Evergreen	VA	23939
City	State	Zip

101-A-10 and 101-A-1	Jon Aubrey & Sue T. Ranson	
Tax Map Number	Name	
P O Box 175		
Mailing Address (Street, Post Office Box)		
Evergreen	VA	23939
City	State	Zip

ADJOINING PROPERTY OWNERS CONTINUED

90-A-103	JC First LLC	
Tax Map Number	Name	
5373 Bethlehem Road		
Mailing Address (Street, Post Office Box)		
Charlotte Court House	VA	23923
City	State	Zip

91-A-23	Thomas William Lawton	
Tax Map Number	Name	
428 Snapps Mill Road		
Mailing Address (Street, Post Office Box)		
Spout Spring	VA	24593
City	State	Zip

91-A-24	Allen Jane Thomas	
Tax Map Number	Name	
260 Morton Lane		
Mailing Address (Street, Post Office Box)		
Appomattox	VA	24522
City	State	Zip

Adjoining Property Owner Location Map

ID	1	2	3	4	5	6	7	8
Tax Map #	91-A-25	91-A-26	101-A-6	101-A-5	101-A-10	101-A-10A	101-A-1B	101-A-1B
Owner Name	Miller James M	Webber Lawrence Jr.	Baldwin Donald Dewitt	Baldwin Donald Dewitt	Ranson Jon Aubrey	Rocks Precinct Voting Hall	Ranson John H Jr Et Als	Ranson John H Jr Et Als
Owner Address	15967 Richmond Hwy Pamplin VA 23958	148 Loblolly Hill Rd Pamplin VA 23958	101 Plum Branch Rd Lynchburg VA 24504	101 Plum Branch Rd Lynchburg VA 24504	P O Box 175 Evergreen VA 23939	Evergreen VA 23939	P O Box 175 Evergreen VA 23939	P O Box 175 Evergreen VA 23939

ID	9	10	11	12	13	14	15	16
Tax Map #	101-A-1C	101-A-1C	101-A-1C	101-A-1C	101-A-1C	101-A-1C	101-A-1C	101-A-1
Owner Name	Ranson John H Jr Et Als	Ranson John H Jr Et Als	Ranson John H Jr Et Als	Ranson John H Jr Et Als	Ranson John H Jr Et Als	Ranson John H Jr Et Als	Ranson John H Jr Et Als	Ranson Jon Aubrey
Owner Address	P O Box 175 Evergreen VA 23939	P O Box 175 Evergreen VA 23939	P O Box 175 Evergreen VA 23939	P O Box 175 Evergreen VA 23939	P O Box 175 Evergreen VA 23939	P O Box 175 Evergreen VA 23939	P O Box 175 Evergreen VA 23939	P O Box 175 Evergreen VA 23939

ID	17	18	19	20
Tax Map #	90-A-103	91-A-23	91-A-23	91-A-24
Owner Name	JC First LLC	Thomas William Lawton	Thomas William Lawton	Allen Jane Thomas
Owner Address	5373 Bethlehem Rd Charlotte Court House, VA 23923	428 Snapps Mill Rd Spout Spring VA 24593	428 Snapps Mill Rd Spout Spring VA 24593	260 Morton Ln Appomattox VA 24522

Project Narrative

1.0 Project Description

Richmond Hwy, LLC (Applicant) proposes to construct and operate the Richmond Highway Solar facility (Project) at 16228 Richmond Highway in Pamplin, VA 23958. The Project will be a fixed tilt, ground-mounted photovoltaic (PV) solar facility, with electricity generating capacity of approximately 5.0 megawatts (MW) of alternating current (ac) and 7.11 MW of direct current (dc) within a fence secured area of approximately 22.5 acres. The 22.5-acre fenced development area is located within parcel Tax Map No. 101-A-1 with a proposed gravel access road that connects to Richmond Highway (SR 460). The project parcel is 34.64 acres and is privately owned by Jon Aubrey and Sue T. Ranson (Property). The location and orientation of the solar array within the Property was designed so to minimize visibility from nearby residents and public roadways, minimize excavation and grading associated with project construction, and maximize exposure to solar radiation throughout the year. The facility setbacks from the surrounding residential parcels meet or exceed County requirements.

2.0 Purpose and Need

The purpose of the proposed Project is to generate local, clean, and renewable solar power, with the electricity generation to be sold to Dominion Energy. Project site construction is anticipated to begin in 2024. Local solar projects are part of the energy mix, reducing the dependence on any single source of electricity generation. Projects like these are being proposed in response to the Virginia Clean Economy Act of 2020 (VCEA). As part of the VCEA, Dominion Energy is required to implement significant development of Virginia-based zero-carbon renewable electricity generation (solar, on-shore wind power, off-shore wind power, etc.) on a prescribed schedule through the year 2036. These local power generation projects also benefit their host communities by improving the resiliency of the local electric grid, supplying power locally and offsetting power supplies that would otherwise be required from distant power plants.

Based on its commitment to providing renewable energy, the Applicant proposes to develop the site described below to maximize its solar energy potential within the Project's secured fenced area. To best determine optimal location within the site, the following factors have been analyzed:

- Significant solar radiation (insolation)
- Site accessibility for service and construction vehicles
- Avoidance of environmentally sensitive areas
- Limited tree and vegetative clearing
- Limited visibility from offsite locations
- Required setbacks from adjacent properties and public roads

3.0 Site Setting

The proposed Project site is located at 16228 Richmond Highway in Pamplin, Virginia. The fenced portion of the Project area is approximately 22.5 acres in size and will be installed within parcel Tax Map No. 101-A-1 (approximately 34.64 acres) with a proposed gravel access road that connects to Richmond Highway. The Property is privately owned by Jon Aubrey and Sue T. Ranson. Approximately 19 acres (55%) of the Property exists as forested (timber) area, some of which include approximately 0.57 acres of wetlands to be conserved and protected. The remaining acreage in the project parcel exists as managed turf with a portion occupied by existing structures.

The proposed 22.5-acre fenced Project site is bordered as follows:

- Bordered to the northeast by Richmond Highway and four (4) Agriculture (A-1) zoned parcels (Tax Map Nos. 91-A-25, 91-A-26, 101-A-6 and 101-A-5) that are directly across from Richmond Highway.
- Bordered to the southeast by Old Bethany Road and two (2) A-1 zoned parcels (Tax Map No. 101-A-10A and 101-A-10).
- Bordered to the southwest by Railroad Lane and nine (9) A-1 zoned parcels (Tax Map Nos. (6) 101-A-1C and (3) 101-A-1B).
- Bordered to the northwest by four (4) Residential (R-1) zoned parcels (Tax Map Nos. 90-A-103, (2) 91-A-23 and 91-A-24).

The specific location of the proposed solar array within this Property was carefully designed so to minimize visibility and maximize setbacks from nearby residents. Viewshed buffering/screening is accomplished by preserving a 25-foot or greater width buffer of existing vegetation. Where preserved existing vegetation is deemed insufficient for buffering, supplemental plantings will be installed for adherence to the buffering compliance in Section 19.6-97.3 of the Ordinance for Utility Scale Solar Energy Farms. Additionally, by placing the 22.5 acre fenced area internal to a larger parcel, screening is largely accomplished through existing topography and land cover within the 34.64 parcel.

A wetland delineation was completed by VHB in January 2023 and is pending confirmation from the United States Army Corps of Engineers. There are waters regulated under Section 401/404 of the Clean Waters Act found on the Project site, however, there are no proposed impacts to these wetlands/waters. A 100-foot buffer to these wetlands/waters will be preserved with the project and are shown on the plans.

4.0 Key Components

The proposed Project will consist of the following key components:

- Solar Modules and Racking
- Underground Electrical Conductors

- Balance of System Equipment
- Gravel Access Road
- Security Fencing

Key components are described in the following subsections:

4.1 Solar Modules and Racking

The proposed Project will utilize approximately 12,402 solar modules. The modules are manufactured offsite and will be delivered to the site by truck in wooden crates or cardboard boxes. Each module will measure approximately 3.7 feet by 7.5 feet and will be rated at approximately 545 watts. Solar modules will be mounted onto a fixed tilt racking system. Solar modules are mounted two rows high in portrait orientation to the racking system. The racking system is oriented in rows extending in the East-West direction, and they are angled to have maximum southern exposure to the sun. The racking will be mounted on steel posts, which will be driven piles or helical ground screws embedded into the ground at a depth determined by structural analysis considering the soils on site, wind loading, and other site-specific factors. Support posts will be driven/screwed into the ground about every 28 to 30 feet. The support structure will be designed to withstand both wind and snow loads as required per federal and state building code standards, respective of the region. The posts will be made from galvanized or corrosion-resistant metal to minimize the potential for corrosion over the lifespan of the project. The rows will be spaced approximately 16 feet apart to allow access for operations and maintenance and minimize inter-row shading. The maximum height of the solar modules above the ground will be approximately 10 feet.

4.2 Underground Electrical Conductors

Underground electrical conductors will be installed in trenches at a depth in compliance with the National Electric Code. Conductors either will be buried in a polyvinylchloride (PVC) conduit or equivalent.

4.3 Balance of System Equipment

Balance of System Equipment including but not limited to inverters, AC combiner boxes, transformers, and/or medium voltage switchgear will be installed near the solar array within the Project's fence line. Balance of System Equipment will be installed on H-Frames and concrete pads and in compliance with equipment manufacturer instructions. Full details of Balance of System Equipment will be included as part of the Project's electrical design plan set submitted for ministerial permits. A single row of power poles will be installed to connect the equipment on the Project's equipment pad to the local electric grid, at an interconnection point specified by Dominion Energy and shown on the Project site plan.

4.4 Access Roads

The site will be accessed via a construction entrance from Richmond Highway via an existing private gravel access road to the project site. A proposed gravel access road into the facility will be constructed to prevent vehicle rutting, erosion and minimize dust. The road will have one (1) turnaround designed to International Fire Code minimum specifications to accommodate maintenance and emergency vehicles. The turnaround will be directly inside of the access gate to the facility. The gravel access roadways will be wide enough to accommodate emergency vehicles and designed in compliance with County standards. The entrance from Richmond Highway will be designed in compliance with VDOT's low-volume commercial entrance standard.

4.5 Fencing

The solar array and all balance of system equipment will be enclosed in a minimum seven-foot-tall wildlife-permeable fence in compliance with the National Electric Code. The fence will have at least one vehicle access chain-link gate at the boundary of the array, which will always remain locked, except during operations and maintenance activities.

5.0 Summary of Construction Activities

Initial site construction will consist of installing erosion control measures, improving the access road, minimal site grading, and establishing the temporary staging/laydown area. Following this initial site preparation, the installation of the support piles, racking equipment, modules, security fencing and balance of system equipment will proceed through completion. Installation of supplemental buffer plantings will take place during or immediately following construction, as applicable. The perimeter erosion control measures will not be converted to permanent stormwater management measures until the disturbed project interior has become stabilized with permanent vegetative cover.

5.1 Erosion Control

The Project's erosion and sediment control will be designed per state and County requirements. The first phase of site construction will be the installation of the temporary construction entrance and the minimum disturbance necessary to install silt fence along the project perimeter. Next will be the construction of the perimeter drainage ditches and the sediment basins. Land disturbance to develop the proposed facility will not begin until after the installation and operation of these erosion control measures. The perimeter erosion control measures will not be converted to permanent stormwater management measures until the disturbed project interior has become stabilized with permanent vegetative cover. This will include permanent vegetative groundcover between rows and under the solar modules.

5.2 Smoke and Dust

The presence of smoke will be limited to initial site clearing and dependent upon County/State permitted onsite burning of removed vegetation. If onsite burning is allowed, then best management practices will be performed to ensure offsite trespass of smoke is not a nuisance or danger. Dust will also be limited to the site construction phase and will be monitored as part of the permitted Erosion & Sediment Control Plan. Best management practices (i.e., water truck) will be performed to control dust until the site is stabilized with permanent vegetative cover. Once the facility is constructed and the site is stabilized the facility will not create smoke or dust during normal operation.

5.3 Staging Area

A temporary staging area will be located within the subject parcel, inside the fenced area to the west of the access road and inside the facility gate. This area will only be temporarily disturbed to accommodate construction personnel parking, laydown for staging construction materials, equipment, and portable sanitation station(s). This facility will not require any onsite parking when in operation, all parking during construction will be accommodated in the proposed staging area.

5.4 Site Grading

Construction equipment such as tractors, backhoes, dozers, and graders may be utilized to grade the proposed perimeter drainage ditch and sediment/stormwater basin. Stripped and excavated soils are to be spread out adjacent to the fenced project area upgradient of silt fence and immediately seeded and mulched. This soil will then be available in the future to accommodate filling of these excavated stormwater measures and regrading back to a predevelopment condition with decommissioning.

Existing slopes were considered when selecting the project area. Site grading design is endeavoring for minimal disturbance of the existing surface soil to ensure prompt establishment of permanent stabilizing grasses following installation of equipment. All grading on this site was designed to have minimal impact on existing soil conditions, with no removal of existing soils from the site. Final finish site grading will be determined with the selection of the final racking system and presented with the final construction drawings for County Site Plan and VDEQ VSMP review and approvals. Reference the attached CUP Site Plan for the proposed siting of the stormwater basins and perimeter ditching.

5.5 Stormwater Management

The Project's Stormwater Management will be designed per VDEQ (state) and County requirements. Stormwater will be managed on site through permanent basins that are designed to the specifications set by VDEQ. Discharge from the site will be through a level spreader or equivalent energy dissipating device to release water as sheet flow to adjacent wetlands/streams or with the appropriate outlet protection as required by VDEQ. Once permanent vegetative covering of the site is approved by the County Erosion Control

Inspector, perimeter control will be converted to permanent measures. The basins will be constructed with permanent control structures, embankments and discharge piping when initially installed as sediment basins. The conversion to permanent stormwater measures will consist of the removal of the temporary dewatering orifice and baffles and uncovering/opening a low flow orifice at the bottom of the basin according to its design specifications. The proposed permanent stormwater basins are to be dry detention measures, and the perimeter drainage ditches will remain as permanently grassed and dry ditches for conveyance during precipitation events.

The Virginia Runoff Reduction Method (VRRM) will be used to determine water quality requirements for the limits of disturbance according to 9VAC25-870-63. A VRRM spreadsheet will be included with the stormwater design modeling with the County Site Plan review submittal, following CUP approval. Reference the attached CUP Site Plan for proposed perimeter drainage ditches and stormwater management (SWM) basins.

6.0 Transportation and Traffic

Materials for the proposed Project including but not limited to gravel, riprap, stormwater structures, PV modules, support racks/piles, inverters, transformer, wiring and equipment pads will be delivered to the site via trucks during construction. All construction traffic will access the project site from Richmond Highway via the proposed access, which is to be constructed as a low volume commercial entrance. Considering the existing function of Richmond Highway as a principal arterial road, the proposed construction truck traffic is not expected to negatively impact existing traffic patterns. A Maintenance of Traffic (MOT) Plan will be developed in accordance with VDOT Work Area Protection Manual (WAPM), the Manual on Uniform Traffic Control Devices (MUTCD) and submitted with the site plan for approval. Following the completion of site construction, vehicular access to the site will be limited to semi-annual operation and maintenance activities. With no VDOT improvements to the subject roadways, the same TMP/MOT proposed for construction will apply to the project's decommissioning process.

7.0 Fiscal and Employment Impacts

A typical construction workforce for a solar facility of this size consists of approximately 18 workers during the construction period, which should last approximately 12 months. Construction personnel will be divided between civil and electrical services, respective of construction phasing. Not all workers will be present on site at the same time.

The attached report entitled "Richmond Hwy, LLC Economic and Fiscal Contribution to Appomattox County, Virginia" was prepared by Mangum Economics is attached as Appendix G and includes the following findings:

The Project would make an economic contribution to Appomattox County:

- The proposed Richmond Highway Solar project would provide an estimated one-time pulse of economic activity to Appomattox County during its construction phase supporting approximately:
  - 5 direct and 2 indirect and induced jobs.
  - $0.3 million in associated wages and benefits.
  - $1.3 million in economic output.

- The proposed Richmond Highway Solar project would provide an estimated annual economic impact to Appomattox County during its ongoing operational phase supporting approximately:
  - < 1 direct, indirect, and induced job.
  - $15,500 in associated wages and benefits.
  - $52,400 in economic output.

The proposed Richmond Highway Solar project would have a significantly greater fiscal impact on Appomattox County than the property generates in its current use:

- The proposed Richmond Highway Solar project would generate approximately between $84,100 in cumulative county revenue under Scenario 1 and approximately $246,500 in cumulative county revenue under Scenario 2 over the facility's anticipated 25-year operational life, as compared to approximately $12,700 in cumulative county revenue in the property's current use – this constitutes a 7 to 19 fold increase over current revenues.

8.0 Utility Use

8.1 Water Use

No permanent potable water service will be required for the solar facility, and therefore no water infrastructure is proposed with the Project. During construction water use will be accommodated by water trucks with use limited as necessary for moisture conditioning of soil, hydro-mulching, dust control and irrigating new buffer plantings.

8.2 Sewer and Solid Waste

No permanent sanitary sewer or solid waste services will be required for the solar facility, and therefore no sewer or solid waste infrastructure is proposed with the Project. During construction temporary sanitary facilities will be accommodated via portables and the limited solid waste will be handled via temporary dumpster(s). Both temporary measures will be serviced at regular intervals to prevent nuisance.

9.0 Community Outreach

Community outreach is important to the overall success of this project, and for this reason the applicant mailed invitations to the neighboring landowners, publicly noticed, and hosted an in-person public community meeting on January ##, 2024. The intent of this meeting was to introduce the proposed project, meet the neighbors, answer questions, and address any concerns they may have about the project, solar energy, and the developer.

10.0 Compliance with Appomattox County Comprehensive Plan

Objective 1: Growth Management

Maintain and protect the rural and historical nature of the county while simultaneously encouraging controlled development in specified areas. Maintain agriculture as a significant portion of the county's economic base. Protect, promote, and enhance agriculture and forestry as a land use. Plan for future locations and expansion of public facilities. Maintain and implement a long range county-wide utility plan for water and sewer that supports and complements the long range plan for community development. Maintain and improve public safety through emergency services. Expand recreational opportunities and facilities for all citizens of all ages. Provide efficient management of solid waste and protect the health, safety, and welfare of the citizens of Appomattox County by planning for future solid waste management.

The construction of the Richmond Highway Solar facility can be characterized as a safe development. The sequence of construction, erosion control and stormwater management measures will be incorporated into construction drawings developed and reviewed by a Professional Engineer and designed in accordance with County and VDEQ regulations. There are no proposed impacts to jurisdictional wetlands/waters and controlled stormwater discharges will be directed via level spreaders or energy-dissipation devices in a non-erosive condition to onsite wetlands and/or streams. The offsite impact is limited to temporary construction traffic along the proposed tuck route, which will be mitigated via a Transportation Management Plan. The proposed interconnection is into the existing overhead power distribution on the west side of Richmond Highway and within the project parcel. The proposed facility siting preserves existing wooded buffers for screening from neighbors and the public roadways. Once the facility has been decommissioned the land will be returned to its existing condition and prolong the agriculture use of the land and this significant portion of the county's economic base. Therefore, the proposed Project will preserve the character of the surrounding community while incorporating a sustainable energy source to the local grid.

Objective 2: Transportation

Enhance the quality, safety, and appearance of the country's primary and secondary roads. Develop alternative transportation methods to better serve county residents and visitors to the county's attractions. Develop and improve passenger transportation services in the county.

Refer to section 6.0 of the project narrative.

Objective 3: Housing

Provide safe, clean, and affordable housing opportunities for all citizens regardless of race, religion, sex, or national origin.

Not applicable to this project.

Objective 4: Natural Environment

Maintain and enhance a healthful natural environment that both preserves the natural beauty and protects the ecology of Appomattox County. Preserve and improve the quality of the county's soil, water, air, forests, and farmland by protecting environmentally sensitive areas from development. Protect water resources and water quality from deterioration from all sources of pollution.

This project requires the removal of approximately 14 acres of existing forested area, but it will promote the preservation of existing vegetation by retaining areas along the perimeter of the property in a minimum 25-foot-wide forested buffer (adjacent landowners) and 50-foot-wide forested buffer (adjacent to public roadways). The balance of these respective setback and buffers will be vegetated with lower growing native grasses, pollinators, and shrubs. Areas that must be timbered to reduce array shading will not be grubbed so that the root structure and existing topsoil will be maintained. No stripped or excavated soils will be removed from the site.

Map Unit Symbol	Map Unit Name	Acres in AOI	Percentage of AOI	Farmland Classification
5B	Cecil sandy loam, 2 to 7 percent slopes	17.2	76.4%	Prime Farmland
12B	Mattaponi-Cecil complex, 2 to 7 percent slopes	0.3	1.3%	Prime Farmland
18C	Pacolet-Louisburg complex, 7 to 15 percent slopes	5.0	22.2%	Farmland of statewide importance
	Total	22.5	100.0%	

The existing use for the property is agriculture with a portion of the land being forested. The USDA NRCS Web Soil Survey was analyzed, and the 22.5-acre fenced facility resides on 17.5 acres (77.7%) of prime farmland and 5.0 acres (22.2%) of farmland of statewide importance. This project serves to provide an environmentally friendly and sustainable local energy source while land-banking the site for potential agricultural use in the future following decommissioning. It also

provides a dependable fixed income to the landowner to ensure the land can be maintained within the family for use by future generations.

Objective 5: Historic Preservation

Maintain and protect Appomattox County as a rural community that focuses on its important position in American history.

A Cultural Resource Risk Assessment was performed on the project parcel by Dutton+Associates and it was determined that no architectural or archaeological resources were found within the boundaries of the project subject parcels. The Cultural Resource Risk Assessment also considered a 0.5-mile buffer surrounding the project and determined there is an absence of previously recorded cultural resources within the study limits. Therefore, this project is considered to have a low risk factor for significant cultural resources to be present. The supporting report is included in Appendix F of this report.

Objective 6: Economic Development

Encourage new economic development while retaining industries and businesses. Promote compatibility of industrial development with existing community conditions. Expand employment opportunities in Appomattox County. Promote tourism to the county and encourage increased visitor spending, local tax revenue, awareness of local tourism assets, and opportunities for job creation.

Richmond Highway is to be developed via a Power Purchase Agreement (PPA) with Dominion Energy. Local solar projects are part of the energy mix, reducing the dependence on any single source of electricity generation by providing "home-grown" electricity. These projects help keep electric costs down by providing a hedge against the rising costs of commodity fuels. These local power generation projects also benefit their host communities by improving the resiliency of the local electric grid, supplying power locally and offsetting power supplies that would otherwise be required from distant power plants.

Facility Decommissioning Plan

Richmond Hwy, LLC: Decommissioning Plan

Intro

Richmond Hwy, LLC ("Petitioner") hereby submits its plan for the eventual decommissioning of the proposed 5 MW solar electric generation facility located in Pamplin, Virginia ("Project") and the establishment of a decommissioning fund for review as part of the Rezoning and Conditional Use Permitting process.

Decommissioning Activities

At the time the Project permanently ceases to operate, Petitioner, or its successor or assigns will perform decommissioning activities which will include off-site removal of the solar panels, support structures, electrical lines, inverters, transformers, any concrete pads, and fencing/fence posts, and any other auxiliary equipment associated with the Project that is within the Petitioner's ownership, or its successor or assigns.

Decommissioning will also include reclaiming the site in order to restore the site's agricultural potential by replacing prime agricultural soils that have been temporarily stockpiled onsite to areas that have been disturbed by Project infrastructure, plowing the site within the fenced-in area to a depth of 8 inches if bulk density testing indicates that Project-related soil compaction has occurred, and preparing the site for re-seeding or planting. All decommissioning activities are detailed in Attachment A.

Cost of Decommissioning

The estimated cost of decommissioning the Project is US **$447,164** as indicated in the following Attachment A and was prepared by Vanasse Hangen Brustlin, Inc. (VHB), which has an office at 115 South 15th Street, Suite 200, Richmond, VA. The estimated cost of decommissioning shall be adjusted every five years to account for inflationary effects using an annual increase of two percent (2%) per year.

Establishment of Decommissioning Fund

Prior to commencing Project construction, a fund for decommissioning ("Decommissioning Fund") shall be established for the Project in the amount of the estimated cost of decommissioning identified in Section III above. The Decommissioning Fund shall be established in the form of an irrevocable standby Letter of Credit (LC") that: (1) names Appomattox County as the sole beneficiary of the LC; (2) is issued by an A-rated financial institution; (3) includes an automatic extension provision or "evergreen clause"; and (4) is bankruptcy remote. . No other entity, including Petitioner, shall have the ability to demand payment under such LC. Upon issuance, such

LC shall be submitted by Petitioner to the Appomattox County for approval. The LC will be substantially in the form annexed hereto as Attachment B.

Every three years, the Petitioner shall file a report with the County describing any adjustments and changes to the decommissioning fund in the previous three-year period. This report shall be filed no later than February 28 of the third year following the issuance of the CUP and every subsequent third year.

The value of Petitioner's decommissioning fund shall be adjusted for inflation every three years based upon the net positive change in the annual average of the U.S. Bureau of Labor Statistics' Northeast Urban Consumer Price Index for the preceding three-year period. The decommissioning fund amount shall not be reduced in periods when the Northeast Urban Consumer Price Index reports a net negative change for the preceding three-year period.

The Petitioner shall adjust the Project's standby LC every three years to reflect changes to the decommissioning fund as provided above. Revisions shall be made no later than February 28 in conjunction with the report required above. Nothing herein shall preclude the Commission from requiring more frequent adjustments due to facility or site conditions.

The Commission shall have the right to draw upon the Petitioner's irrevocable standby LC to pay for decommissioning in the event that the Petitioner has not commenced decommissioning activities within 90 days of a Commission order directing decommissioning consistent with a Drawing Certificate substantially in the form annexed hereto as Attachment C.

When the Project permanently ceases to operate, Petitioner, its successors or assigns shall decommission the Project as required under the County's rules for the approved Conditional Use Permit.

Upon completion of all decommissioning and site restoration activities, the Petitioner will request a determination from the Commission that the Petitioner's decommissioning obligations have been satisfied. Upon the Commission's determination that the decommissioning obligations have been satisfied, the Commission will terminate the Project's LC.

Decommissioning Cost Estimate – Attachment A

Decommissioning Cost Estimate				
Item	**Quantity**	**Units**	**Unit Cost**	**Total**
Disassembly / Removal / Demo				
Mobilization	1	LS	$ 10,000.00	$ 10,000.00
Erosion Control Measures (CE, SF, etc.)	23.5	AC	$ 700.00	$ 16,450.00
Road Base Material	1,117	SY	$ 0.50	$ 558.50
Concrete Pads	1	EA	$ 1,050.00	$ 1,050.00
Posts	1,560	EA	$ 8.00	$ 12,480.00
Racking	19,000	LF	$ 1.50	$ 28,500.00
Modules	12,402	EA	$ 1.00	$ 12,402.00
Cable	3,000	LF	$ 0.25	$ 750.00
Transformers	1	EA	$ 425.00	$ 425.00
Inverters	40	EA	$ 425.00	$ 17,000.00
Stormwater Basin Structure Removal	2	EA	$ 6,000.00	$ 12,000.00
Grading, Decompaction & Seeding/Stabilization	23.5	AC	$ 4,000.00	$ 94,000.00
Fence	5,607	LF	$ 5.00	$ 28,035.00
Trucking / Hauling / Disposal				
Road Base Material	17	Trucks	$ 700.00	$ 11,900.00
Concrete	1	Trucks	$ 1,400.00	$ 1,400.00
Posts	4	Trucks	$ 500.00	$ 2,000.00
Racking	5	Trucks	$ 500.00	$ 2,500.00
Modules	21	Trucks	$ 1,400.00	$ 29,400.00
Cable	1	Trucks	$ 475.00	$ 475.00
Transformer & Inverters	1	Trucks	$ 1,400.00	$ 1,400.00
Fencing	1	Trucks	$ 500.00	$ 500.00
Module Landfill Fees	12,402	EA	$ 3.30	$ 40,926.60
Salvage - excluded from Net Cost				
Steel		Tons	$ 100.00	$ -
Net Cost				
Disassembly / Removal / Demo			$	233,650.50
Trucking / Hauling / Disposal			$	90,501.60
Decommissioning Management (10%)			$	32,415.21
15% Contingency			$	53,485.10
2% Annual Inflation (5 years)			$	37,111.81
Total			**$**	**447,164.22**

Decommissioning – Attachment B

FORM OF LETTER OF CREDIT

[NAME OF BANK] IRREVOCABLE STANDBY LETTER OF CREDIT

Appomattox County Effective Date: _____
153A Morton Lane

P.O. Box 863 Letter of Credit No.: _____
Appomattox, VA 24522

Expiry Date: _____

Telephone: **434-352-2637**

Attn: County Administrator

At the request of Richmond Hwy, LLC (the "Petitioner"), [**NAME OF BANK**] (the "Issuer"), hereby issues this irrevocable Letter of Credit No. [**____**] in the favor of **Appomattox County** ("Beneficiary") available for an aggregate amount up to the maximum amount of $[**Amount**] ([**Amount in words**] United States Dollars), effective as of the date first set forth above and expiring at our office located at **_____**(or at any other office which may be designated by us by written notice delivered to you) on the earliest to occur of (i) [**Expiration Date**] (the "Stated Expiration Date") or any automatically extended Stated Expiration Date, (ii) payment by Issuer hereunder of the maximum amount written above, or (iii) surrender of this original Letter of Credit to us for cancellation.

It is a condition of this Letter of Credit that the Stated Expiration Date shall be automatically extended without amendment, for successive periods of one year each from the Stated Expiration Date hereof or any such automatically extended Stated Expiration Date, unless, no less than 60 days before any such Stated Expiration Date, Issuer sends Beneficiary notice stating that this Letter of Credit will not be extended beyond the then current Stated Expiration Date. Any such notice of non-extension shall be in writing, shall be sent by hand, by certified mail (return receipt requested), or by Federal Express or other overnight delivery service, and shall be addressed to Beneficiary at the address set forth above.

Issuer has been requested to issue this Letter of Credit in connection with Condition of the
Certificate of Public Good issued by the Commission to Petitioner on _____in Case No. ___by Beneficiary in favor of Petitioner. However, Issuer assumes no obligations under the Certificate of Public Good or responsibility or duties thereunder.

Funds under this Letter of Credit are available to you by making a demand for payment by presentation to us at our offices at_____,
Attention: Loan Administration (or at any other office which may be designated by us by written notice delivered to you) of your drawing certificate in the form attached

hereto ("Drawing Certificate") and accompanied by the original of this Letter of Credit. A presentation under this Letter of Credit

may be made only on a day, and only between the hours of 9:00 AM and 5:00 PM, ___time on which such office is open for business (a "Business Day").

If we receive your Drawing Certificate and the original of this Letter of Credit at such office on any Business Day, all in reasonable conformity with the terms and conditions of this Letter of Credit, we will honor the same by making payment in accordance with your payment instructions on the third succeeding Business Day after presentation so long as the amount of the drawing, together with all previous drawings honored pursuant to this Letter of Credit, does not exceed the aggregate amount of this Letter of Credit. Typographical errors other than in amounts will not violate the conformity provision in this paragraph. If a drawing fails to conform to the terms and conditions of this Letter of Credit it shall not (i) preclude the Beneficiary from correcting any such errors and resubmitting the request nor (ii) act as a waiver of any rights the Beneficiary has under this Letter of Credit.

Partial and multiple drawings are permitted. All of the banking charges are for Applicant's account.

This Letter of Credit sets forth in full the terms of our undertaking to you (but not any of your duties, obligations or responsibilities to Issuer hereunder or otherwise). Such undertaking to you shall not in any way be modified, amended or amplified by reference to any document or instrument referred to herein or in which this Letter of Credit is referred to or to which this Letter of Credit relates and any such reference shall not be deemed to incorporate herein by reference any document or instrument.

Except as otherwise expressly stated herein, this Letter of Credit is subject to the International Standby Practices 1998, I.C.C. Publication No. 590 ("ISP98"), excluding, however, Rules 4.09(c) and 5.06(c)(I), and shall be governed by and construed in accordance with the laws of the State of New York. In the event of conflict between the ISP98 and a non-mandatory (variable) provision of such laws, the ISP98 shall govern.

Yours faithfully, **[NAME OF BANK]**

By:

Name:

Title:

By:

Name:

Title:

Decommissioning – Attachment C
DRAWING CERTIFICATE

[**NAME OF BANK**]

Ladies and Gentlemen:

Capitalized terms used herein and not otherwise defined herein shall have the respective meanings given to such terms in the Letter of Credit.

The Beneficiary hereby certifies to the Issuer, with reference to the Issuer's Irrevocable Standby Letter of Credit No. [_____]) (the "Letter of Credit"); that:

In connection with the terms of Richmond Hwy LLC 's Conditional Use Permit issued on [**Date**]_____for the construction of 5 MW solar electric generation facility, the Beneficiary is making a demand for payment under the Letter of Credit of the sum of____,which amount does not exceed the current Stated Amount of the Letter of Credit.

We hereby certify that the draft accompanying this statement drawn under Letter of Credit No. _____represents the amount due us to pay the costs of decommissioning the [**Project**] located in Pamplin, Virginia. We also certify that [**Petitioner**] has not commenced decommissioning after having a reasonable period of time, not to exceed ninety days, following issuance of an order of Appomattox County requiring decommissioning of the project per terms of the Conditional Use Permit issued to [**Petitioner**] by Appomattox County dated [**Date**].

OR

This Letter of Credit has fewer than 30 days remaining prior to the date of expiration and the Beneficiary has not received a replacement letter of credit to the extent required by the Conditional Use Permit, and the undersigned hereby confirms that the amount of this drawing does not exceed the undrawn face amount of the Letter of Credit.

The amount demanded hereby has been calculated in accordance with the terms of the Conditional Use Permit.

You are hereby directed to pay the amount so demanded to: [**Insert wire transfer instruction**]

IN WITNESS WHEREOF, the Beneficiary has executed and delivered this Certificate as of the day of , 20 .

Very truly yours,
Name:
Title:

Documentation of Right to use Property

LEASE OPTION AGREEMENT

THIS LEASE OPTION AGREEMENT ("Option Agreement"), entered into on the 7th day of March, 2022 (the "Effective Date") by and between _ John H. Ranson, Jr ; Sue T. Ranson ; Jon A. Ranson__,of ___ Appomattox ____, ____ Virginia ____, hereinafter referred to as the "Owner" and ____Encore Redevelopment, LLC____, of ___Burlington___, __Vermont__, hereafter referred to as "Optionee."

WITNESSETH:

WHEREAS, The Owner is the owner of certain real estate located off ___ Richmond Highway ____ in ____ Pamplin ____, ___ Virginia __ (the "Property"); and

WHEREAS, the parties have agreed that Optionee may lease said real estate from the Owner; and

WHEREAS, the parties wish to reduce their agreement to writing.

NOW THEREFORE, in consideration of [redacted] (the "Option Payment") and other good and valuable consideration and the mutual benefits accruing to each, the parties hereby covenant and agree as follows:

1. The Owner hereby grants to Optionee the right and option to lease from the Owner any portion of the Property, and access thereto, owned by the Owner, located at the Property as shown in Exhibit 1, and access thereto, to develop the site for the installation of a solar generation and possible storage. (the "Option").

2. The Owner and Optionee agree that the Option Payment shall be issued by Optionee within Six (6) weeks of the Effective Date. Should Optionee not make the Option Payment within that time, this Option Agreement shall terminate and be null and void.

3. The Owner hereby warrants and represents that Owner (a) owns the property in fee simple absolute; b) has the sole and unilateral right and authority to enter into this Option Agreement, (c) has and will maintain good and marketable title to the Property, free and clear of any encumbrances that could reasonably be expected to have a material adverse affect on development of the Property for a solar energy generating and/or battery energy storage facility, (d) shall not enter into any lease, option to lease, purchase and sale agreement, option to purchase, or any other similar agreement with any other developer of solar energy generating or battery or energy storage facilities during the Option Period, as defined below, and (e) shall notify Optionee promptly in writing after any transfer or other change in ownership of all or any part of the Property, including the name and address of the new Owner.

4. Optionee shall give the Owner written notice of Optionee's election to lease the subject Property at the time and date specified by Optionee in such notice. The formal Site Lease Agreement, which has been fully negotiated and agreed to by Owner and Optionee, executed by Owner and included herein as Exhibit 2, shall be executed by the Optionee on or about the time specified in such notice.

5. During the Option Period, Owner shall permit Optionee and its authorized agents and

representatives to enter upon the Property at reasonable times during normal business hours to inspect the Property and perform surveys. Optionee shall notify Owner of its intention, or the intention of its agents or representatives, to enter the Property at least twenty-four (24) hours prior to such intended entry. Optionee shall bear the cost of all inspections.

6. In the event Owner fails to perform its obligations under this Agreement for any reason other than Optionee's breach, Optionee may pursue all remedies available at law and in equity. Owner hereby acknowledges that Optionee will incur significant expenses in reliance on this Agreement.

7. The parties shall execute any and all other documents and take all actions necessary to effectuate the intent of this Option Agreement.

8. This Option Agreement shall be and remain in full force until December 31, 2027 or three (3) years from the date of execution of this Option Agreement, whichever is later (the "Option Period").

Option Payment Schedule

a) **Option Payment 2**:
   a.) Amount = [redacted]
   b.) Due Date = On or before the twelve (12) month anniversary of this Agreement.

b) **Option Payment 3:**
   a.) Amount = [redacted]
   b.) Due Date = On or before the twenty-four (24) month anniversary of this Agreement.

c) **Option Payment 4:**
   a.) Amount = [redacted]
   b.) Due Date = On or before the thirty-six (36) month anniversary of this Agreement.

Option Payment 5:
   a.) Amount = [redacted]
   b.) Due Date = On or before the thirty-six (36) month anniversary of this Agreement.

9. This agreement shall be binding upon the parties hereto and the respective heirs, successors and assigns of each.

Signature Page to Follow

Signature Page of Lease Option Agreement

JOHN H. RANSON, JR, SUE T. RANSON JON A. RANSON

(Printed Name)

(Signature)

STATE OF Virginia
COUNTY OF Appomattox, SS.

In _____, _____ in said County this 7th day of March, 2022, John H. Ranson Jr, Sue T Ranson, Jon A Ranson personally appeared, and s/he acknowledged this instrument, by him/her sealed and subscribed, to be his/her free act and deed and the free act and deed of _____.

Angela Williams
Notary Public
Commonwealth of Virginia
My Commission Expires 2/28/23
Commission #7072974

Before me, Angela Williams
Notary Public: Angela Williams
Commission Expires: 2/28/23
License #: Encore Redevelopment, LLC 7072974

~~John H Ranson, Sue T Ranson + Jon A Ranson~~
By: Charles R. "Chad" Fennell

STATE OF Vermont
COUNTY OF Chittenden, SS.

In Burlington, Vermont in said County this 16 day of March, 2022, personally appeared Chad Fennell, Duly Authorized Agent of Encore Redevelopment, LLC, and s/he acknowledged this instrument, by him/her sealed and subscribed, to be his/her free act and deed and the free act and deed of Encore Redevelopment, LLC.

Before me, _____
Notary Public: _____
Commission Expires: 1.31.23
License #: 157.0000609

EXHIBIT 1

MAP OF PROPERTY

EXHIBIT 2

SITE LEASE AGREEMENT

SITE LEASE AGREEMENT

This Site Lease Agreement ("Lease Agreement") is made by and between __Encore Redevelopment___, a ___Vermont___ limited liability company (the "Tenant") with a principal place of business at ___Burlington____, ____Vermont____, and ____ RANSON JOHN H JR ET ALS ___ with a principal place of business at ___ Richmond Highway ____ (the "Landlord"). The Tenant and the Landlord are sometimes referred to individually as a "Party" and collectively as the "Parties."

RECITALS

WHEREAS, the Landlord is the Owner of certain real property located in ___ Pamplin ____, ___ Virginia ___, with an address set forth and as more particularly described in Exhibit A (the "Property") and Tenant desires to lease all or a portion of the Property as more preliminarily and particularly described in Exhibit B (the "Premises").

WHEREAS, the Tenant designs, installs, operates and maintains equipment and systems, including battery storage, or battery storage solar panels, mounting systems, inverters, transformers, integrators, all electrical lines and conduits required to collect and transmit solar electrical energy to the delivery point and such additional utility lines, cables, conduits, transformers, wires, meters, monitoring equipment and other necessary and convenient equipment and appurtenances, that produce electricity from exposure to sunlight for sale and distribution to the electric grid.

WHEREAS, the Landlord and the Tenant desire to have a photovoltaic generation facility (the "Project") on the Premises.

NOW, THEREFORE, in consideration of the promises and the mutual covenants contained herein, the sufficiency of which is hereby acknowledged by both Parties, the Parties do hereby agree as follows:

1. **Lease.** The Landlord hereby leases the Premises to the Tenant pursuant to the terms and conditions of this Lease Agreement.

2. **Permitted Use.** The Tenant may use the Premises to install, operate, maintain, improve and replace the Project for purposes of generating and delivering electricity to the local utility. Tenant shall not construct or erect any structure or building on the Premises, if the use or useful occupancy of that structure or building will require the installation of or connection to a potable water supply or wastewater system, without first complying with the applicable rules and obtaining any required permit.

3. **Access to the Premises from the road to the Property.** Landlord agrees at all times to allow Tenant access to the Property to install, operate, maintain, improve and replace the Project on the Premises. Landlord shall also provide Tenant with adequate space on the Property during the construction of the Project for the Tenant's construction of the Project including reasonable staging and laydown areas. The Tenant shall comply with all laws, rules and regulations relating to Tenant's use of the Property and the Premises in connection with the construction and operation of the Project.

Landlord further hereby grants to Tenant, and shall execute such additional instruments as may be necessary or appropriate to fully vest in Tenant, the following easements and related rights:

(a) An easement over the Property for ingress and egress for the purpose of siting, development, enhancement, relocation, installation, construction, operation, inspection, maintenance, replacement, repair, improvements and removal of the Project, including without limitation the right to construct such temporary access roads as may be necessary or appropriate for such purposes.

(b) An easement and right to capture, use and convert the unobstructed solar resources over and across the Premises, and to prevent measurable diminishment in output due to obstruction of the sunlight across the area surrounding the Premises including but not limited to an easement right to trim, cut down and remove all trees, brush, vegetation and fire and electrical hazards now or hereafter existing on the Premises or immediately surrounding the Premises, which might obstruct receipt of or access to sunlight to the Premises or interfere with or endanger the Project or Tenant's operations, as determined by Tenant.

(c) An easement over the Property to allow the Project to interconnect to the electrical grid.

4. **Construction of the Project.** The installation and construction of the Project shall be performed in a good and workmanlike manner.

5. **Interconnection.** Tenant shall be responsible for the interconnection of the Project and Landlord shall cooperate with Tenant, any applicable utility and municipal and regulatory authorities in Tenant's pursuit of all permits, approvals and other authorizations that may be required in order to effect the interconnection of the Project. The date at which the Project is energized and permitted to operate by the utility shall be the date of commissioning (the "Commissioning Date").

6. **Approvals and Permits.** Tenant shall obtain all necessary approvals and permits required for the installation, construction and operation of the Project, and pay all permit fees required in connection with its activities under this Lease. The Landlord shall cooperate with Tenant in obtaining all such approvals and permits and necessary transfer Project permits to Tenant for purposes of operating the Project. To the extent that any permit must be obtained by Landlord, the Landlord agrees that it will grant all material decision-making rights with respect to such permit to Tenant.

7. **Exposure to Sunlight.** The Landlord covenants that it will use its best efforts to not allow vegetation on its property to grow in a manner or initiate or conduct any activities that could reasonably diminish the exposure of the Panels to sunlight during daylight hours, while this Lease Agreement remains in effect. Landlord hereby grants to Tenant an exclusive easement to use, convert, maintain and capture the free and unobstructed flow of solar insolation (sunlight) over and across the Property. Without limiting the foregoing, Landlord shall not: (a) construct or permit to be constructed any structure; or (b) plant or allow to be planted any trees or other vegetation in each case, on the Property or the real property adjacent to the Property that is owned by Landlord, that is reasonably expected to decrease the output or efficiency of the Project or adversely affect insolation levels on the Premises.

8. **Use of Subcontractors.** The Tenant shall be permitted to license subcontractors or agents to perform any of its obligations under this Lease Agreement.

9. **Landlord not to Interfere with the Project.** The Landlord and any representatives thereof shall not tamper with or undertake any maintenance or alterations to the Premises or the Project without the express written permission of the Tenant. The Landlord shall take reasonable measures necessary to ensure that the operation of the Property does not unreasonably impede, interrupt or prevent the generation and supply of electricity by the Project or damage or otherwise adversely impact the installation, operation and maintenance of the Project or the Tenant's performance under this Lease Agreement.

10. **Cooperation in Securing Rebates, Tax Credits and other Economic Benefits.** The Landlord will cooperate with Tenant in completing and filing such applications and other documents as are necessary to permit the Tenant to receive all mandatory or voluntary federal, state, or local renewable energy certificates or emissions or rebates, tax credits and including, without limitation, other economic benefits (the "Environmental Attributes") that are now or may hereafter become available to the Tenant in connection with the Project. Notwithstanding anything to the contrary herein contained, all Environmental Attributes in connection with the Project shall remain the property of the Tenant or its successors and assigns. Tenant shall have the exclusive right to sell, transfer, or convey the Environmental Attributes to any other person in Tenant's sole discretion.

11. **Taxes and Utility Expenses.**

(a) Tenant shall pay on or before when all taxes are assessed against the Tenant on account of the Tenant's personal property, equipment, or otherwise assessed against the Project, and Tenant's use and occupancy of the Premises under this Lease. Tenant shall, during the Term, pay and discharge on or before when due, all Utility expenses.

(b) The Landlord shall pay on or before when due all taxes, if any, including real estate taxes assessed on the Property and land underlying the Premises and any penalties or assessment under Virginia's land use program, imposed in connection with this Lease or the use of the Premises by the Tenant.

(c) All taxes shall be paid to the government entity assessing such taxes. All Utility expenses related directly to the Project shall be paid by the Tenant directly to the Utility unless the parties agree otherwise.

12. **Term.** This Lease Agreement shall commence upon execution by Tenant and shall terminate twenty five (25) years from the Commissioning Date, unless terminated earlier in accordance with the terms and conditions of this Lease Agreement (the "Term"). At the option of the Tenant, the Term may be extended by four (4) additional five (5) year terms.

13. **Rent.** Tenant shall pay the Landlord rent in the amount of $_____ per acre, per year ("Rent"),

[redacted]

("Rent"), which shall become due and payable within fifteen (15) days of the start of construction on the Project ("Construction Commencement"), and every anniversary of the Commissioning Date thereafter for the duration of this Lease Agreement.

_____ Landowner initial

_____ Tenant initial

OR

[redacted]

("Rent") and the yearly rental for the second year and for each year thereafter shall be increased by 2% above the prior year's annual rental amount. The initial Rent payment shall become due and payable within fifteen (15) days of the start of construction on the Project ("Construction Commencement"), and every anniversary of the Commissioning Date thereafter for the duration of this Lease Agreement.

_____ Landowner initial

_____ Tenant initial

Final acreage to be utilized for Rent calculation shall be determined based on the actual footprint of the Project, as further defined in Section 14. Any difference between the initial year's Rent and subsequent Rent calculations based on final design, shall be reconciled on the first anniversary of the Commissioning Date.

14. **Premises Leased.** Within 15 days of Construction Commencement, Tenant shall provide a final site plan to Landlord, which shall exist wholly within the Property, and which both Parties hereby agree shall be included as Exhibit B, without requiring any further approval of Landlord.

15. **Reserved**

16. **Ownership of the Project.** The Project shall be and remain the personal property of the Tenant and shall not be or become fixtures, notwithstanding the manner in which the Project is or may be affixed to the Premises. The Landlord shall not suffer or permit the Project to become subject to any lien, security interest or encumbrance of any kind, and the Landlord expressly disclaims and waives any rights it may have in the Project at any time and from time to time, at law or in equity. The Tenant shall maintain the Project in a good state of repair. The Tenant may grant a security interest in the Project and an assignment for purposes of security to its lender or lenders, and the Landlord shall provide any consent and/or waiver reasonably requested by any lender, consenting to such lender's rights in the Project.

17. **Removal of the Project**. Within six (6) months after the end of the Term or Term extension, or upon termination of this Lease Agreement, the Tenant, its successors or assigns shall sever, disconnect, and remove the Project and all of the Tenant's other property from the Premises and restore the Premises to as close to original condition as reasonably possible. The removal, repair and restoration shall be at the sole expense of the Tenant or its successors and assigns.

18. **Title**. Landlord represents and covenants that Landlord owns the Premises and the Property in fee simple, free and clear of all liens, encumbrances, and restrictions of every kind and nature, except for those that currently appear in the recorded chain of title and are reported as exceptions on the

commitment for title insurance that Tenant may obtain. Landlord further represents and warrants that Landlord is not a party to any, and to Landlord's best knowledge, there are no pending or threatened, legal, administrative, arbitral or other proceedings, claims, actions or governmental or regulatory investigations of any kind or nature whatsoever against Landlord (i) challenging the validity or propriety of this Lease Agreement, and/or transactions contemplated in this Lease Agreement or (ii) which could reasonably be expected to have a material adverse effect on the Ownership or operation of the Property or any part thereof or interest therein.

19. Quiet Enjoyment. The Landlord covenants and agrees that the Tenant, provided it remains in compliance with its obligations under this Lease Agreement, shall lawfully and quietly have the right to hold, occupy and enjoy the Premises for the Term of this Lease free from any claim of any entity or person of superior title thereto without hindrance to, interference with the Tenant's use and enjoyment thereof.

20. Environmental Matters. The Tenant shall not be liable for any past, present or future contamination or pollution or breach of environmental laws, if any, relating to the Premises or the Property, unless attributable to the Tenant's activities, its employees contractors or agents. Accordingly: (a) the Tenant shall not be responsible for any work relating to (i) the existence, use, transportation or treatment of Hazardous Materials, or (ii) the storage, handling, use, transportation, treatment, or the disposal, discharge, leakage, detection, removal, or containment of Hazardous Materials, and (b) the Landlord agrees to assume full responsibility for (and protect, indemnify and defend the Tenant against, any liability for response costs for any contamination or pollution or breach of environmental laws related to the Premises and the Property, unless and to the extent attributable to the Tenant's activities. The Tenant may encounter Hazardous Materials when installing, servicing, expanding, modifying or maintaining the Project. In the event the Tenant encounters any Hazardous Material at the Premises, the Tenant shall promptly cease any work in progress in an orderly, safe and efficient manner and inform The Landlord of the nature and location of said Hazardous Materials. It shall then be The Landlord's responsibility to eliminate or contain such Hazardous Materials in a commercially reasonable manner in compliance with law to allow The Tenant to continue or finalize any work in progress.

21. Government Approvals. Landlord acknowledges that Tenant's ability to use the Property for the development of a Project is contingent upon obtaining all government and utility approvals. Landlord shall cooperate with Tenant in its effort to obtain such approvals. Should Tenant be unable to obtain all necessary approvals, or be unable to maintain such approvals due to changes in law, this agreement shall terminate at Tenant's option as outlined further in Section 22 below.

22. Right to Terminate. Prior to the Commissioning Date of the Project, the Tenant may terminate this Lease Agreement by providing prior written notice to the Landlord. On or after the Commissioning Date, the Tenant may terminate this Lease Agreement by providing at least six (6) months' prior written notice to the Landlord. After the Commissioning Date, Tenant may terminate this Lease, at its option, after giving not less than thirty (30) days notice to Landlord, if:

a. Any governmental agency denies a request by Tenant for or revokes a permit, license, or approval that is required for Tenant to construct or operate the Project and infrastructure on the Premises;
b. Tenant determines that technical problems, which problems cannot reasonably be corrected, preclude Tenant from using the Premises for its intended purpose;

c. Tenant does not have acceptable and legally enforceable means of ingress and egress to and from the Premises;
d. Utilities necessary for Tenant's use of the Premises are no longer available to the Premises; or
e. The Premises and/or Project are damaged or destroyed to an extent that prohibits or materially interferes with Tenant's use of the Premises.

In the event of termination by Tenant pursuant to this provision, Tenant shall be relieved of all further liability hereunder except its obligation to remove the Project as provided herein. Should Tenant terminate in accordance with this Section 22, Tenant shall remove the system in accordance with Section 17 above.

23. Assignment. This Lease Agreement and the rights and obligations of either Party may be assigned, so long as any assignee assumes all rights, duties and obligations of the assigning Party.

24. Liability for Injury and Damage. Tenant shall defend, indemnify and hold harmless the Landlord from any and all liability, loss, cost, damage or expense sustained by reason of the injury or death of any person, and/or damage to or destruction of any property arising from or caused by the Project and/or caused by any act, omission, or neglect of the Tenant or its subcontractors, agents, servants, employees, invitees, visitors or guests, including reasonable attorney's fees and other litigation expenses.

Landlord shall defend, indemnify and hold harmless the Tenant from any and all liability, loss, cost, damage or expense sustained by reason of the injury or death of any person, and/or damage to or destruction of any property arising from or caused by any act, omission, or neglect of the Landlord or its subcontractors, agents, servants, employees, invitees, visitors or guests, including reasonable attorney's fees and other litigation expenses.

Prior to commencing operations, Tenant shall obtain and provide evidence of the insurance coverages specified below.

1. **Commercial General Liability:** Including bodily injury, property damage, products and completed operations, personal and advertising injury with limits of $1,000,000 per occurrence and $2,000,000 annual aggregate limit;
2. **Automobile Liability**: All motor vehicles, including Hired and Non-Owned, used in connection with the Agreement; $1,000,000 combined single limit per accident;
3. **Workers' Compensation:** As required per the State of Virginia including Employer's Liability E.L. $500,000 per accident and $500,000 per employee, and $500,000 caused by disease; and
4. **Umbrella Liability excess of General Liability, Auto Liability and Employer's Liability** for $5,000,000 Each Occurrence/Aggregate.

Tenant shall provide the Landlord with certificate(s) of insurance naming the Landlord as an additional insured and evidencing the procurement of insurance contemplated in this section including endorsements, as required.

25. Revocation. In the event of a material default in the terms of this Lease Agreement by either the Landlord or the Tenant, the other party may terminate this Lease Agreement. Events that shall constitute a default under this Lease Agreement shall include, but not be limited to, a party's failure to perform or comply with any material provision of this Lease Agreement; an unauthorized assignment, a party's insolvency or inability to pay debts as they mature, or an assignment for the benefit of creditors; or if a petition under any foreign, state, or United States bankruptcy act, receivership statute, or the like, as they now exist, or as they may be amended, is filed by a party.

No party shall be in default under this Lease Agreement unless and until it has been given written notice of a breach of this Lease Agreement by the other party and shall have failed to cure such breach within thirty (30) days after receipt of such notice. When a breach cannot reasonably be cured within such thirty (30) day period, the time for curing may be extended by agreement of the parties for such time as may be necessary to complete the cure, provided that the defaulting party shall have proceeded to cure such breach with due diligence.

26. Lender Protection. Tenant shall have the absolute right at any time and from time to time, without Landlord's prior written consent or approval (but with prior written notice to Landlord) to: (i) assign, encumber, hypothecate, mortgage or pledge (including by mortgage, deed of trust or personal property security instrument), or otherwise transfer all or any portion of its right, title or interest under this Lease to a Lender designated by Tenant, as security for the repayment of any indebtedness and/or the performance of any obligation owned by Tenant to such Lender; and (ii) mortgage its leasehold interest hereunder and/or collaterally assign its interest in this Lease and in any monies due under this Lease in connection with obtaining financing from a Lender for the Project and all appurtenances thereto (including the interconnection facilities and the transmission facilities and improvements, or otherwise encumber and grant security interests in all or any part of its interest in this Lease, the Premises, the Project, interconnection facilities or transmission facilities (holders of these various security interests are referred to as "Leasehold Mortgagees").

Following an event of default under any financing documents relating to the Project and all appurtenances thereto (including the interconnection facilities and the transmission facilities and improvements), any Lender or Leasehold Mortgagee may (but shall not be obligated to) assume, or cause their designees to assume, all of the interests, rights and obligations of Tenant thereafter arising under this Lease. Any Leasehold Mortgagee that has succeeded to Tenant's interests under this Lease in accordance with the provisions of this Section shall also have the right, without Landlord's prior written consent or approval (but with prior written notice to Landlord) to assign or sublet the whole or any portion or portions of its interest in this Lease, the Premises, the Project and all appurtenances thereto (including the interconnection facilities and the transmission facilities and improvements) for the uses permitted under this Lease, to one (1) or more creditworthy persons or entities (each, an "Assignee"). Following any such sale, conveyance, lease, assignment or sublet, the term "Tenant" shall be deemed to include each "Assignee" then holding Tenant's interest in this Lease. However, no Leasehold Mortgagee or Assignee shall by virtue of Tenant's conveyance to it acquire any greater interest in the Premises or any easements created hereunder than Tenant then has under this Lease. As used herein, (A) the term "Subtenant" means any Person that receives a transfer from Tenant in accordance with the provisions of this Lease of all or any portion of the right, title or interest under this Lease or in one or more such easements; (B) the term "Sublease" means the grant or assignment of such rights from Tenant to a Subtenant; and (C) the term "Lender" means any financial institution or other Person (including a Leasehold Mortgagee) that from time to time provides secured financing for some or all of Tenant's or a Subtenant's Project, collectively with any security or collateral agent, indenture trustee, loan trustee or

participating or syndicated lender involved in whole or in part in such financing, and their respective representatives, successors and assigns. References to Tenant in this Lease shall be deemed to include any Person that succeeds (whether by assignment or otherwise) to all of the then-Tenant's then-existing right, title and interest under this Lease in accordance with the provisions of this Section.

If the rights and interests of Tenant in this Lease shall be assigned in accordance with this Section and the assuming party shall agree in writing to be bound by, and to assume, the terms and conditions hereof and any and all obligations to Landlord arising or accruing hereunder from and after the date of such assumption, Tenant shall be released and discharged from the terms and conditions hereof and each such obligation hereunder from and after such date, and Landlord shall continue this Lease with the assuming party as if such person had been named as Tenant under this Lease, provided, however, that the assuming party is creditworthy.

Landlord agrees to enter into a form of Non-disturbance, Consent and Recognition Agreement by and among the Tenant's then chosen Lender or Leasehold Mortgagee, Landlord, and Tenant which shall include, without limitation, consent by Landlord to the Tenant's collateral assignment of this Lease and Tenant's leasehold interest hereunder, cure rights and step in rights in favor of the Lender or Leasehold Mortgagee.

Any Lender or Leasehold Mortgagee or Assignee who acquires Tenant's leasehold interest pursuant to foreclosure or assignment in lieu of foreclosure that does not directly hold an interest in this Lease, or that holds an interest, lien or security interest in this Lease solely for security purposes, shall have no obligation or liability under this Lease for obligations arising prior to the time such Lender, Leasehold Mortgagee or Assignee directly holds an interest in this Lease, or succeeds to title to such interest, or to this Lease. Any such Lender, Leasehold Mortgagee or Assignee shall be liable to perform obligations under this Lease only for and during the period it directly holds such interest or title.

Within fifteen (15) days after written request therefore, Landlord shall execute such estoppel certificates (certifying as to such truthful matters as Tenant, Lenders, Assignees or Leasehold Mortgagees may reasonably request, including that no default then exists under this Lease, if such be the case, and that this Lease remains in full force and effect), consents to assignment and non-disturbance agreements as Tenant or any Lender, Leasehold Mortgagee or Assignee may request from time to time, it being intended that any such estoppel certificates, consents to assignment and the like may be relied upon by any Lenders, Leasehold Mortgagees or Assignees or prospective Lenders, Leasehold Mortgagees, or Assignees, or any prospective and/or subsequent purchaser or transferee of all or a part of Tenant's interest in the Premises, any easements granted hereunder, the interconnection facilities and/or transmission facilities and/or the Project.

The provisions of this Section are for the benefit of the Lenders, Leasehold Mortgagees and Assignees, as well as the Parties hereto, and shall be enforceable by the Lenders, Leasehold Mortgagees and Assignees as express third-party beneficiaries hereof. Landlord hereby agrees that none of the Lenders, Leasehold Mortgagees and Assignees, nor any Person for whom they may act, shall be obligated to perform any obligation or be deemed to incur any liability or obligation provided in this Lease on the part of Tenant or shall have any obligation or liability to Landlord with respect to this Lease except to the extent any of them becomes a party hereto pursuant to this Section or through the exercise of its rights or remedies and the written assumption of the Lease or the easements granted hereunder. Any exercise by the Lenders, Leasehold Mortgagees and Assignees of any rights and remedies hereunder shall be subject to all rights, defenses and remedies available to Landlord, in each case subject to the

terms of any non-disturbance, consent and recognition agreement entered into between or among the Lenders, Leasehold Mortgagees and Assignees and Landlord.

A Lender, Leasehold Mortgagee or Assignee shall have the absolute right: (a) enforce its lien and acquire title to Tenant's leasehold estate and easement rights by any lawful means; (b) to take possession of and operate the Premises or any portion thereof, in accordance with the terms of this Lease and to perform all obligations to be performed by Tenant under this Lease, or to cause a receiver to be appointed to do so; and (c) to acquire such leasehold estate and easement rights by foreclosure or by an assignment in lieu of foreclosure and thereafter to assign or transfer such leasehold estate to a third party.

To prevent termination of this Lease or any partial interest in this Lease, each Lender, Leasehold Mortgagee or Assignee shall have the right, but not the obligation, at any time prior to termination of this Lease, to perform any act necessary to cure any default and to prevent the termination of this Lease or any partial interest in this Lease. As a precondition to exercising any rights or remedies as a result of any alleged default by Tenant, Landlord shall give written notice of such default to each Lender, Leasehold Mortgagee or Assignee previously disclosed by Tenant, concurrently with delivery of notice to Tenant, specifying in detail the alleged event of default and the required remedy. Each such Lender, Leasehold Mortgagee or Assignee shall have the same amount of time to cure the default as to Tenant's interest in this Lease as is given to Tenant. The cure period for each Lender, Leasehold Mortgagee or Assignee shall begin to run at the end of the cure period given to Tenant in this Lease.

If any default by Tenant under this Lease cannot be cured without the Lender, Leasehold Mortgagee or Assignee obtaining possession of all or part of the Premises and/or all or part of the Project and/or all or part of Tenant's interest in this Lease, then any such default shall be deemed remedied if: (a) within ninety (90) days after receiving notice from Landlord as set forth in Section 33, either Lender, Leasehold Mortgagee or Assignee shall have acquired possession of all or part of the Premises and/or all or part of the Project and/or all or part of such interest in this Lease, or shall have commenced appropriate judicial or non-judicial proceedings to obtain the same; (b) the Lender, Leasehold Mortgagee or Assignee, as the case may be, shall be in the process of diligently prosecuting any such proceedings to completion; and (c) after gaining possession of all or part of the Premises and/or all or part of the Project and/or all or part of such interest in this Lease, the Lender, Leasehold Mortgagee or Assignee performs all other obligations as and when the same are due in accordance with the terms of this Lease, but only for the period attributable to its possession of the Premises, provided, however, that the Lender, Leasehold Mortgagee or Assignee shall pay the Rent and perform all the other obligations of Tenant hereunder as of the date that Landlord could have terminated this Lease for an event of default. If a Lender, Leasehold Mortgagee or Assignee is prohibited by any process or injunction issued by any court or by reason of any action by any court having jurisdiction over any bankruptcy or insolvency proceeding involving Tenant or any defaulting Assignee, as the case may be, from commencing or prosecuting the proceedings described above, the sixty (60) day period specified above for commencing such proceeding shall be extended for the period of such prohibition. During any period of possession of the Premises by a Lender, Leasehold Mortgagee or Assignee and/or during the pendency of any foreclosure proceedings instituted by a Lender, Leasehold Mortgagee or Assignee, the Lender, Leasehold Mortgagee or Assignee shall pay or cause to be paid the fees, Rent and all other monetary charges payable by Tenant under this Lease which have accrued and are unpaid at the commencement of such period and those which accrue thereafter during such period. Following acquisition of Tenant's leasehold estate by the Lender, Leasehold Mortgagee or Assignee as a result of either foreclosure or acceptance of an assignment in lieu of foreclosure, or by a purchaser at a foreclosure sale (all of which are included in the term "Assignee"),

this Lease shall continue in full force and effect and the Lender, Leasehold Mortgagee or Assignee shall, as promptly as reasonably possible, commence the cure of all defaults under this Lease and thereafter diligently process such cure to completion, and upon such completion of the cure of all defaults under the Lease Landlord's right to terminate this Lease based upon such defaults shall be deemed waived; provided, however, that the Lender, Leasehold Mortgagee or Assignee or such party acquiring title to Tenant's leasehold estate shall not be required to cure those defaults which are not reasonably susceptible of being cured or performed by such party ("Non-curable defaults"). Non-curable defaults shall be deemed waived by Landlord upon completion of foreclosure proceedings or acquisition of Tenant's interest in this Lease by such party.

Any Lender, Leasehold Mortgagee or Assignee who acquires Tenant's leasehold interest, pursuant to foreclosure or assignment in lieu of foreclosure shall not be liable to perform the obligations imposed on Tenant by this Lease incurred or accruing after the Lender, Leasehold Mortgagee or Assignee no longer has Ownership of the leasehold estate or possession of the Premises. Neither the bankruptcy nor the insolvency of Tenant shall be grounds for terminating this Lease as long as all Rent and all other monetary charges payable by Tenant under this Lease are promptly paid by the Lender, Leasehold Mortgagee or Assignee in accordance with the terms of this Lease. The acceptance of Rent by Landlord shall not be deemed a waiver of any other rights or remedy it may have under the Lease at law or in equity.

If this Lease terminates for any reason, including because of Tenant's default or if the leasehold estate is foreclosed, or if this Lease is rejected or disaffirmed pursuant to bankruptcy Applicable Requirements or other Applicable Requirements affecting creditor's rights and, within ninety (90) days after such event, Tenant or any Lender, Leasehold Mortgagee or Assignee shall have arranged to the absolute satisfaction of Landlord for the payment of Rent, fees and other charges due and payable by Tenant as of the date of such event, then Landlord shall execute and deliver to such Lender, Leasehold Mortgagee or Assignee or designee, as the case may be, a new lease to the Premises which (a) shall be for a term equal to the remainder of the Lease Term before giving effect to such rejection or termination; (b) shall contain the same covenants, agreements, terms, provisions and limitations as this Lease (except as otherwise provided in this section and for any requirements that have been fulfilled by Tenant or any Lender, Leasehold Mortgagee or Assignee prior to rejection or termination of this Lease); and (c) shall include that portion of the Project in which Tenant had an interest on the date of rejection or termination. A Lender, Leasehold Mortgagee or Assignee shall pay all of Landlord's reasonable legal fees associated with a new lease of the Premises.

After the termination, rejection or disaffirmation of this Lease and during the period thereafter during which any Lender, Leasehold Mortgagee or Assignee shall be entitled to enter into a new lease of the Premises, Landlord will not terminate any sublease or the rights of any sub-Tenant unless such sub-Tenant shall be in default under such sublease.

If more than one (1) Lender, Leasehold Mortgagee or Assignee makes a written request for a new lease pursuant to this provision, the new lease shall be delivered to the Lender, Leasehold Mortgagee or Assignee requesting such new lease whose mortgage or assignment of this Lease or the Tenant's leasehold interest hereunder is prior in lien, and the written request of any other Lender, Leasehold Mortgagee or Assignee whose lien is subordinate shall be void and of no further force or effect.

The provisions of Section 26 shall survive the termination, rejection or disaffirmation of this Lease and shall continue in full force and effect thereafter to the same extent as if Section 26 was a separate and

independent contract made by Landlord, Tenant and each Lender, Leasehold Mortgagee or Assignee, and, from the effective date of such termination, rejection or disaffirmation of this Lease to the date of execution and delivery of such new lease, such Lender, Leasehold Mortgagee or Assignee may use and enjoy said Premises in accordance with the terms of such new lease, provided that all of the conditions for a new lease as set forth above are complied with.

Notwithstanding any provision of this Lease to the contrary, the Parties agree that so long as there exists an unpaid Leasehold Mortgage or loan or other financing held by a Lender that is secured by Tenant's grant of a security interest in the Premises, this Lease, the Project or any other Improvement, this Lease shall not be terminated, modified or amended, and Landlord shall not accept a surrender of all or any part of the Premises or a cancellation or release of this Lease from Tenant, prior to expiration of the Lease Term without the prior written consent of the Lender, Leasehold Mortgagee or Assignee, provided, however, that Landlord shall be permitted to terminate this Lease without the consent of Lender, Leasehold Mortgagee or Assignee if (a) such termination resulted from an event of default, and (b) Lender, Leasehold Mortgagee or Assignee was provided notice in accordance with this Section and the right to cure such default for a period of ninety (90) days following such notice, and failed to cure such default within such period.

27. Condemnation. If, at any time during the Term, any authority having the power of eminent domain shall condemn a portion of the Premises, the Easements, the Project or related interconnection and transmission improvements for any public use or otherwise, such that the operation of Project becomes, in the reasonable discretion of Tenant, impractical by materially reducing the electrical generating capacity of the Project or materially impacting access to the Premises, then Tenant may terminate this Lease Agreement without incurring any liability to Landlord with respect to such termination by giving written notice to Landlord indicating the effective date of such termination except that Tenant will have responsibility to remove the Project or related interconnection and transmission improvements owned by the Tenant from the Premises and Property. Tenant shall have the right to exercise its termination option only within the six (6) month period after the Tenant receives knowledge of the condemnation.

The disposition of any condemnation award and/or casualty insurance proceeds shall be allocated among Landlord, Tenant, any Lender, Leasehold Mortgagee or Assignee as their interests may appear.

28. Damage to Project. If, at any time during the Term, the Project shall be substantially damaged or destroyed and rendered inoperable by fire or other occurrence of any kind, Tenant shall at its sole cost and expense either (a) repair or replace the Project, or (b) elect to terminate this Lease Agreement in which case Tenant remove the Project or related interconnection and transmission improvements owned by the Tenant from the Premises and Property.

If Tenant elects to repair and restore the Project, all insurance money paid to Tenant on account of such damage or destruction under the policies of insurance maintained by Tenant hereunder, less the cost, if any, incurred in connection with the adjustment of the loss and the collection thereof shall be applied by Tenant to the payment of the cost of the repair and replacement of the Project, subject to the rights of Lenders, Assignees and Leasehold Mortgagees.

29. Terminate in Event of Governmental Shutdown. In the event a governmental authority decrees, orders or demands that operation of the Project cease or that the Project must be removed from the Premises, for reasons unrelated to any default, violation or breach by Tenant of any applicable law,

permit or consent, Tenant shall have the right to terminate this Lease Agreement without penalty to either Party upon delivery to Landlord of thirty (30) days prior written notice, in which case Tenant remove the Project or related interconnection and transmission improvements owned by the Tenant from the Premises and Property.

30. Force Majeure. In the event of a Force Majeure Event, as identified further below, Tenant shall be relieved from any future Rent payments and any other obligations under this Agreement, except its obligation to remove the Project as provided herein. "Force Majeure Event" means any act, event, cause or condition that prevents Tenant from performing its obligations, and is beyond the Tenant's reasonable control.

A Force Majeure Event may include, but shall not be limited to the following: an act of god; war (declared or undeclared); sabotage; riot; insurrection; civil unrest or disturbance; military or guerilla action; terrorism; economic sanction or embargo; civil strike, work stoppage, slow-down, or lock-out; explosion; fire; earthquake; abnormal weather condition or actions of the elements; hurricane; flood; lightning; wind; drought; the binding order of any Governmental Authority (provided that such order has been resisted in good faith by all reasonable legal means); the failure to act on the part of any Governmental Authority (provided that such action has been timely requested and diligently pursued); unavailability of electricity from the utility grid, equipment, supplies or products (but not to the extent that any such availability of any of the foregoing results from the failure of the Party claiming a Force Majeure Event to have exercised reasonable diligence); and failure of equipment not utilized by or under the control of the party claiming a Force Majeure Event.

31. Miscellaneous provisions.

A. Applicable Law. This Lease Agreement shall be interpreted and governed by the laws of the State of Virginia.

a. Rules of Interpretation. Titles and headings are included in this Lease Agreement for convenience only, and shall not be used for the purpose of construing and interpreting this Lease Agreement. Words in the singular also include the plural and vice versa where the context requires.

b. Severability. In the event that any provisions of this Lease Agreement are held to be unenforceable or invalid by any court or regulatory agency of competent jurisdiction, the Landlord and the Tenant shall negotiate an equitable adjustment in the provisions of this Lease Agreement with a view toward effecting the purposes of this Lease Agreement, and the validity and enforceability of the remaining provisions hereof shall not be affected thereby.

c. Entire Agreement; Amendments and Waivers. This Lease Agreement constitutes the entire agreements between the Parties and supersedes the terms of any previous agreements or understandings, oral or written. Any waiver or amendment of this Lease Agreement must be in writing. A Party's waiver of any breach or failure to enforce any of the terms of this Lease Agreement shall not affect or waive that Party's right to enforce any other term of this Lease Agreement.

d. Further Assurances. Either Party shall execute and deliver instruments and assurances and do all things reasonably necessary and proper to carry out the terms of this Lease Agreement if the request from the other Party is reasonable.

e. Recordation. The Parties hereto acknowledge that a memorandum of this Lease Agreement shall be recorded in the local land records, in the form included herein as Exhibit C.

f. Specific Performance. In the event that the Landlord is in material default under this Lease Agreement, then the Tenant may in its sole discretion, in addition to any other remedies available at law or in equity, tender performance of the obligations of the Tenant and specifically enforce all obligations of the Landlord.

32. Representations and Warranties.

(a) The Landlord hereby represents and warrants to Tenant as follows:

(i) Right, Power and Authority. It has full right, power and authority to enter into this Agreement and there is nothing, which would prevent it from performing its obligations under the terms and conditions imposed on it by this Agreement.

(ii) Binding Obligation. This Agreement has been duly authorized by all necessary action of Landlord, and constitutes a valid and binding obligation on the Landlord, enforceable in accordance with the terms hereof.

(iii.) Performance. To the best of the Landlord's knowledge, no fact or circumstance exists that will have, or is reasonably likely to have, a material adverse effect upon the Landlord's ability to perform its obligations under this Agreement.

(iv) Information. To the knowledge of the Landlord, the information provided to the Tenant by the Landlord pursuant to this Agreement is true and accurate in all material respects.

(b) Tenant hereby represents and warrants to the Landlord as follows:

(i) Right, Power and Authority. It has full right, power and authority to enter into this Agreement and there is nothing which would prevent it from performing its obligations under the terms and conditions imposed on it by this Agreement.

(ii) Binding Obligation. This Agreement has been duly authorized by all necessary action of Tenant, and constitutes a valid and binding obligation on Tenant, enforceable in accordance with the terms hereof.

(iii) Performance. To the best of the Tenant's knowledge, no fact or circumstance exists that will have, or is reasonably likely to have, a material adverse effect upon the Tenant's ability to perform its obligations under this Agreement.

(iv) Information. To the knowledge of the Tenant, the information provided to the Landlord by the Tenant pursuant to this Agreement is true and accurate in all material respects.

33. **Notices**. All notices, demands, requests, consents, approvals, and other instruments required or permitted to be given pursuant to this Agreement shall be in writing, signed by the notifying party, or officer, agent, or attorney of the notifying party, and shall be deemed to have been effective upon delivery if served personally, including but not limited to delivery by messenger, overnight courier service or overnight express mail, or upon posting if sent by registered or certified mail, postage prepaid, return receipt requested, and addressed as follows:

To Landlord:

To Tenant:

The address to which any notice, demand, or other writing may be delivered to any party as above provided may be changed by written notice given by such party as above provided.

Lease Agreement – Signature Page

IN WITNESS WHEREOF, the parties, as evidenced by the signatures of their Duly Authorized Agents, do hereby execute this Lease Agreement this ____ day of _____, 201__.

IN PRESENCE OF:

_____

_____
Witness

By: _____
Duly Authorized Agent

_____

_____
Witness

By: _____
Duly Authorized Agent

Exhibit A

Tax Map & Book and Page of Deed for Landlord's Property

Exhibit B

Description of the Premises

(To be provided by Tenant at sole discretion in accordance with Section 13 & 14)

Exhibit C

MEMORANDUM OF LEASE

KNOW ALL PERSONS BY THESE PRESENTS that a certain Site Lease Agreement (the "Lease") was entered into on _____, 20___, by and _____, a _____ (hereinafter "Lessee") and_____. (hereinafter "Lessor"), with an effective date of _____ _____, 20___.

1. Property Affected By The Lease. The leased property is further identified in Exhibit A attached hereto

2. Term of Lease. The Lease commences on__, 20____ and continues for twenty five years and ninety days following the Commissioning Date of the solar electric generation and/or battery facility to be constructed on the leased property by the Lessee. The Commissioning Date is defined in the Lease as the date on which the facility is energized and permitted to operate.

3. Restriction on Assignment. The Lease may be assigned by the Lessee without restriction or limitation, but may only be assigned by Lessor only upon written consent of the Lessee.

4. Extension and Renewal. The Lease is may be extended for four (4) additional five (5) year terms at the option of the Lessee.

5. Right of Purchase or First Refusal. There is no purchase right or right of first refusal granted in the Lease.

6. Location of Original Lease. The original signed copy of the Lease will be maintained at the Office of the Lessor.

7. Addresses. The addresses set forth in the Lease as those of the parties are as follows:

   Lessor:

   Lessee:

8. Conflict With Lease. The provisions of this Memorandum shall not be used in interpreting the Lease, and in the event of any conflict between this Memorandum and the Lease, the terms of the Lease shall control in all respects.

9. Use. Lessee shall not construct or erect any structure or building on the Premises, if the use or useful occupancy of that structure or building will require the installation of or connection to a potable water supply or wastewater system, without first complying with the applicable rules and obtaining any required permit.

10. Miscellaneous. All capitalized terms not defined herein shall have the meaning set forth in the Lease. This Memorandum shall be governed by the laws of Virginia.

LESSOR,_____.

_____

_____

STATE OF _____)
COUNTY OF _____) SS.

At _____, _____this__day of _____, 20____,
_____ personally appeared, and he acknowledged this instrument, by him sealed and subscribed, to be his free act and deed, and the free act and deed of _____.

Before me,_____
Notary Public:
Commission Expires:
License #:

LESSEE, _____

_____
Duly Authorized Agent

STATE OF _____)
COUNTY OF _____) SS.

At _____, _____this__day of _____, 20____,
_____ personally appeared, and he acknowledged this instrument, by him sealed and subscribed, to be his free act and deed, and the free act and deed of _____.

Before me,_____
Notary Public:
Commission Expires:
License #:

Memorandum of Option Agreement

This Memorandum of Option Agreement is made as of the 7th day of March, 2022. Notice is hereby given of a Lease Option Agreement (the "Agreement") dated the 7th day of March, 2022, by and between John H. Ranson, Jr ; Sue T. Ranson ; Jon A. Ranson of Appomattox, Virginia (the "Grantor"), and Encore Redevelopment, a Vermont limited liability company, its successors and assigns (the "Grantee").

1. The names and addresses of the parties to the Agreement are as follows:

Grantor: [John H Ranson Jr]
[Sue T Ranson]
[Jon A. Ranson]

Grantee: Encore Redevelopment
110 Main Street, Suite 2C
Burlington, VT 05401

2. The date of the Agreement is as set forth above.

3. The Grantor has granted the Grantee an option to lease certain real property owned by the Grantor and located Richmond Highway. The property subject to the option is described in further on Exhibit 1 hereto.

4. The term for the exercise of the option began on the 7th day of March, and shall end on see dates shown "Lease Option Agreement; section 8"_____, _____.

5. The Agreement does not grant the Grantee a right to extend or renew the term for the exercise of the option.

6. A copy of the original Agreement is on file with the Grantee.

[*Remainder of Page Intentionally Left Blank; Signature Page Follows*]

IN WITNESS WHEREOF, the parties have executed this Memorandum of Option Agreement effective as of the date first set forth above.

GRANTOR:

Sue T Ranson Jon A Ranson

STATE OF Va)
COUNTY OF Appomattox) SS.

At _____, _____ this 7th day of March, 2022, John H. Ranson, Jr
Sue T Ranson, Jon A Ranson personally appeared, and s/he acknowledged this instrument, by him/her sealed and subscribed, to be his/her free act and deed.

Angela Williams
Notary Public
Commonwealth of Virginia
My Commission Expires 2/28/23
Commission #7072974

Before me, Angela Williams
Notary Public: Angela Williams
Commission Expires: 2/28/23
License #: 7072974

GRANTEE: Encore Redevelopment, LLC

Name: Charles R. "Chad" Fennell
Title: Authorized Agent

STATE OF Vermont)
COUNTY OF Chittenden) SS.

At Burlington, Vermont this 16 day of March, 2022, Chad Fennell personally appeared, and he acknowledged this instrument, by him sealed and subscribed, to be his free act and deed, and the free act and deed of Encore Redevelopment, LLC.

Before me, _____
Notary Public: _____
Commission Expires: 1.31.23
License #: 157.0000609

A

Appendix A

CUP Site Plan

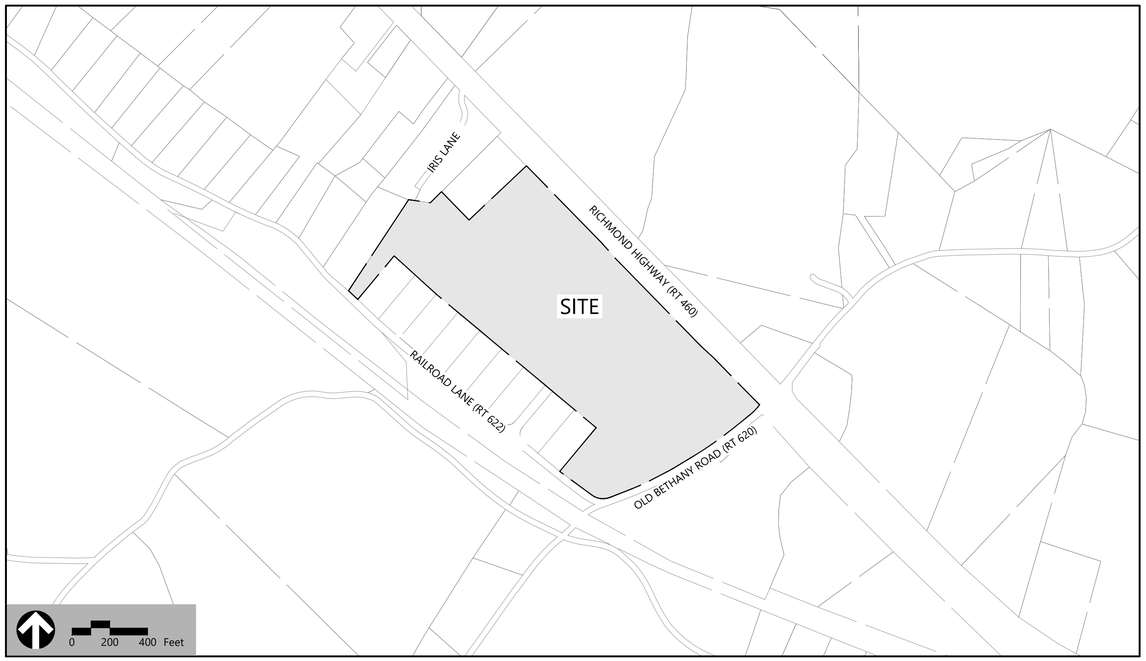
Site Plans

Issued for	**Review**
Date Issued	**February 28, 2024**
Latest Issue	**February 28, 2024**

RICHMOND HIGHWAY SOLAR CONDITIONAL USE PERMIT 5MW AC

APPLICATION #: TBD

16228 RICHMOND HIGHWAY PAMPLIN, VA 23958



Land Owner:

Jon Aubrey & Sue T. Ranson
P O Box 175 Evergreen, VA 23939
Tax Map No: 101-A-1

Applicant / Developer:

Richmond Hwy, LLC
50 Lakeside Avenue, Suite 110
Burlington, VT 05401
c/o caity@encore.eco
(802) 540-8304

Sheet Index

No.	Drawing Title	Latest Issue
C100	NOTES AND DETAILS	February 28, 2024
C200	EXISTING CONDITIONS	February 28, 2024
C300	SITE PLAN	February 28, 2024
C301	SITE PLAN W/ AERIAL	February 28, 2024
C400	PRELIMINARY BOUNDARY PLAT	February 28, 2024

vhb.com

115 South 15th Street
Suite 200
Richmond, VA 23219
804.343.7100

Civil Engineer & Survey Consultant:
VHB
115 South 15th Street, Suite 200
Richmond, VA 23219
Attn: Stephen Quina, PE
(804) 441-7440
squina@vhb.com

Environmental Consultant
VHB
351 McLaws Circle, Suite 3
Williamsburg, VA 23185
Attn: Kimberly Blossom
(757) 279-2828
kblossom@vhb.com

\\VHB.COM\GBL\PRO\WILLIAMSBURG\34864.01 ENCORE_RICHMOND_HWY_DD\CAD\LD\PLANSET\CUP\34864.01-CV 27 February 2024

VHB Project : 34864.01 Richmond Highway Solar
Issued for : Review 2/28/2024

PROJECT NOTES:

1. THE APPLICANT REQUESTS THE GRANTING OF A CONDITIONAL USE PERMIT (CUP) TO ALLOW FOR THE INSTALLATION OF A LARGE SOLAR ENERGY SYSTEM ON THE SUBJECT PROPERTY PER SECTION 19.6-97.2 OF THE ORDINANCE FOR UTILITY SCALE SOLAR ENERGY FACILITIES IN APPOMATTOX COUNTY, VA.
2. THE SUBJECT PROPERTY IS IDENTIFIED AS PARCEL TAX MAP NUMBER 101-A-1 PER THE APPOMATTOX COUNTY ASSESSOR AND TOTALS 34.64 ACRES PER THE VHB PERFORMED ALTA.
3. THE APPLICANT IS RICHMOND HWY, 50 LAKESIDE AVENUE, SUITE 110 BURLINGTON, VT 05401.
4. THE DEPICTED SUBJECT PROPERTY BOUNDARY AND EASEMENT INFORMATION TAKEN FROM A FIELD RUN SURVEY PREPARED BY VHB AND COURT RECORDS. ADDITIONAL ADJOINER LINES AND EXISTING CONDITIONS INFORMATION WAS OBTAINED FROM APPOMATTOX COUNTY GIS DATA.
5. TOPOGRAPHY, EXISTING BUILDINGS AND DRIVEWAYS ARE DERIVED FROM A PHOTOGRAMMETRIC SURVEY PREPARED BY NV5 DATED SEPTEMBER 7, 2023. THE CONTOUR INTERVAL IS ONE (1) FOOT.
6. WETLANDS INFORMATION OBTAINED FROM A WATERS OF THE U.S. DELINEATION PERFORMED BY VHB ON JANUARY 12, 2023 AND IS AWAITING CONFIRMATION VIA A PRELIMINARY JURISDICTIONAL DETERMINATION LETTER FROM THE UNITED STATES ARMY CORPS OF ENGINEERS.
7. PER FEMA FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL 51011C0250C, WITH AN EFFECTIVE DATE OF 1/2/2008, THERE ARE NO SPECIAL FLOOD HAZARD AREAS. THE PROPERTY IS LOCATED IN ZONE X, AREA OF MINIMAL FLOOD HAZARD.
8. TO THE BEST KNOWLEDGE OF THE ENGINEER AND APPLICANT THIS APPLICATION CONFORMS TO ALL APPLICABLE ORDINANCES, REGULATIONS AND ADOPTED STANDARDS.
9. A CULTURAL RESOURCE RISK ASSESSMENT WAS PERFORMED BY DUTTON AND ASSOCIATES FOR ARCHAEOLOGY IN JANUARY 2023. THE PROJECT AREA IS CONSIDERED TO HAVE A LOW RISK FOR SIGNIFICANT CULTURAL RESOURCES TO BE PRESENT. A COPY OF THE CULTURAL RESOURCE RISK ASSESSMENT WILL BE INCLUDED WITH THE CUP APPLICATION.
10. A PHASE I ENVIRONMENTAL SITE ASSESSMENT WAS PERFORMED IN JANUARY 2023 AND DID NOT INDICATE THE PRESENCE OF ANY POTENTIAL OR RECOGNIZED ENVIRONMENTAL CONDITIONS IN CONNECTION WITH THE SITE. A COPY OF THE PHASE 1 ESA WILL BE INCLUDED WITH THE CUP APPLICATION PACKAGE.
11. THE SOLAR PANEL LAYOUT PROVIDED ON THIS CONDITIONAL USE PERMIT PLAN IS APPROXIMATE AND THE FINAL LOCATION OF THE PROPOSED SOLAR PANELS, WITHIN THE PROPOSED LIMITS OF DISTURBANCE, SHALL BE DETERMINED AT THE TIME OF SITE PLAN SUBMISSION.
12. PROJECT SIGNAGE SHALL COMPLY WITH ALL APPLICABLE APPOMATTOX COUNTY SIGN REGULATIONS. REQUIRED WARNING SIGNAGE SHALL BE PROVIDED AS REQUIRED BY THE ZONING ORDINANCE.
13. NOISE LEVELS FROM THE SOLAR ENERGY FACILITY WILL COMPLY WITH ALL APPLICABLE APPOMATTOX COUNTY NOISE REGULATIONS.
14. EROSION CONTROL AND STORMWATER MANAGEMENT SHALL BE PROVIDED IN ACCORDANCE WITH LOCAL AND STATE REQUIREMENTS.

PROJECT NARRATIVE:

RICHMOND HWY, LLC (APPLICANT) PROPOSES TO CONSTRUCT AND OPERATE THE RICHMOND HIGHWAY SOLAR FACILITY (PROJECT) AT 16228 RICHMOND HIGHWAY IN PAMPLIN, VA 23958. THE PROJECT WILL BE A FIXED TILT, GROUND-MOUNTED PHOTOVOLTAIC (PV) SOLAR FACILITY, WITH ELECTRICITY GENERATING CAPACITY OF APPROXIMATELY 5.0 MEGAWATTS (MW) OF ALTERNATING CURRENT (AC) AND 7.11 MW OF DIRECT CURRENT (DC) WITHIN A FENCE SECURED AREA OF APPROXIMATELY 22.5 ACRES. THE 22.5-ACRE FENCED DEVELOPMENT AREA IS LOCATED WITHIN PARCEL TAX MAP NO. 101-A-1 WITH A PROPOSED GRAVEL ACCESS ROAD THAT CONNECTS TO RICHMOND HIGHWAY (SR 460). THE PROJECT PARCEL IS 34.64 ACRES AND IS PRIVATELY OWNED BY JON AUBREY AND SUE T. RANSON (PROPERTY). THE LOCATION AND ORIENTATION OF THE SOLAR ARRAY WITHIN THE PROPERTY WAS DESIGNED SO TO MINIMIZE VISIBILITY FROM NEARBY RESIDENTS AND PUBLIC ROADWAYS, MINIMIZE EXCAVATION AND GRADING ASSOCIATED WITH PROJECT CONSTRUCTION, AND MAXIMIZE EXPOSURE TO SOLAR RADIATION THROUGHOUT THE YEAR. THE FACILITY SETBACKS FROM THE SURROUNDING RESIDENTIAL PARCELS MEET OR EXCEED COUNTY REQUIREMENTS.

PURPOSE AND NEED

THE PURPOSE OF THE PROPOSED PROJECT IS TO GENERATE LOCAL, CLEAN, AND RENEWABLE SOLAR POWER, WITH THE ELECTRICITY GENERATION TO BE SOLD TO DOMINION ENERGY. PROJECT SITE CONSTRUCTION IS ANTICIPATED TO BEGIN IN 2024. LOCAL SOLAR PROJECTS ARE PART OF THE ENERGY MIX, REDUCING THE DEPENDENCE ON ANY SINGLE SOURCE OF ELECTRICITY GENERATION. PROJECTS LIKE THESE ARE BEING PROPOSED IN RESPONSE TO THE VIRGINIA CLEAN ECONOMY ACT OF 2020 (VCEA). AS PART OF THE VCEA, DOMINION ENERGY IS REQUIRED TO IMPLEMENT SIGNIFICANT DEVELOPMENT OF VIRGINIA-BASED ZERO-CARBON RENEWABLE ELECTRICITY GENERATION (SOLAR, ON-SHORE WIND POWER, OFF-SHORE WIND POWER, ETC.) ON A PRESCRIBED SCHEDULE THROUGH THE YEAR 2036. THESE LOCAL POWER GENERATION PROJECTS ALSO BENEFIT THEIR HOST COMMUNITIES BY IMPROVING THE RESILIENCY OF THE LOCAL ELECTRIC GRID, SUPPLYING POWER LOCALLY AND OFFSETTING POWER SUPPLIES THAT WOULD OTHERWISE BE REQUIRED FROM DISTANT POWER PLANTS.

BASED ON ITS COMMITMENT TO PROVIDING RENEWABLE ENERGY, THE APPLICANT PROPOSES TO DEVELOP THE SITE DESCRIBED BELOW TO MAXIMIZE ITS SOLAR ENERGY POTENTIAL WITHIN THE PROJECT'S SECURED FENCED AREA. TO BEST DETERMINE OPTIMAL LOCATION WITHIN THE SITE, THE FOLLOWING FACTORS HAVE BEEN ANALYZED:

- SIGNIFICANT SOLAR RADIATION (INSOLATION)
- SITE ACCESSIBILITY FOR SERVICE AND CONSTRUCTION VEHICLES
- AVOIDANCE OF ENVIRONMENTALLY SENSITIVE AREAS
- LIMITED TREE AND VEGETATIVE CLEARING
- LIMITED VISIBILITY FROM OFFSITE LOCATIONS
- REQUIRED SETBACKS FROM ADJACENT PROPERTIES AND PUBLIC ROADS

SITE SETTING

THE PROPOSED PROJECT SITE IS LOCATED AT 16228 RICHMOND HIGHWAY IN PAMPLIN, VIRGINIA. THE FENCED PORTION OF THE PROJECT AREA IS APPROXIMATELY 22.5 ACRES IN SIZE AND WILL BE INSTALLED WITHIN PARCEL TAX MAP NO. 101-A-1 (APPROXIMATELY 34.64 ACRES) WITH A PROPOSED GRAVEL ACCESS ROAD THAT CONNECTS TO RICHMOND HIGHWAY. THE PROPERTY IS PRIVATELY OWNED BY JON AUBREY AND SUE T. RANSON. APPROXIMATELY 19 ACRES (55%) OF THE PROPERTY EXISTS AS FORESTED (TIMBER) AREA, SOME OF WHICH INCLUDE APPROXIMATELY 0.57 ACRES OF WETLANDS TO BE CONSERVED AND PROTECTED. THE REMAINING ACREAGE IN THE PROJECT PARCEL EXISTS AS MANAGED TURF WITH A PORTION OCCUPIED BY EXISTING STRUCTURES.

THE PROPOSED 22.5-ACRE FENCED PROJECT SITE IS BORDERED AS FOLLOWS:

- BORDERED TO THE NORTHEAST BY RICHMOND HIGHWAY AND FOUR (4) AGRICULTURE (A-1) ZONED PARCELS (TAX MAP NOS. 91-A-25, 91-A-26, 101-A-6 AND 101-A-5) THAT ARE DIRECTLY ACROSS FROM RICHMOND HIGHWAY.
- BORDERED TO THE SOUTHEAST BY OLD BETHANY ROAD AND TWO (2) A-1 ZONED PARCELS (TAX MAP NO. 101-A-10A AND 101-A-10).
- BORDERED TO THE SOUTHWEST BY RAILROAD LANE AND NINE (9) A-1 ZONED PARCELS (TAX MAP NOS. (6) 101-A-1C AND (3) 101-A-1B).
- BORDERED TO THE NORTHWEST BY FOUR (4) RESIDENTIAL (R-1) ZONED PARCELS (TAX MAP NOS. 90-A-103, (2) 91-A-23 AND 91-A-24).

THE SPECIFIC LOCATION OF THE PROPOSED SOLAR ARRAY WITHIN THIS PROPERTY WAS CAREFULLY DESIGNED SO TO MINIMIZE VISIBILITY AND MAXIMIZE SETBACKS FROM NEARBY RESIDENTS. VIEWSHED BUFFERING/SCREENING IS ACCOMPLISHED BY PRESERVING A 25-FOOT OR GREATER WIDTH BUFFER OF EXISTING VEGETATION. WHERE PRESERVED EXISTING VEGETATION IS DEEMED INSUFFICIENT FOR BUFFERING, SUPPLEMENTAL PLANTINGS WILL BE INSTALLED FOR ADHERENCE TO THE BUFFERING COMPLIANCE IN SECTION 19.6-97.3 OF THE ORDINANCE FOR UTILITY SCALE SOLAR ENERGY FARMS. ADDITIONALLY, BY PLACING THE 22.5 ACRE FENCED AREA INTERNAL TO A LARGER PARCEL, SCREENING IS LARGELY ACCOMPLISHED THROUGH EXISTING TOPOGRAPHY AND LAND COVER WITHIN THE 34.64 PARCEL.

A WETLAND DELINEATION WAS COMPLETED BY VHB IN JANUARY 2023 AND IS PENDING CONFIRMATION FROM THE UNITED STATES ARMY CORPS OF ENGINEERS. THERE ARE WATERS REGULATED UNDER SECTION 401/404 OF THE CLEAN WATERS ACT FOUND ON THE PROJECT SITE, HOWEVER, THERE ARE NO PROPOSED IMPACTS TO THESE WETLANDS/WATERS. A 100-FOOT BUFFER TO THESE WETLANDS/WATERS WILL BE PRESERVED WITH THE PROJECT AND ARE SHOWN ON THE PLANS.

KEY COMPONENTS

THE PROPOSED PROJECT WILL CONSIST OF THE FOLLOWING KEY COMPONENTS:

- SOLAR MODULES AND RACKING
- UNDERGROUND ELECTRICAL CONDUCTORS
- BALANCE OF SYSTEM EQUIPMENT
- GRAVEL ACCESS ROAD
- SECURITY FENCING

FOR ADDITIONAL INFORMATION PLEASE REFERENCE THE COMPLETE PROJECT NARRATIVE AND OTHER SUPPORTING DOCUMENTS THAT ACCOMPANY THIS CUP APPLICATION.

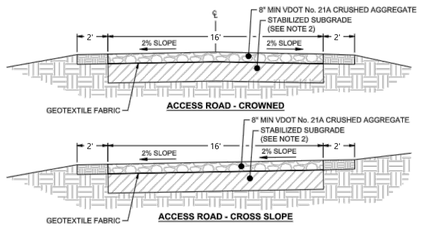
PROJECT DEVELOPMENT DATA

AREA CLASSIFICATION	PROJECT PARCEL AREA		LIMIT OF DISTURBANCE	
	(ACRE)	(PERCENT)	(ACRE)	(PERCENT)
WOODED AREA	6.92	20.0%	0	0.0%
TURF/POLLINATOR AREA	20.86	60.2%	18.87	81.3%
*TREE CLEARING AREA FOR SHADE REDUCTION	2.88	8.3%	0.35	1.5%
TOTAL IMPERVIOUS AREA	3.98	11.5%	3.98	17.2%
Gravel Roads/Riprap	0.27	-	0.27	-
PV Panels	3.61	-	3.61	-
Equipment Pads	0.10	-	0.10	-
TOTAL PROJECT PARCEL	34.64	TOTAL LOD	23.2	

*EXISTING TREES IN THESE SHADE REDUCTION AREAS ARE TO BE CLEARED VIA TIMBER PRACTICES THAT PRESERVE THE STUMPS/ROOTS AND PREVENT LAND DISTURBANCE.

ZONING TABULATIONS

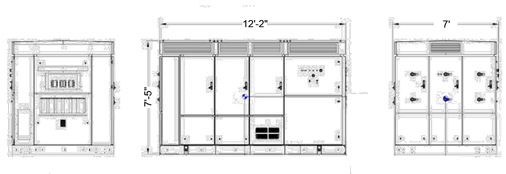
	REQUIREMENT / EXISTING	PROPOSED / PROVIDED
ZONING DISTRICT	AGRICULTURAL DISTRICT (A-1)	NO CHANGE
LAND USE	AGRICULTURE / FORESTED	LARGE SOLAR ENERGY FACILITY
MINIMUM SETBACKS (SEE NOTE #1)		
RIGHT-OF-WAY	100 FEET	>101 FEET
ADJACENT PROPERTY LINES	100 FEET	>100 FEET
MAXIMUM HEIGHT	15 FEET	10 FEET
MINIMUM BUFFER	100 FOOT LANDSCAPED STRIP ALONG AREAS ADJACENT TO PUBLIC ROADWAYS	EXISTING FORESTED BUFFER 100 FEET IN WIDTH TO BE PRESERVED ALONG ROADWAYS AND 25 FEET ALONG ADJACENT PROPERTY LINES.
NOTES:	1. SETBACKS MAY VARY SLIGHTLY WITH FINAL PLAN BUT ARE SUBJECT TO THE MINIMUM DISTANCES AS REQUIRED BY SECTION 19.6-97.3 OF DIVISION 9 OF CHAPTER 19 OF THE APPOMATTOX COMPREHENSIVE PLAN. 2. THE PROJECT LAYOUT IS DESIGNED SO TO PRESERVE AN EXISTING FORESTED/WOODLAND BUFFER OF 25 FEET OR WIDER AROUND THE PROJECT PARCEL'S PERIMETER. THIS EXISTING VEGETATION IS NATIVE AND WELL ESTABLISHED/MATURE AND PRESERVES EXISTING HABITAT IN ADDITION TO VISUALLY SCREENING THE SOLAR FACILITY.	



NOTES:
1. GEOTEXTILE FABRIC SHALL BE MIRAFI HP370 OR PROJECT ENGINEER APPROVED EQUIVALENT.
2. SUBGRADE MATERIALS SHALL CONFORM TO VDOT "ROAD AND BRIDGE SPECIFICATIONS". SUBGRADE SHALL BE PLACED IN 8" MAXIMUM LIFTS AND COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. SOIL MOISTURE CONTENT DURING COMPACTION SHALL BE MAINTAINED WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT.
3. SHOULDERS SHALL BE COMPACTED NATIVE SOIL.
4. ROAD GRAVEL WIDTH MAY BE EXPANDED TO 20 FEET WIDE AT ENTRANCE OR WHERE SPECIFIED ON PLAN.

Access Road Typical Section

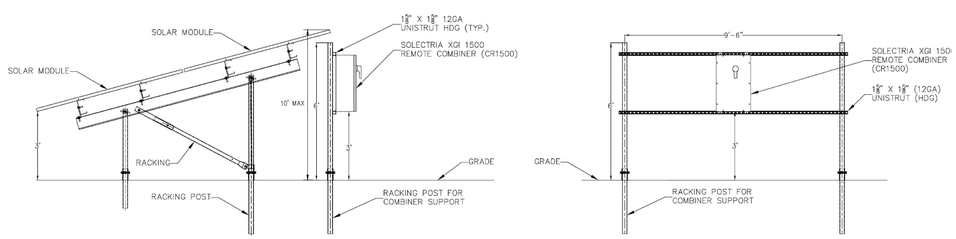
N.T.S.



Typical Power Inverter Elevations

N.T.S.

SOLAR EQUIPMENT NOTE:
TYPICAL SECTION DETAIL REPRESENTATIVES ARE SHOWN FOR THE GROUND MOUNTED FIXED-TILT PV MODULE RACKING SYSTEM AND POWER INVERTERS. THE FINAL EQUIPMENT SELECTIONS WILL BE SPECIFIED WITH THE FINAL SITE PLAN SUBMITTAL TO THE COUNTY.



Typical Fixed-Tilt Racking and Combiner Elevations

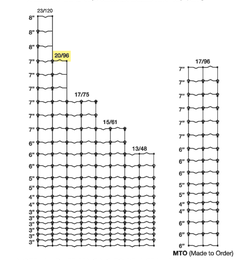
N.T.S.

Fixed Knot Fence Products

Solidlock® Pro Professional Strength Fixed Knot Game Fence

Part #	Fence Design	Height	Vertical Spacing	Roll Length	Wire Gauge	Roll Weight	Coating	
118248	1961-6	61"	6"	330'	12.5g	279 lbs	Class 3	
118269	1775-6	75"	6"	330'	12.5g	327 lbs	Class 3	
118271	2096-3	96"	3"	165'	12.5g	340 lbs	Class 3	
118288	2096-6	96"	6"	330'	12.5g	397 lbs	Class 3	
118378	2096-6	96"	6"	500'	12.5g	601 lbs	Class 3	
118241	2096-12	96"	12"	330'	12.5g	282 lbs	Class 3	
118371	2096-12	96"	12"	660'	12.5g	564 lbs	Class 3	
118318	2312/0-6	120"	6"	330'	12.5g	492 lbs	Class 3	
180546	2096-6	96"	6"	330'	12.5g	397 lbs	Bezinal® coating	
216657	2096-6	96"	6"	500'	12.5g	600 lbs	Bezinal® coating	
136261	2096-6	96"	6"	330'	12.5g	366 lbs	Bezinal® Black	

Solidlock® Pro Game or Project Approved Equivalent
Available in 6" and 12" stays; select sizes available with 3" stay spacing

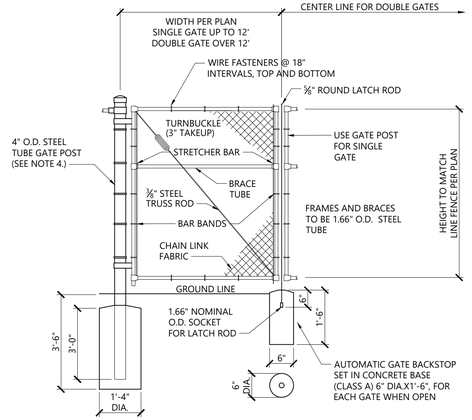


NOTE: WILDLIFE FENCING TO BE INSTALLED WITH 8" VERTICAL BAR SPACING AT BOTTOM TO ACCOMMODATE PASSAGE OF SMALL WILDLIFE.

Wildlife-Permeable Fencing Specifications*

N.T.S. Source: Bekaert Fixed Knot Fence

*NOTE: FENCING IS SUBJECT TO APPROVAL BY THE LOCAL DISTRIBUTION UTILITY



NOTES

1. MATERIALS TO BE SUPPLIED AND INSTALLED IN CONFORMANCE WITH "CHAIN LINK MANUFACTURER'S INSTITUTE" PRODUCT MANUAL.
2. CONCRETE FOOTING ON LINE POSTS MAY BE OMITTED IF POSTS ARE BURIED A MIN. OF 2.5 FEET, UNLESS SPECIFIED OTHERWISE BY FENCE MANUFACTURER.
3. FENCE FABRIC, POSTS, FRAMEWORKS, AND HARDWARE SHALL BE GALVANIZED STEEL PER SPECIFICATIONS.
4. GATE POSTS TO BE USED ON EACH SIDE OF SINGLE AND DOUBLE GATE OPENINGS.

Chain Link Fence Gate

12/19

N.T.S. Source: VHB REV LD_482

vhb.com
vhb
115 South 15th Street
Suite 200
Richmond, VA 23219
804.343.7100

encore RENEWABLE ENERGY®

Richmond Highway Solar

16228 Richmond Highway
Pamplin, VA 23958

No.	Revision	Date	Appvd.

Designed by JRN Checked by SCQ

Issued for Date

Review 2/28/2024

Not Approved for Construction

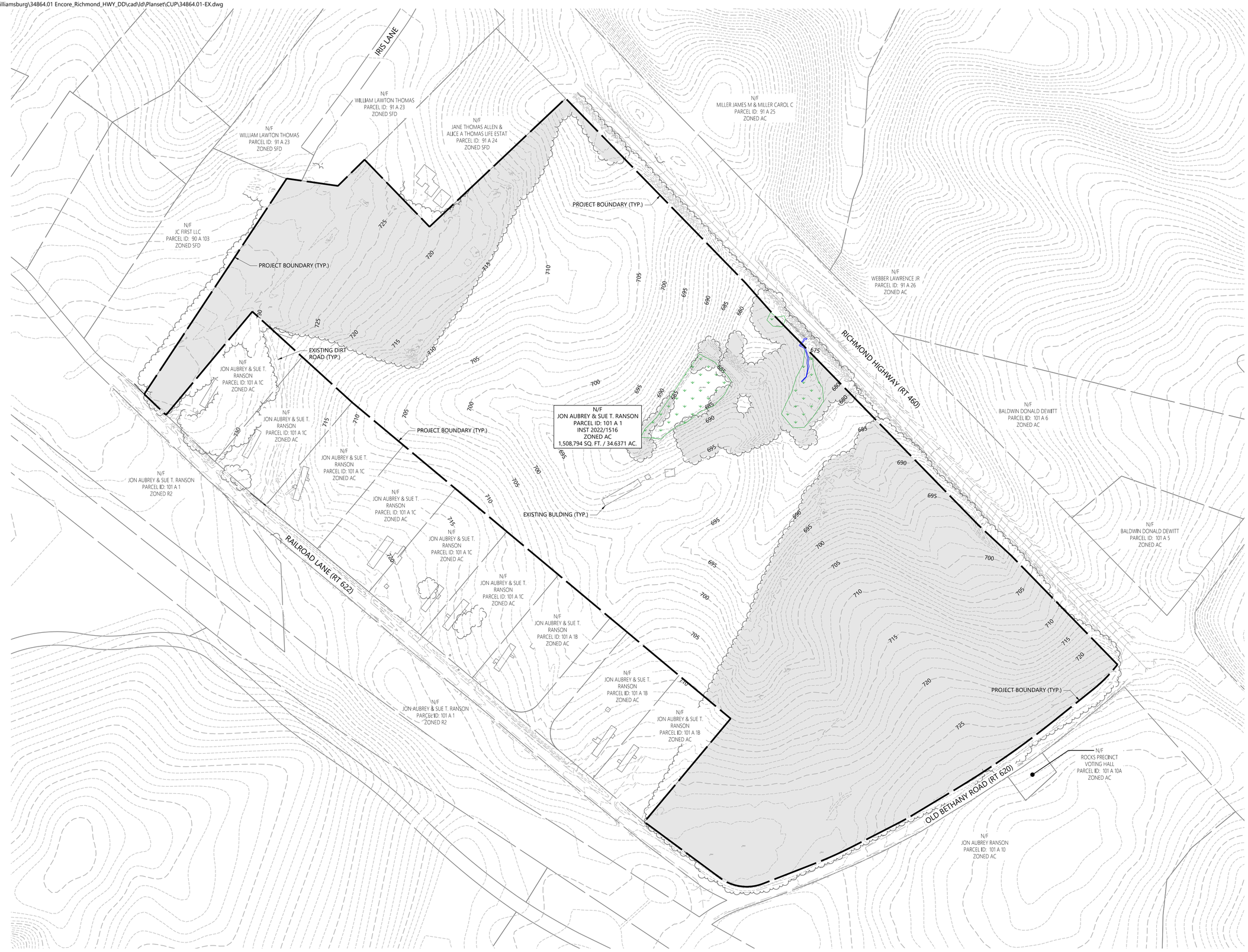
Drawing Title
NOTES AND DETAILS

Drawing Number
C100

Sheet 2 of 6

Project Number
34864.01

Saved Tuesday, February 13, 2024 4:26:54 PM JNICKEL Plotted Tuesday, February 27, 2024 5:32:46 PM Jackson Nickel



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LEGEND

- EXISTING TREELINE
- EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)
- EXISTING ADJOINING PARCELS
- EXISTING WETLANDS
- EXISTING STREAMS
- PROJECT PARCEL BOUNDARY

0 50 100 200 Feet

Richmond Highway Solar

16228 Richmond Highway
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No.	Revision	Date	Appvd.

Designed by JRN | Checked by SCQ

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Date: 2/28/2024

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Drawing Title

EXISTING CONDITIONS

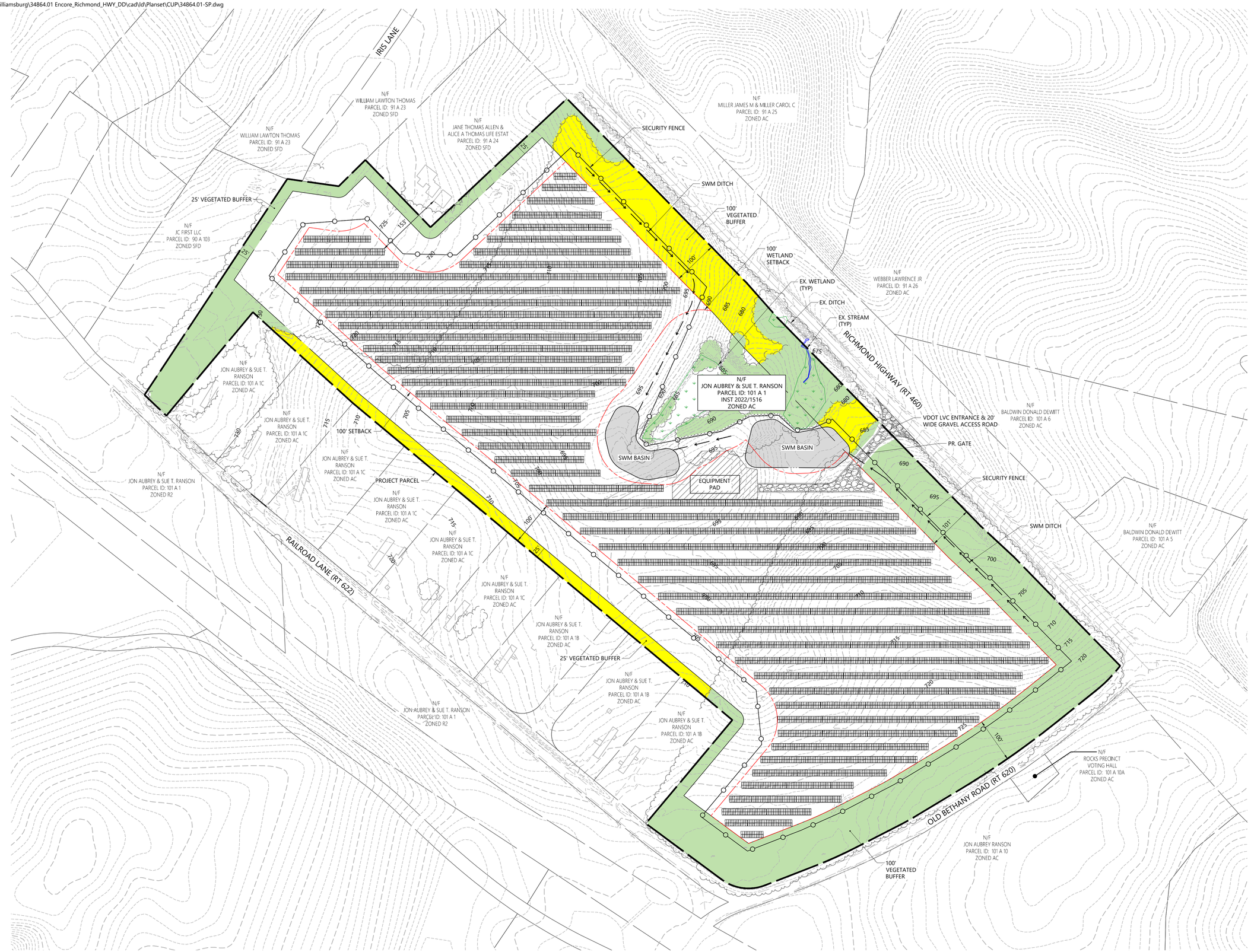
Drawing Number

C200

Sheet 3 of 6

Project Number 34864.01

\\vhb.com\gbl\proj\Williamsburg\34864.01 Encore_Richmond_HWY_DD\cad\ld\Planset\CUP\34864.01-SP.dwg



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LEGEND

- EX. TREELINE
- EX. CONTOUR (MAJOR)
- EX. CONTOUR (MINOR)
- EX. ADJOINING PARCELS
- EX. WETLANDS
- EX. STREAM
- PROJECT PARCEL BOUNDARY
- PROJECT SETBACK
- PR. TREELINE
- PR. SECURITY FENCE
- PR. LIMIT OF DISTURBANCE
- PR. SOLAR PANELS
- PR. GRAVEL ACCESS ROAD
- PR. SWM BASIN
- PR. DIVERSION DITCH
- EXISTING VEGETATIVE BUFFER
- PROPOSED VEGETATIVE BUFFER
- TEMPORARY CONSTRUCTION LAYDOWN/STAGING AREA

0 50 100 200 Feet

Richmond Highway Solar

16228 Richmond Highway
Pamplin, VA 23958

No.	Revision	Date	Apprvd.

Designed by JRN | Checked by SCQ

Issued for: Review | Date: 2/28/2024

Not Approved for Construction

Drawing Title
SITE PLAN

Drawing Number
C300

Sheet 4 of 6

Project Number
34864.01

Saved Monday, February 19, 2024 1:58:09 PM JNICKEL Plotted Tuesday, February 27, 2024 5:47:23 PM Jackson Nickel

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LEGEND

- EX. TREELINE
- EX. CONTOUR (MAJOR)
- EX. CONTOUR (MINOR)
- EX. ADJOINING PARCELS
- EX. WETLANDS
- EX. STREAM
- PROJECT PARCEL BOUNDARY
- PROJECT SETBACK
- PR. TREELINE
- PR. SECURITY FENCE
- PR. LIMIT OF DISTURBANCE
- PR. SOLAR PANELS
- PR. GRAVEL ACCESS ROAD
- PR. SWM BASIN
- PR. DIVERSION DITCH
- EXISTING VEGETATIVE BUFFER
- PROPOSED VEGETATIVE BUFFER
- TEMPORARY CONSTRUCTION LAYDOWN/STAGING AREA

0 50 100 200 Feet

Richmond Highway Solar

16228 Richmond Highway
Pamplin, VA 23958

No.	Revision	Date	Appvd.

Designed by JRN | Checked by SCQ

Issued for: Review

Date: 2/28/2024

Not Approved for Construction

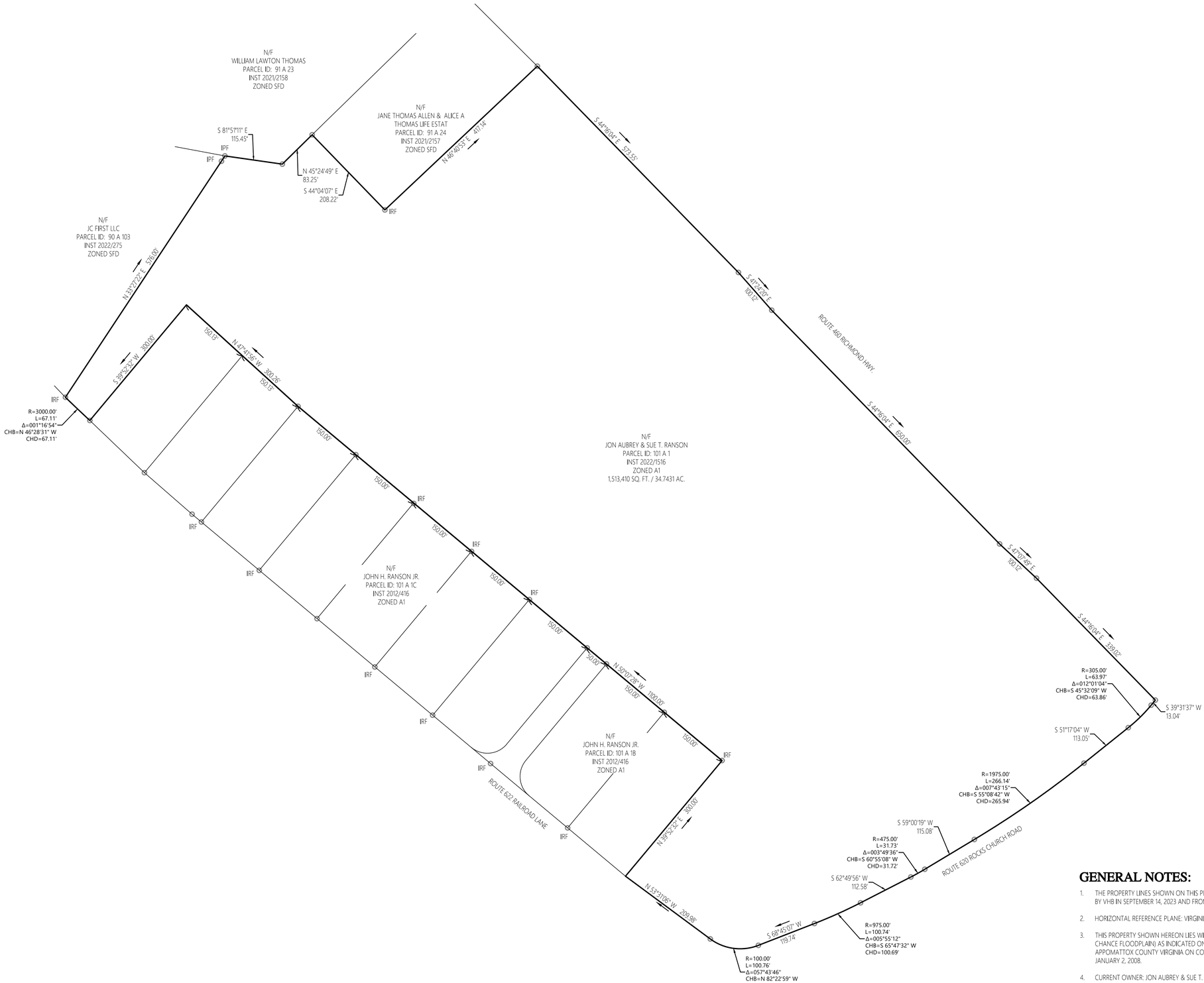
Drawing Title: SITE PLAN W/ AERIAL

Drawing Number: C301

Sheet 5 of 6

Project Number: 34864.01

Saved Monday, February 19, 2024 1:58:09 PM JNICKEL Plotted Tuesday, February 27, 2024 5:54:16 PM Jackson Nickel



GENERAL NOTES:

1. THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB IN SEPTEMBER 14, 2023 AND FROM DEEDS AND PLANS OF RECORD.
2. HORIZONTAL REFERENCE PLANE: VIRGINIA STATE PLANE COORDINATE SYSTEM SOUTH ZONE NAD83.
3. THIS PROPERTY SHOWN HEREON LIES WITHIN FLOOD ZONE X (AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS INDICATED ON THE FLOOD INSURANCE RATE MAP (FIRM) FOR APPOMATTOX COUNTY VIRGINIA ON COMMUNITY PANEL NUMBER 51011C0250C MAP REVISED JANUARY 2, 2008.
4. CURRENT OWNER: JON AUBREY & SUE T. RANSON.
5. THE PROPERTY SHOWN HEREON IS LISTED AS PARCEL ID 035-0A-44 AMONG THE RECORDS OF APPOMATTOX COUNTY, VIRGINIA REAL ESTATE ASSESSMENT OFFICE.
6. PROPERTY ADDRESS: 1596 RAILROAD LN. FLOOD VIRGINIA.

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No.	Revision	Date	Appvd.

Designed by JRN | Checked by SCQ

Issued for: Review | Date: 2/28/2024

Not Approved for Construction

Drawing Title
Preliminary Boundary Plat

Drawing Number
C400

COMMONWEALTH OF VIRGINIA
DRAFT
STEPHEN A. ROMEO
Lic. No. 1448-B
LAND SURVEYOR

Sheet 6 of 6

Project Number
34864.01

Saved Monday, February 19, 2024 2:28:22 PM CORSBORNE Plotted Tuesday, February 27, 2024 5:56:37 PM Jackson Nickel

B

Appendix B

Wildlife Impacts Report

Encore Richmond Hwy RTE Write-Up

Threatened and Endangered Species Documentation

- An online search report was conducted through the Virginia Fish and Wildlife Information Service (VaFWIS) and the US Fish and Wildlife Service's Information for Planning and Consultation tool (IPaC) to generate a list of threatened and endangered species occurrence and habitat data.
- The search indicated that there are potential occurrences of threatened or endangered species within the study area. The following species include:

VaFWIS Search Report		
Common Name	**Status**	**Confirmed within 2 miles of Site**
Roanoke logperch	Federal Endangered, State Endangered	No
Gray bat	Federal Endangered, State Endangered	No
Northern long-eared bat	Federal Threatened, State Threatened	No
Atlantic pigtoe	Federal Threatened, State Threatened	No
Little brown bat	State Endangered	No
Tri-colored bat	Federal Proposed State Endangered	No
Brook floater	State Endangered	No
Loggerhead shrike	State Threatened	Potential
Green floater	State Threatened	No
Carolina darter	State Threatened	No
Migrant loggerhead shrike	State Threatened	No

- Many of the species listed above are aquatic organisms that favor habitats in streams and rivers and are not likely to be affected by the development of a solar array, if avoided during planning. Habitat for these organisms appears limited based on desktop review due to the degraded nature of aquatic habitat present on site. The Little brown bat and the Tri-colored bat are mainly found in caves, trees/vegetation and will roost in buildings, under bridges, mines and tunnels. The Loggerhead shrike and Migrant loggerhead shrike prefer areas of grassland that are grazed or mowed and usually nests in eastern red cedar or hawthorne.
- Virginia Department of Natural Heritage's available Predictive Model Information identified that habitat for federal and state species of concern does *not* exist onsite.
- The Virginia Department of Wildlife Resources (DWR) noted potential observations of the Loggerhead shrike adjacent to the study area.
- There are no areas designated as critical habitat that include the project site.
- There are no bald eagle nests within proximity of the project area. The nearest eagle nest is approximately 17.30 miles (91,353 feet) from the project area.
- Habitat surveys for protected species may be required to resolve Section 7 consultation regarding threatened and endangered species effects concerns.
- If required, these habitat studies could likely be conducted simultaneous with other resource studies.

- The northern long-eared bat is likely to be uplisted to Endangered in March 2023. Regulatory uncertainty is expected regarding this species during the transition from threatened to endangered. Elements of the regulatory shifts that are anticipated include:
    - VHB's recommendations for permitted projects that have not been built are to conduct tree clearing under the 4(d) authority before March 31, 2023 or reach out to local U.S. Fish and Wildlife Service (USFWS) field officers to discuss consultation under the new endangered rule.
    - New and existing projects with tree clearing not complete by March 31, 2023 will have to be (re)reviewed under the authority of the new rule.
    - Short-term projects may file accordingly under the 4(d) authority until March 31, 2023 and anticipate some delays once the new rule is effective.
    - An Interim Formal Consultation Framework will be put into place by USFWS to minimize or reduce delays for projects already in compliance with expiring 4(d) exemptions or projects that are already in the consultation phase. This is expected to cover projects between 3/31/23 and Spring (April) 2024. This interim rule will apply to timber harvest projects, prescribed fires, and infrastructure projects (e.g. road and utility projects). There is no additional information regarding the interim framework currently.
    - New guidance will provide winter clearing thresholds to be considered with respect to NLEB habitat and perhaps a smaller threshold for summer clearing and/or more restrictions around it. Time of year (TOY) restrictions for tree clearing will be determined regionally, and local USFWS field offices will make project determinations. No quantity for clearing thresholds has been specified yet.
        - However, USFWS is considering isolated patches of forests 10 acres or less as not suitable habitat. However, if the landscape contains multiple patches of forests within 1,000 feet, this will qualify as suitable.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To: January 06, 2023
Project Code: 2023-0031366
Project Name: Richmond Highway Solar Parcel

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Project Code: 2023-0031366
Project Name: Richmond Highway Solar Parcel
Project Type: Power Gen - Solar
Project Description: Location: Appomattox County
Size: 46.65 acres
Scope: Potential solar parcel

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.2933086,-78.73740527007186,14z

Counties: Appomattox County, Virginia

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 28 to Jul 20

NAME	BREEDING SEASON
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

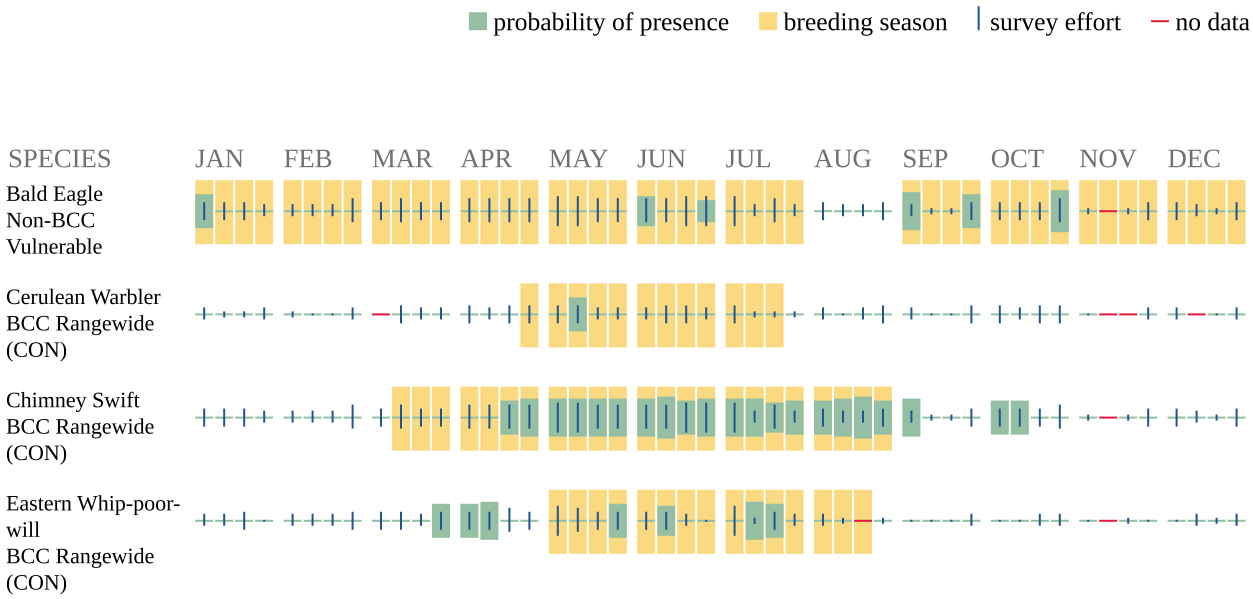
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

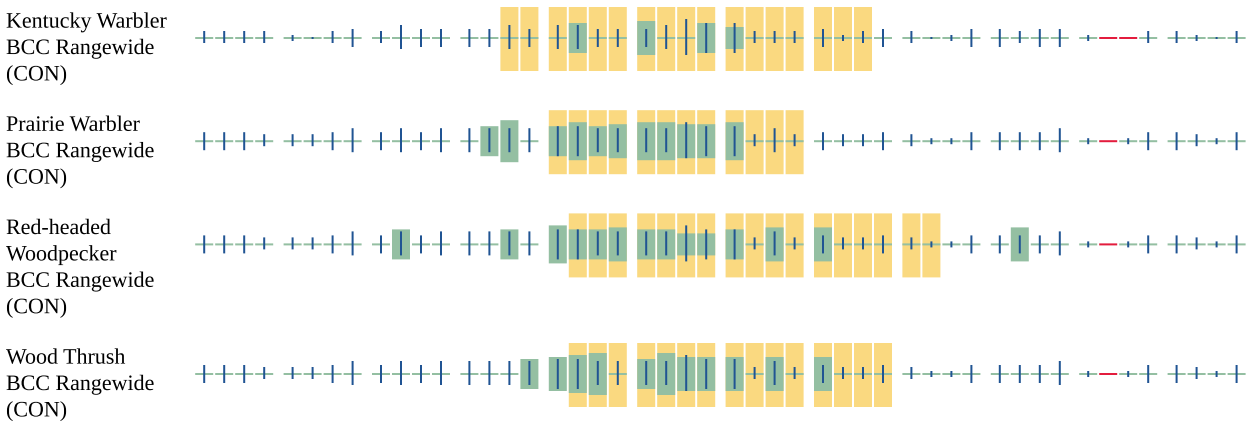
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides

birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

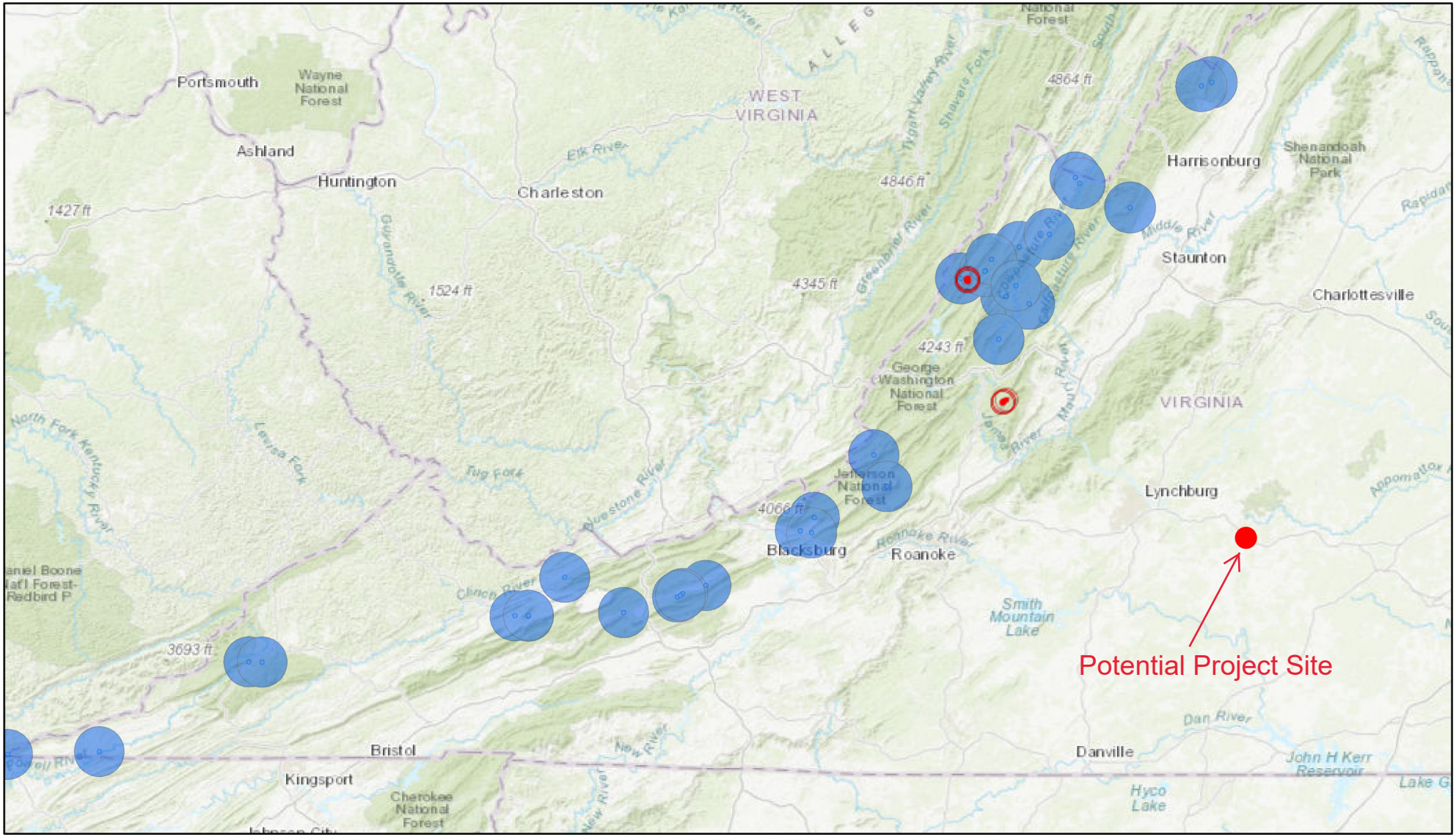
What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPaC User Contact Information

Agency:	VHB
Name:	Claire Wilson
Address:	351 McLaws Circle
Address Line 2:	Suite 3
City:	Williamsburg
State:	VA
Zip:	23185
Email	ccwilson@vhb.com
Phone:	7572792837

NLEB Locations and Roost Trees



1/6/2023, 12:54:47 PM

NLEB Known Occupied Maternity Roost (Summer Habitat)

NLEB Hibernaculum 5.5 Mile Buffer

NLEB Hibernaculum Half Mile Buffer

1:2,311,162

0 15 30 60 mi

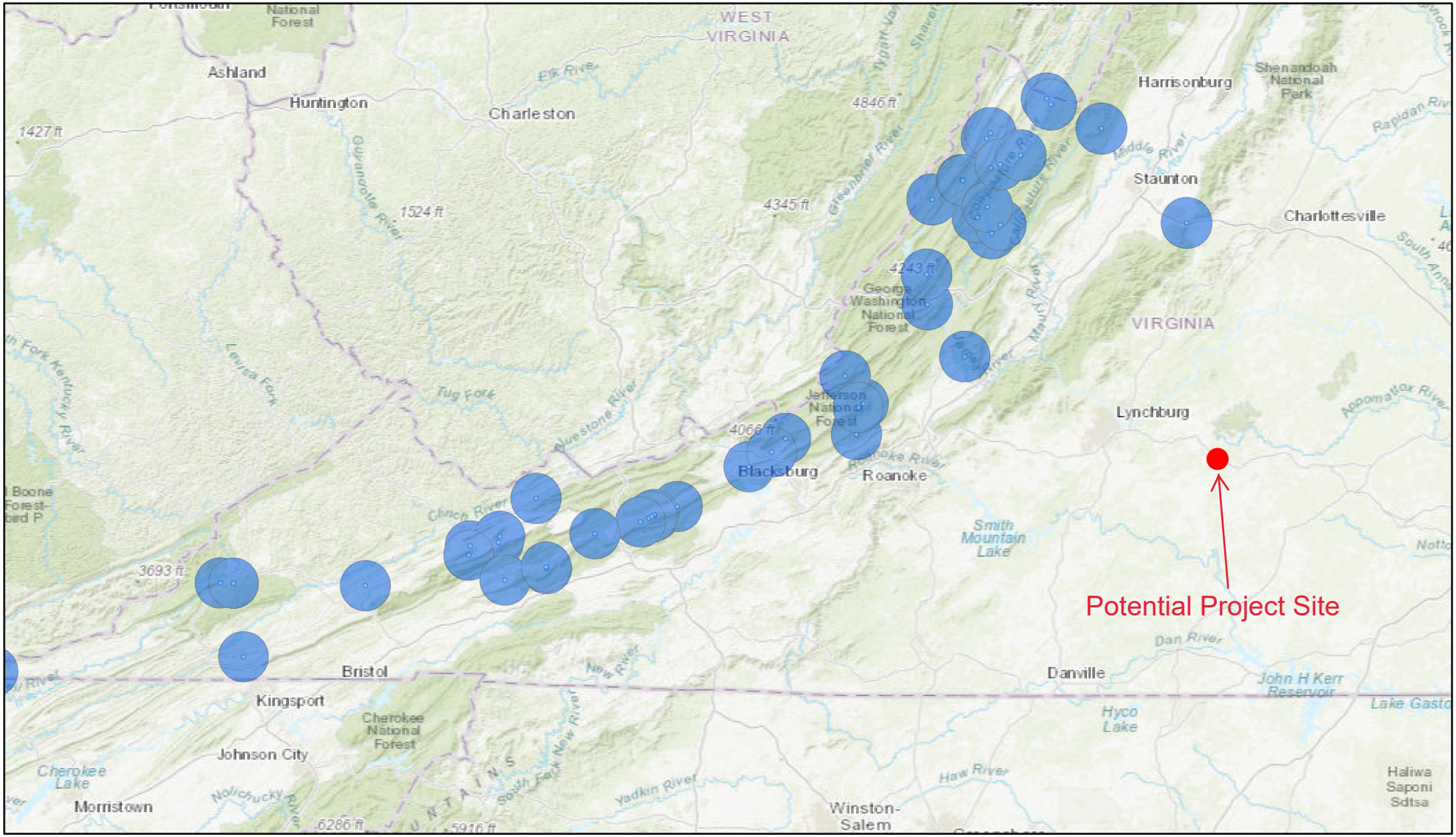
0 25 50 100 km

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

VA Dept. Game & Inland Fisheries

Esri, HERE, Garmin, FAO, USGS, EPA, NPS |

ArcGIS Web Map



1/6/2023, 2:26:19 PM

Tri-colored and Little Brown Hibernaculum Half Mile Buffer

Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

1:2,311,162

0 15 30 60 mi

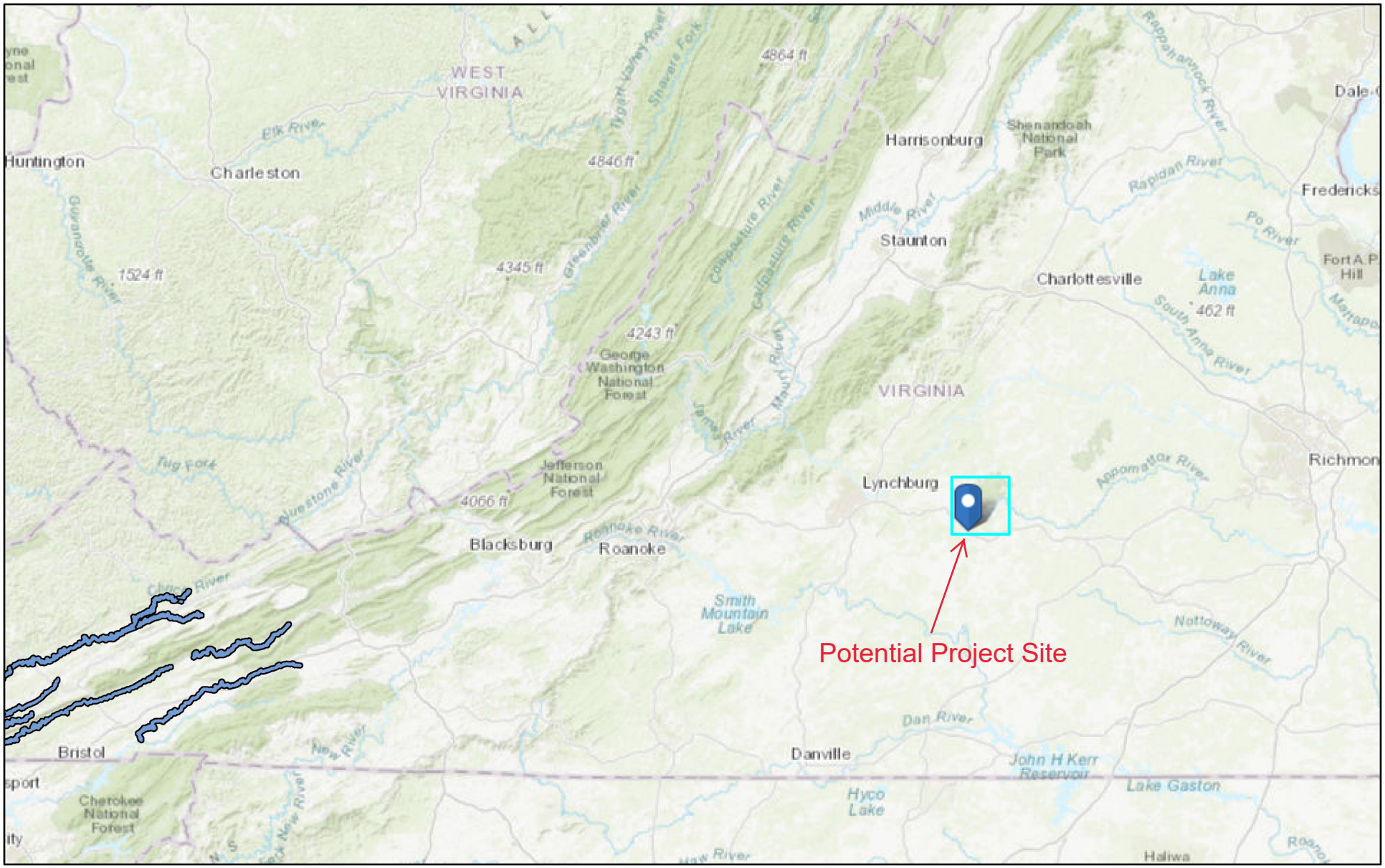
0 25 50 100 km

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

Dept. Game and Inland Fisheries

Esri, HERE, Garmin, FAO, USGS, EPA, NPS |

Critical Habitat Map



January 6, 2023

Virginia Critical Habitat (published)

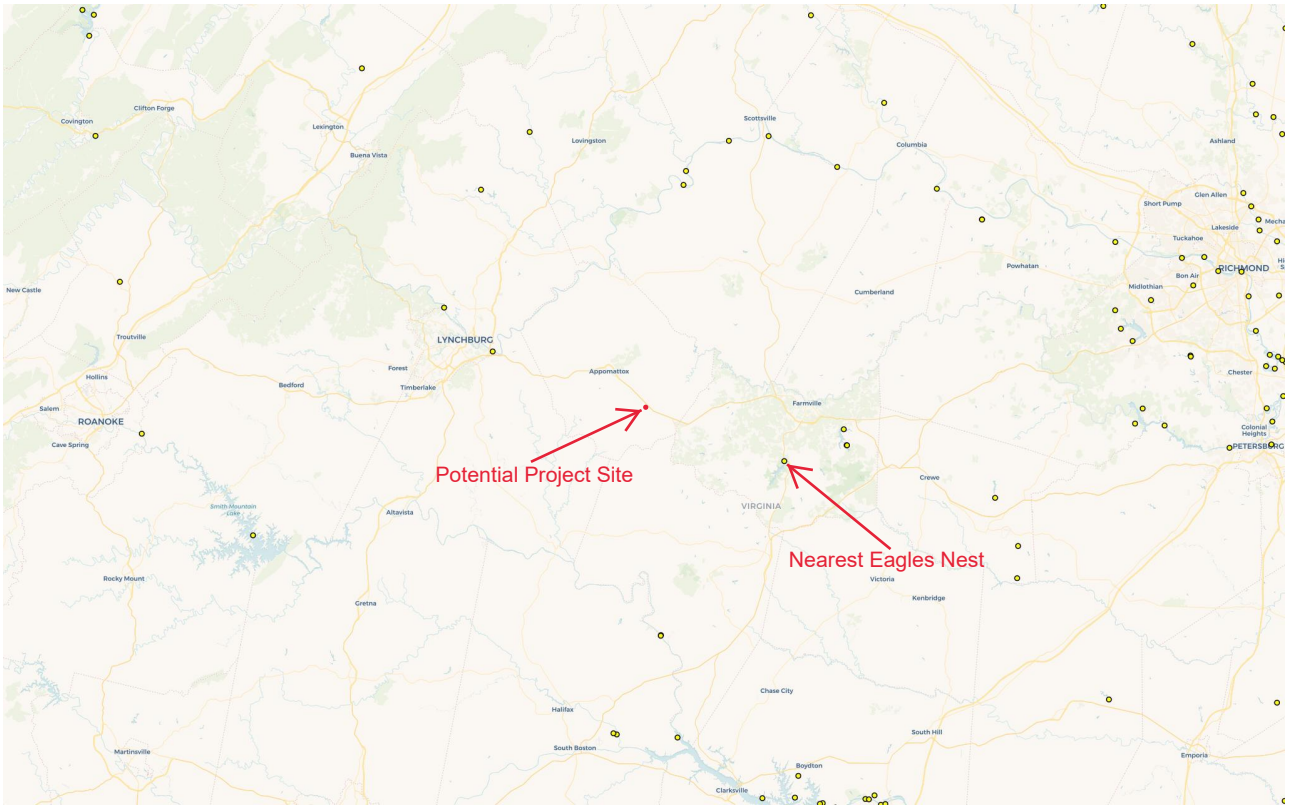
1:2,311,162

0 15 30 60 mi

0 25 50 100 km

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

CCB Mapping Portal



Layers: VA Eagle Nest Locator

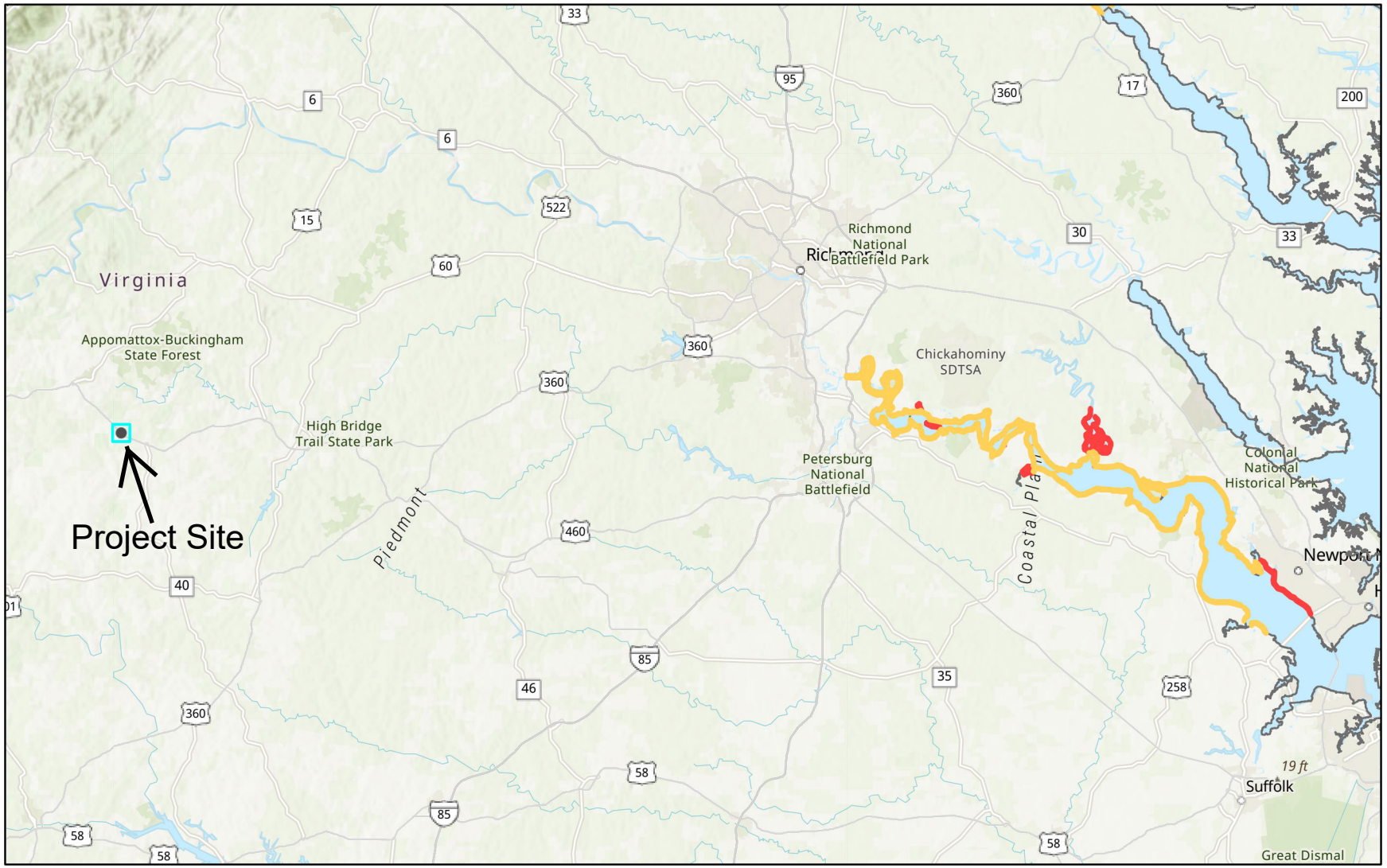
Map Center [longitude, latitude]: [-78.75068664550781, 37.276238364942955]

Map Link:
https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&zoom=10&lat=37.276238364942955&lng=-78.75068664550781&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

Report Generated On: 01/06/2023

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the Data Use Agreement to ensure compliance with our data use policies. For additional data access questions, view our Data Distribution Policy, or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

Richmond Highway



January 27, 2023

1:1,155,581

0 5 10 20 mi

0 12.5 25 50 km

Esri, CGIAR, USGS, VGIN, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

Eagle Use Map

VaFWIS - Department of Game and Inland Fisheries

37,17,37.0 -78,44,17.2
is the Search Point
Submit Cancel

Search Point
- **Change** to "clicked" map point
- **Fixed** at 37,17,37.0 -78,44,17.2

Show Position Rings
Yes No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
Yes No
2 Search distance miles radius

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search

Map Overlay Legend

Position Rings 1 mile and 1/4 mile at the Search Point

2 mile radius Search Area

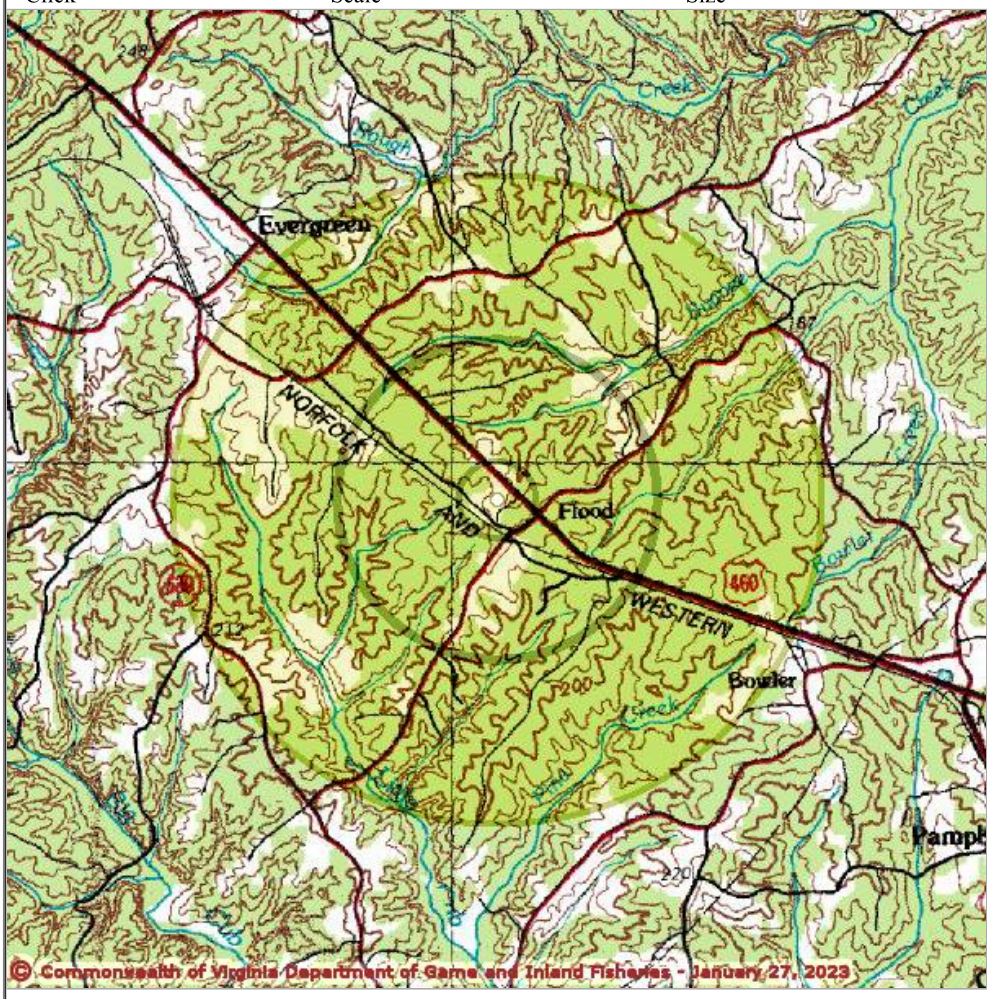
Map Click 37,20,03.7 -78,42,50.2 Pan Id M

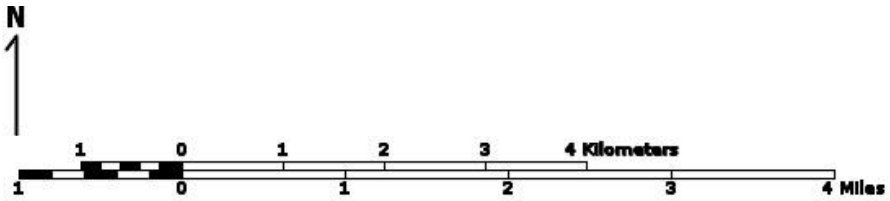
Refresh Browser Page

Map Scale In Zoom Out

Screen Size Small Size Big

Help





Point of Search 37,17,37.0 -78,44,17.2
Map Location 37,17,37.0 -78,44,17.2

Select **Coordinate System:**
- Degrees,Minutes,Seconds Latitude - Longitude
- Decimal Degrees Latitude - Longitude
- Meters UTM NAD83 East North Zone
- Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 17 NAD 1983 with left 695691 and top 4134643. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5

	square miles. Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network. Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries. map assembled 2023-01-27 12:00:51 (qa/qc March 21, 2016 12:20 - tn=1455936 dist=3218 I) $poi=37.2936111 -78.7381111

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VaFWIS Search Report Compiled on 1/27/2023, 12:01:37 PM

Help

Known or likely to occur within a **2 mile radius around point 37,17,37.0 -78,44,17.2** in **011 Appomattox County, VA**

View Map of Site Location

393 Known or Likely Species ordered by Status Concern for Conservation (displaying first 20) (20 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010214	FESE	IIa	Logperch, Roanoke	Percina rex		HU6
050021	FESE	IIa	Bat, gray	Myotis grisescens		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060173	FTST	Ia	Pigtoe, Atlantic	Fusconaia masoni		BOVA,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus	Potential	BOVA,BBA
060081	ST	IIa	Floater, green	Lasmigona subviridis		HU6
010353	ST	IIc	Darter, Carolina	Etheostoma collis		HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus		BOVA,HU6
010174		Ia	Bass, Roanoke	Ambloplites cavifrons		BOVA,HU6
040040		Ia	Ibis, glossy	Plegadis falcinellus		BOVA
020023		IIa	Salamander, mole	Ambystoma talpoideum		BOVA,HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040181		IIa	Tern, common	Sterna hirundo		HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
040105		IIb	Rail, king	Rallus elegans		BOVA

To view **All 393 species** View 393

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage (1 records)

View Map of All Fish Impediments

ID	Name	River	View Map
314	ALLEN DAM	SUANEE CREEK	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations (3 records)

View Map of All Query Results Species Observations

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
307821	SppObs	Feb 9	George Mathews (principal	1			Yes

		2004	permittee)/Kory Steele				
362268	SppObs	Jan 1 1900		1			Yes
50753	SppObs	Jan 1 1900	P Sattler, Liberty University	1			Yes

Displayed 3 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (2 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
40074	Appomattox, CE	2	ST	I	Yes
40076	Appomattox, SE	61		III	Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
011	Appomattox	338	FTSE	I

USGS 7.5' Quadrangles:
Appomattox
Pamplin

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
JA02	Appomattox River-Suanee Creek	45	FTST	I
RU76	Big Cub Creek	52	FESE	I

RU77	Little Cub Creek	51	ST	I

Compiled on 1/27/2023, 12:01:37 PM I1455936.0 report=all searchType= R dist= 3218 poi= 37,17,37.0 -78,44,17.2

PixelSize=64; Anadromous=0.018028; BBA=0.039949; BECAR=0.017559; Bats=0.020677; Buffer=0.061735; County=0.049684; HU6=0.0644; Impediments=0.019315; Init=0.100692; PublicLands=0.019105; Quad=0.0347460000000001; SppObs=0.330011; TEWaters=0.018987; TierReaches=0.023308; TierTerrestrial=0.04179; Total=1.045518; Tracking_BOVA=0.17447; Trout=0.024191; huva=0.04341

Virginia Department of Game and Inland Fisheries

1/27/2023 12:03:22 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 1/27/2023, 12:03:22 PM

Help

Observations reported or potential habitat occurs within a **2 mile radius around point 37,17,37.0 -78,44,17.2**
in **011 Appomattox County, VA**
where (040293) **Shrike, loggerhead** observed.

View Map of Site Location

Virginia Breeding Bird Atlas Blocks where Shrike, loggerhead (040293) observed

(1 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
40074	Appomattox, CE	2	ST	I	Yes

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Compiled on 1/27/2023, 12:03:22 PM I1455936.1 report=BOVA searchType= R dist= 3218 poi= 37,17,37.0 -78,44,17.2

audit no. 1455936 1/27/2023 12:03:22 PM Virginia Fish and Wildlife Information Service

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Virginia Breeding Bird Atlas Blocks

37,17,37.0 -78,44,17.2
is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search, BBA

Map Overlay Legend

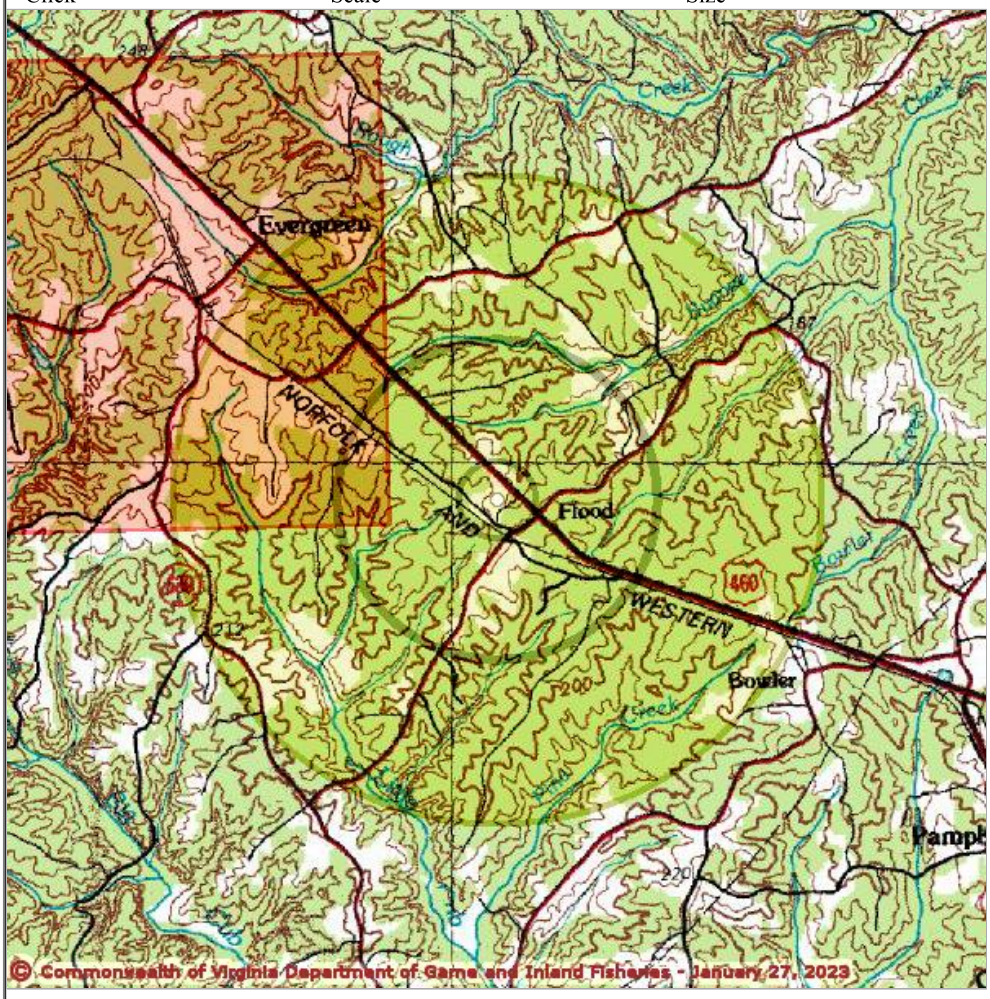
Position Rings 1 mile and 1/4 mile at the Search Point

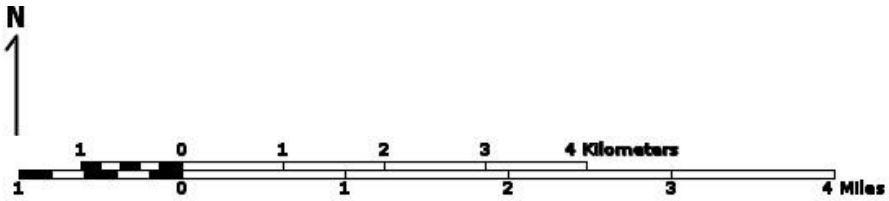
2 mile radius Search Area

Data Observation Site

Refresh Browser Page

Map Click Pan Id M Map Scale In Zoom Out Screen Size Small Size Big Help





Point of Search 37,17,37.0 -78,44,17.2
Map Location 37,17,37.0 -78,44,17.2

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 17 NAD 1983 with left 695691 and top 4134643. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5

	square miles. Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network. Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries. map assembled 2023-01-27 12:03:47 (qa/qc March 21, 2016 12:20 - tn=1455936.1 dist=3218 I) $poi=37.2936111 -78.7381111

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Endangered Species Act (ESA) Section 7 Determination Table

Project Name: Richmond Highway Solar Parcel

Date: January 6, 2023

Project Code: 2023-0031366

Species / Resource Name *Insert name of species or resource as listed on Official Species List.*	**Habitat/Species Presence in Action Area** *Indicate if suitable habitat and species are present in the Action Area (see examples in Step 5).*	**Sources of Info** *Explain what info suitable habitat/species presence is based on.*	**ESA Section 7 Determination** *Using reasoning and decision tables in Step 5, select determination for each species (e.g. no effect, not likely to adversely affect, or likely to adversely affect).*	**Project Elements that Support Determination** *Explain which project elements may impact the habitat or individuals of each species and any Avoidance and Minimization Measures being implemented.*
Northern long-eared bat	Suitable habitat present	DKey	Covered by 4(d) Rule, May affect	Trees will be removed for the project. Project will adhere to 4(d) Rule.
Gray bat	Suitable habitat not present		No effect	Site does not consist of caves or mines where species habitat is preferred.
Roanoke logperch	No suitable habitat		No effect	This species occupies warm, moderate to large size streams and rivers with a succession of riffle-run-pool habitat, with moderately to unsilted substrates varying from gravel, rubber to boulder, and usually clear water. Site is mainly comprised of forest and field habitats.
Atlantic pigtoe	No suitable habitat		No effect	Species prefers to inhabit the upper parts of rivers, usually above the fall line. Prefers clean, swift-moving waters and is often found in gravel or gravel-sand substrata. Site is comprised of forest and field habitats.

Little brown bat	Suitable habitat present		May affect, not likely to adversely affect	A large quantity of trees would be removed for the solar project. According to the VDWR database, there are no known little bats in the area.
Tri-colored bat	Suitable habitat present		May affect, not likely to adversely affect	The project site is slightly forested with fields. Trees on site would be removed for the solar project. There are no known tri-colored bats recorded in the area.
Brook floater	Suitable habitat not present		No effect	Site does not contain a fast-flowing freshwater habitat that the species prefers.
Loggerhead shrike	Suitable habitat present		May affect, not likely to adversely affect	The species prefers areas of grasslands that are grazed or mowed. Perching sites include fences, woody vegetation, or hedgerows. Species usually nest in eastern redcedar, hawthorne, or thorny shrubs. There are no known loggerhead strike species recorded in the area.
Green floater	Suitable habitat not present		No effect	Site does not contain a fast-flowing freshwater habitat that the species prefers.
Carolina darter	Suitable habitat not present		No effect	The species inhabits streams in the rolling terrain of the lower and middle Piedmont. Species prefers small streams and rivulets with in frequent short riffles.
Migrant loggerhead shrike	Suitable habitat present		May affect, not likely to adversely affect	The species prefers areas of grasslands that are grazed or mowed. Perching sites include fences, woody vegetation, or hedgerows. Species usually nest in eastern redcedar, hawthorn, or

				thorny shrubs. There are no known migrant loggerhead shrike species recorded in this area.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project code: 2023-0031366
Project Name: Richmond Highway Solar Parcel

January 06, 2023

Subject: Consistency letter for the 'Richmond Highway Solar Parcel' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Claire Wilson:

The U.S. Fish and Wildlife Service (Service) received on January 06, 2023 your effects determination for the 'Richmond Highway Solar Parcel' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Additionally, please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If

your project may result in incidental take of NLEB after the new listing goes into effect this will first need to be addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

The IPaC-assisted determination for the northern long-eared bat **does not** apply to the following ESA-protected species that also may occur in your Action area:

- Gray Bat *Myotis grisescens* Endangered
- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Richmond Highway Solar Parcel

2. Description

The following description was provided for the project 'Richmond Highway Solar Parcel':

> Location: Appomattox County
> Size: 46.65 acres
> Scope: Potential solar parcel

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.2933086,-78.73740527007186,14z

Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/media/nleb-roost-tree-and-hibernacula-state-specific-data-links-0.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

   No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

IPaC User Contact Information

Agency:	VHB
Name:	Claire Wilson
Address:	351 McLaws Circle
Address Line 2:	Suite 3
City:	Williamsburg
State:	VA
Zip:	23185
Email	ccwilson@vhb.com
Phone:	7572792837

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: January 6, 2023

Self-Certification Letter

Project Name: Richmond Highway Solar Parcel

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Ecological Services online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA conclusions. These conclusions resulted in:

- "no effect" determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR § 17.40(o) [as determined through the Information, Planning, and Consultation System (IPaC) northern long-eared bat assisted determination key]; and/or
- "may affect, not likely to adversely affect" determinations for proposed/listed species and/or proposed/designated critical habitat.

We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the "no effect" or "may affect, not likely to adversely affect" determinations for proposed and listed species and proposed and designated critical habitat. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of proposed or listed species, proposed or designated critical habitat becomes available, this determination may be reconsidered. This certification letter is valid for 1 year.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html. If you have any questions, please contact Troy Andersen of this office at (804) 824-2428.

Sincerely,

Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

C

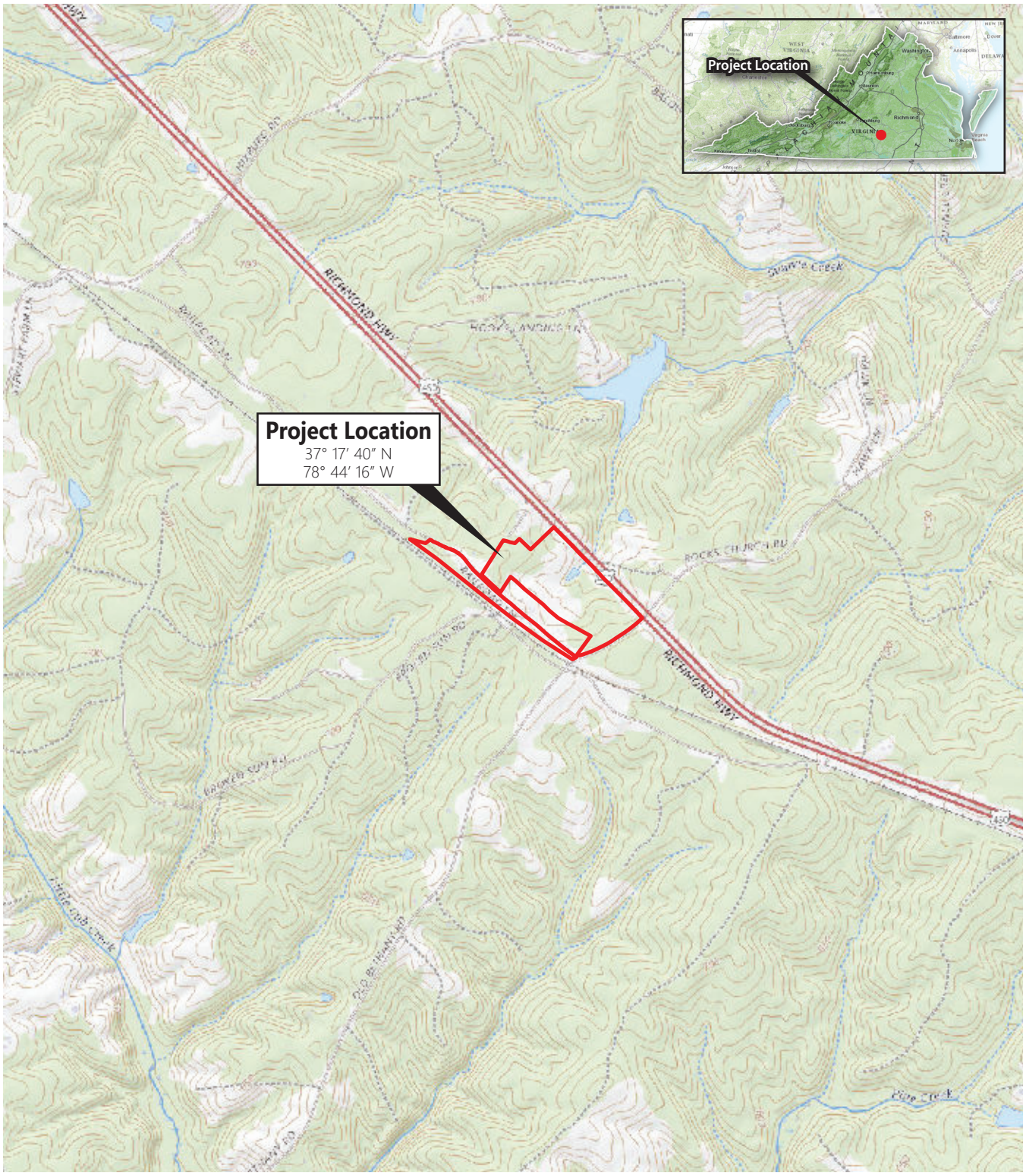
Appendix C

Wetland Delineation Map

Figure 1: Project Location Map

Richmond Highway Solar Site | Pamplin, Virginia

January 12, 2023



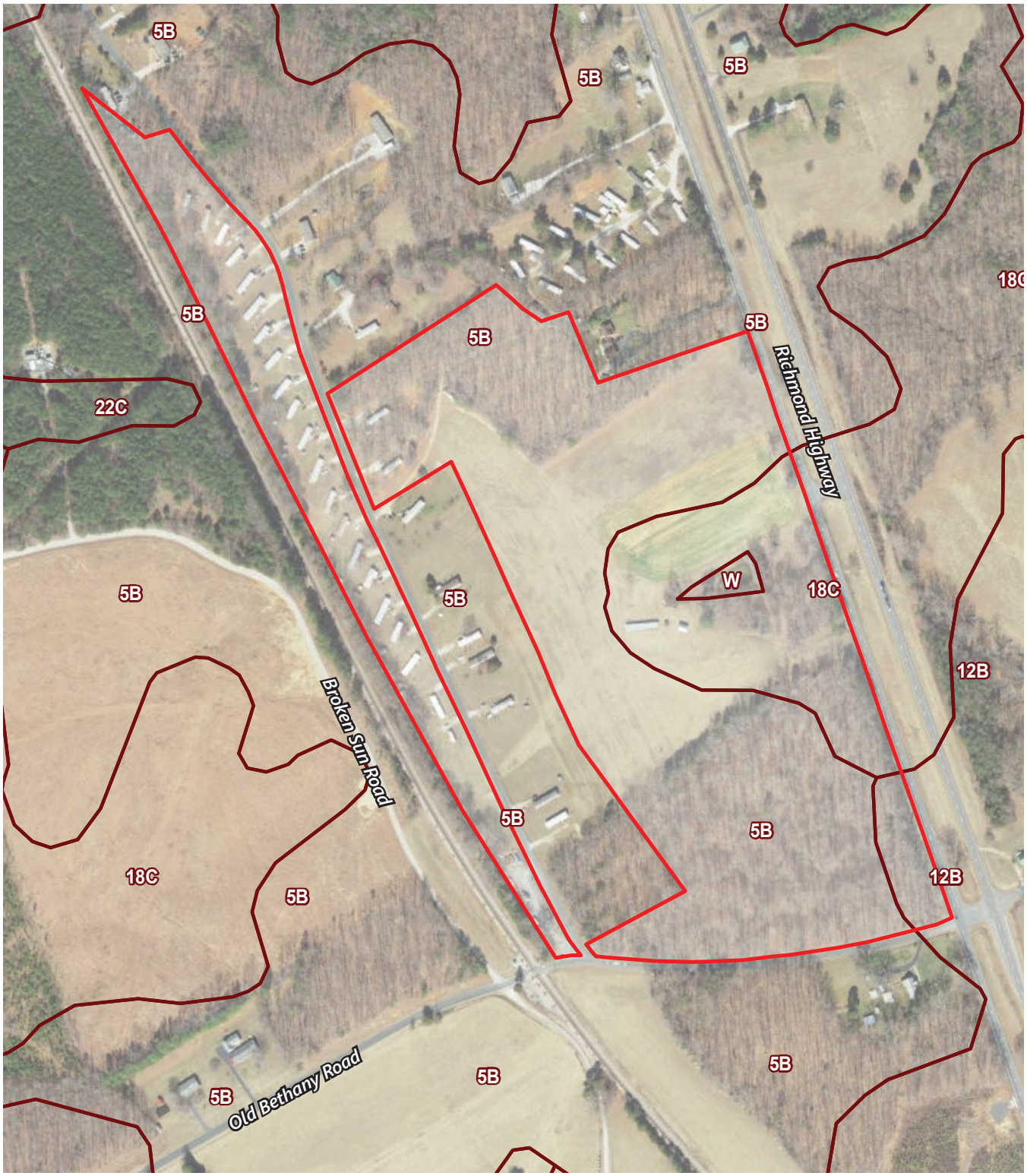
3486401_Richmond_Hwy_PJD_Figures.

Source: USGS The National Map - covered by 7.5 minute Norfolk South, Virginia Quadrangle

Figure 2: Soils Map

Richmond Highway Solar Site | Pamplin, Virginia

January 12, 2023



3486401_Richmond_Hwy_PJD_Figures.

Project Boundary (46.56 ac)

Soil Map Unit Boundary

5B - Cecil sandy loam, 2 to 7 percent slopes

18C - Pacolet-Louisburg complex, 7 to 15 percent slopes

W - Water

N

0 200 400 Feet

Source: VGIN/VBMP Most Recent Orthoimagery

Figure 3: National Wetlands Inventory Map

Richmond Highway Solar Site | Pamplin, Virginia

January 12, 2023

3486401_Richmond_Hwy_PJD_Figures.

Project Boundary (46.56 ac)

National Wetlands Inventory Data

Freshwater Pond

Riverine

N

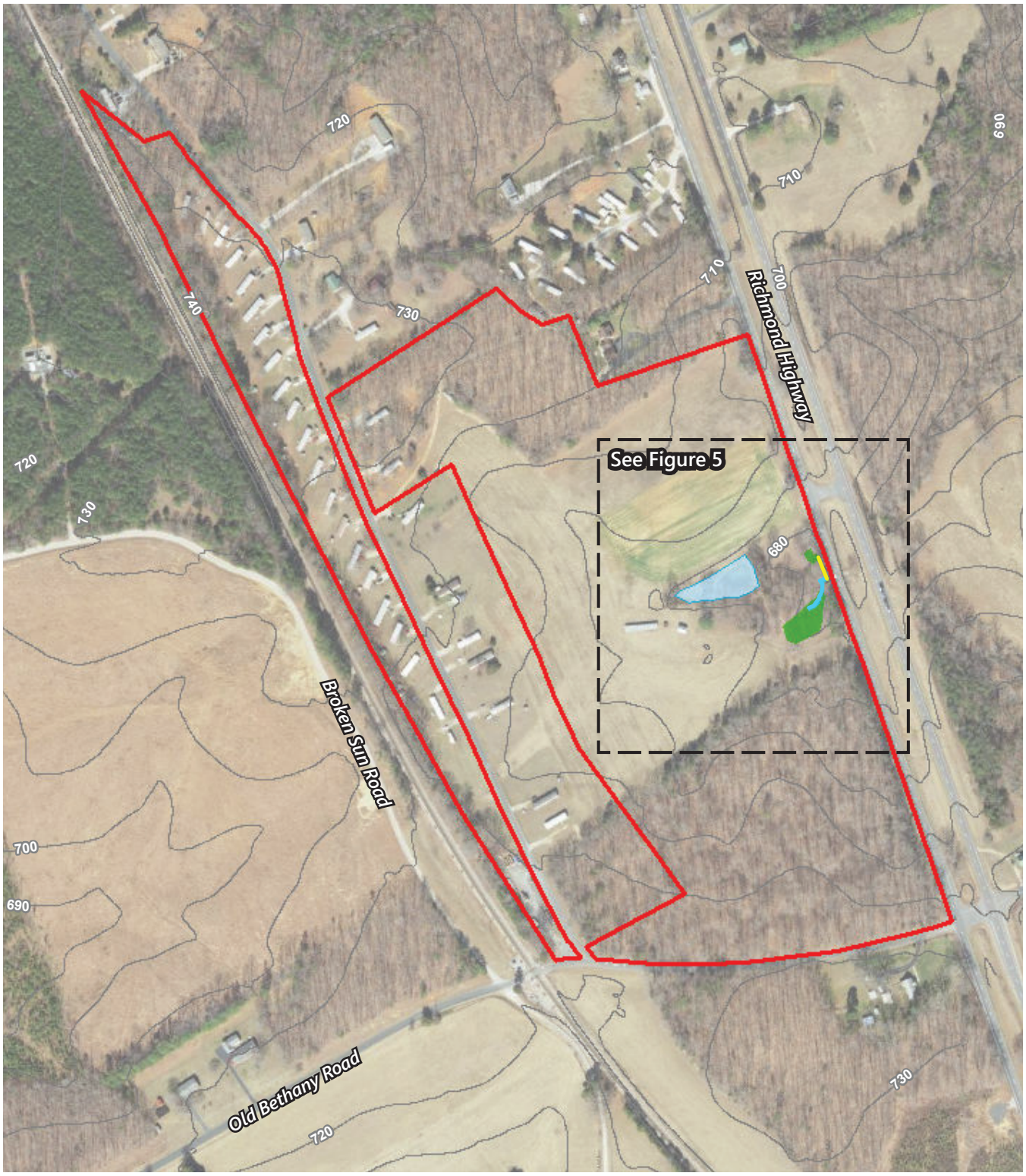
0 200 400 Feet

Source: VGIN/VBMP Most Recent Orthoimagery

Figure 4: Wetland Delineation Map

Richmond Highway Solar Site | Pamplin, Virginia

January 12, 2023



3486401_Richmond_Hwy_PJD_Figures.

Source: VGIN/VBMP Most Recent Orthoimagery

Figure 5: Wetland Delineation Map - Detailed

Richmond Highway Solar Site | Pamplin, Virginia

January 12, 2023

3486401_Richmond_Hwy_PJD_Figures.

Project Boundary (46.56 ac)
Data Point
Wetland Flag
Palustrine Forested (PFO) Wetland (0.21 AC)
Palustrine Unconsolidated Bottom (PUB) (0.37 AC)
Intermittent Stream (117 LF)
Ditch (65 LF)

N

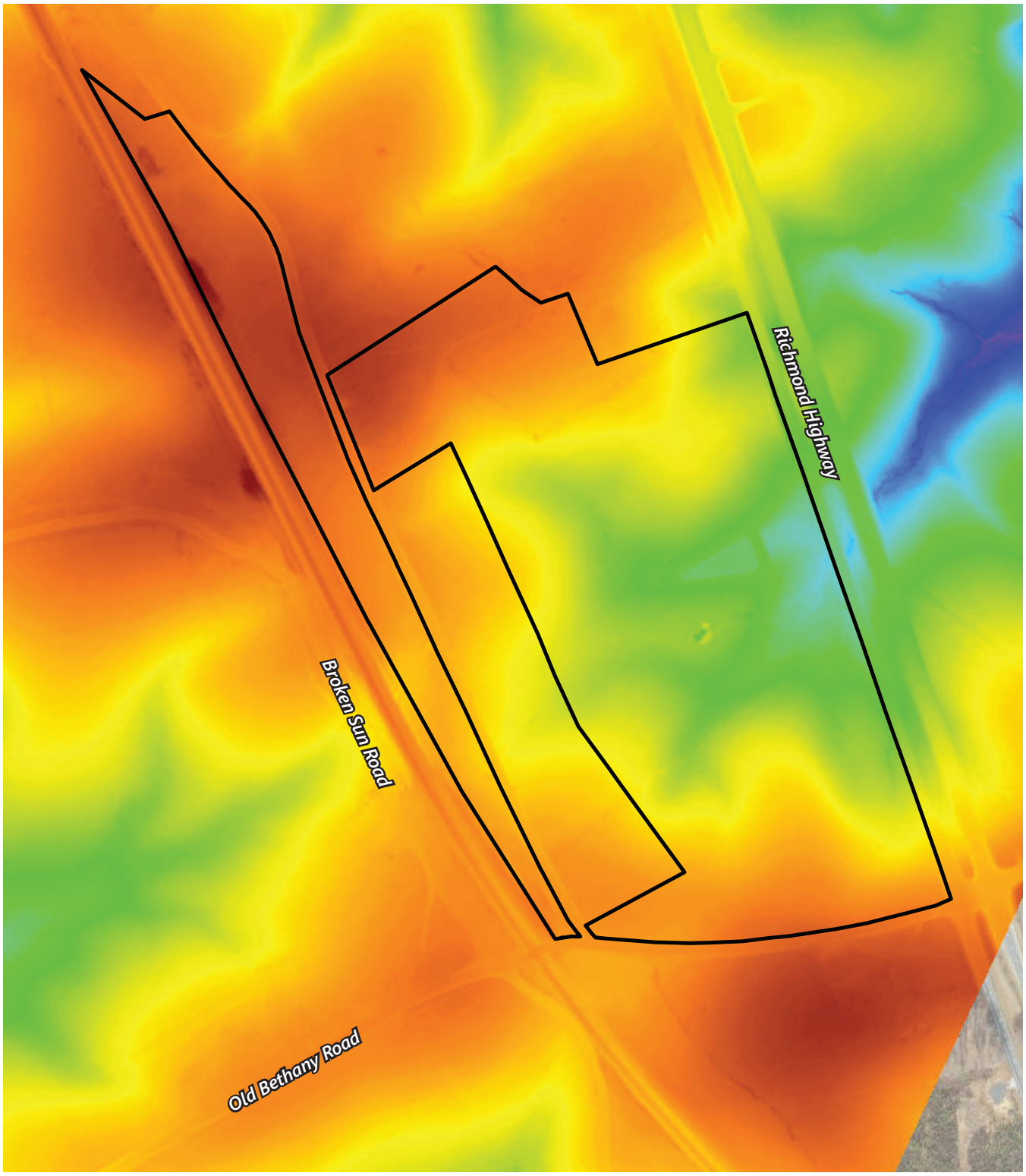
0 100 200 Feet

Source: VGIN/VBMP Most Recent Orthoimagery

Figure 6: LiDAR Map

Richmond Highway Solar Site | Pamplin, Virginia

January 12, 2023



3486401_Richmond_Hwy_PJD_Figures.

Project Boundary (46.56 ac)

Elevation

High

Low

N

0 200 400 Feet

Source: VGIN/VBMP Most Recent Orthoimagery

D

Appendix D

Environmental Protection and Product Safety

Environmental Protection and Product Safety

The Richmond Highway project will consist of crystalline silicon cell modules, specifically ET 540W modules (see specifications attached), which meet both the International Electrotechnical Commission No. 61215-2 and the Underwriters Laboratories No. 61730-2 standards. These modules, like all silicon cell modules, are mostly composed of tempered glass and aluminum, both widely used and nontoxic materials. The silicon in the cells also presents no safety risk; silicon is a naturally occurring element and comprises much of the Earth's crust. Crystalline silicon modules such as those used in this project contain minor components that may include toxic metals or chemicals. These components are well protected from the environment by surrounding components, and industry research has found no potential toxicity threat from leaching, even under extreme weather circumstances. Module lamination is designed to be stable and resistant to degradation from heat, light, and moisture. Encore works to ensure the longevity and health of all solar modules included on projects through partnering with qualified contractors and regularly assessing sites.

Encore projects also follow the industry standard of using nontoxic vegetable oil and secondary containment systems in transformers. As with the modules, there is extremely minimal risk of environmental harm from the liquid used in transformers.

Though some project components such as inverters and transformers do emit noise while in operation, we estimate surrounding properties would experience ambient noise of 30-38 decibels, akin to a library or suburban area at night. See attached acoustics study for a site map demonstrating estimated ambient noise on the property and adjacent land. Importantly, the sound of inverters becomes negligible when power is not being generated, meaning the project will be even quieter at night. The project will use CPS 100/125 kW, 1500 Vdc String Inverters (see specifications attached) which are NFPA 70 and NEC compliant.

Encore maintains strict adherence to the national electric code and takes all reasonable precautions to ensure worker safety on site.

Encore hires licensed civil engineers to design and inspect stormwater management and erosion and sediment control measures throughout the project's development and construction phases. Encore's construction management team is trained on all applicable stormwater management and erosion and sediment control measures per state and federal codes.

Encore's commitment to project safety and environmental protection extends beyond the construction of the array. Project development will fully comply with applicable state wildlife policy, with wildlife surveys and any necessary mitigation efforts to be conducted in partnership with the Virginia Department of Wildlife Resources following county approval. To benefit the long term health of surrounding ecosystems, Encore projects utilize agricultural fencing which allows for the passage of small wildlife in and out of the project area. Additionally, Encore made a commitment in 2020 that each developed project

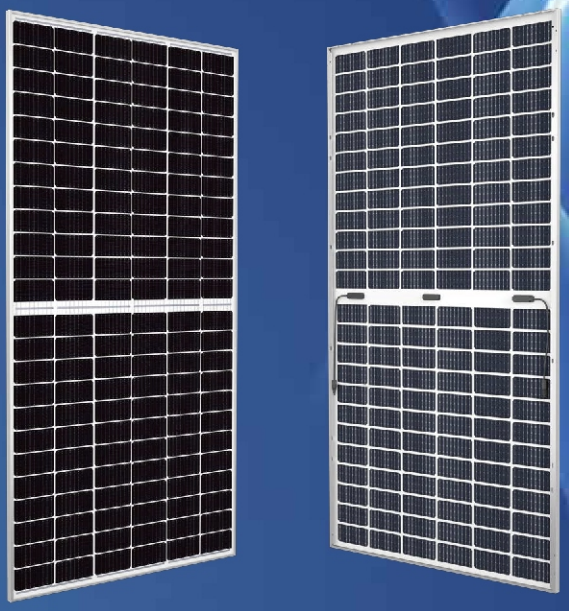
would make use of ecologically beneficial dual land use in some way. This project would either be planted with pollinator friendly ground cover, restoring habitat for vital pollinator species and benefitting soil health, or would be grazed by sheep, bolstering local agricultural economies and also improving the soil.

EliTe

PREC BIFACIAL

PV MODULE

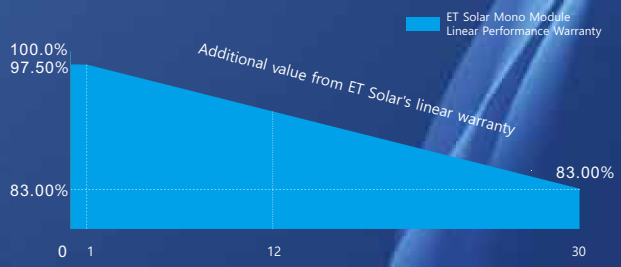
ET-M772BH525TW 530W
ET-M772BH530TW 535W
ET-M772BH535TW 540W
ET-M772BH540TW 545W
ET-M772BH545TW 550W



KEY FEATURES

- Enhanced safety by excellent fire resistance
- Perfect for sandy, snowy and high latitude regions
- Bifacial technology enables additional energy harvesting from rear side(up to 25%)
- Lower operating temperature, more reliable
- Cut cell, Less internal power loss, Less mismatch loss

WARRANTY



IEC61215
IEC61730
UL61215
UL61730

12 YEARS Guarantee on product material and workmanship

30 YEARS linear power output warranty

ET SOLAR
support@etsolar.hk

ET Solar

M/ET-PD-EN-EU2021V1

ETECTRICAL SPECIFICATIONS

Module Type	ET-M772BH530TW ET-M772BH530TB		ET-M772BH535TW ET-M772BH535TB		ET-M772BH540TW ET-M772BH540TB		ET-M772BH545TW ET-M772BH545TB		ET-M772BH550TW ET-M772BH550TB	
Maximum Power -P_{mp} (W)	530	398	535	401	540	405	545	409	550	349
Open Circuit Voltage -V_{oc} (V)	49.30	46.20	49.45	46.24	49.60	46.28	49.75	46.32	49.90	46.16
Short Circuit Current -I_{sc} (A)	13.72	11.29	13.79	11.38	13.86	11.46	13.93	11.54	14.00	11.20
Maximum Power Voltage -V_{mp} (V)	41.31	37.18	41.47	37.24	41.64	37.30	41.80	37.36	41.96	37.12
Maximum Power Current -I_{mp} (A)	12.83	10.69	12.90	10.77	12.97	10.86	13.04	10.94	13.11	11.03
Module Efficiency STC-η_m(%)	20.5%		20.7%		20.8%		21.0%		21.3%	
Power Tolerance (W)	(0 , +4.99)									
Pmax Temperature Coefficient	-0.350%/°C									
Voc Temperature Coefficient	-0.290 %/°C									
Isc Temperature Coefficient	+0.048 %/°C									

STC: Irradiance 1000 W/m ² module temperature 25°C AM=1.5

REAR SIDE POWER GAIN (ET-M772BH535TW)

Power Gain	10%	15%	20%	25%
Maximum Power -P_{mp}(W)	589	615	642	669
Open Circuit Voltage -V_{oc} (V)	49.06	49.06	49.06	49.06
Short Circuit Current -I_{sc} (A)	15.13	15.81	16.50	17.19
Maximum Power Voltage -V_{mp}(V)	42.67	42.67	42.67	42.67
Maximum Power Current -I_{mp} (A)	13.79	14.42	15.05	15.68

MECHANICAL SPECIFICATIONS

External Dimension	2279 x 1134 x 35mm
Weight	28kg
Solar Cells	PERC Mono crystalline 182 x 91 mm (144pcs)
Front Glass	3.2mm AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	IP68, 3 diodes
Output Cables	4.0 mm², Portrait:350mm(+)/250mm(-) Or customized
Connector	MC4 Compatible

APPLICATION CONDITIONS

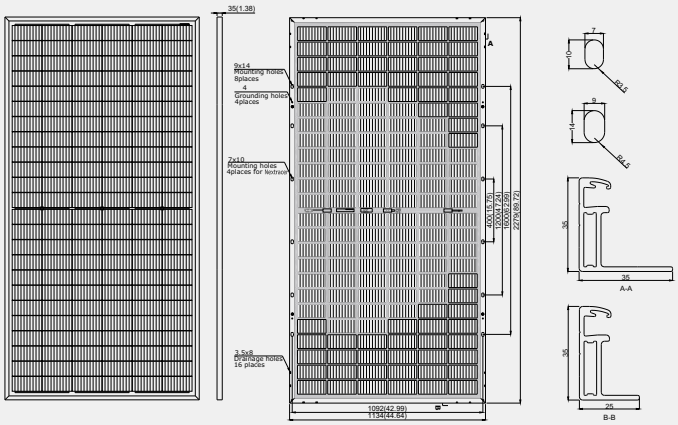
Maximum System Voltage	1500VDC
Maximum Series Fuse Rating	30A
Operating Temperature	-40~+85 °C
Nominal Operating Cell Temperature	45±2 °C

PACKING MANNER

Container	40'HQ
Pieces per Pallet	31
Pallets per Container	20
Pieces per Container	620

PHYSICAL CHARACTERISTICS

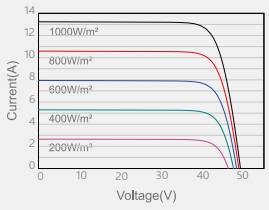
Unit:mm



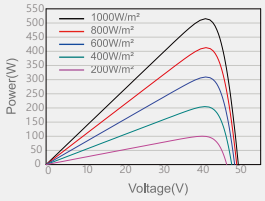
* The above drawing is a graphical representation of the product.
For engineering quality drawings please contact ET Solar.

CURVE

Current-Voltage Curve (530W)

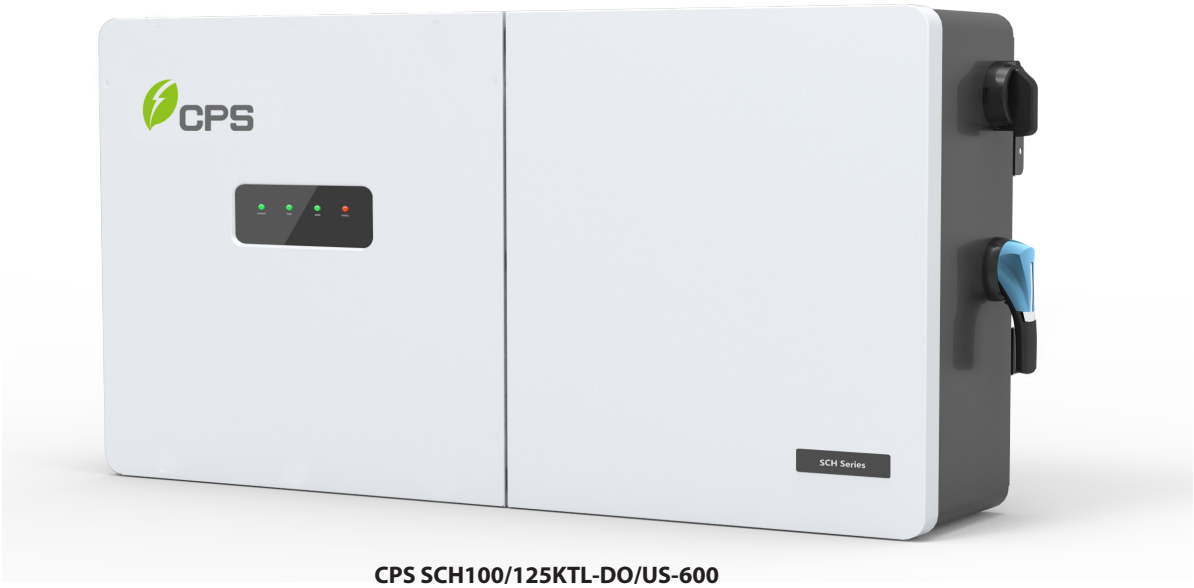


Power-Voltage Curve (530W)



Note: the specifications are obtained under the Standard Test Conditons (STCs): 1000 W/m² solar irradiance, 1.5 Air Mass, and cell temperature of 25℃. The NOCT is obtained under the Test Conditions: 800 W/m², 20℃ ambient temperature, 1m/s wind speed , AM 1.5 spectrum.
Please contact support@etsolar.hk for technical support. The actual transactions will be subject to the contracts. This parameters is for reference only and it is not a part of the contracts. The specifications are subject to change without prior notice.

100/125 kW, 1500 Vdc String Inverters for North America



CPS SCH100/125KTL-DO/US-600

The 100 and 125 kW high power CPS three-phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 99.1% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100/125 kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box includes touch-safe fusing for up to 20 strings. The CPS FlexOM Gateway enables communication, controls and remote product upgrades.

Key Features

- NFPA 70 and NEC compliant
- Touch-safe DC Fuse holders add convenience and safety
- CPS FlexOM Gateway enables remote firmware upgrades
- Integrated AC and DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper- and Aluminum-compatible AC connections
- NEMA Type 4X outdoor rated enclosure
- Advanced Smart-Grid features (CA Rule 21 certified)
- kVA headroom yields 100 kW @ 0.9 PF and 125 kW @ 0.95 PF
- Generous 1.87 (100 kW) and 1.5 (125 kW) DC/AC inverter load ratios
- Separable wire-box design for fast service
- Standard 5-year warranty with extensions to 20 years

100/125KTL Standard Wire-box

100/125KTL Centralized Wire-box

C SP US

FC This device complies with part 15 of the FCC Rules

© CHINT POWER SYSTEMS AMERICA 2023/8-MKT NA

Chint Power Systems America
1380 Presidential Drive, Suite 100, Richardson, TX 75081
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

Model Name	CPS SCH100KTL-DO/US-600	CPS SCH125KTL-DO/US-600
DC Input		
Max. PV power	187.5 kW	
Max. DC input voltage	1500 V	
Operating DC input voltage range	860-1450 Vdc	
Start-up DC input voltage / power	900 V / 250 W	
Number of MPP trackers	1	
MPPT voltage range[1]	870-1300 Vdc	
Max. PV input current (Isc x 1.25)	275 A	
Number of DC inputs	Standard Wire-box: 20 PV source circuits, pos. and neg. fused Centralized Wire-box: 1 input circuit, 1-2 terminations per pole, non-fused	
DC disconnection type	Load-rated DC switch	
DC surge protection	Type II MOV (with indicator/remote signaling)	
AC Output		
Rated AC output power	100 kW	125 kW
Max. AC output power[2]	100 kVA (111 kVA @ PF>0.9)	125 kVA (132 kVA @ PF>0.95)
Rated output voltage	600 Vac	
Output voltage range[3]	528-660 Vac	
Grid connection type[4]	3Φ / PE / N (neutral optional)	
Max. AC output current @ 600 Vac	96.2 / 106.8 A	120.3 / 127.0 A
Rated output frequency	60 Hz	
Output frequency range[3]	57-63 Hz	
Power factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	
Max. fault current contribution (1-cycle RMS)	41.47 A	
Max. OCPD rating	200 A	
AC disconnection type	Load-rated AC switch	
AC surge protection	Type II MOV (with indicator/remote signaling)	
System		
Topology	Transformerless	
Max. efficiency	99.1%	
CEC efficiency	98.5%	
Stand-by / night consumption	<4 W	
Environment		
Enclosure protection degree	NEMA Type 4X	
Cooling method	Variable speed cooling fans	
Operating temperature range	-22°F to +140°F / -30°C to +60°C (derating from +108°F / +42°C)	
Non-operating temperature range[5]	-40°F to +158°F / -40°C to +70°C maximum	
Operating humidity	0-100%	
Operating altitude	8202 ft / 2500 m (no derating)	
Audible noise	<65 dBA @ 1 m and 25°C	
Display and Communication		
User interface and display	LED indicators, WiFi + APP	
Inverter monitoring	Modbus RS485	
Site-level monitoring	CPS FlexOM Gateway (1 per 32 inverters)	
Modbus data mapping	SunSpec / CPS	
Remote diagnostics / firmware upgrade functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (W x H x D)	Standard Wire-box: 45.28 x 24.25 x 9.84 in (1150 x 616 x 250 mm) Centralized Wire-box: 39.37 x 24.25 x 9.84 in (1000 x 616 x 250 mm)	
Weight	Inverter: 121 lbs (55 kg) Standard Wire-box: 55 lbs (25 kg) Centralized Wire-box: 33 lbs (15 kg)	
Mounting / installation angle	15 - 90 degrees from horizontal (vertical or angled)	
AC termination	M10 stud type terminal [3Φ] (wire range: 1/0 AWG - 500 kcmil CU/AL; lugs not supplied) Screw clamp terminal block [N] (#12 - 1/0 AWG CU/AL)	
DC termination	Standard Wire-box: Screw clamp fuse holder (wire range: #12 - #6 AWG CU) Centralized Wire-box: Busbar, M10 bolts (wire range: #1AWG - 500kcmil CU/AL [1 termination per pole], #1 AWG - 300 kcmil CU/AL [2 terminations per pole]; lugs not supplied)	
Fused string inputs	25 A fuses provided (fuse values up to 30 A acceptable)	
Safety		
Certifications and standards	UL 1741-SA/SB Ed. 3, CSA-C22.2 NO.107.1-01, IEEE 1547-2018, FCC PART15	
Selectable grid standard	IEEE 1547a-2014, IEEE 1547-2018[6], CA Rule 21, ISO-NE	
Smart-grid features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAR, Freq-Watt, Volt-Watt	
Warranty		
Standard[7]	5 years	
Extended terms	10, 15 and 20 years	

1) See user manual for further information regarding MPPT voltage range when operating at non-unity PF.
2) "Max AC apparent power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100 kW PF≥0.9, and 125 kW PF≥0.95.
3) The "output voltage range" and "output frequency range" may differ according to the specific grid standard.
4) Wye neutral-grounded; delta may not be corner-grounded.
5) See user manual for further requirements regarding non-operating conditions.
6) Firmware version 12.0 or later required.
7) 5-year warranty effective for units purchased after October 1, 2019.

VG-100®

Natural Ester-based Fluid for Transformers

Ecological & sustainable alternative for electrical transformers

Technical information

PROLEC® GE

Powering reliable solutions for you

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VG-100

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Technical Data Sheet

Description

VG-100® is a dielectric fluid derived from natural esters of edible seeds, formulated using a proprietary process for use in electrical transformers – both new and retrofill. It was developed by **Prolec GE** in 2009 as an environmentally-friendly alternative to existing dielectric fluids. It is 100% natural and biodegradable, and does not contain any synthetic antioxidant, petroleum, or toxic compounds.

Properties

VG-100® fluid fulfills with international standards and requirements such as ASTM & IEEE. It is also certified by Factory Mutual (FM) and Underwriters Laboratories (UL).

Table 1. Electrical, physical and chemical properties of **VG-100®** fluid

Properties	Test Method		Requirement		VG-100 fluid[3]
	ASTM	ISO/IEC	ASTM D6871[1]	IEC 62770[2]	
ELECTRICAL					
Dielectric breakdown, kV 2mm	D1816		≥ 35		>60
2.5mm		IEC 60156		≥ 35	80-98
Dissipation factor,% 25°C	D924		≤ 0.2		0.08
90°C		IEC 60247		≤ 0.05	0.011
100°C	D924		≤ 4.0		0.29
PHYSICAL					
Color	D1500	ISO 2211	L1.0		L0.5
Appearance	visual	visual	bright & clear	bright & clear	bright & clear
Relative density, g/cm^3 15°C	D1298		≤ 0.96		0.916
Density, g/cm^3 20°C		ISO 3675		1.00	0.919
Viscosity, cSt 0°C	D445	ISO 3104	≤ 500		178
40°C	D445	ISO 3104	≤ 50	≤ 50	31
100°C	D445	ISO 3104	≤ 15	≤ 15	6
Pour Point, °C	D97	ISO 3016	ISO 3016		-12 to -15
Flash Point, °C	D92	ISO 2592	≥ 275		330
Fire Point, °C	D92	ISO 2592	≥ 300		352
CHEMICAL AND ENVIRONMENTAL					
Water content, mg/kg	D1533		≤ 200		50
		IEC 60814		≤ 200	34
Acidity number, mg KOH/g	D974		≤ 0.06		0.05
		IEC 62021.3		≤ 0.06	0.03
PCB content, mg/kg	D4059		not detectable	free from PCB	not detectable
Oxidation stability (48hrs, 120°C)		IEC 61125-C			
Total acidity, mg KOH/g		IEC 62021.3		≤ 0.6	0.43
Viscosity at 40°C, cSt		ISO 3104		≤ 30% increase	<20% increase
Dissipation factor at 90°C, tanδ		IEC 60247		≤ 0.5	0.17
Biodegradability		OECD 301	Readily biodegradable	Readily biodegradable	Readily biodegradable

[1] ASTM D6871. Standard Specification for Natural (Vegetable Oil) Ester Fluids Used in Electrical Apparatus
[2] IEC 62770. Fluids for electrotechnical applications – Unused natural esters liquids for transformers and similar electrical equipment.
[3] Typical data for new fluid. These values may vary depending on the handling. For more information, please contact Prolec GE at 1-800-437-7653

Storage & Handling

To maintain the optimal properties of **VG-100®** fluid, it is important to take some precautions related to its storage and handling. **VG-100®** is classified as a less-flammable dielectric fluid by UL-340 and FM-6933 approval agencies, so its fire point overpass of 300°C allows either indoor or outdoor storage. **VG-100®** fluid can be delivered in sealed totes (drums) or tankers. As with mineral oil, an inspection should be done when the material is received. Verify the fluid properties using IEEE C57.147 Guide for Acceptance and Maintenance of Natural Ester Fluids in Transformers (table below). If the fluid does not meet the required specifications, please contact **Prolec GE** for further guidance.

Storage considerations

Drums/totes are shipped with a positive pressure dry nitrogen blanket to prevent fluid contamination by humidity or oxygen inside the container, or other solid or volatile materials.

New fluid should be stored in a dry location, protected from rain, direct sunlight, or high temperatures. When the fluid is received in bulk tankers, the fluid must be degassed, filtered and dried (moisture extraction) to ensure optimal characteristics and benefits.

If **VG-100®** fluid has been stored or received during cold weather, heating the containers may be necessary to decrease the fluid's viscosity. Storage in a heated warehouse could reduce the amount of heating needed, thus making it easier to pump the fluid into storage containers or to the transformer filling line. It is recommended that the containers be opened before heating to avoid unintended pressure build-up in the containers during this process.

Table 1. IEEE C57.147 Acceptance values for receipt of shipments of natural esters

Parameter	Min	Max
Breakdown Voltage (kV), ASTM D1816, at 2mm		
Sampled from bulk tanker	35	–
Sampled from drums/totes	60	–
Dissipation Factor (%), ASTM D924		
at 25°C	–	0.2
at 100°C	–	4.0
Density (g/cm$^{3)}$, ASTM D1298 at 25°C		≤ 0.96
Water content (mg/kg), ASTM D1533		
Sampled from bulk tanker	–	200
Sampled from drums/totes	–	100
Neutralization number (mgKOH/g), ASTM D974	–	0.06
Color, ASTM D1500	–	L1.0
Flash Point (°C), ASTM D92	275	
Fire Point (°C), ASTM D92	300	
Pour Point (°C), ASTM D97		-10
Viscosity (cSt), ASTM D445		
at 0°C	–	500
at 40°C	–	50
at 100°C	–	15

Once opened, a container can be closed and resealed by first filling the headspace of the container with a blanket of dry nitrogen to prevent any contaminant and moisture entrance.

If **VG-100®** fluid has been stored or received during cold weather, heating the containers may be necessary to decrease the fluid's viscosity. Storage in a heated warehouse could reduce the amount of heating needed, thus making it easier to pump the fluid into storage containers or to the transformer filling line. It is recommended that the containers be opened before heating to avoid unintended pressure build-up in the containers during this process.

Once opened, a container can be closed and resealed by first filling the headspace of the container with a blanket of dry nitrogen to prevent any contaminant and moisture entrance.

Storage containers/ tanks should be made preferably of stainless steel or steel coated with a compatible paint. The use of new and clean containers is highly recommended, making sure the containers are in good condition.

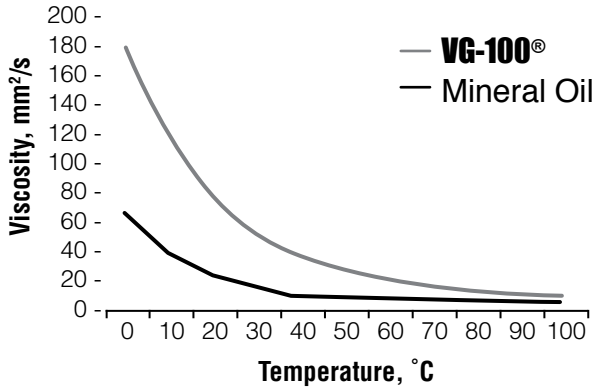


Figure 1. Viscosity behavior of **VG-100®** at different temperatures

IMPORTANT. Store fluid in dry location, protected from rain, direct sunlight, and high temperature to assure the optimal properties of the VG-100® fluid

As indicated previously, it is recommended that the exposure time of the fluid to air and high temperatures be limited, since polymerization reactions can occur in vegetable oils due to air exposure. However, **Prolec GE** has determined that exposure of bulk quantities during normal transformer manufacturing processes has no effect on the electrical and physical properties of the fluid.

IMPORTANT. Exposure to oxygen (O_2) for long periods should be avoided

Handling

Any equipment that is suitable for transformer oil can be used with **VG-100®** , although the capacity of the pump should be reviewed because **VG-100®** fluid has a higher viscosity than mineral oil. The required filling rate, the fluid temperature, and filling pressure will affect the proper pump size. It is recommended that the lowest operating temperature expected during handling operations be used for this analysis to derive the resulting viscosity of the fluid. Before using, pumping equipment should be cleaned and rinsed with **VG-100®** fluid to remove dirt, dust or traces of other oils, and then thoroughly flushed with new **VG-100®** fluid.

Handling for transformer maintenance, repairs, or retrofills

In cold weather, **VG-100®** fluid should be heated to reduce its viscosity and to avoid damage to pump equipment. If pipes, hoses and fittings are thermally insulated, a continuous flow can be maintained. A temperature above 10°C is suggested for easy handling of the fluid.

It is also recommended that the main tank be insulated with thermal sheets in order to minimize the heat released to the ambient and also to reduce the process time. If thermal sheets are not available, polystyrene sheets of 1" thickness can also be used. If heat blowers are available, either electrical or gas, those could be used to heat the ambient around the transformer to keep it heated to help the impregnation of cellulose insulation of the transformer.

Prior to filling the transformer, the liquid should be processed (degassed, filtered and dehydrated) to meet the acceptance levels of applicable standards (ASTM D6871, IEEE C57.147 or IEC 62770). The treated fluid should be placed in a tank under vacuum or directly to the transformer with a previous vacuum step. A target temperature of approximately 80 degrees C will improve the impregnation process of the insulation system. As is the case with any dielectric fluid, there is a possibility of static charge accumulation when **VG-100®** fluid flows through the pumping equipment. Therefore it is important that all pumps, lines and vessels be grounded during pumping operations to prevent this electrical phenomena.

For drying impregnated insulation with **VG-100®** fluid, kerosene vapors or hot nitrogen should be used. A drying process with air is not acceptable as it could lead to fluid polymerization on impregnated materials.

IMPORTANT. Higher temperatures will decrease the viscosity and improve the insulation system impregnation process

For any work inside a transformer that requires draining of **VG-100®** fluid, it will be necessary to transfer the fluid to suitable new clean sealed containers to minimize contamination. A positive pressure with a dry nitrogen blanket will help to prevent the admission of humidity or oxygen into the container, keeping the **VG-100®** fluid in good condition. All equipment used to manipulate the oil (pumps, pipes, hoses, fittings) should be cleaned after use to avoid gelification; thin films of **VG-100®** fluid or any natural ester oil over time will polymerize and that could be difficult to remove. This phenomena depends mainly on temperature, time of exposure to the ambient, and sunlight.

Oxidation performance

There are some differences in oxidation properties for natural ester based fluids versus mineral oils. Vegetable fluids are subject to a polymerization process in the continuous presence of oxygen and elevated temperatures.

However, when used in sealed environments, such as in sealed transformers, vegetable fluids are stable. **VG-100®** meets all IEC requirements for oxidation stability using the IEC 61125 method C modified test (see Table 1 below):

Table 1. Oxidation stability of **VG-100®** fluid based on IEC 61125 method C

Properties	Units	Standard	Acceptance criteria	VG-100® fluid
Total acidity	[mg KOH/g]	IEC 62021-3	≤ 0.6	0.4
Dissipation factor (90°C)	[tan δ]	IEC 60247	≤ 0.5	0.2
Viscosity at 40°C	cSt	ISO 3104	≤ 30% increase	<20% increase

In addition, **Prolec GE** has conducted testing of **VG-100®** fluid exposed to oxygen at room temperature which shows that **VG-100®** fluid does not change its characteristics and does not form oxidation by-products after two weeks of exposure. These results assure that **VG-100®** fluid can be used in transformer manufacturing – both during production processes and maintenance practices.

Since polymerization reactions are accelerated on the exposed surface of vegetable oils, it is recommended that the time where impregnated components are exposed to air and high temperatures be limited to what would be normal for production processes.

For additional information, please contact
Prolec GE at 1-800-437-7653.

Retrofilling

There are many environmental benefits derived from the use of natural ester fluid in transformers, both for new units and for retrofill applications.

All retrofilling processes should be reviewed by qualified personnel. It is important to verify the good condition of the transformers as well as the reliability of their components.

When conducting a retrofill operation using natural ester fluid, the most relevant parameters to take into account are humidity and oxygen content. Humidity decreases the dielectric strength of the insulation and oxygen content affects the physical and chemical properties such as viscosity, which directly impact the transformer thermal performance.

If during retrofilling, the **VG-100®** fluid has been exposed or has been in contact with water or dust, it is recommended to process the oil as the same as in factory: degassed, filtered and dehydrate.

VG-100® fluid is fully miscible with conventional mineral oil, natural and synthetic esters, and it does not compatible with silicone oils.

IMPORTANT. Mineral oil and dielectric esters fluids are completely miscible with VG-100®

Once the transformer is drained, the remaining mineral oil needs to be controlled in order to minimize its volume, since high concentrations of it can reduce the original characteristics of the **VG-100®** fluid, such as fire resistance, biodegradability, among other. It is highly recommended to have less than 7% of mineral oil in order to maintain the optimal performance of **VG-100®** fluid.

The maintenance will be the same for **VG-100®** fluid and for mineral oil, highlighting that the equipment to be refilled should be non-free breathing, sealed transformer. Some parameters will need to be considered differently compared to those of mineral oil, such as exposure time, oil filtering before filling up the transformer, and others.

IMPORTANT. Avoid a concentration higher than 7% of residual mineral oil in a VG-100® retrofilled transformer.

Retrofilling process

Step 1	• De-energize the equipment • Perform power factor and insulating resistance tests • Take oil sample for analysis
Step 2	• Drain the oil • Allow the residual oil to drip out of windings and tank
Step 3	• Change all gaskets for new ones • Replace any damaged components
Step 4	• Flush core and coil with **VG-100®** fluid • Allow the residual fluid to drip out of windings and tank • Remove fluid residues
Step 5	• Apply vacuum process • Begin filling the unit with **VG-100®** fluid • Nitrogen blanket is required
Step 6	• Allow time for **VG-100®** fluid to saturate the windings • Perform power factor and insulating resistance tests
Step 7	• Reclassify the transformer as “Unit Retrofilled with **VG-100®** fluid” • Take a **VG-100®** oil sample for analysis
Step 8	• Connect transformer to the network • Check operational conditions of the transformer (temperature, pressure) • Verify no leaks are present
Step 9	• Verify no leaks are present • Continue with any other maintenance required and reenergize when ready

NOTE. These are general recommendations for a retrofilling process. It may vary depends on each installation. Further information are available, please contact Prolec GE at 1-800-437-7653.

Certifications

In order to assure optimal **VG-100®** performance, this ester fluid has been subjected to several tests, to meet usage, performance and testing criteria based on standards set by the industry.

FM Approvals

Is a company that certifies industrial and commercial products and services for companies worldwide. When a product or service meets the standards of FM Approvals, it is issued the FM APPROVED mark to signify it will perform as expected and support property loss prevention. FM Approvals backs its evaluations with scientific research and testing and lists more than 45,000 certified products and services.

UL

UL certifies, validates, tests, inspects, audits, and advises and trains, provides the knowledge and expertise to help customers navigate growing complexities across the supply chain from compliance and regulatory issues to trade challenges and market access.

OECD

The OECD has a collection of Test Guidelines of internationally agreed test methods used by government, industry and independent laboratories. They are used to determine the safety of chemicals and chemical preparations, including pesticides and industrial chemicals.

Table 1. List of certifications of **VG-100®**

Certifications	Organization	Code
Less Flammable Transformer Fluid	FM Approvals	Class number 6933
Less or non-flammable Liquid-Insulated Transformers	FM Approvals	Class number 3990
Tests for comparative Flammability of Liquids	UL	UL-340
Dielectric Medium	UL	EOUV
Acute Toxicity Test of Natural Dielectric Oil VG100 using rainbow trout ONCORHYNCHUS MYKISS (OECD Guideline203)	Maxxam	OECD 203
Ready Biodegradability of **VG100®** Using the Manometric Respirometry Test	Maxxam	OECD 301F

FM APPROVED

Certificate of Compliance

This certificate is issued for the following:

Vegetable Oil VG-100

Prepared for:

Prolec GE International S de RL de CV
Blvd Carlos Salinas de Gortari No Km 9.25
Apodaca, Nuevo Leon CP 66600
Mexico

FM Approvals Class: 6933

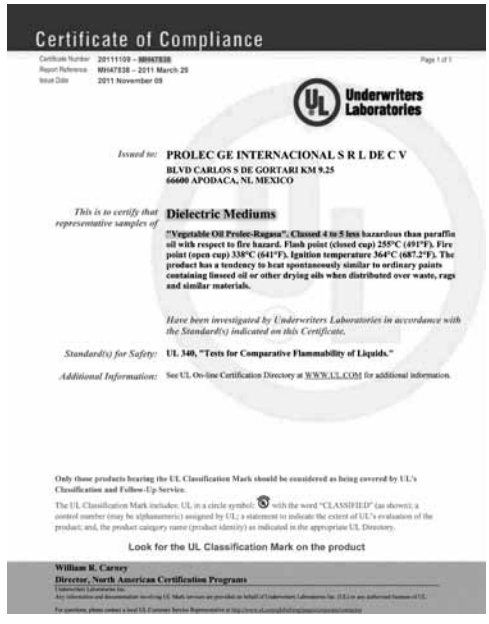
Approval Identification: 3040078 Approval Granted: 15 November, 2011

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

For more than 160 years FM Approvals has partnered with business and industry to reduce property losses.

Cynthia Frank
Group Manager - Materials
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062

FM Approvals
Member of the FM Global Group


Certificate of Compliance

Certificate Number: 20111109 – MH47838
Report Reference: MH47838 – 2011 March 25
Issue Date: 2011 November 09

Page 1 of 1

Underwriters Laboratories

Issued to: PROLEC GE INTERNACIONAL S R L DE C V
BLVD CARLOS S DE GORTARI KM 9.25
66600 APODACA, NL MEXICO

This is to certify that representative samples of **Dielectric Mediums**

"Vegetable Oil Prolec-Ragasa". Classed 4 to 5 less hazardous than paraffin oil with respect to fire hazard. Flash point (closed cup) 255°C (491°F). Fire point (open cup) 338°C (641°F). Ignition temperature 364°C (687.2°F). The product has a tendency to heat spontaneously similar to ordinary paints containing linseed oil or other drying oils when distributed over waste, rags and similar materials.

Have been investigated by Underwriters Laboratories in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: **UL 340, "Tests for Comparative Flammability of Liquids."**

Additional Information: See UL On-line Certification Directory at WWW.UL.COM for additional information.

Only those products bearing the UL Classification Mark should be considered as being covered by UL's Classification and Follow-Up Service.

The UL Classification Mark includes: UL in a circle symbol; with the word "CLASSIFIED" (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and, the product category name (product identity) as indicated in the appropriate UL Directory.

Look for the UL Classification Mark on the product

William R. Carney
Director, North American Certification Programs

Material Safety Data Sheet

SECTION I – IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product identifier: Natural ester **VG-100®**
Other forms of identification: High purity dielectric vegetable oil, food-grade dielectric vegetable oil, natural ester dielectric fluid.
Recommended use: To be used in electrical equipment such as transformers as an insulating element and cooling medium.
Produced by:
PROLEC GE INTERNACIONAL SRL DE CV
BLVD Carlos Salinas de Gortari km 9.25
66600 Apodaca NL México
Emergency phone in México: 1-800-437-7653

SECTION II - HAZARD IDENTIFICATION

VG-100® dielectric fluid is not classified as hazardous. It is a preparation classed 4 to 5 less hazardous than paraffin oil in respect to fire hazard.
NFPA Hazard Classification

Health (Blue)	0
Flammability (Red)	1
Reactivity (Yellow)	0

SECTION III – COMPOSITION

Chemical name: Mixed Triglycerides
CAS N°: 008001-22-7
Common name and synonyms: Natural ester fluid
Components: Vegetable oil: 100% wt
Synthetic additives: 0% wt

SECTION IV – FIRST AID MEASURES

Symptoms and effects
Ingestion: Abdominal pain and possible diarrhea.
Inhalation: No adverse effect.
Eye contact: May produce temporary blurred vision.
Skin contact: Sensitive people may experience dermatitis after a long time in contact with the oil.

First aid description
Ingestion: No special requirements, contact your doctor if necessary.
Eye contact: Flush with water, be sure to remove all product from affected area.
Skin contact: Remove clothing and wash skin with soap and water.
Inhalation: Unlikely to cause adverse effects.

SECTION V – FIRE FIGHTING MEASURES

Extinguishing medium: Dry chemical foam, carbon dioxide (CO_2), sand or earth.
Specific danger of the chemical substance, or mixes: The pressure in sealed containers can increase under the influence of heat as with most fluids.
Fire residues and contaminated firefighting water: It must be disposed according to local regulations.
Special precautions to be followed by fire fighting groups: In case of insufficient ventilation, wear breathing equipment. Application of water to flaming oil can cause spreading. Avoid contact with oxidant agents.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Methods and materials for containment and cleaning up spills or leaks: Contain the liquid with sand, earth or control material and transfer it into a properly identified container for disposal.

Environmental precautions: Prevent leakage or spillage, prevent entry into drains, ditches or rivers by using sand, earth or barriers. Consult and follow all applicable Federal, State, and Local regulations.

SECTION VII – HANDLING AND STORAGE

Avoid dispersion of the material into air to minimize risks of ignition and health hazards. Store material in tightly-closed container, avoiding direct sunlight, heat, and oxidizing agents. Store at room temperature.

SECTION VIII – EXPOSURE CONTROLS/ PERSONAL PROTECTION

Signs and symptoms of exposure: There are no significant health hazards under normal conditions of use.
Respiratory protection: Not required under normal use conditions and proper ventilation; in the presence of any vegetable oil mists, proper respiratory protection should be used.
Eye Protection: Wear safety glasses to prevent eye contact.
Protective gloves: Usually not needed.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

Appearance and odor: Pale yellow transparent liquid, vegetable oil odor.
Flash point: >330°C
Vapor pressure 20°C: <1 mbar
Boiling temperature: >360°C
Specific gravity: 0.919-0.925
Solubility in water (20ºC): Negligible

SECTION X – REACTIVITY AND STABILITY

Stability: The product is stable when is stored at normal room temperature.
Possibility of hazardous reactions: None.
Conditions that should be avoided: Avoid direct sunlight, heat sources.
Incompatible materials: Avoid oxidizing agents.
Hazardous decomposition products: None.

SECTION XI – TOXICOLOGICAL INFORMATION

VG-100® fluid base oil is generally recognized as safe (GRAS) by the U.S Food and Drug Administration (FDA).
Carcinogenicity (NTP) (IARC) (OSHA): Not listed as a carcinogen.

SECTION XII – ECOLOGICAL INFORMATION

Toxicity:
OECD 203: > 100mg/L
Persistence and biodegradability:
Readily biodegradable
OECD 301F, > 99% after 13 days
Potential for bioaccumulation:
No potential for bioaccumulation
Other adverse effects:
No other adverse effects detected

SECTION XIII – DISPOSAL CONSIDERATIONS

Product waste must be handled and disposed in accordance with applicable local, state, and federal regulations. In that case, **VG-100®** fluid is

not a hazardous waste and could be recycled when required following applicable regulations.

Empty containers should be completely drained and then discarded or recycled, if possible.

SECTION XIV – TRANSPORT INFORMATION

DOT (49 CFR 172.101)

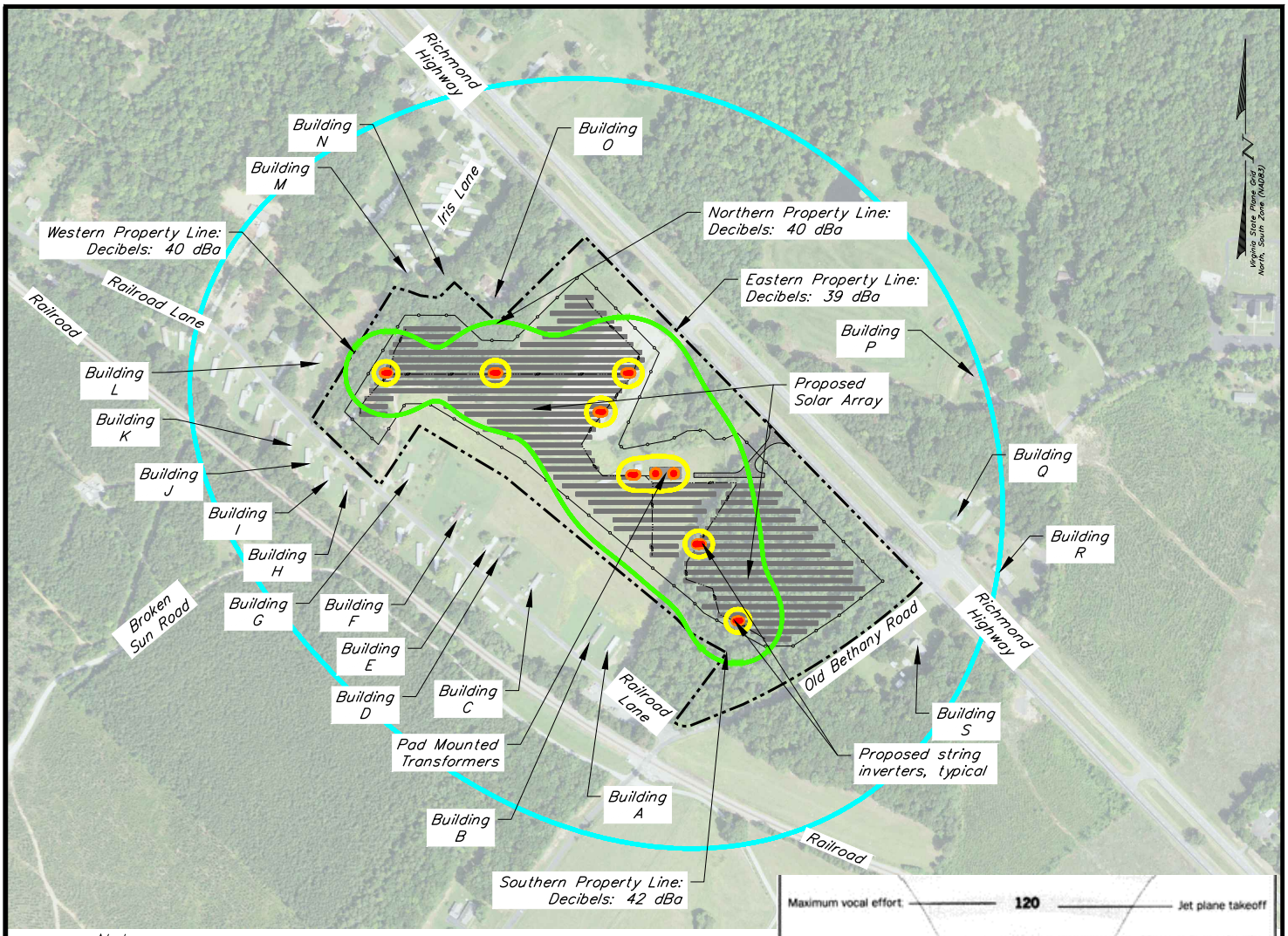
UN Proper shipping name:	Not regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable

SECTION XV – REGULATORY INFORMATION

VG-100® fluid does not contain any hazardous component(s) according to EPA's hazardous substances list. When disposed, is not considered as hazardous waste.

SECTION XVI – OTHER INFORMATION

DISCLAIMER: The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty expressed or implied as to its accuracy. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, PROLEC GE® assumes no responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If this fluid is used in a product other than transformers, this information may not be applicable.



Notes:

1. Chint specifies that the CPS SCH100-125KTL String Inverter creates less than 65 dBa at a distance of 1 meter from the unit, the calculated sound level at 3 meters is 55.5 dBa. Sound levels for the Cooper 2,700 kVA pad mounted transformer have sound levels of 63 dBA, assuming sound at 3 meters to be conservative.

2. Other decibel ranges were derived using the following distance damping equation [L2 = L1 -20 Log(d1/d2)]. This damping equation was the only factor considered in decibel range attenuation estimates. Elevation, ambient noise, vegetation, proposed solar array and other structures which would further effect the attenuation of sound levels were not considered in this study. Sound levels depicted are for all (40) Chint CPS SCH100-125KTL string inverters and (2) 2,700 kVA Cooper pad mounted transformers for the solar array operating simultaneously at maximum noise level. See additional calculation information on Sound 2, Sound 3 and Sound 4.

3. Plans Sound 3 & Sound 4 run the calculations for nighttime operation. Site inverters make negligible noise when not loaded with power. For this calculation we assume they will make no noise. The site transformers and battery storage system units do still make noise at night, to be conservative the nighttime calculation models the transformers running at maximum noise.

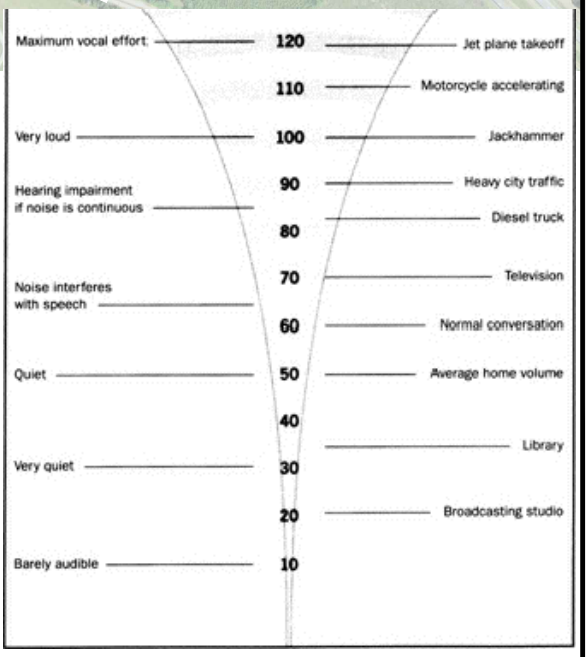
4. Sound levels reported do not account for any background noise. Local background noise may exceed sound created by project equipment.

Legend:

- +70 dBa range
- 60 dBa range
- 50 dBa range
- 40 dBa range
- 30 dBa range

0' 300' 600' 1,200'

GRAPHIC SCALE 1" = 600'



Decibel Breakdown Compared to Everyday Noises

KREBS & LANSING CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 878-0375
www.krebsandlansing.com

encore RENEWABLE ENERGY
P.O. Box 1072
Burlington, VT 05401
T: (802) 861-3023
EncoreRenewableEnergy.com

FULL OPERATION DAYTIME SOUND LEVEL PLAN

Basic Sound Level Estimates for Noise Produced by Project Equipment

Project: Richmond Highway Solar

Location: 16228 Richmond Highway,Pamplin, VA

Source Data:
Chart found at www.soundinstitute.com/article_detail.cfm/ID/95

Plan ID: Sound 1

Scale: 1" = 600'

Date: 02/16/24

DRAWN BY: GTD

CHECKED BY: GTD

Revision Date:

Richmond Highway Solar Project - 16228 Richmond Highway, Pamplin, Virginia - DAYTIME

Sound Source #	Noise Level (dBa @ 3 Meters)
Chint CPS SCH100-125KTL (40)	55.5
Cooper 2,700 kVA Pad Mounted Trans. (2)	63.0

Formulas used for Calculations

Adding of Noise Levels

$L_T = 10 \times \text{Log}_{10} (10^{L1/10} + 10^{L1/10} + ... + 10^{Ln/10})$

Where:

L_T = Total noise level of all equipment

Ln = Noise level for each piece of equipment

Noise Level Changes with Distance

Lb = La - 20 x Log10 (Db/Da)

Where:

Lb = Noise level at new distance

La = Noise level at original distance

Db = New distance from source of noise

Da = Original distance from source of noise

Equipment:	1 Meter	3 Meter
Chint CPS SCH100-125KTL - String Inverters	65.000	55.458
Cooper 2,700 kVA Pad Mounted Transformer	-	63.000

Chint specifies that the CPS SCH100-125KTL String Inverter creates less than 65 dBa at a distance of 1 meter from the unit, the calculated sound level at 3 meters is 55.5 dBa.

Sound levels for the 2,700 kVA pad mounted transformers have sound levels of 63 dBA, assuming sound at 3 meters to be conservative.

Points of Interest	Estimated Noise Level Based on Project Components (Sound Pressure, dBa)
Northern Property Line	40
Eastern Property Line	39
Southern Property Line	42
Western Property Line	40
Building A	37
Building B	37
Building C	37
Building D	36
Building E	36
Building F	36
Building G	36
Building H	34
Building I	34
Building J	34
Building K	33
Building L	37
Building M	35
Building N	36
Building O *Highest dBa from Equipment*	38
Building P	31
Building Q	31
Building R	30
Building S	32

Points of Interest were chosen based on close proximity to the proposed project.

KREBS & LANSING CONSULTING ENGINEERS
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EncoreRenewableEnergy.com

FULL OPERATION DAYTIME SOUND LEVEL PLAN

Basic Sound Level Estimates for Noise Produced by Project Equipment

DRAWN BY: GTD

CHECKED BY: GTD

Project: Richmond Highway Solar

Location: 16228 Richmond Highway,Pamplin, VA

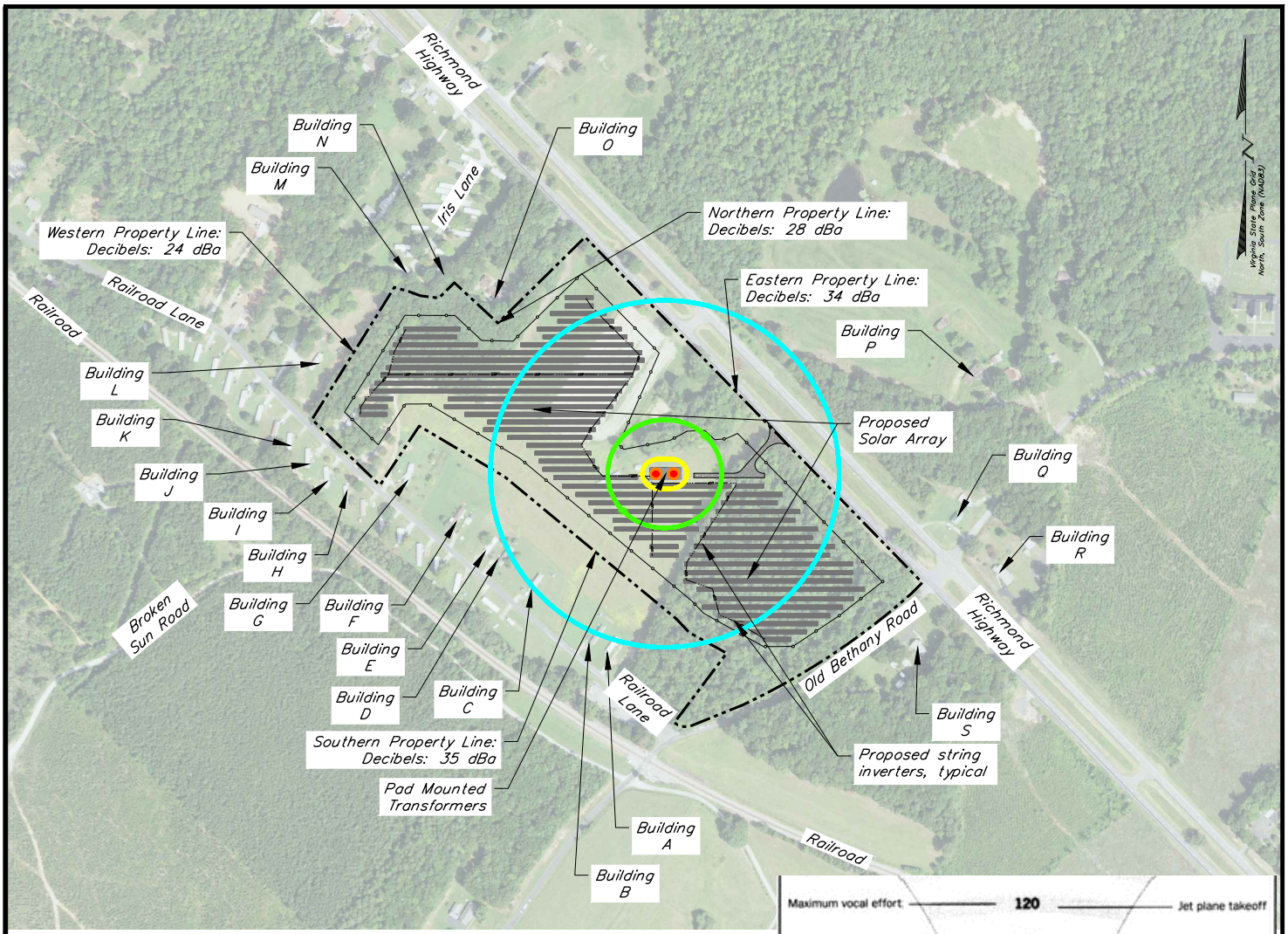
Source Data:

Revision Date:

Plan ID: Sound 2

Scale: N/A

Date: 02/16/24



Notes:

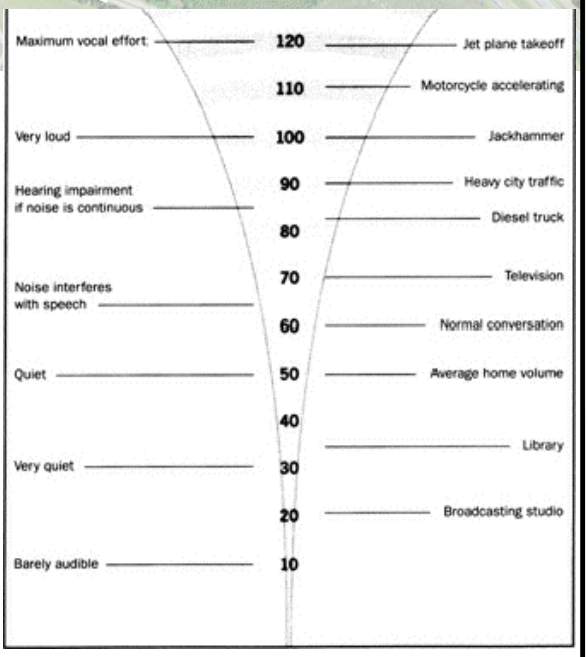
1. Sound levels for the Cooper 2,700 kVA pad mounted transformer have sound levels of 63 dBA, assuming sound at 3 meters to be conservative.
2. Other decibel ranges were derived using the following distance damping equation [L2 = L1 −20 Log(d1/d2)]. This damping equation was the only factor considered in decibel range attenuation estimates. Elevation, ambient noise, vegetation, proposed solar array and other structures which would further effect the attenuation of sound levels were not considered in this study. Sound levels depicted are for all (2) 2,700 kVA Cooper pad mounted transformers for the solar array operating simultaneously at maximum noise level.
3. Sound levels reported do not account for any background noise. Local background noise may exceed sound created by project equipment.

Legend:

- +70 dBa range
- 60 dBa range
- 50 dBa range
- 40 dBa range
- 30 dBa range

0' 300' 600' 1,200'

GRAPHIC SCALE 1" = 600'



Decibel Breakdown Compared to Everyday Noises

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EncoreRenewableEnergy.com

NIGHTTIME OPERATION SOUND LEVEL PLAN

Basic Sound Level Estimates for Noise Produced by Project Equipment

DRAWN BY: GTD

CHECKED BY: GTD

Project: Richmond Highway Solar

Location: 16228 Richmond Highway,Pamplin, VA

Source Data: *Chart found at www.soundinstitute.com/article_detail.cfm/ID/95*

Revision Date:

Plan ID: Sound 3

Scale: 1" = 600'

Date: 02/16/24

Richmond Highway Solar Project - 16228 Richmond Highway, Pamplin, Virginia - NIGHTTIME

Sound Source #	Noise Level (dBa @ 3 Meters)
Cooper 2,700 kVA Pad Mounted Trans. (2)	63.0

Formulas used for Calculations

Adding of Noise Levels

$L_T = 10 \times \text{Log}_{10} (10^{L1/10} + 10^{L1/10} + ... + 10^{Ln/10})$

Where:

L_T = Total noise level of all equipment

Ln = Noise level for each piece of equipment

Noise Level Changes with Distance

Lb = La - 20 x Log10 (Db/Da)

Where:

Lb = Noise level at new distance

La = Noise level at original distance

Db = New distance from source of noise

Da = Original distance from source of noise

Equipment:	1 Meter	3 Meter
Cooper 2,700 kVA Pad Mounted Transformer	-	63.000

Sound levels for the 2,700 kVA pad mounted transformers have sound levels of 63 dBA, assuming sound at 3 meters to be conservative.

Points of Interest	Estimated Noise Level Based on Project Components (Sound Pressure, dBa)
Northern Property Line	28
Eastern Property Line	34
Southern Property Line	35
Western Property Line	24
Building A	30
Building B	31
Building C *Highest dBa from Equipment*	31
Building D	30
Building E	30
Building F	29
Building G	27
Building H	25
Building I	24
Building J	24
Building K	23
Building L	24
Building M	25
Building N	25
Building O	27
Building P	25
Building Q	26
Building R	24
Building S	25

Points of Interest were chosen based on close proximity to the proposed project.

Site inverters make negligible noise when not loaded with power. For this calculation we assume they will make no noise.

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NIGHTTIME OPERATION SOUND LEVEL PLAN

Basic Sound Level Estimates for Noise Produced by Project Equipment

Project: Richmond Highway Solar

Location: 16228 Richmond Highway,Pamplin, VA

Source Data:

DRAWN BY: GTD

CHECKED BY: GTD

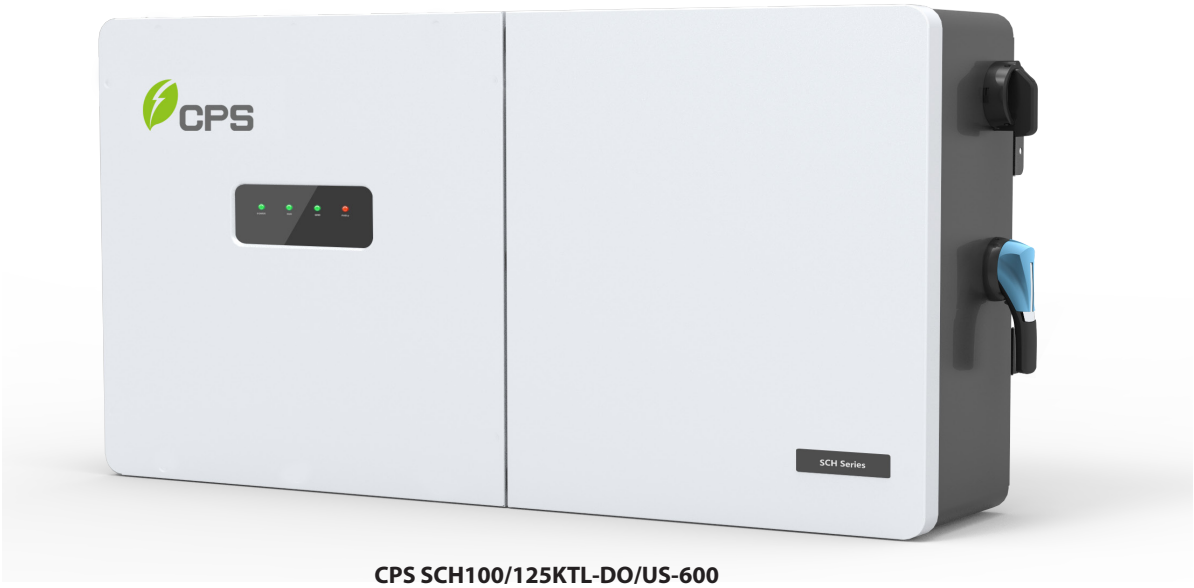
Revision Date:

Plan ID: Sound 4

Scale: N/A

Date: 02/16/24

100/125 kW, 1500 Vdc String Inverters for North America



CPS SCH100/125KTL-DO/US-600

The 100 and 125 kW high power CPS three-phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 99.1% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100/125 kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box includes touch-safe fusing for up to 20 strings. The CPS FlexOM Gateway enables communication, controls and remote product upgrades.

Key Features

- NFPA 70 and NEC compliant
- Touch-safe DC Fuse holders add convenience and safety
- CPS FlexOM Gateway enables remote firmware upgrades
- Integrated AC and DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper- and Aluminum-compatible AC connections
- NEMA Type 4X outdoor rated enclosure
- Advanced Smart-Grid features (CA Rule 21 certified)
- kVA headroom yields 100 kW @ 0.9 PF and 125 kW @ 0.95 PF
- Generous 1.87 (100 kW) and 1.5 (125 kW) DC/AC inverter load ratios
- Separable wire-box design for fast service
- Standard 5-year warranty with extensions to 20 years

100/125KTL Standard Wire-box

100/125KTL Centralized Wire-box

C SP US

FC This device complies with part 15 of the FCC Rules

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Chint Power Systems America
1380 Presidential Drive, Suite 100, Richardson, TX 75081
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

Model Name	CPS SCH100KTL-DO/US-600	CPS SCH125KTL-DO/US-600
DC Input		
Max. PV power	187.5 kW	
Max. DC input voltage	1500 V	
Operating DC input voltage range	860-1450 Vdc	
Start-up DC input voltage / power	900 V / 250 W	
Number of MPP trackers	1	
MPPT voltage range[1]	870-1300 Vdc	
Max. PV input current (Isc x 1.25)	275 A	
Number of DC inputs	Standard Wire-box: 20 PV source circuits, pos. and neg. fused Centralized Wire-box: 1 input circuit, 1-2 terminations per pole, non-fused	
DC disconnection type	Load-rated DC switch	
DC surge protection	Type II MOV (with indicator/remote signaling)	
AC Output		
Rated AC output power	100 kW	125 kW
Max. AC output power[2]	100 kVA (111 kVA @ PF>0.9)	125 kVA (132 kVA @ PF>0.95)
Rated output voltage	600 Vac	
Output voltage range[3]	528-660 Vac	
Grid connection type[4]	3Φ / PE / N (neutral optional)	
Max. AC output current @ 600 Vac	96.2 / 106.8 A	120.3 / 127.0 A
Rated output frequency	60 Hz	
Output frequency range[3]	57-63 Hz	
Power factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	
Max. fault current contribution (1-cycle RMS)	41.47 A	
Max. OCPD rating	200 A	
AC disconnection type	Load-rated AC switch	
AC surge protection	Type II MOV (with indicator/remote signaling)	
System		
Topology	Transformerless	
Max. efficiency	99.1%	
CEC efficiency	98.5%	
Stand-by / night consumption	<4 W	
Environment		
Enclosure protection degree	NEMA Type 4X	
Cooling method	Variable speed cooling fans	
Operating temperature range	-22°F to +140°F / -30°C to +60°C (derating from +108°F / +42°C)	
Non-operating temperature range[5]	-40°F to +158°F / -40°C to +70°C maximum	
Operating humidity	0-100%	
Operating altitude	8202 ft / 2500 m (no derating)	
Audible noise	<65 dBA @ 1 m and 25°C	
Display and Communication		
User interface and display	LED indicators, WiFi + APP	
Inverter monitoring	Modbus RS485	
Site-level monitoring	CPS FlexOM Gateway (1 per 32 inverters)	
Modbus data mapping	SunSpec / CPS	
Remote diagnostics / firmware upgrade functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (W x H x D)	Standard Wire-box: 45.28 x 24.25 x 9.84 in (1150 x 616 x 250 mm) Centralized Wire-box: 39.37 x 24.25 x 9.84 in (1000 x 616 x 250 mm)	
Weight	Inverter: 121 lbs (55 kg) Standard Wire-box: 55 lbs (25 kg) Centralized Wire-box: 33 lbs (15 kg)	
Mounting / installation angle	15 - 90 degrees from horizontal (vertical or angled)	
AC termination	M10 stud type terminal [3Φ] (wire range: 1/0 AWG - 500 kcmil CU/AL; lugs not supplied) Screw clamp terminal block [N] (#12 - 1/0 AWG CU/AL)	
DC termination	Standard Wire-box: Screw clamp fuse holder (wire range: #12 - #6 AWG CU) Centralized Wire-box: Busbar, M10 bolts (wire range: #1AWG - 500kcmil CU/AL [1 termination per pole], #1 AWG - 300 kcmil CU/AL [2 terminations per pole]; lugs not supplied)	
Fused string inputs	25 A fuses provided (fuse values up to 30 A acceptable)	
Safety		
Certifications and standards	UL 1741-SA/SB Ed. 3, CSA-C22.2 NO.107.1-01, IEEE 1547-2018, FCC PART15	
Selectable grid standard	IEEE 1547a-2014, IEEE 1547-2018[6], CA Rule 21, ISO-NE	
Smart-grid features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAR, Freq-Watt, Volt-Watt	
Warranty		
Standard[7]	5 years	
Extended terms	10, 15 and 20 years	

1) See user manual for further information regarding MPPT voltage range when operating at non-unity PF.
2) "Max AC apparent power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100 kW PF≥0.9, and 125 kW PF≥0.95.
3) The "output voltage range" and "output frequency range" may differ according to the specific grid standard.
4) Wye neutral-grounded; delta may not be corner-grounded.
5) See user manual for further requirements regarding non-operating conditions.
6) Firmware version 12.0 or later required.
7) 5-year warranty effective for units purchased after October 1, 2019.

Three-phase pad-mounted PEAK™ transformer

General

Eaton's Cooper Power™ series PEAK™ transformers represent the next generation of transformer design, and with three distinct product offerings there is a PEAK transformer to fit your needs. The first PEAK transformer option is a 75 °C average winding rise (AWR) design that offers users a potentially smaller and lighter footprint than today's 65 °C AWR transformers. This design is ideal for applications with cost, weight, or dimensional constraints. The second PEAK transformer option is a 65/75 °C AWR design that offers users sustained overload capacity while maintaining IEEE Std C57.91™-2011 standard per unit life requirements. This design offers customers flexibility in transformer sizing by offering the ability to accommodate future load growth without oversizing relative to current load, or the ability to meet periods of peak demand without oversizing based on continuous load. The third PEAK transformer option is a 55/75 °C AWR design that provides up to 22% additional loading capacity when compared to traditional mineral oil-filled transformers.

With all PEAK product offerings utilizing thermally upgraded kraft paper and Envirotemp™ FR3™ dielectric fluid, PEAK transformers offer customers a solution that is fully compatible with the new IEEE® standard for transformers using high-temperature insulation systems, IEEE Std C57.154™-2012 standard. In addition, all PEAK transformers provide the high fire point and environmental benefits of Envirotemp™ FR3™ fluid. PEAK transformers are available in various designs and configurations to match almost every application.

Powering Business Worldwide

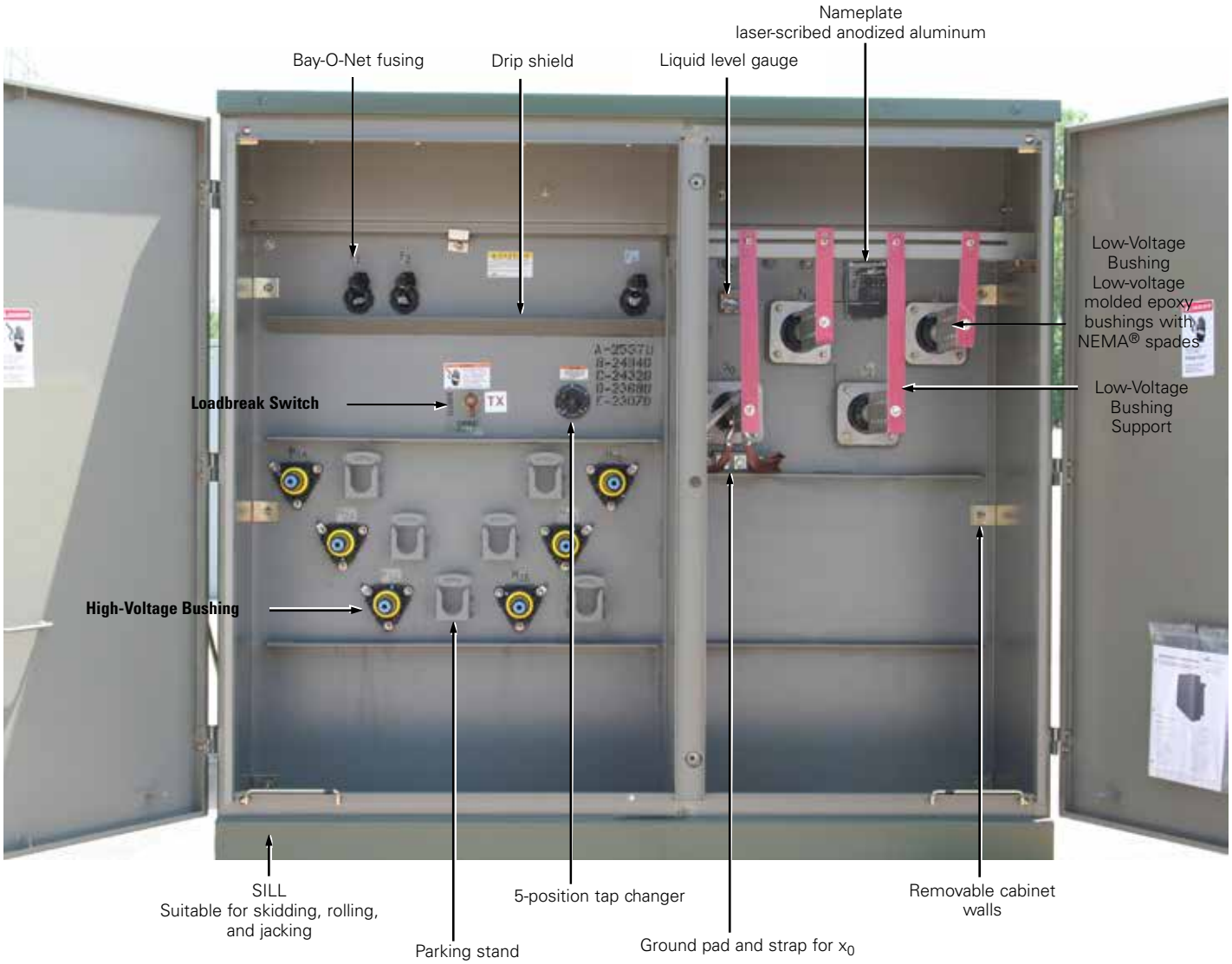

Figure 1. Three-phase pad-mounted PEAK transformer.

Table 1. Product scope

Type	Three-Phase, 50 or 60 Hz, 75 ºC Rise and 65 °C/75 °C and 55/75 °C
Fluid Type	Only Envirotemp™ FR3™ fluid
Coil Configuration	2-winding or 4-winding or 3-winding (Low-High-Low), 3-winding (Low-Low-High)
Size	45 – 10,000 kVA
Primary Voltage	2,400 – 46,000 V
Secondary Voltage	208Y/120 V to 14,400 V
Specialty Designs	Inverter/Rectifier Bridge
	K-Factor (up to K-19)
	Solar/Wind Designs
	Differential Protection
	Seismic Applications (including OSHPD)
	Hardened Data Center
	UL® Listed & Label and Classified

Table 2. Three-Phase Ratings

Three-Phase 50 or 60 Hz
kVA Available[1]: 45, 75, 112.5, 150, 225, 300, 500, 750, 1000, 1500, 2000, 2500, 3000, 3750, 5000, 7500, 10000

[1]Transformers are available in the standard ratings and configurations shown or can be customized to meet specific needs.

Table 3. Impedance Voltage

	Low-voltage rating		
Rating (kVA)	**≤ 600 V**	**2400 Δ through 4800 Δ**	**6900 Δ through 13800GY/7970 or 13800 Δ**
45-75	2.70-5.75	2.70-5.75	2.70-5.75
112.5-300	3.10-5.75	3.10-5.75	3.10-5.75
500	4.35-5.75	4.35-5.75	4.35-5.75
750-2500	5.75	5.75	5.75
3750	5.75	5.75	6.00
5000		6.00	6.50

Note: The standard tolerance is ± 7.5%

Table 4. Audible Sound Levels

	NEMA® TR-1 Average
Self-Cooled, Two Winding kVA Rating	**Decibels (dB)**
45-500	56
501-700	57
701-1000	58
1001-1500	60
1501-2000	61
2001-2500	62
2501-3000	63
3001-4000	64
4001-5000	65
5001-6000	66
6001-7500	67
7501-10000	68

Table 5. Insulation Test Levels

KV Class	Induced Test 180 or 400 Hz 7200 Cycle	kV BIL Distribution	Applied Test 60 Hz (kV)
1.2	Twice Rated Voltage	30	10
2.5		45	15
5		60	19
8.7		75	26
15		95	34
25		125	40
34.5		150	50

Table 6. Temperature Rise Ratings 0-3300 Feet (0-1000 meters)

	Unit Rating (Temperature Rise Winding)
	75, 65/75, 55/75 °C
Ambient Temperature Max.	40 °C
Ambient Temperature 24 Hour Average	30 °C
Temperature Rise Hotspot	90 °C

TYPICAL SECONDARY CONTAINMENT GEOSYNTHETIC BARRIER DETAILS

NOTES:

1. NUMBER OF STAPLES/SCREWS USED WILL VARY BASED ON BARRIER HEIGHT.
2. FIRE QUENCH YARDSTONE – AREA EXTENT AND DEPTH AS PER ENGINEER.

SECONDARY CONTAINMENT GEOSYNTHETIC BARRIER PLAN

SCALE: N.T.S.

DWG FILE: DETAILS - PLAN
DATE: MARCH 9, 2011
DRAWN BY: M.T.H.
SCALE: N.T.S.

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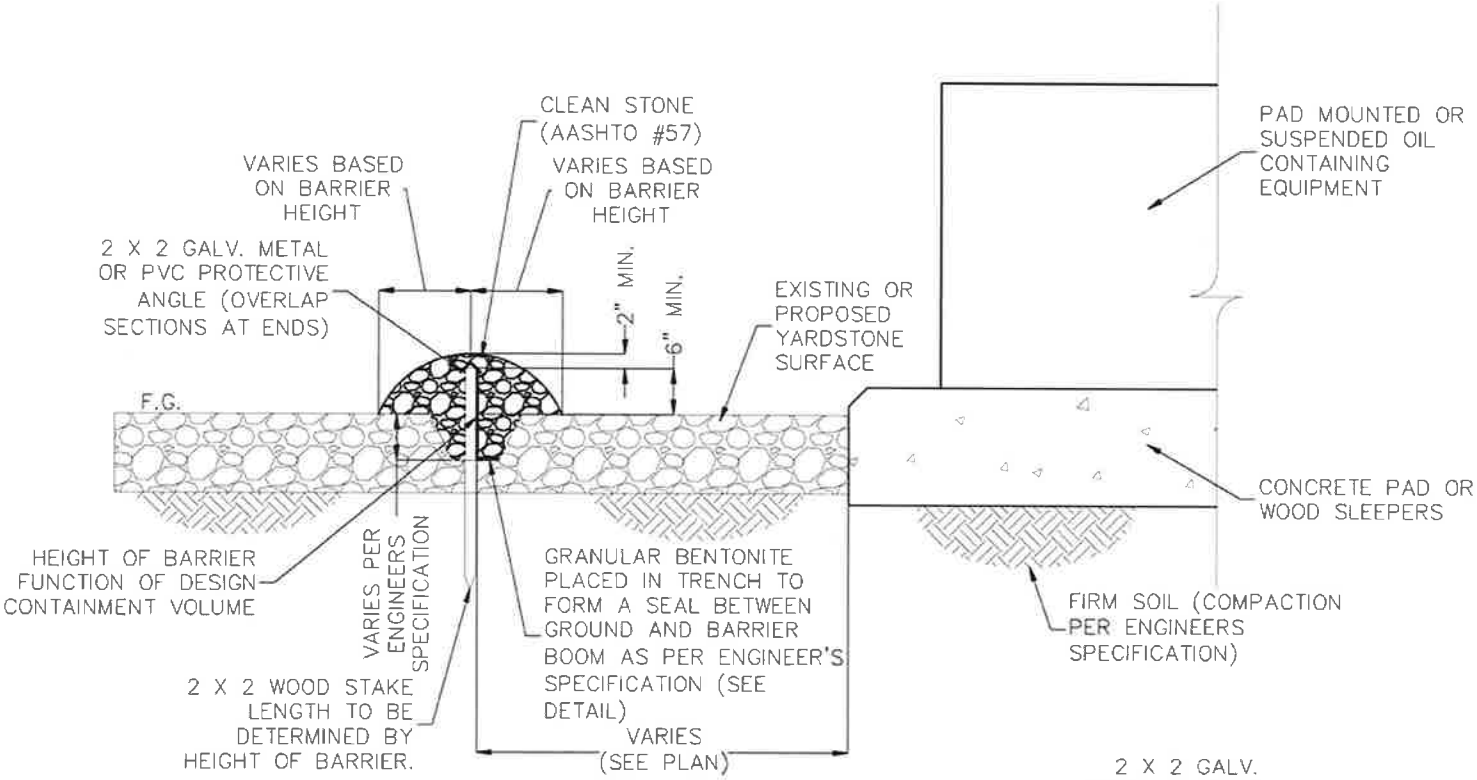
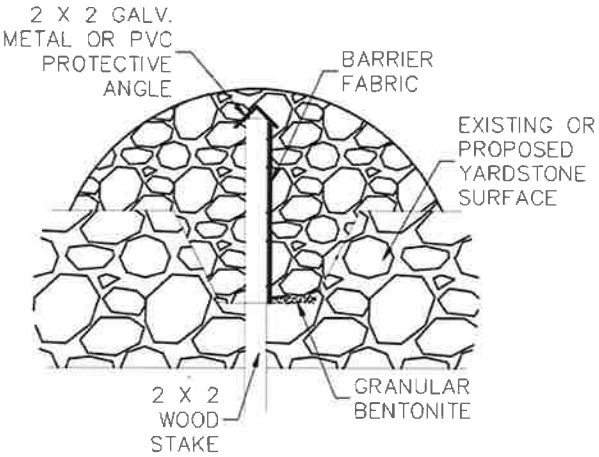
1 OF 1

TYPICAL SECONDARY CONTAINMENT GEOSYNTHETIC BARRIER DETAILS



NOTES:

1. INSTALL BARRIER IN TRENCH – DEPTH AND WIDTH AS PER ENGINEER'S SPECIFICATION.
2. SEE PLAN FOR LOCATION OF BARRIER IN RELATION TO OIL CONTAINING EQUIPMENT.
3. FOR CONTAINMENT LAYOUTS THAT DO NOT TOTALLY ENCLOSE THE OIL CONTAINING EQUIPMENT – EXTEND BOTH ENDS OF THE BARRIER AT LEAST 5' UPSLOPE AT A 45° ANGLE TO THE MAIN BARRIER ALIGNMENT OR AS SHOWN ON THE PLAN.
4. (OPTIONAL) LAY PROTECTIVE ANGLE ON WOOD STAKES BEFORE INSTALLING STONE ADJACENT TO AND COVERING BARRIER.
5. BARRIER TO BE INSTALLED WITH THE BLACK (AGENT X) SIDE FACING INSIDE. FLAP, IF USED, ALSO TO FACE INSIDE.
6. OVERLAP ENDS OF BARRIER PIECE A MINIMUM OF 2" AND STAPLE/SCREW TO WOOD STAKE.
7. DO NOT CUT OR TRIM BARRIER WITHOUT MANUFACTURE/REPRESENTATIVE APPROVAL.



BARRIER DETAIL

SCALE: N.T.S.

SECONDARY CONTAINMENT GEOSYNTHETIC BARRIER SECTION

SCALE: N.T.S.

DWG FILE: DETAILS - PLAN
DATE: MARCH 9, 2011
DRAWN BY: M.T.H.
SCALE: N.T.S.

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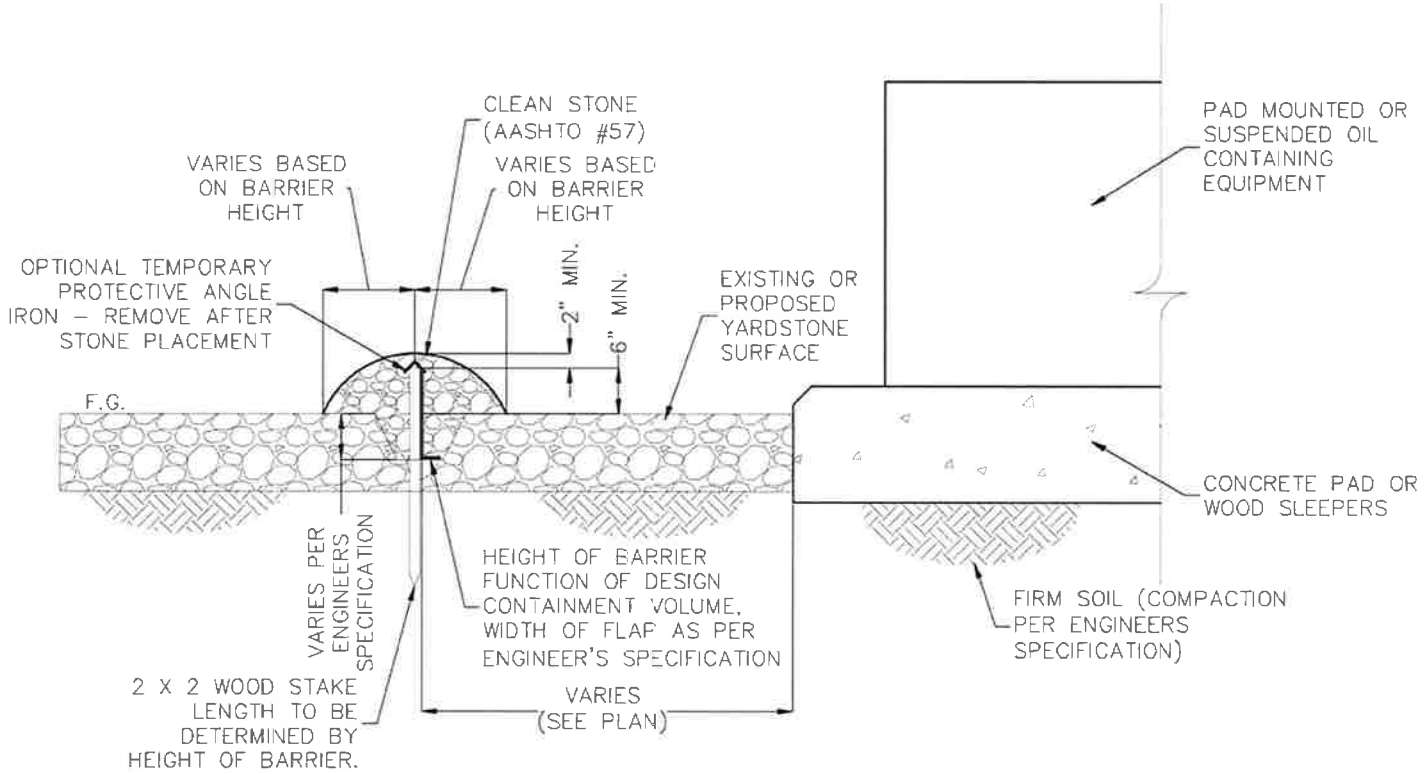
TYPICAL SECONDARY CONTAINMENT GEOSYNTHETIC BARRIER DETAILS

DWG FILE: DETAILS - SECTION
DATE: MARCH 9, 2011
DRAWN BY: M.T.H.
SCALE: N.T.S.



NOTES:

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6. OVERLAP ENDS OF BARRIER PIECE A MINIMUM OF 2" AND STAPLE/SCREW TO WOOD STAKE.
7. DO NOT CUT OR TRIM BARRIER WITHOJT MANUFACTURE/REPRESENTATIVE APPROVAL.

SECONDARY CONTAINMENT GEOSYNTHETIC BARRIER SECTION (with subsurface flow prevention flap)

SCALE: N.T.S.

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E

Appendix E

FAA Report

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

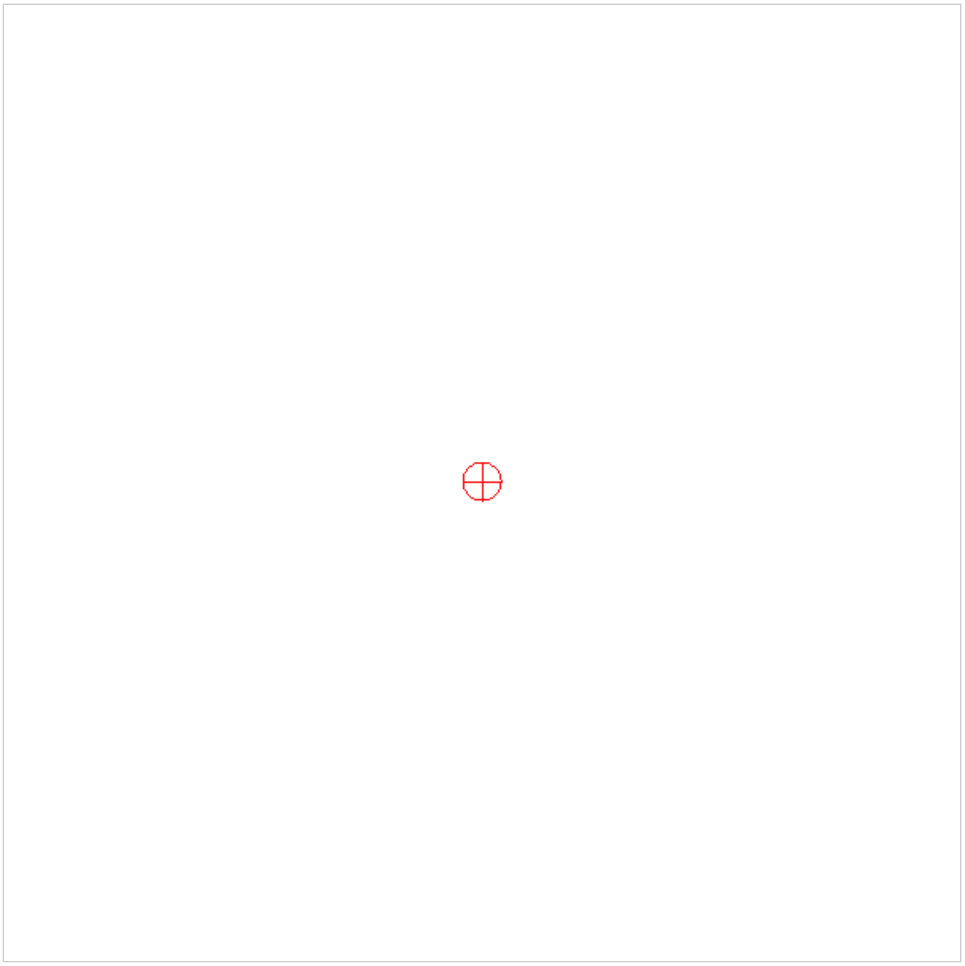
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 17 M 38.27 S N
Longitude:	78 Deg 44 M 28.66 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	700 (nearest foot)
Structure Height :	10 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

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- your structure will be on an airport or heliport
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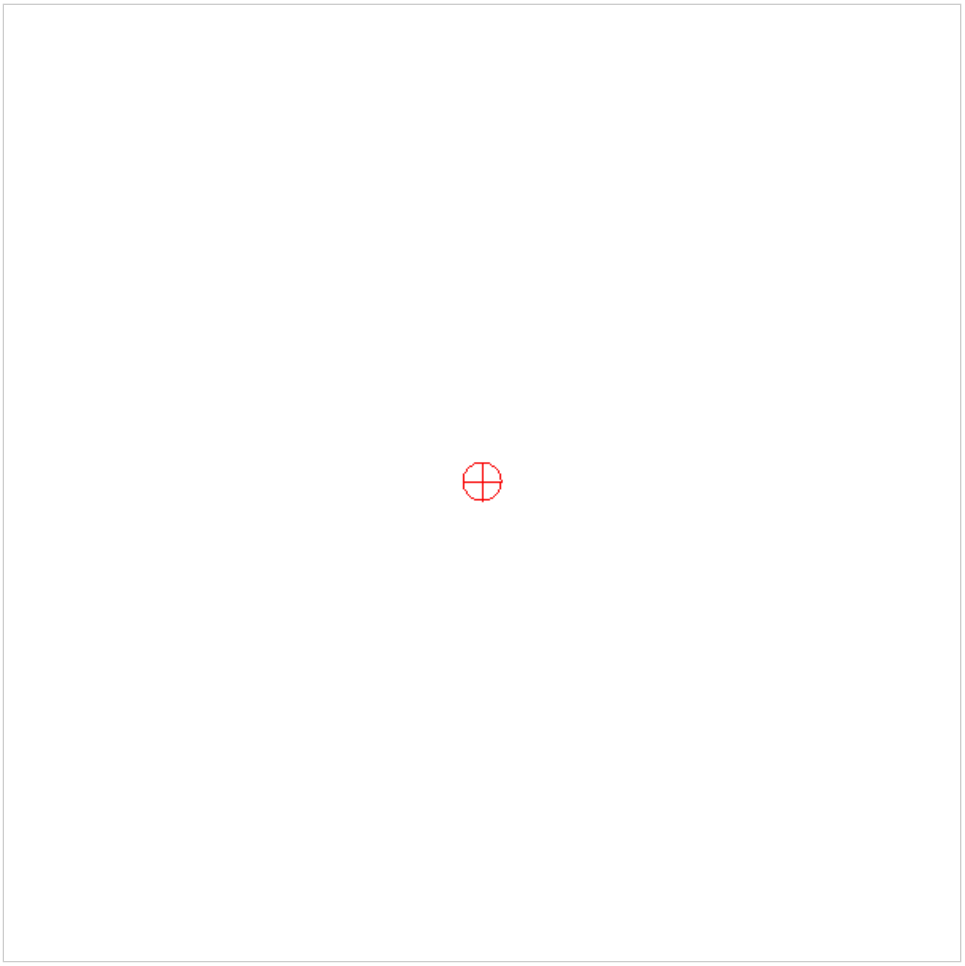
The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 17 M 43.40 S N
Longitude:	78 Deg 44 M 17.81 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	700 (nearest foot)
Structure Height :	10 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

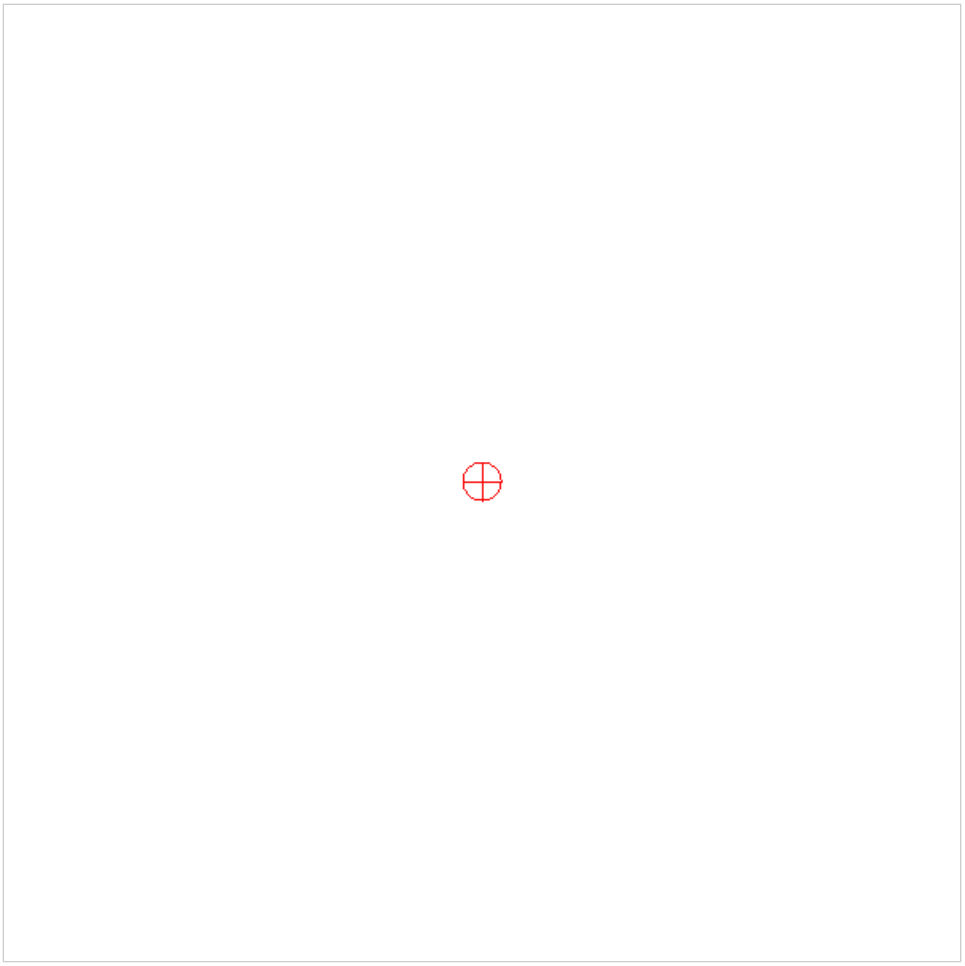
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 17 M 32.36 S N
Longitude:	78 Deg 44 M 4.20 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	700 (nearest foot)
Structure Height :	10 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.



Notice Criteria Tool

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- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

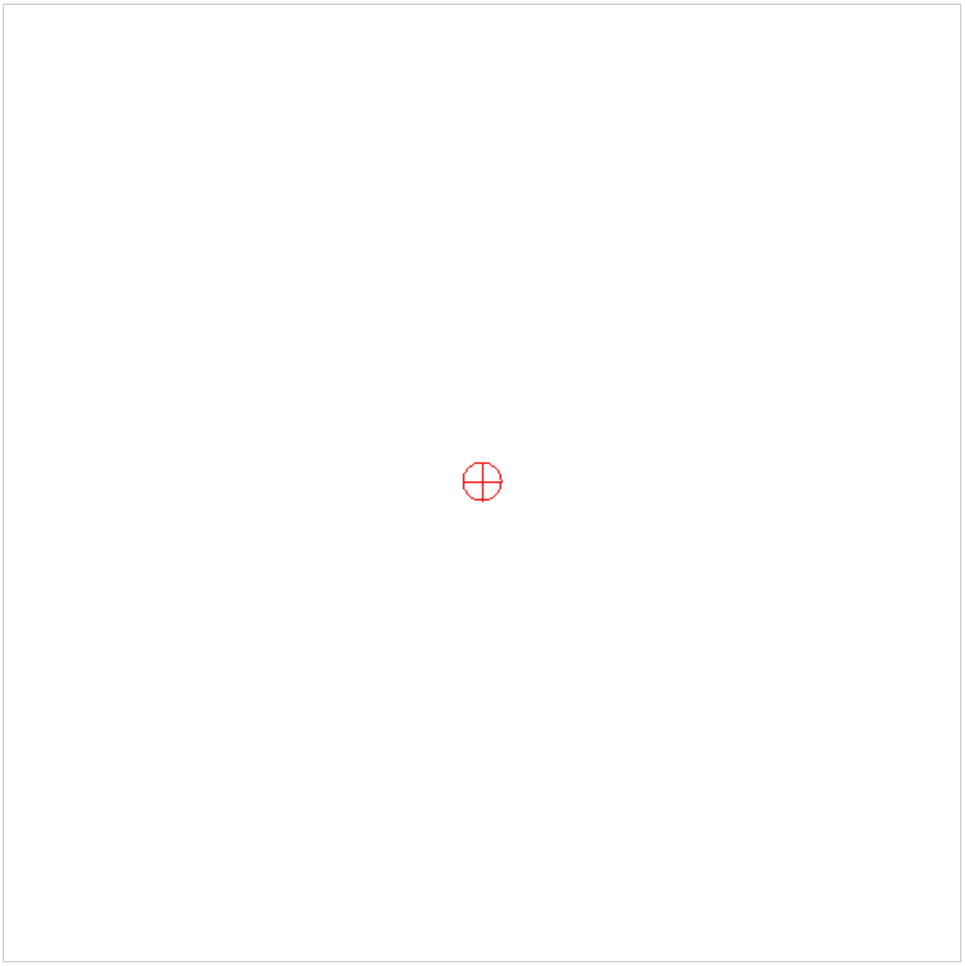
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 17 M 29.56 S N
Longitude:	78 Deg 44 M 9.16 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	700 (nearest foot)
Structure Height :	10 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



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Appendix F

Cultural Resource Risk Assessment

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

January 19, 2023

Stephen Quina, PE
VHB
115 South 15th Street, Suite 200
Richmond VA 23219-4209

RE: Richmond Highway-Pamplin Solar Cultural Resource Risk Assessment
Appomattox County, Virginia

Dear Mr. Quina:

Dutton + Associates, LLC (D+A) is pleased to provide the following cultural resource risk assessment for the ±19.58-hectare (±48.39-acre) Richmond Highway-Pamplin Solar project area located in Appomattox County, Virginia ("the project area"). The project area is located northwest of Pamplin, Virginia on the south side of Route 460 and west of Rocks Church Road (Route 620) (Figures 1 and 2).

This risk assessment is intended to be used as planning tool and will not satisfy any local, federal, or state regulatory requirements. The goal is to provide project planners with a professional assessment of the likelihood for cultural resources to be present within a given project area and whether or not cultural resource survey may be warranted. For the purposes of this assessment, cultural resources include the following: buildings, structures, sites, historic districts, landscapes, battlefield, and cemeteries, which may be considered potentially eligible for listing in the National Register of Historic Places (NRHP). All data used in the risk assessment is derived from online sources and no field visits or fieldwork were conducted as part of the assessment.

For this effort, risk is defined as high, medium, and low and is based on the following factors.

> ***High Risk:*** *Previously recorded cultural resources are present within or immediately adjacent to the limits of the project area.*
>
> ***Medium Risk:*** *Previously recorded resources are located either adjacent to or in the immediate vicinity of the project area and site predictors (i.e., well drained elevated landforms, short distance to water, map projected sites, etc.) are present within the project area.*
>
> ***Low Risk:*** *No previously recorded cultural resources are located within or adjacent to the project area and there is an overall absence of site predictors.*

Figure 1: Aerial view of project area shown in red. Source: Google Earth 2022

Figure 2: View of project area location on USGS topographic map. Source: Earth Point USGS Topo 2021

PROJECT AREA

Based on aerial imagery, the project area currently consists of two parcels; one located north of Railroad Lane (Route 622) consisting of largely open pasture and woodlands. Two agricultural buildings and what appear to be three mobile homes are also located within the northern portion of the project area. The southern portion of the project area is located on the south side of Railroad Lane (Route 622) and consists

of largely cleared land with several mobile homes. The project area is situated on the northeastern edge of a large flat landform, which is located at the head of an unnamed tributary of Suanee Creek. A small manmade farm pond marks the head of the drainage. Soils within the project area are well drained with only a small area of moderately well drained soils located in the northeastern corner of the project area. Overall, project area topography is consistent with the piedmont with gently rolling terrain and more pronounced slopes adjacent to the farm pond in the center of the northern portion of the project area (Table 1 and Figure 3).

Table 1: Project area soil unit classifications. Source: NRCS 2023

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5B	Cecil sandy loam, 2 to 7 percent slopes	Well drained	36.8	79.1%
12B	Mattaponi-Cecil complex, 2 to 7 percent slopes	Moderately well drained	1.2	2.6%
18C	Pacolet-Louisburg complex, 7 to 15 percent slopes	Well drained	8.1	17.5%
W	Water		0.4	0.8%

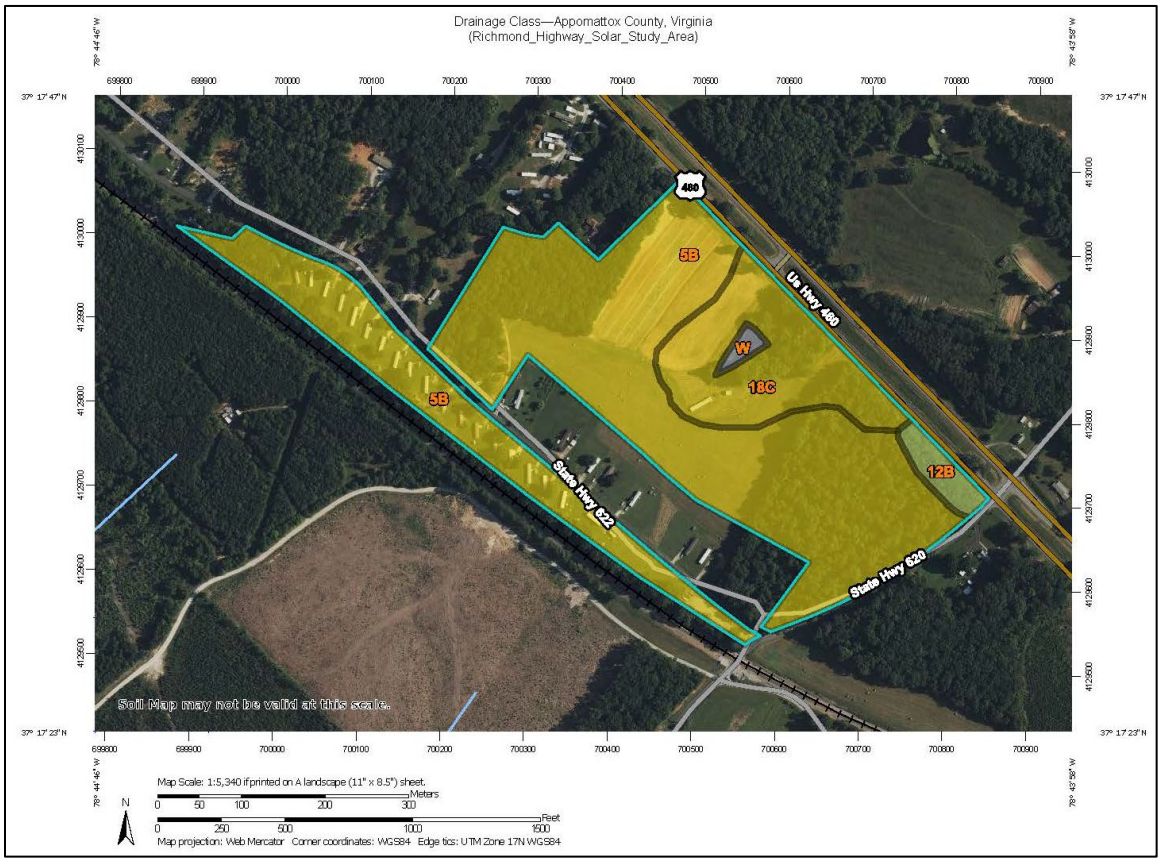

Figure 3: Project area soils drainage classification map. Source: NRCS 2021

PREVIOUSLY RECORDED CULTURAL RESOURCES

A review of the Virginia Department of Historic Resources (VDHR) Virginia Cultural Resource Information System (V-CRIS) revealed that there are no previously recorded Phase I archaeological surveys, archaeological resources, or architectural resources within in the project area or within 0.5 miles of the project area (Figure 4).

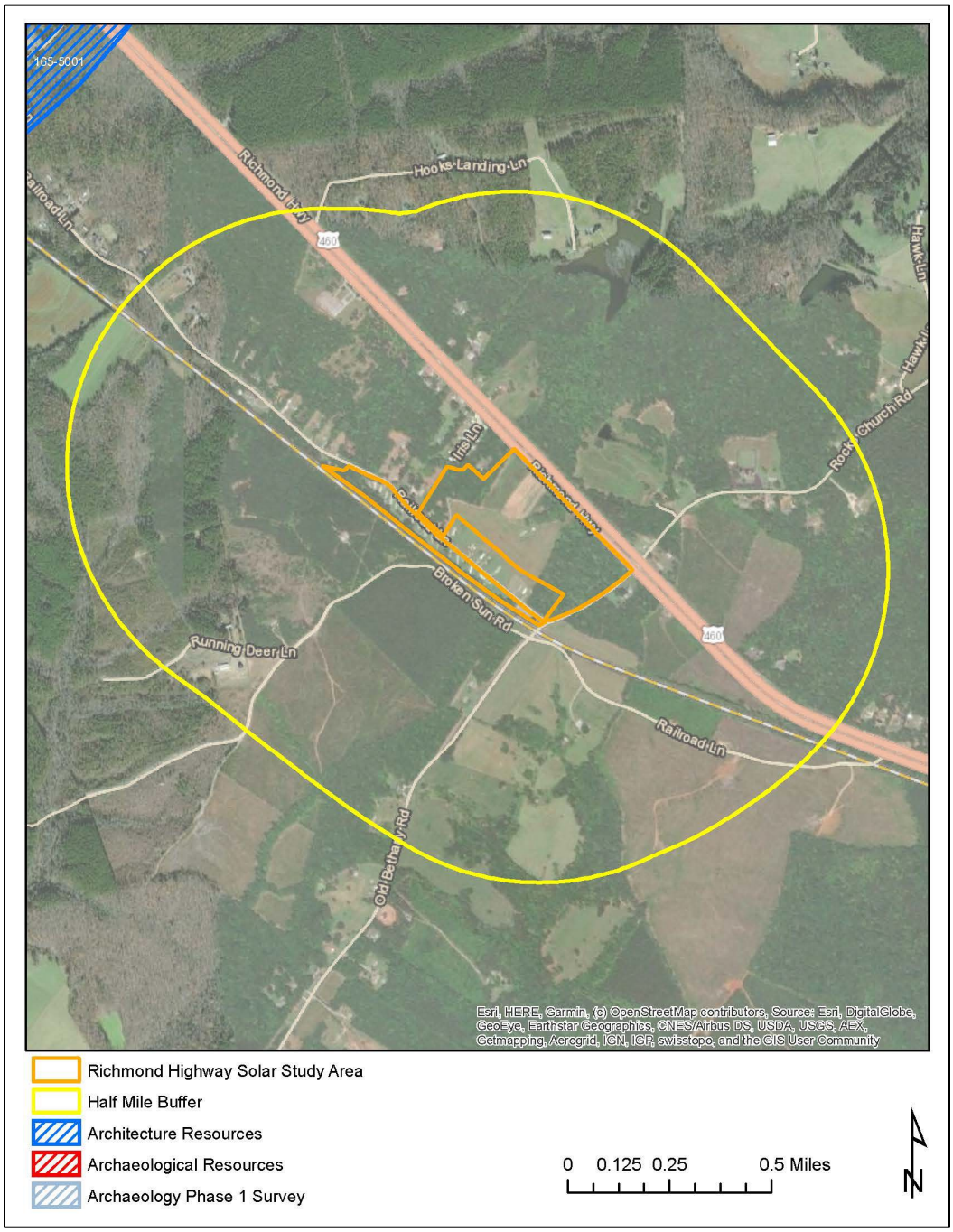

Figure 4: Image of previously recorded Phase I archaeological surveys, archaeological sites, and architectural resources located within 0.5 miles of the project area.

Historic Map Review

A review of available historic mapping and aerial imagery of the project area revealed that the project area was illustrated as largely wooded at the time of the Civil War (Figure 5). The absence of later nineteenth century and early twentiteh century mapping limits the ability to understand development and land use during this period. The next available imagery of the area is a 1954 aerial image, which shows cleared fields and a structure present (Figure 6). The farm pond does not appear to be present in 1954, and given the proximity of the visible structure and access drive, it is likely the property was cleared and developed shortly after the construction of Route 460. Topographic mapping from the later 1950s through the 1980s shows clear evidence of the farm pond and the number of structures and limits of clearing appear consistent through time (Figures 7, 9, and 9). Mobile homes appear in the project area in the late 1990s and early 2000s and sometime between 2012 and 2015, the structure first mapped in the area is demolished (Figures 10, 11, and 12). Careful inspection of aerial imagary does not reveral any visible evidence of landscape features suggestive of burials or cemeteries.

Figure 5: Detail of *Map of Buckingham & Appomattox counties*, 1863, depicting the approximate location of the project area. Source: Library of Congress

Figure 6: Detail of a 1954 aerial depicting the project area. Source: USGS

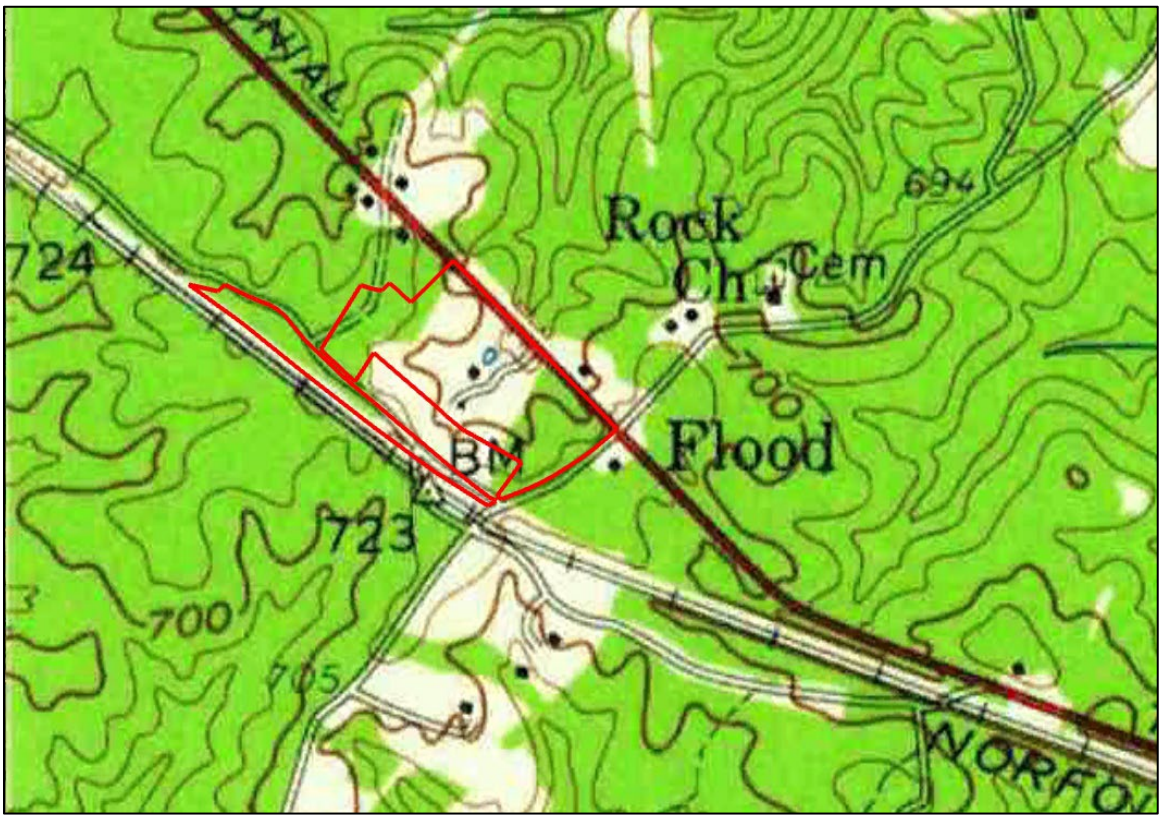

Figure 7: Detail of the 1958 topographic map, *Pamplin City*, depicting the project area. Source: USGS

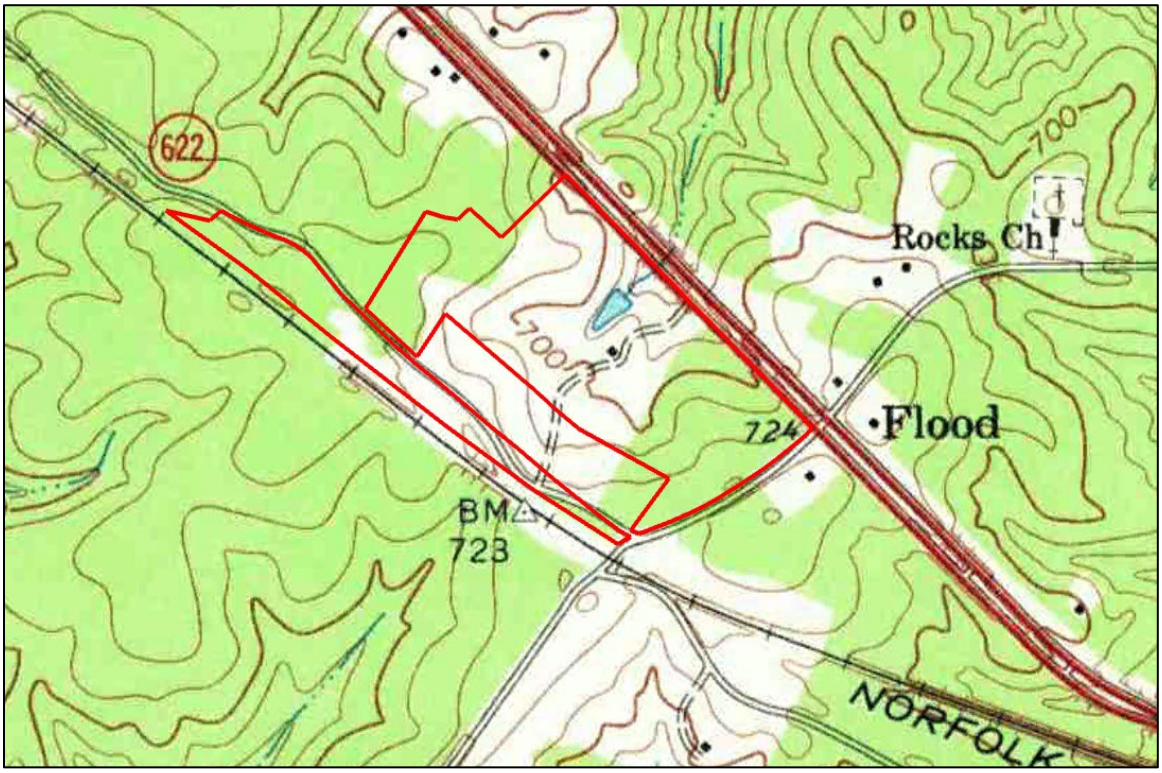

Figure 8: Detail of the 1968 topographic map, *Pamplin*, depicting the project area. Source: USGS

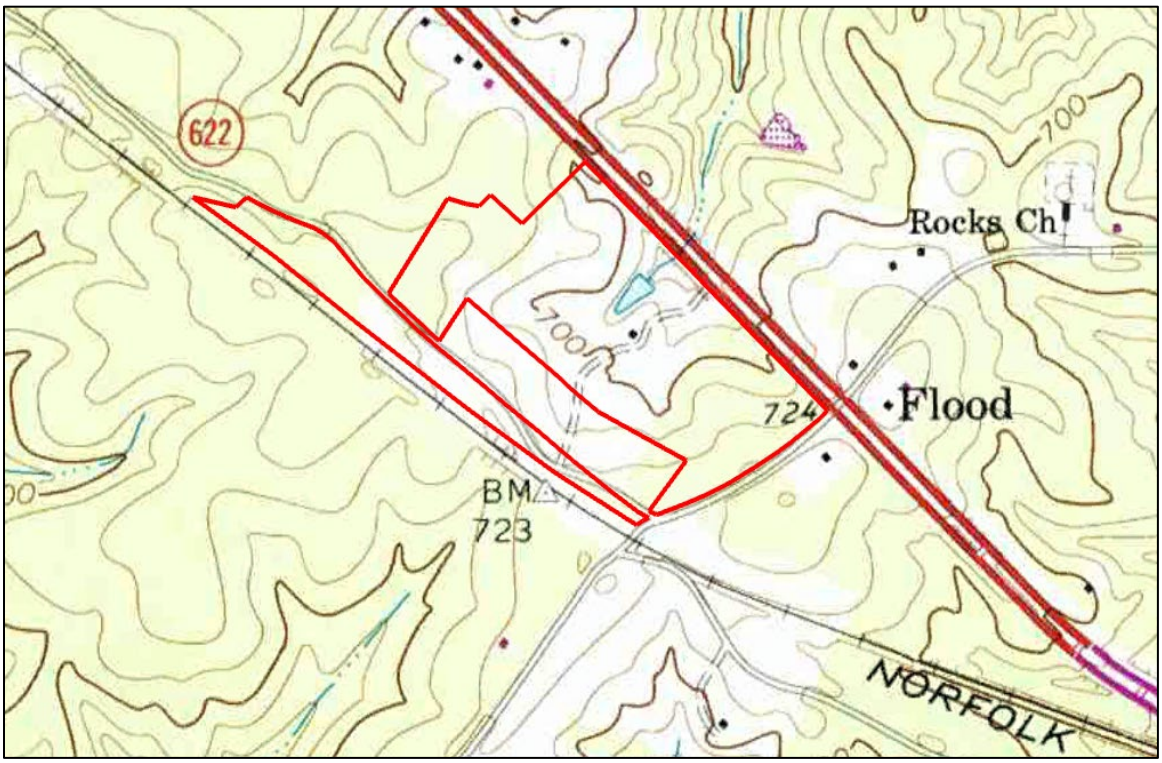

Figure 9: Detail of the 1985 topographic map, *Pamplin*, depicting the project area. Source: USGS

Figure 10: Detail of a 1996 aerial depicting the project area. Source: Google Earth

Figure 11: Detail of a 2001 aerial depicting the project area. Source: Google Earth

Figure 12: Detail of a 2011 aerial depicting the project area. Source: Google Earth

CONCLUSIONS AND RECOMMENDATIONS

Review of cultural resource risks associated with the ±19.58-hectare (±48.39-acre) Richmond Highway-Pamplin Solar project area located in Appomattox County, Virginia included consideration of topography, slope, and soils data, information on previously recorded cultural resources, and a review of historic maps and aerial imagery.

The project area is located northwest of Pamplin, Virginia on the south side of Route 460 and west of Rocks Church Road (Route 620). As of January 2023, a small number of what appear to be agricultural buildings and a number of mobile homes are present in the project area largely along Railroad Lane (Route 622). The project area vegetation is a mixture of open fallow agricultural land with woodlands along the edges. Topography is consistent with that of the Piedmont region and consists of gently rolling terrain with steeper slopes down to creeks and streams. Overall, the project area is considered well drained with a small area of moderately well drained soils located in the northeastern portion of the property. A modern manmade farm pond is located in the project area at the head of an unnamed tributary of Suanee Creek, which flows northeast towards the Appomattox River.

A review of the VDHR V-CRIS data reveals that there are no previously recorded Phase I archaeological surveys, archaeological resources, or architectural resources located within the project area or within 0.5 miles of the project area. There are no previously recorded battlefields, historic districts, or historic landscapes located either within or within 0.5 miles of the project area.

Historic mapping and aerial imagery indicate that the first illustrated evidence of structures in the project area occurred in the 1950s. A single structure is mapped in the project area and was likely constructed shortly after Route 460 was built. The building with associated agricultural structures appears on

topographic mapping of the property from the 1950s up through the early 2000s with little to no change in the numbers of structures or relationship of open space to wooded space.

The absence of previously recorded cultural resources within the limits of the project area and within 0.5 miles of the project area coupled with an overall lack of strong environmental and historical predictors for prehistoric and historic period sites to be present in the project area indicates that the potential for intact significant prehistoric and historic period sites to be present within the project area is low. Therefore, based on a review of available data, ***it is D+A's opinion that overall, the project area is considered to have a low risk for significant cultural resources to be present.***

If you have any questions or wish to discuss the results of the risk assessment further, do not hesitate to contact me at ddutton@dutton-associates.com or at 804-897-1960.

Sincerely,

DUTTON + ASSOCIATES, LLC

David H. Dutton
Partner

REFERENCES

--

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1985 *Pamplin, VA Quadrangle*. 7.5 Minute Series Topographical Map, Scale 1:24000.

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Appendix G

Fiscal Impacts Analysis

RICHMOND HWY, LLC

ECONOMIC & FISCAL CONTRIBUTION TO APPOMATTOX COUNTY, VIRGINIA

Prepared for

encore RENEWABLE ENERGY®

MANGUM economics

4510 COX ROAD, SUITE 202
GLEN ALLEN, VIRGINIA 23060
804-322-7777

MANGUMECONOMICS.COM

MARCH 2024

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About Mangum Economics, LLC

Mangum Economics **w**as founded in 2003 and since then, we have become known as a leader in industry analysis, economic impact assessment, policy and program evaluation, and economic and workforce strategy development. The Mangum Team specializes in producing objective and actionable quantitative economic research that our clients use for strategic decision making in a variety of industries and environments. We know that our clients are unique, and that one size does not fit all. As a result, we have a well-earned reputation for tailoring our analyses to meet the specific needs of specific clients, with a specific audience.

Most of our research falls into four general categories:

- **Economic Development and Special Projects:** The Mangum Team has performed hundreds of analyses of proposed economic development projects. One recent example was an analysis of the proposed $2.3 billion Green City "net-zero eco district." The Mangum Team has also authored multiple economic development plans, including identifying industry recruitment opportunities created by the high-speed MAREA and BRUSA sub-sea cable landings in Virginia Beach.
- **Energy:** The Mangum Team has produced analyses of the economic and fiscal impact of over 28 GW of proposed solar, wind, battery energy storage, and hydro projects spanning twenty-five states. Among those projects was Dominion's 2.6 GW Coastal Virginia Offshore Wind project off of Virginia Beach. In addition, the Mangum Team has also performed economic and fiscal impact analyses for the natural gas, nuclear, oil, and pipeline industries.
- **Advanced Applied Technology:** The Mangum Team specializes in analyzing how advanced technology developments (like data centers, fiber networks, and advanced manufacturing plants) contribute to the state and local economies. We have worked with local governments, trade associations, developers, and operating firms across the country to show how investments in advanced critical infrastructure transform local economies across the country.
- **Policy Analysis:** The Mangum Team also has extensive experience in identifying and quantifying the intended and unintended economic consequences of proposed legislative and regulatory initiatives.

The Project Team

Martina Arel, M.B.A.
Director – Economic Development & Energy Research

Connor Wills
Research Analyst

Rebecca Kyle
Senior Research Analyst

A. Fletcher Mangum, Ph.D.
Founder and CEO

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Executive Summary

This report assesses the economic and fiscal contribution that the proposed Richmond Hwy, LLC project would make to Appomattox County, Virginia. The primary findings from that assessment are as follows:

1) **Richmond Hwy, LLC is a proposed 5-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located off of Richmond Highway (Route 460) in Appomattox County, Virginia. The total fenced-in acreage to be used for solar encompasses approximately 25 acres of vacant land.**

2) **The proposed Richmond Hwy, LLC project would make an economic contribution to Appomattox County:**

   - The proposed Richmond Highway, LLC project would employ approximately 18 local and non-local full-time equivalent construction workers over the construction period.
   - The proposed Richmond Hwy, LLC project would provide an estimated one-time pulse of economic activity to Appomattox County during its construction phase supporting approximately:[1]
     - 5 direct and 2 indirect and induced job years.
     - $0.3 million in associated wages and benefits.
     - $1.3 million in economic output.
   - The proposed Richmond Hwy, LLC project would provide an estimated annual economic impact to Appomattox County during its ongoing operational phase supporting approximately:
     - < 1 direct, indirect, and induced job.
     - $15,500 in associated wages and benefits.
     - $52,400 in economic output.

3) **The proposed Richmond Hwy, LLC would also make a fiscal contribution to Appomattox County. The proposed project would generate approximately:**

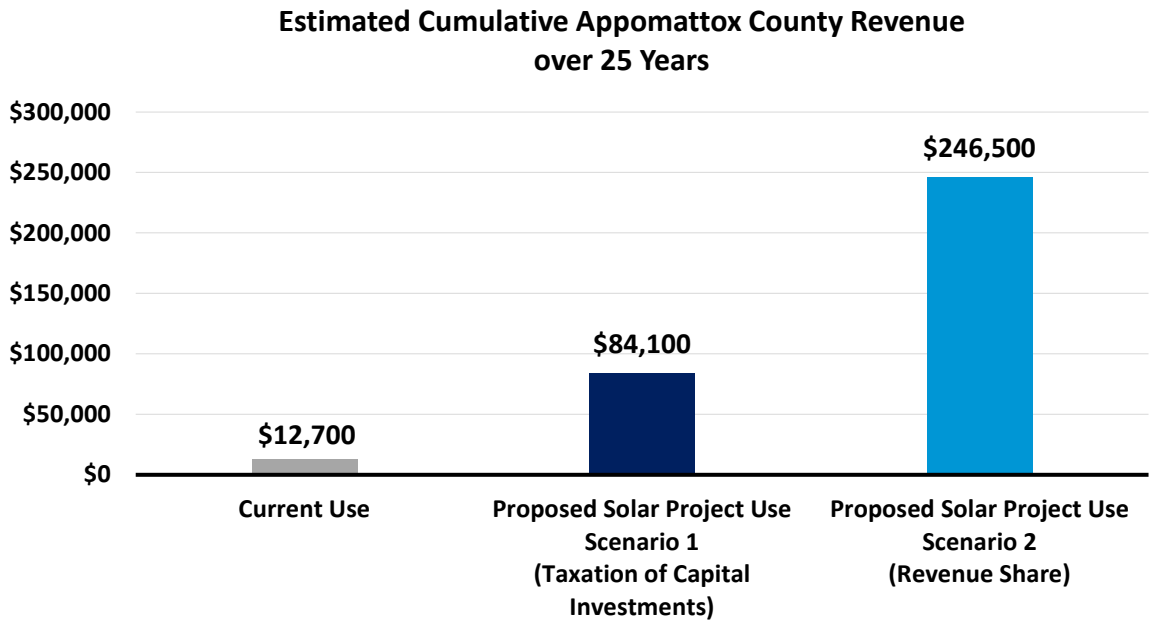
   - $46,300 in state and county tax revenue from the one-time pulse of economic activity associated with the project's construction.
   - $84,100 in cumulative county revenue over the facility's anticipated 25-year operational life assuming revenues are generated from the reassessment of the real property and the taxation of the associated capital investments in machinery and tools (Scenario 1); or

[1] Please note that it is not possible to know with certainty what proportion of jobs would go to construction contractors in the county or be filled by county residents.

- $246,500 in cumulative county revenue over the facility's anticipated 25-year operational life assuming revenues are generated from the reassessment of the real property and payments associated with a locally adopted revenue share ordinance. The payments would be based on the project's generation capacity and would include a 10 percent escalator every five years pursuant to recently passed legislation (Scenario 2).

4) **The proposed Richmond Hwy, LLC would have a significantly greater fiscal impact on Appomattox County than the property generates in its current use:**

- The proposed Richmond Hwy, LLC project would generate approximately between $84,100 in cumulative county revenue under Scenario 1 and approximately $246,500 in cumulative county revenue under Scenario 2 over the facility's anticipated 25-year operational life, as compared to approximately $12,700 in cumulative county revenue in the property's current use – this constitutes a 7- to 19-fold increase respectively over current revenues.



The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

Introduction

This report assesses the economic and fiscal contribution that the proposed Richmond Hwy, LLC project would make to Appomattox County, Virginia. This report was commissioned by Encore Renewable Energy and produced by Mangum Economics.

The Project

Richmond Hwy, LLC is a proposed 5-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located east of Railroad Lane, west of Richmond Highway, and just north of Old Bethany Road in Appomattox County, Virginia. The total fenced-in acreage to be used for solar encompasses approximately 25 acres of land.

Economic and Fiscal Impact

This section quantifies the economic and fiscal contribution that the proposed Richmond Hwy, LLC would make to Appomattox County. The analysis separately evaluates the one-time pulse of economic activity that would occur during the construction phase of the project, as well as the annual economic activity that the project would generate during its ongoing operations phase.

Method

To empirically evaluate the likely local economic impact attributable to the proposed Richmond Hwy, LLC project, the analysis employs a regional economic impact model called IMPLAN.[2] The IMPLAN model is one of the most commonly used economic impact simulation models in the U.S., and in Virginia is used by UVA's Weldon Cooper Center, the Virginia Department of Planning and Budget, the Virginia Employment Commission, and other state agencies and research institutes. Like all economic impact models, the IMPLAN model uses economic multipliers to quantify economic impact.

Economic multipliers measure the ripple effects that an expenditure generates as it makes its way through the economy. For example, as when the Richmond Hwy, LLC purchases goods and services – or when contractors hired by the facility use their salaries and wages to make household purchases – thereby generating income for someone else, which is in turn spent, thereby becoming income for yet someone else, and so on, and so on. Through this process, one dollar in expenditures generates multiple dollars of income. The mathematical relationship between the initial expenditure and the total income generated is the economic multiplier.

One of the primary advantages of the IMPLAN model is that it uses regional and national production and trade flow data to construct region-specific and industry-specific economic multipliers, which are then further adjusted to reflect anticipated actual spending patterns within the specific geographic study area

[2] IMPLAN is produced by IMPLAN Group, LLC.

that is being evaluated. As a result, the economic impact estimates produced by IMPLAN are not generic. They reflect as precisely as possible the economic realities of the specific industry, and the specific study area, being evaluated.

In the analysis that follows, these impact estimates are divided into three categories. First round direct impact measures the direct economic contribution of the entity being evaluated (e.g., own employment, wages paid, goods and services purchased by Richmond Hwy, LLC). Second round indirect and induced impact measures the economic ripple effects of this direct impact in terms of business to business, and household (employee) to business, transactions. Total impact is simply the sum of the preceding two. These categories of impact are then further defined in terms of employment (the jobs that are created), labor income (the wages and benefits associated with those jobs), and economic output (the total amount of economic activity that is created in the economy).

Construction Phase

This portion of the section assesses the economic and fiscal impact that the one-time pulse of activity associated with construction of the proposed Richmond Hwy, LLC project would have on Appomattox County.

Economic Impact Assumptions

The analysis is based on the following assumptions:

- Total capital investment associated with Richmond Hwy, LLC is estimated to be approximately $10.1 million.[3]
- Of that total:
    - Architecture, engineering, site preparation, and other construction and development costs are estimated to be approximately $4.1 million.[4]
    - Capital equipment costs are estimated to be approximately $6.0 million.[5] It is anticipated that no capital equipment would be purchased from vendors in Appomattox County.[6]
- Richmond Hwy, LLC would hire approximately 18 full-time equivalent local and non-local construction workers during the construction period.[7]
- All construction expenditures are assumed to take place during a twelve-month period.[8]

[3] Data Source: Encore Renewable Energy. Investment estimate subject to change based on final design and vendor contracts.
[4] Data Source: Encore Renewable Energy.
[5] Data Source: Encore Renewable Energy.
[6] Data Source: IMPLAN Group LLC.
[7] Data Source: Encore Renewable Energy.
[8] Data Source: Encore Renewable Energy.

Economic Impact

Applying these assumptions in the IMPLAN model results in the following estimates of one-time economic and fiscal impact. As shown in Table 1, construction of the proposed Richmond Hwy, LLC would directly provide a one-time pulse supporting approximately: 1) 5 job years, 2) $0.3 million in wages and benefits, and 3) $1.0 million in economic output to Appomattox County.

Taking into account the economic ripple effects that direct investment would generate, the total estimated one-time impact on Appomattox County would support approximately: 1) 7 job years, 2) $0.3 million in wages and benefits, 3) $1.3 million in economic output, and 4) $46,300 in state and local tax revenue.

Table 1: Estimated One-Time Economic and Fiscal Impact on Appomattox County from Construction of the Richmond Hwy, LLC Project[9,10]

Economic Impact	Employment (Job Years)	Wages and Benefits	Output
1st Round Direct Economic Activity	5	$271,500	$1,031,100
2nd Round Indirect and Induced Economic Activity	2	$59,400	$264,400
Total Economic Activity	**7**	**$330,900**	**$1,295,500**
Fiscal Impact			
State and Local Tax Revenue			**$46,300**

**Totals may not sum due to rounding.*

Ongoing Operations Phase

This portion of the section assesses the annual economic and fiscal impact that the proposed Richmond Hwy, LLC project would have on Appomattox County during its anticipated 25-year operational phase.

Economic Impact Assumptions

The analysis is based on the following assumptions:

- Richmond Hwy, LLC would spend approximately $31,000 each year for maintenance and repair, vegetative control, and other operational expenditures.[11]

[9] Please note that construction sector jobs are not necessarily new jobs, but the investments made can also support an existing job during the construction of the project. Additionally, it is important to note that it is not possible to know with certainty what proportion of jobs would go to county construction contractors or be filled by county residents. A construction sector job, also referred to as a job year, is equal to one job over one year. It is used to denote employment on construction projects where the construction schedule is not exactly one year and to account for the fact that actual on-site employment may vary over the period.

[10] Includes impacts from portions of the per diem spending of non-local construction workers.

[11] Data Source: Encore Renewable Energy.

- Richmond Hwy, LLC would make confidential lease payments to local landowners.[12]

Economic Impact

Applying these assumptions in the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 2, annual operation of the proposed Richmond Hwy, LLC would on average directly support approximately: 1) < 1 job, 2) $10,900 in wages and benefits, and 3) $30,000 in economic output to Appomattox County.

Taking into account the economic ripple effects that direct impact would generate, the total estimated annually supported impact on Appomattox County would be approximately: 1) < 1 job, 2) $15,500 in wages and benefits, and 3) $52,400 in economic output.

Table 2: Estimated Annual Economic Impact on Appomattox County from the Ongoing Operation of the Richmond Hwy, LLC Project

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	< 1	$10,900	$30,000
2nd Round Indirect and Induced Economic Activity	< 1	$4,620	$22,400
Total Economic Activity	**< 1**	**$15,500**	**$52,400**

Fiscal Impact Assumptions

The analysis is based on the following assumptions:

- Total capital investment in machinery and tools in Richmond Hwy, LLC is estimated to be approximately $7.4 million.[13]
- The 25 fenced-in acres would be reassessed at a solar use assessment value of $4,000 per acre.[14]
- The initial interconnection request for Richmond Hwy, LLC was filed in June 2022.[15]
- Tax rates and the depreciation schedule are assumed to remain constant throughout the analysis.
- Richmond Hwy, LLC's total generation capacity would be 5 MW AC.[16]
- Richmond Hwy, LLC would become operational in 2025.[17]

[12] Data Source: Encore Renewable Energy.
[13] Data Source: Encore Renewable Energy.
[14] Data Source: Hypothetical assessment value for illustrative purposes based on an informal discussion with the County Commissioner of Revenue on value of existing solar facility. Please note that actual future assessment value may vary.
[15] Data Source: Encore Renewable Energy.
[16] Data Source: Encore Renewable Energy.
[17] Data Source: Encore Renewable Energy.

- Richmond Hwy, LLC would be privately owned.[18]
- Richmond Hwy, LLC would have an operational life of 25 years.[19]

Fiscal Impact

This portion of the section quantifies the direct fiscal contribution that the proposed Richmond Hwy, LLC project would make to Appomattox County. The analysis considers two scenarios. Both scenarios include the additional revenue that Richmond Hwy, LLC would generate for Appomattox County over a 40-year period from increased property assessments associated with reassessing the site as solar use property. Scenario 1 then describes the additional revenue Richmond Hwy, LLC would generate for Appomattox County from taxes levied on capital investments in machinery and tools, while Scenario 2 assumes tax revenue generated from the capital investment in machinery and tools will be replaced with revenue associated with a locally adopted revenue share ordinance and based on the project's total generation capacity.

Reassessment of Property

Table 3 details the increased tax revenue associated with reassessing the 25-acre solar site as solar use property. The county's real estate tax revenue from the fenced-in acreage after reassessment is estimated to be approximately $630 per year, for a cumulative total of approximately $15,800 over the project's anticipated 25-year operational life expectancy. In contrast, the property currently generates approximately $510 per year for the county, for a cumulative total of approximately $12,700 over 25 years.

Table 3: Estimated County Revenue Generated by the Proposed Richmond Hwy, LLC Project over 25 Years from Real Estate Taxes

Estimated Increased Appraised Value of Property	$100,000
Appomattox County Real Estate Tax Rate[20]	0.0063
Annual County Real Estate Tax – Solar Use	$630
Cumulative Revenue over 25 Years	**$15,800**

**Totals may not sum due to rounding.*

Scenario 1: Taxation of Capital Investment

Table 4 separately details the additional annual revenue that the proposed Richmond Hwy, LLC solar project would generate for Appomattox County over a 25-year period from taxes levied on capital investment in machinery and tools. This estimate is calculated as: 1) the taxable portion of capital

[18] Data Source: Encore Renewable Energy.
[19] Data Source: Encore Renewable Energy.
[20] Data Source: Appomattox County Fiscal Year 2024 Budget.

investments based on the stepdown local tax exemption pursuant to Virginia Code §58.1-2606.1, times 2) Appomattox County's depreciation guidelines for machinery and tools[21], times 3) Appomattox County real estate tax rate of $0.63 per $100 of assessed value pursuant to Virginia Code §58.1-2606.1.[22]

As the data in Table 4 indicate, based on these calculations the estimated additional county revenue from taxation of capital investments associated with the proposed Richmon Hwy, LLC would be approximately $1,600 in the project's first year of operation, with that figure projected to increase thereafter as the value of the exemption reduced. The annual tax revenue is estimated to increase to approximately $3,200 in year 11 of the project and thereafter for a cumulative total of approximately $68,400 over 25 years.

Table 4: Estimated County Revenue by Proposed Solar Investment Over 25 years

Year	Total Capital Investment Subject to Exemption[23]	Depreciated Value of Taxable Capital Investment[24]	Additional Annual County Tax Revenue Solar Investment[25]
1	$7,379,100	$255,300	$1,600
2	$7,379,100	$255,300	$1,600
3	$7,379,100	$255,300	$1,600
4	$7,379,100	$255,300	$1,600
5	$7,379,100	$255,300	$1,600
6	$7,379,100	$383,000	$2,400
7	$7,379,100	$383,000	$2,400
8	$7,379,100	$383,000	$2,400
9	$7,379,100	$383,000	$2,400
10	$7,379,100	$383,000	$2,400
11	$7,379,100	$510,600	$3,200
12	$7,379,100	$510,600	$3,200
13	$7,379,100	$510,600	$3,200
14	$7,379,100	$510,600	$3,200
15	$7,379,100	$510,600	$3,200
16	$7,379,100	$510,600	$3,200
17	$7,379,100	$510,600	$3,200
18	$7,379,100	$510,600	$3,200
19	$7,379,100	$510,600	$3,200

[21] Because the Richmond Hwy, LLC would be independently owned and does not meet the definition of an "Electric Supplier" because it is under 25 MW, it would be assessed locally.
[22] Data Source: Appomattox County Fiscal Year 2024 Budget.
[23] Data Source: Encore Renewable Energy.
[24] Accounts for the stepdown exemption from local property taxes pursuant to Virginia Code §58.1-3660 for projects less than 150 MW with an interconnection request on or after January 1, 2019.
[25] Calculated pursuant to Virginia Code §58.1-2606.1. Richmond Hwy, LLC would be taxable at a rate not exceeding Appomattox County's real property tax rate of $0.63 per $100 of assessed value.

Year	Total Capital Investment Subject to Exemption[23]	Depreciated Value of Taxable Capital Investment[24]	Additional Annual County Tax Revenue Solar Investment[25]
20	$7,379,100	$510,600	$3,200
21	$7,379,100	$510,600	$3,200
22	$7,379,100	$510,600	$3,200
23	$7,379,100	$510,600	$3,200
24	$7,379,100	$510,600	$3,200
25	$7,379,100	$510,600	$3,200
CUMULATIVE TOTAL			**$68,400**

**Totals may not sum due to rounding.*

Scenario 1: Total Fiscal Impact

Table 5 combines the results from the calculations depicted in Tables 3 and 4 to provide an estimate of the cumulative fiscal contribution that the proposed Richmond Hwy, LLC project would make to Appomattox County over its 25-year anticipated operational life under Scenario 1. As these data indicate, that cumulative total is approximately $84,100.

Table 5: Estimated Cumulative County Tax Revenue from the Proposed Richmond Hwy, LLC Project over 25 years under Scenario 1

County Real Estate Tax	$15,800
County Revenue from Taxation of Capital Investments	$68,400
TOTAL Cumulative Revenue over 25 years	**$84,100**

**Totals may not sum due to rounding.*

Scenario 2: Revenue Share Ordinance

The following section describes the additional annual revenue that the proposed Richmond Hwy, LLC project would generate for Appomattox County assuming the county adopts an energy revenue share ordinance under Virginia Code §58.1-2636. The Virginia Code currently stipulates that a locality may assess an annual revenue share of up to $1,400 per megawatt (MW) alternating current (AC) generation capacity of a solar facility. However, legislation that was passed in the 2021 General Assembly (SB 1201/HB 2006) and went into effect on July 1, 2021, allows a 10 percent escalator to be applied to the $1,400 per MW revenue share every five years, beginning in 2026. Section 58.1-3660 further stipulates that capital investment associated with the solar project will be exempt from taxation if the county adopts an energy revenue share ordinance.

Table 6 details the revenue generated from a revenue share ordinance including the 10 percent escalator. Based on a total generation capacity of 5 MW AC and an assumed commissioning date of 2025, a revenue share ordinance would generate approximately $230,800 over the anticipated 25-year operational life of the project.

Table 6: Estimated County Revenue Generated from a Revenue Share Ordinance over 25 Years

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
1	5	$1,400	$7,000
2	5	$1,540	$7,700
3	5	$1,540	$7,700
4	5	$1,540	$7,700
5	5	$1,540	$7,700
6	5	$1,540	$7,700
7	5	$1,694	$8,470
8	5	$1,694	$8,470
9	5	$1,694	$8,470
10	5	$1,694	$8,470
11	5	$1,694	$8,470
12	5	$1,863	$9,320
13	5	$1,863	$9,320
14	5	$1,863	$9,320
15	5	$1,863	$9,320
16	5	$1,863	$9,320
17	5	$2,050	$10,200
18	5	$2,050	$10,200
19	5	$2,050	$10,200
20	5	$2,050	$10,200
21	5	$2,050	$10,200
22	5	$2,255	$11,300
23	5	$2,255	$11,300
24	5	$2,255	$11,300
25	5	$2,255	$11,300
Cumulative Total			**$230,800**

Scenario 2: Total Fiscal Impact

Table 7 combines the results from the calculations depicted in Tables 3 and 6 to provide an estimate of the cumulative fiscal contribution that the proposed Richmond Hwy, LLC project would make to Appomattox County over its 25-year anticipated operational life under Scenario 2. As these data indicate, that cumulative total is approximately $246,500 million.

Table 7: Estimated Cumulative County Revenue from the Proposed Richmond Hwy, LLC Project over 25 years under Scenario 2

County Real Estate Tax	$15,800
County Revenue from Revenue Share Ordinance	$230,800
TOTAL Cumulative Revenue over 25 Years	**$246,500**

Current Use

This section provides a benchmark for the previous estimates of the economic and fiscal contribution that the proposed Richmond Hwy, LLC would make to Appomattox County by estimating the economic and fiscal contribution that the site makes in its current use.

Economic Impact Assumptions

The analysis is based on the following assumptions:

- The proposed Richmond Hwy, LLC would be situated on approximately 25 acres of vacant land that currently does not provide an economic benefit to the county. [26]

Fiscal Impact Assumptions

- The current assessment value of the affected acreage is approximately $0.1 million.[27]

Fiscal Impact

Table 8 details the estimated tax revenue that the proposed Richmond Hwy, LLC site generates for Appomattox County in its current use. As the data in Table 8 indicate, the current county real estate tax revenue from the project site is estimated to be approximately $510 per year, for a cumulative total of approximately $12,700 over 25 years.

Table 8: Estimated County Revenue Generated by the Proposed Richmond Hwy, LLC Project Site over 25 years from Real Estate Taxes – Current Use

Estimated Assessed Value of Property – Current Use[28]	$80,500
Appomattox County Current Real Estate Tax Rate	0.0063
Estimated Annual County Real Estate Tax – Current Use	$510
Total Cumulative Revenue over 25 years	**$12,700**

**Totals may not sum due to rounding.*

[26] Data Source: Encore Renewable Energy.
[27] Data Source: Derived from Appomattox County's property assessment database.
[28] Data Source: Derived from Appomattox County's property assessment database.

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The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing that information. However, because these estimates attempt to foresee circumstances that have not yet occurred, it is not possible to provide any assurance that they will be representative of actual events. These estimates are intended to provide a general indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.