Attachment A

SITE: SATELLITE VIEW

CHABERTON SOLAR SUGARLOAF LLC

CHABERTON SOLAR SUGARLOAF

5,922.24 kWdc / 4,000.00 kWac SOLAR GROUND MOUNT AT
20507 DARNESTOWN RD. DICKERSON, MD 20842
MONTGOMERY COUNTY, MD
39.2080°N, -77.4233°W

10% DESIGN PACKAGE

SITE: MAP VIEW

SHEET INDEX

SHEET NUMBER	SHEET TITLE	REVISION
G-001	COVER SHEET & INDEX	D
G-010	GENERAL SYMBOLS & NOTES	A
E-001	ELECTRICAL SITE PLAN	D
E-100	ELECTRICAL SINGLE LINE DIAGRAM	A
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3 OF 6	PROPOSED SITE PLAN 1	-
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6 OF 6	PROPOSED SITE DETAILS	-

SYSTEM SUMMARY

DC SYSTEM SIZE	5,922.24 kWdc
AC SYSTEM SIZE	4,000.00 kWac
DC/AC RATIO	1.481
MODULES	QCELL Q.TRON XL-G2 620 (620Wp) OR EQUIV.
MODULE QUANTITY	9,552
INVERTERS	CHINT CPS SCH125KTL-DO/US-600 OR EQUIV.
INVERTER QUANTITY	34
AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft

NOT FOR CONSTRUCTION

10% DESIGN 01/04/2024

PROJECT

CHABERTON SOLAR SUGARLOAF LLC
5.92 MWdc / 4.00 MWac GROUND MOUNT AT
20507 DARNESTOWN RD. DICKERSON, MD 20842
39.2080°N, -77.4233°W

DEVELOPER

CHABERTON ENERGY
1700 Rockville Pike, Suite 305
Rockville, MD 20852

chaberton ENERGY

REV.	DESCRIPTION	DATE
D	LAYDOWN UPDATE	07/30/2024
C	ROAD LAYOUT UPDATE	07/24/2024
B	PIER HEIGHT REVISION	07/02/2024

APPROVED BY: JSG
CHECKED BY: EJA
DESIGNED BY: AOK

DRAWING TITLE
COVER SHEET & INDEX

REVISION C

DRAWING NO. G-001

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AHJ	AUTHORITY HAVING JURISDICTION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
AT	AMPERE TRIP
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BESS	BATTERY ENERGY STORAGE SYSTEM
BKR	BREAKER
CAT	CATEGORY
CEH	CHABERTON ENERGY HOLDINGS
CKT	CIRCUIT
CT	CURRENT TRANSFORMER
DAS	DATA ACQUISITION SYSTEM
DC	DIRECT CURRENT
EGC	EQUIPMENT GROUNDING CONDUCTOR
EMT	ELECTRIC METALLIC TUBING
EPC	ENGINEERING, PROCUREMENT, & CONSTRUCTION COMPANY
EST	ESTIMATED
EXIST	EXISTING
GEC	GROUND ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CURRENT INTERRUPTER
GND	GROUND
IC	INTERCONNECTION CUSTOMER
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IFC	ISSUED FOR CONSTRUCTION
Imp	CURRENT MAXIMUM POWER
Isc	CURRENT SHORT CIRCUIT
IX	INTERCONNECTION
LV	LOW VOLTAGE
MCOV	MAXIMUM CONTINUOUS OPERATING VOLTAGE
MFR	MULTI-FUNCTION RELAY
MPPT	MAXIMUM POWER POINT TRACKING
MV	MEDIUM VOLTAGE
NEC	NATIONAL ELECTRICAL CODE
NO	NUMBER / NORMALLY OPEN
NTS	NOT TO SCALE
PLS	PURE LIVE SEED
PRI	PRIMARY
PSF	POUNDS PER SQUARE FOOT
PT	POTENTIAL TRANSFORMER
PV	PHOTOVOLTAIC
QTY	QUANTITY
SEC	SECONDARY
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TBD	TO BE DETERMINED
TYP.	TYPICAL
UL	UNDERWRITERS LABORATORIES
UOM	UNIT OF MATERIAL
V	VOLTS
VA	VOLT-AMPERE
Vmp	VOLTAGE MAXIMUM POWER
Voc	VOLTAGE OPEN CIRCUIT
W	WATT
WP	WEATHERPROOF
XFMR	TRANSFORMER

STANDARD SYMBOLS

	BREAKER
52R	BREAKER WITH RECLOSER
X	CONDUCTOR IDENTIFIER
	CURRENT TRANSFORMER
	DISCONNECT SWITCH
	ELECTRIC POLE
X	EQUIPMENT IDENTIFIER
	FUSE
	INVERTER
	OUTLET
	POTENTIAL TRANSFORMER
	SURGE ARRESTER
	TRANSFORMER

ANSI STANDARD DEVICE NUMBERS

27	UNDERVOLTAGE RELAY
50	INSTANTANEOUS OVERCURRENT RELAY
51	TIMED OVERCURRENT RELAY
52	CIRCUIT BREAKER
59	OVERVOLTAGE RELAY
81	FREQUENCY RELAY

EXAMPLE WILDFLOWER SEEDING MIX LIST

DESCRIPTION	BULK QTY	PLS QTY	UOM
ROUNDSEED PANICGRASS	0.377	0.350	LB PLS
PATH RUSH, PA ECOTYPE	0.066	0.060	LB PLS
PURPLE LOVEHRASS, FORT INDIANTOWN GAP, PA ECOTYPE	0.023	0.020	LB PLS
SENSITIVE PEA, NC ECOTYPE	0.082	0.080	LB PLS
BLACKEYED SUSAN	0.123	0.120	LB PLS
LANCELEAF COREOPSIS	0.113	0.100	LB PLS
MISTFLOWER, VA ECOTYPE	0.008	0.005	LB PLS
BUTTERFLY MILKWEED	0.020	0.015	LB PLS
AROMATIC ASTER, PA ECOTYPE	0.019	0.010	LB PLS
NARROWLEAF MOUNTAINMINT	0.024	0.020	LB PLS
GOLDEN ALEXANDERS, PA ECOTYPE	0.023	0.020	LB PLS
NARROWLEAF BLUE EYED GRASS	0.032	0.030	LB PLS
EASTERN GRAY BEARDTONGUE	0.005	0.005	LB PLS
HAIRY BEARDTONGUE	0.006	0.005	LB PLS
CALICO ASTER	0.013	0.010	LB PLS
AUTUMN BENTGRASS, ALBANY PINE BUSH, NY ECOTYPE	0.157	0.150	LB PLS

POLLINATOR NOTES:

1. SUGGESTED SEED RATE IS 3 PLS POUNDS PER ACRE, ALONG WITH 30 POUNDS OF COVER CROP (GRAIN OATS OR GRAIN RYE).
2. POLLINATOR SEEDING MIX SUBJECT TO CHANGE AFTER FINAL APPROVAL.
3. ALL AREAS WITHIN PROJECT FENCE TO RECEIVE POLLINATOR WILDFLOWER SEEDING MIX.

PROJECT NOTES:

1. PROJECT CONSISTS OF A SINGLE 4.00 MWac INTERCONNECTION TO SERVE POTOMAC EDISON COMMUNITY SOLAR PROGRAM.
2. PROJECT IS CURRENTLY DESIGNED WITH QCELL Q.TRON XL-G2 620 (620WP) OR EQUIV. MODULES TO BE PROVIDED BY PROJECT OWNER OR EPC.

GENERAL NOTES:

1. THIS DESIGN PACKAGE INDICATED THE INTENT OF THE DESIGN AND SHALL BE CONSIDERED DIAGRAMMATIC ONLY OF REQUIRED EQUIPMENT FOR ACCURATE BID PRICING. FULL ENGINEERING DESIGN TO BE SUBMITTED BY EPC AND APPROVED BY CEH. EPC SHALL ENGINEER THE SYSTEM FOR A SAFE AND COMPLIANT SYSTEM AT MAXIMUM ENERGY PRODUCTION AT OPTIMAL COST.
2. ALL SUBMITTED EPC DESIGNS INCLUDING ANY DEVIATIONS FROM THE DESIGN SET FORTH IN THIS DESIGN PACKAGE MUST BE APPROVED IN WRITING.
3. 60/90/IFC DRAWINGS TO BE SUBMITTED TO CEH BY EPC. WRITTEN APPROVAL REQUIRED BEFORE EPC MAY PROCEED.
4. AT SUBSTANTIAL COMPLETION OF CONSTRUCTION AS-BUILT DRAWINGS TO BE SUBMITTED BY THE EPC FOR CEH.
5. ANY DEVIATIONS FROM APPROVED DESIGN DRAWINGS MUST BE APPROVED BY CEH IN WRITING.
6. INSTALLATION SHALL COMPLY WITH LATEST STATE ADOPTED NEC, BUILDING CODE, AND ANY ADDITIONAL REQUIREMENTS AND REGULATIONS IMPOSED BY THE AHJ AND/OR ELECTRIC UTILITY.
7. RELAY PROTECTION SETTINGS PROVIDED ARE PRELIMINARY AND SUBJECT TO COORDINATION WITH LOCAL UTILITY.
8. ALL EQUIPMENT REQUIRED FOR A FULLY FUNCTIONING SYSTEM NOT MENTIONED IN THIS OR FUTURE DRAWINGS SHALL BE FURNISHED AND INSTALLED BY THE EPC AT NO ADDITIONAL COST.
10. ALL EQUIPMENT AND SERVICES NOT NOTED AS "TO BE PROVIDED BY OTHERS" OR "TO BE PROVIDED BY CEH" SHALL BE PROVIDED BY THE PROJECT OWNER OR EPC.
11. PERMISSION TO OPERATE IS NOT AUTHORIZED UNTIL COMPLETION OF COMMISSIONING/TESTING, CEH APPROVAL, APPROVAL OF AHJ, AND APPROVAL OF ELECTRIC UTILITY.
12. ALL ELECTRICAL EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF THE NEC. WHERE UNDERWRITERS' LABORATORIES HAVE SET STANDARDS, LISTED PRODUCTS AND ISSUED LABELS, PRODUCTS USED SHALL BE LISTED AND LABELED TO THOSE STANDARDS BY UL OR ANOTHER AGENCY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE LISTING OF THE EQUIPMENT.
13. CONTRACTOR SHALL PROVIDE ALL REQUIRED SIGNAGE AS PER ARTICLES 690 & 705 OF THE NEC.
14. ELECTRICAL GROUNDING SHALL COMPLY WITH ALL REQUIREMENTS SPECIFIED ABOVE AND AT A MINIMUM INCLUDE DETAILS SHOWN IN E-200.
15. ALL WIRING IN PANELS SHALL BE NEATLY TIE-WRAPPED AND LIE WITHIN GUTTER SPACES.
16. ALL ALUMINUM TERMINATIONS NEED ANTI-OXIDATION COMPOUND APPLIED.

ELECTRICAL TESTING:

1. EPC SHALL PERFORM AT MINIMUM WITNESSED ELECTRICAL TESTING FOR CEH AND UTILITY FOR PERMISSION TO OPERATE.
2. FOR LAB CERTIFIED OR FIELD APPROVED EQUIPMENT, VERIFICATION (EITHER BY AN ON-SITE OBSERVATION OR REVIEW OF DOCUMENTS) BY THE UTILITY THAT THE INTERCONNECTION INSTALLATION EVALUATION REQUIRED BY IEEE STANDARD 1547 SECTION 5.3 AND THE COMMISSIONING TEST REQUIRED BY IEEE STANDARD 1547 SECTION 5.4 HAVE BEEN ADEQUATELY PERFORMED.
3. FOR INTERCONNECTION EQUIPMENT THAT HAS NOT BEEN LAB CERTIFIED OR FIELD APPROVED, THE WITNESS TEST SHALL ALSO INCLUDE THE VERIFICATION BY THE UTILITY OF THE ON-SITE DESIGN TESTS AS REQUIRED BY IEEE STANDARD 1547 SECTION 5.1 AND VERIFICATION BY THE UTILITY OF PRODUCTION TESTS REQUIRED BY IEEE STANDARD 1547 SECTION 5.2.
4. ALL TESTS VERIFIED BY THE UTILITY ARE TO BE PERFORMED IN ACCORDANCE WITH THE TEST PROCEDURES SPECIFIED BY IEEE STANDARD 1547.1.
5. ANY ADDITIONAL TESTING REQUIRED BY THE ELECTRIC UTILITY, AHJ, OR PROJECT OWNER SHALL BE PERFORMED BY THE EPC.

SYSTEM SUMMARY

DC SYSTEM SIZE	5,922.24 kWdc
AC SYSTEM SIZE	4,000.00 kWac
DC/AC RATIO	1.481
MODULES	QCELL Q.TRON XL-G2 620 (620Wp) OR EQUIV.
MODULE QUANTITY	9,552
INVERTERS	CHINT CPS SCH125KTL-DO/US-600 OR EQUIV.
INVERTER QUANTITY	34
AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft

NOT FOR CONSTRUCTION

10% DESIGN 01/04/2024

PROJECT

CHABERTON SOLAR SUGARLOAF LLC
5.92 MWdc / 4.00 MWac GROUND MOUNT AT
20507 DARNESTOWN RD. DICKERSON, MD 20842
39.2080°N, -77.4233°W

DEVELOPER

CHABERTON ENERGY
1700 Rockville Pike, Suite 305
Rockville, MD 20852

chaberton ENERGY

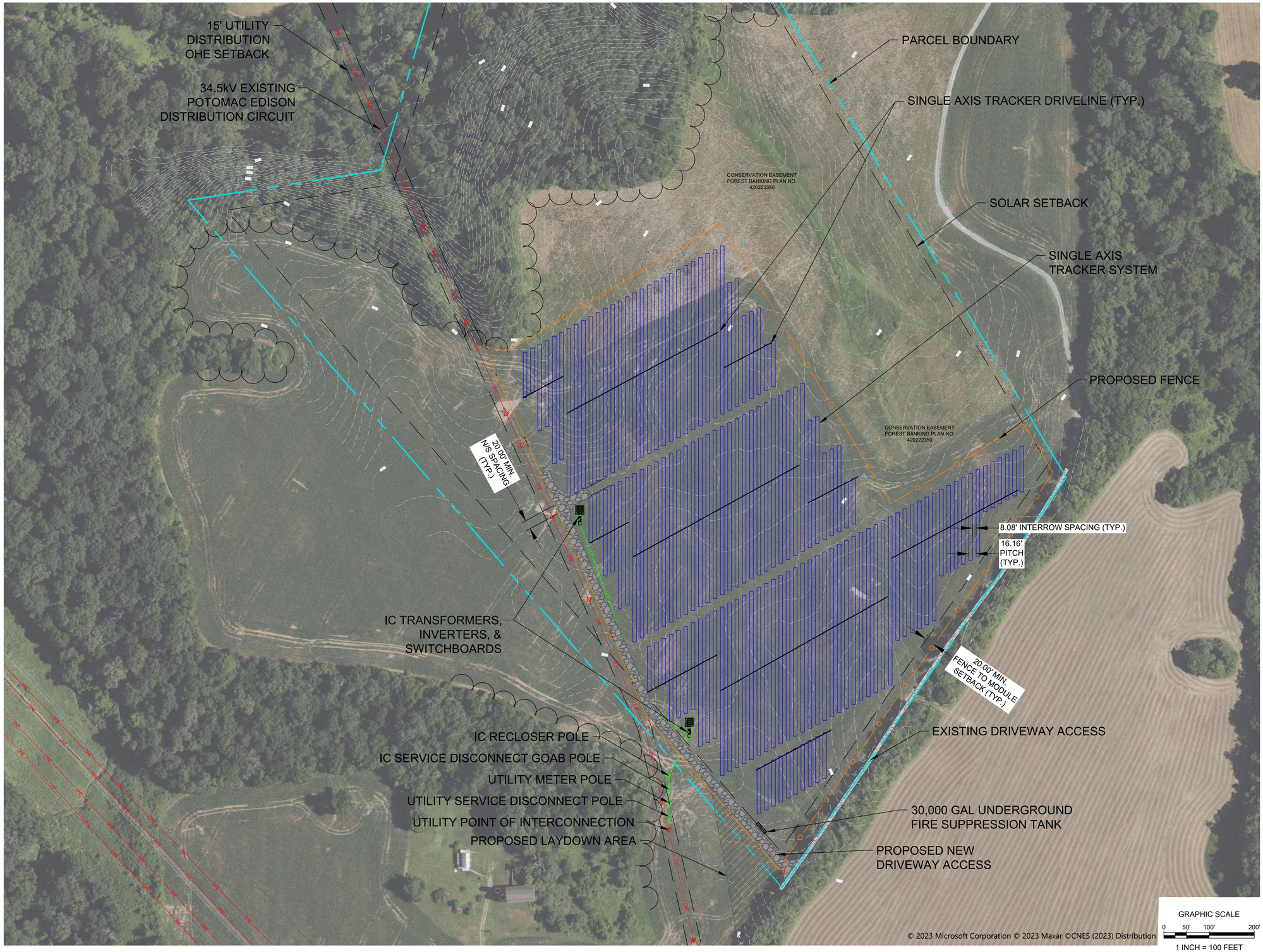
REV.	DESCRIPTION	DATE
A	CPCN UPDATE/MANDATORY REFERRAL PROCESS	05/31/2024

APPROVED BY: JSG
CHECKED BY: EJA
DESIGNED BY: AOK

DRAWING TITLE
GENERAL SYMBOLS & NOTES

REVISION A

DRAWING NO. G-010



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AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft

LAYER LEGEND

PROP. UNDERGROUND ELECTRIC	UGE UGE UGE UGE		
PROP. OVERHEAD ELECTRIC	OHE OHE OHE OHE		
EX. UNDERGROUND ELECTRIC	UGE UGE UGE UGE		
EX. OVERHEAD ELECTRIC	OHE OHE OHE OHE		
PROP. FENCE			
PROPERTY LINE			
SOLAR PV MODULES		LANDSCAPE BUFFER	
ROAD		WETLANDS	
CONCRETE		FLOODPLAINS	
LAYDOWN AREA		WATER	

NOTES:

1. DRAWING FOR INTERCONNECTION APPROVAL AND EPC BID ONLY. NOT FOR CONSTRUCTION.
2. ALL EQUIPMENT SHALL BE UL LISTED FOR USE IN SYSTEM CONFIGURATION.
3. INSTALLATION SHALL COMPLY WITH THE LATEST STATE ADOPTED NEC.
4. EQUIPMENT LOCATIONS FOR PRELIMINARY DESIGN ONLY. EQUIPMENT LOCATION MAY BE SUBSTITUTED BY THE EPC AS APPROVED BY CEH.
5. SEE CIVIL ENGINEERING DRAWINGS FOR CIVIL SITE DETAILS.
6. PROPOSED INTERCONNECTION PATH AND POINT MAY BE SUBSTITUTED BY THE EPC AS APPROVED BY CEH.
7. INVERTER AC OUTPUT SHALL BE FACTORY LIMITED TO VALUES SHOWN IN THE INVERTER SUMMARY TABLE ON E-110.
8. MODULE AND FENCE LAYOUT ON E-001 SUPERSEDES THOSE SHOWN ON LAYOUT CIVIL DRAWINGS.
9. CONTRACTOR TO LOCATE TRANSFORMER PAD ON CREST OF HILL AND TO ENSURE PROPER DRAINAGE AWAY FROM PAD.

N W E S

NOT FOR CONSTRUCTION

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DEVELOPER

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1700 Rockville Pike, Suite 305
Rockville, MD 20852

chaberton ENERGY

REV.	DESCRIPTION	DATE
D	LAYDOWN UPDATE	07/30/2024
C	ROAD LAYOUT UPDATE	07/23/2024
B	CPCN UPDATE/MANDATORY REFERRAL PROCESS	05/31/2024

APPROVED BY: JSG
CHECKED BY: EJA
DESIGNED BY: ACA

DRAWING TITLE
ELECTRICAL SITE PLAN

REVISION D
DRAWING NO. E-001

NOTES:

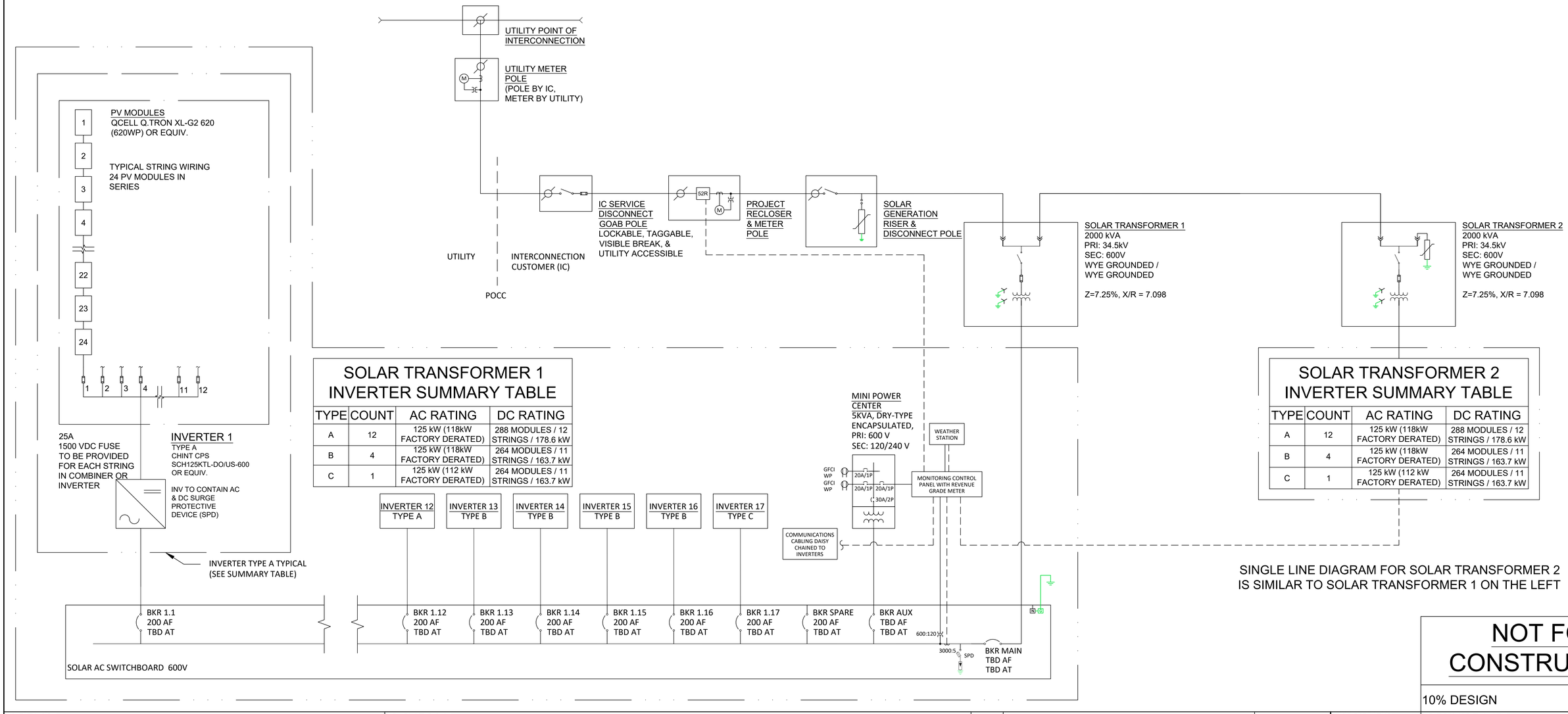
1. DRAWINGS FOR INTERCONNECTION APPROVAL ONLY - NOT FOR CONSTRUCTION.
2. ALL EQUIPMENT SHALL BE UL LISTED FOR USE IN SYSTEM CONFIGURATION.
3. INSTALLATION SHALL COMPLY WITH LATEST ADOPTED NEC.
4. RELAY PROTECTION SETTINGS PROVIDED ARE PRELIMINARY AND SUBJECT TO COORDINATION WITH LOCAL UTILITY.
5. MAXIMUM FACILITY OUTPUT (MFO) IS 4.00 MWac. GRID CONTROLLER AND PROTECTION SETTINGS SHALL NOT ALLOW MORE THAN MFO RATING. GRID CONTROLLER SHALL ALSO LIMIT POWER THROUGH EACH TRANSFORMER TO MAXIMUM RATING OF TRANSFORMER.
6. SYSTEM SHALL BE CONFIGURED TO SHUTDOWN VIA ALL OF THE FOLLOWING MEANS:
   -RECEPTION OF A REMOTE SIGNAL
   -UPON LOSS OF UTILITY POWER
   -LOCAL EMERGENCY POWER-OFF (EPO) INITIATING DEVICE
   -OPERATION OF DISCONNECTING MEANS

INVERTER TRIP SETTINGS

FUNCTION	SETTING VOLTAGE (P.U. OF NOMINAL VOLTAGE) / FREQUENCY (Hz)	CLEARING TIME (s)
UNDERVOLTAGE UV1	0.88	2
UNDERVOLTAGE UV2	0.5	1.1
OVERVOLTAGE OV1	1.1	2
OVERVOLTAGE OV2	1.2	0.16
UNDERFREQUENCY UF1	58.5	300
UNDERFREQUENCY UF2	56.8	0.16
OVERFREQUENCY OF1	61.2	300
OVERFREQUENCY OF2	62	0.16
OVERCURRENT SETTINGS TO BE DETERMINED AS DESIGN DEVELOPS		

SYSTEM SUMMARY

DC SYSTEM SIZE	5,922.24 kWdc
AC SYSTEM SIZE	4,000.00 kWac
DC/AC RATIO	1.481
MODULES	QCELL Q.TRON XL-G2 620 (620Wp) OR EQUIV.
MODULE QUANTITY	9,552
INVERTERS	CHINT CPS SCH125KTL-DO/US-600 OR EQUIV.
INVERTER QUANTITY	34
AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft



SOLAR TRANSFORMER 1 INVERTER SUMMARY TABLE

TYPE	COUNT	AC RATING	DC RATING
A	12	125 kW (118kW FACTORY DERATED)	288 MODULES / 12 STRINGS / 178.6 kW
B	4	125 kW (118kW FACTORY DERATED)	264 MODULES / 11 STRINGS / 163.7 kW
C	1	125 kW (112 kW FACTORY DERATED)	264 MODULES / 11 STRINGS / 163.7 kW

SOLAR TRANSFORMER 2 INVERTER SUMMARY TABLE

TYPE	COUNT	AC RATING	DC RATING
A	12	125 kW (118kW FACTORY DERATED)	288 MODULES / 12 STRINGS / 178.6 kW
B	4	125 kW (118kW FACTORY DERATED)	264 MODULES / 11 STRINGS / 163.7 kW
C	1	125 kW (112 kW FACTORY DERATED)	264 MODULES / 11 STRINGS / 163.7 kW

SINGLE LINE DIAGRAM FOR SOLAR TRANSFORMER 2
IS SIMILAR TO SOLAR TRANSFORMER 1 ON THE LEFT

NOT FOR CONSTRUCTION

10% DESIGN 01/04/2024

PROJECT

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5.92 MWdc / 4.00 MWac GROUND MOUNT AT
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DEVELOPER

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chaberton ENERGY

REV.	DESCRIPTION	DATE
A	CPCN UPDATE/MANDATORY REFERRAL PROCESS	05/31/2024

APPROVED BY: JSG
CHECKED BY: EJA
DESIGNED BY: AOK

DRAWING TITLE
ELECTRICAL SINGLE LINE DIAGRAM

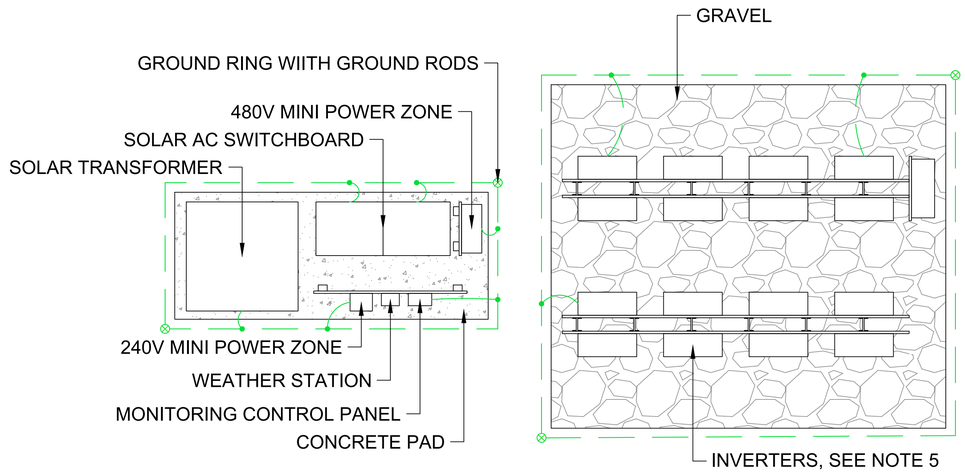
REVISION A

DRAWING NO. E-100

SYSTEM SUMMARY	
DC SYSTEM SIZE	5,922.24 kWdc
AC SYSTEM SIZE	4,000.00 kWac
DC/AC RATIO	1.481
MODULES	QCELL Q.TRON XL-G2 620 (620Wp) OR EQUIV.
MODULE QUANTITY	9,552
INVERTERS	CHINT CPS SCH125KTL-DO/US-600 OR EQUIV.
INVERTER QUANTITY	34
AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft

NOTES:

1. DRAWING FOR INTERCONNECTION APPROVAL AND EPC BID ONLY - NOT FOR CONSTRUCTION.
2. INSTALLATION SHALL COMPLY WITH THE LATEST STATE ADOPTED NEC.
3. PV EQUIPMENT SHOWN FOR PRELIMINARY DESIGN ONLY. EQUIPMENT MAY BE SUBSTITUTED BY THE EPC AS APPROVED BY CEH.
4. PV EQUIPMENT PAD LAYOUT TYPICAL ONLY. EPC MAY SUBMIT PREFERRED LAYOUT FOR CEH APPROVAL.
5. INVERTERS MAY BE STACKED ONE OR TWO HIGH.
6. EQUIPMENT TO MEET ALL UTILITY INTERCONNECTION REQUIREMENTS.
7. EQUIPMENT MUST MEET ALL WORKING CLEARANCE REQUIREMENTS PER NEC 110.26 AND EQUIPMENT INSTALLATION MANUALS.



PV EQUIPMENT PAD
SCALE 1/4" = 1'

NOT FOR CONSTRUCTION

10% DESIGN 01/04/2024

PROJECT

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REV.	DESCRIPTION	DATE
A	CPCN UPDATE/MANDATORY REFERRAL PROCESS	05/31/2024

APPROVED BY: JSG
CHECKED BY: EJA
DESIGNED BY: AOK

DRAWING TITLE
EQUIPMENT PAD DETAILS

REVISION A

DRAWING NO. E-200

SYSTEM SUMMARY

DC SYSTEM SIZE	5,922.24 kWdc
AC SYSTEM SIZE	4,000.00 kWac
DC/AC RATIO	1.481
MODULES	QCELL Q.TRON XL-G2 620 (620Wp) OR EQUIV.
MODULE QUANTITY	9,552
INVERTERS	CHINT CPS SCH125KTL-DO/US-600 OR EQUIV.
INVERTER QUANTITY	34
AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft

CPS

Datasheet

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

CPS SCH100/125KTL-DO/US-600

The 100 & 125kW 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 100/125KW 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, NEC 2014 and 2017 compliant
- Touch safe DC Fuse holders adds convenience and safety
- CPS FlexOM Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features (CA Rule 21 certified)
- kVA Headroom yields 100kW @ 0.9PF and 125kW @ 0.95PF
- Generous 1.87 and 1.5 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

Chint Power Systems America
6800 Koll Center Parkway, Suite 235 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

CPS

Technical Data

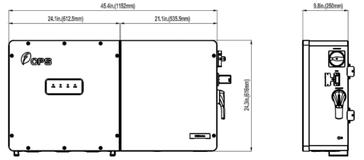
Model Name	CPS SCH100KTL-DO/US-600	CPS SCH125KTL-DO/US-600
DC Input		
Max. PV Power	187.5kW	
Max. DC Input Voltage	1500V	
Operating DC Input Voltage Range	860-1450Vdc	
Start-up DC Input Voltage / Power	900V / 250W	
Number of MPP Trackers	1	
MPPT Voltage Range[1]	870-1300Vdc	
Max. PV Input Current (Isc x1.25)	275A	
Number of DC Inputs	20 PV source circuits, pos. & neg. fused (Standard Wire-box) 1 PV output circuit, 1-2 terminations per pole, non-fused (Centralized Wire-box)	
DC Disconnection Type	Load-rated DC switch	
DC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
AC Output		
Rated AC Output Power	100kW	125kW
Max. AC Output Power[2]	100kVA (111KVA @ PF>0.9)	125kVA (132KVA @ PF>0.95)
Rated Output Voltage	600Vac	
Output Voltage Range[3]	528-660Vac	
Grid Connection Type[4]	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @600Vac	96.2/106.8A	120.3/127.0A
Rated Output Frequency	60Hz	
Output Frequency Range[3]	57-63Hz	
Power Factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	
Max. Fault Current Contribution (1-cycle RMS)	41.47A	
Max. OCPD Rating	200A	
AC Disconnection Type	Load-rated AC switch	
AC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
System		
Topology	Transformerless	
Max. Efficiency	99.1%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<4W	
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	8202ft / 2500m (no derating)	
Audible Noise	<65dBA@1m 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 / FW Upgrade Functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (WxHxD)	45.28x24.25x9.84in (1150x616x250mm) with Standard Wire-box 39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box	
Weight	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (Standard Wire-box); 33lbs / 15kg (Centralized Wire-box)	
Mounting / Installation Angle	15 - 90 degrees from horizontal (vertical or angled)	
AC Termination	M10 Stud Type Terminal [3Φ] (Wire range 1/0AWG - 500kcmil CU/AL, Lugs not supplied) Screw Clamp Terminal Block [N] (#12 - 1/0AWG CU/AL)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #12 - #6AWG CU) - Standard Wire-box Busbar, M10 Bolts (Wire range: #1AWG - 500kcmil CU/AL [1 termination per pole], #1AWG - 300kcmil CU/AL [2 terminations per pole], Lugs not supplied) - Centralized Wire-box	
Fused String Inputs	20A fuses provided (Fuse values up to 30A acceptable)	
Safety		
Safety and EMC Standard	UL1741-SA-2016, CSA-C22.2 NO.107.1-01, IEEE1547a-2014, FCC PART15	
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE	
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAr, Freq-Watt, Volt-Watt	
Warranty		
Standard[6]	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) The "Maximum AC Apparent Power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100KW PF ≥0.9 and 125KW 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) 5 year warranty effective for units purchased after October 1st, 2019.

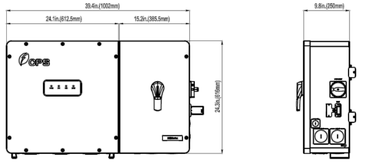
CPS

3.2 Mechanical Installation

(1) **Dimensions**



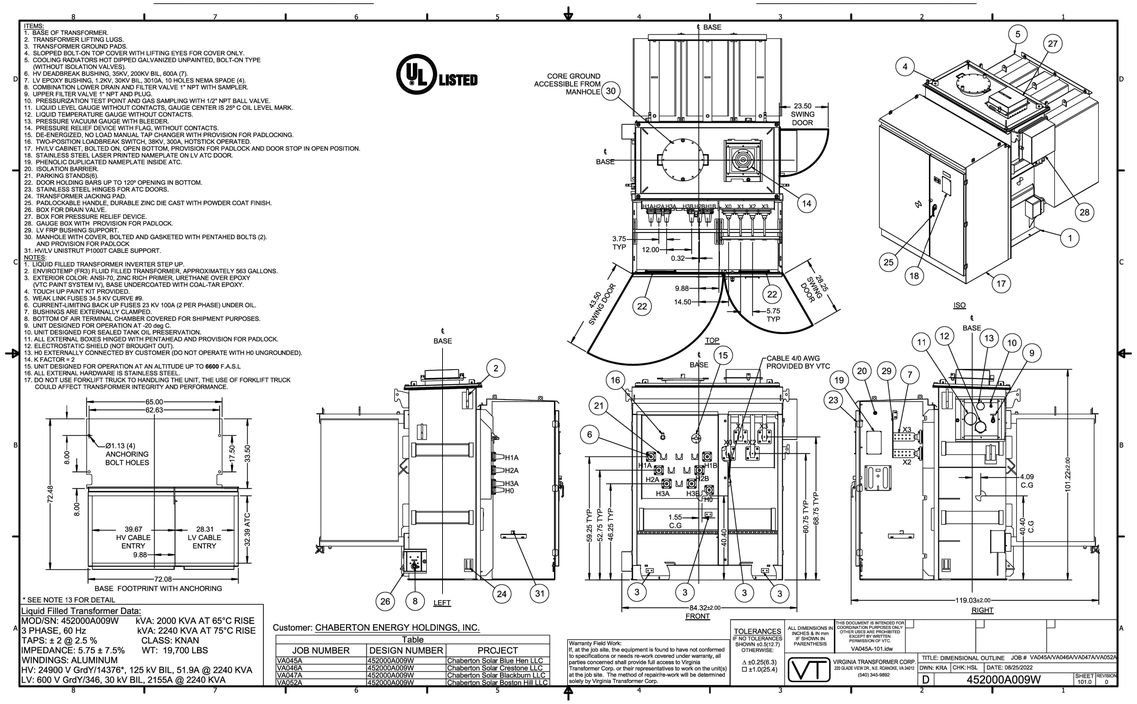
100/125kW Standard Wire-box



100/125kW Centralized Wire-box

Figure 3-1 Dimensions of CPS SCH100/125KTL-DO/US-600 and CPS SCH100KTL-DO/US-480 Inverter

INVERTER DATA SHEET



Liquid Filled Transformer Data:
MOD/SN: 452000A009W kVA: 2000 KVA AT 65°C RISE
3 PHASE: 60 Hz kVA: 2240 KVA AT 75°C RISE
TAPS: ± 2 @ 2.5 % CLASS: KNAN
IMPEDANCE: 5.75 ± 7.5% WT: 19,700 LBS
WINDINGS: ALUMINUM
HV: 24900 V GrdY/14376*, 125 kV BIL, 51.9A @ 2240 KVA
LV: 600 V GrdY/346, 30 kV BIL, 2155A @ 2240 KVA

Customer: CHABERTON ENERGY HOLDINGS, INC.

Table		
JOB NUMBER	DESIGN NUMBER	PROJECT
VA045A	452000A009W	Chaberton Solar Blue Hen LLC
VA046A	452000A009W	Chaberton Solar Crestone LLC
VA047A	452000A009W	Chaberton Solar Blackburn LLC
VA052A	452000A009W	Chaberton Solar Boston Hill LLC

Warranty Field Work:
If, at the job site, the equipment is found to have not conformed to specifications or needs re-work covered under warranty, all parties concerned shall provide full access to Virginia Transformer Corp. or their representatives to work on the unit(s) at the job site. The method of repair/re-work will be determined solely by Virginia Transformer Corp.

TOLERANCES IF NO TOLERANCES SHOWN ±0.5(12.7) OTHERWISE:
△ ±0.25(6.3)
□ ±1.0(25.4)

ALL DIMENSIONS IN INCHES & IN mm IF SHOWN IN PARENTHESIS

THIS DOCUMENT IS INTENDED FOR CORPORATION PURPOSES ONLY. OTHER USES ARE PROHIBITED EXCEPT BY WRITTEN PERMISSION OF VTC

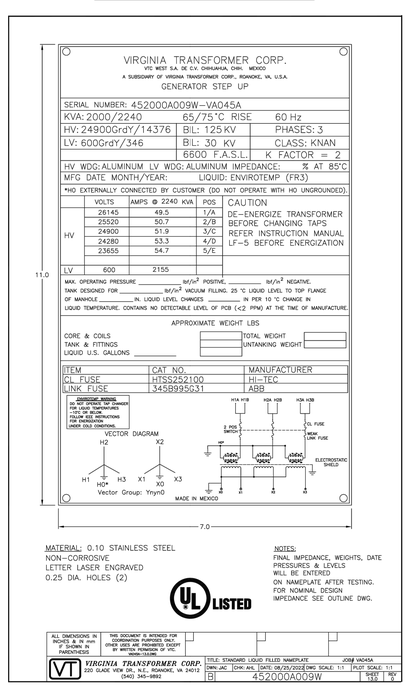
VA045A-101.stw

VIRGINIA TRANSFORMER CORP.
220 GLADE VIEW DR. N.E. ROANOKE, VA 24012
(540) 345-9892

TITLE: DIMENSIONAL OUTLINE JOB # VA045A/VA046A/VA047A/VA052A
DWN: KRA CHK: HSL DATE: 08/25/2022
D 452000A009W
SHEET 1 OF 1 REVISION 0

TRANSFORMER DATA SHEET

INVERTER DATA SHEET



MATERIAL: 0.10 STAINLESS STEEL NON-CORROSIVE LETTER LASER ENGRAVED 0.25 DIA. HOLES (2)

NOTES:
FINAL IMPEDANCE, WEIGHTS, DATE PRESSURES & LEVELS WILL BE ENTERED ON NAMEPLATE AFTER TESTING. FOR NOMINAL DESIGN IMPEDANCE SEE OUTLINE DWG.

UL LISTED

ALL DIMENSIONS IN INCHES & IN mm IF SHOWN IN PARENTHESIS

THIS DOCUMENT IS INTENDED FOR CORPORATION PURPOSES ONLY. OTHER USES ARE PROHIBITED EXCEPT BY WRITTEN PERMISSION OF VTC

VIRGINIA TRANSFORMER CORP.
220 GLADE VIEW DR., N.E., ROANOKE, VA 24012
(540) 345-9892

TITLE: STANDARD LIQUID FILLED NAMEPLATE JOB# VA045A
DWN: JAC CHK: AAL DATE: 08/25/2022 ENG SCALE: 1:1 PLOT SCALE: 1:1
SIZE B DWG # 452000A009W SHEET 1 OF 1 REV A

TRANSFORMER DATA SHEET

NOT FOR CONSTRUCTION

10% DESIGN 01/04/2024

PROJECT

CHABERTON SOLAR SUGARLOAF LLC
5.92 MWdc / 4.00 MWac GROUND MOUNT AT
20507 DARNESTOWN RD. DICKERSON, MD 20842
39.2080°N, -77.4233°W

DEVELOPER

CHABERTON ENERGY
1700 Rockville Pike, Suite 305
Rockville, MD 20852

chaberton ENERGY

REV.	DESCRIPTION	DATE
A	CPCN UPDATE/MANDATORY REFERRAL PROCESS	05/31/2024

APPROVED BY: JSG
CHECKED BY: EJA
DESIGNED BY: AOK

DRAWING TITLE
EQUIPMENT DATASHEETS

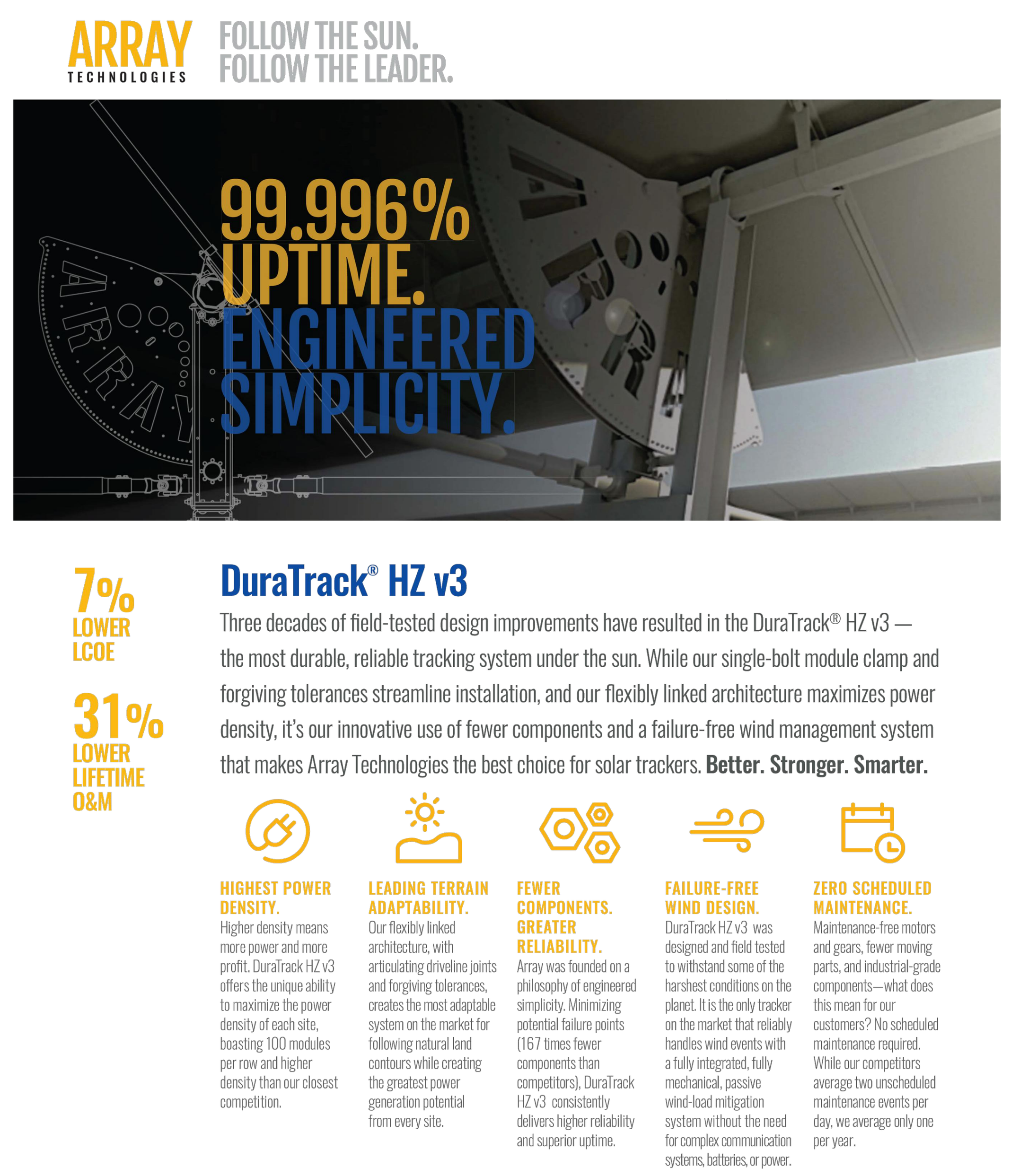
REVISION A

DRAWING NO. E-500

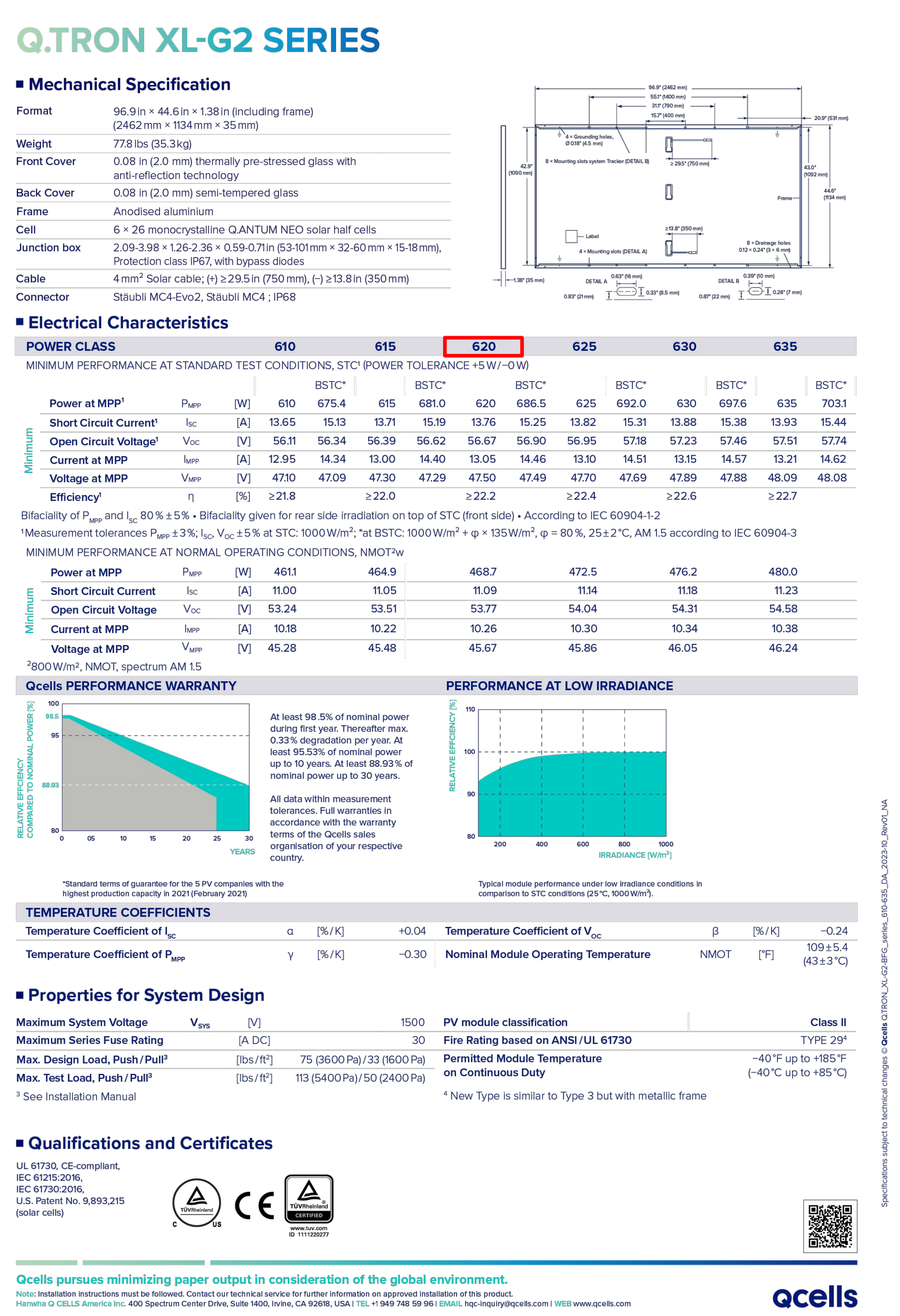
SYSTEM SUMMARY

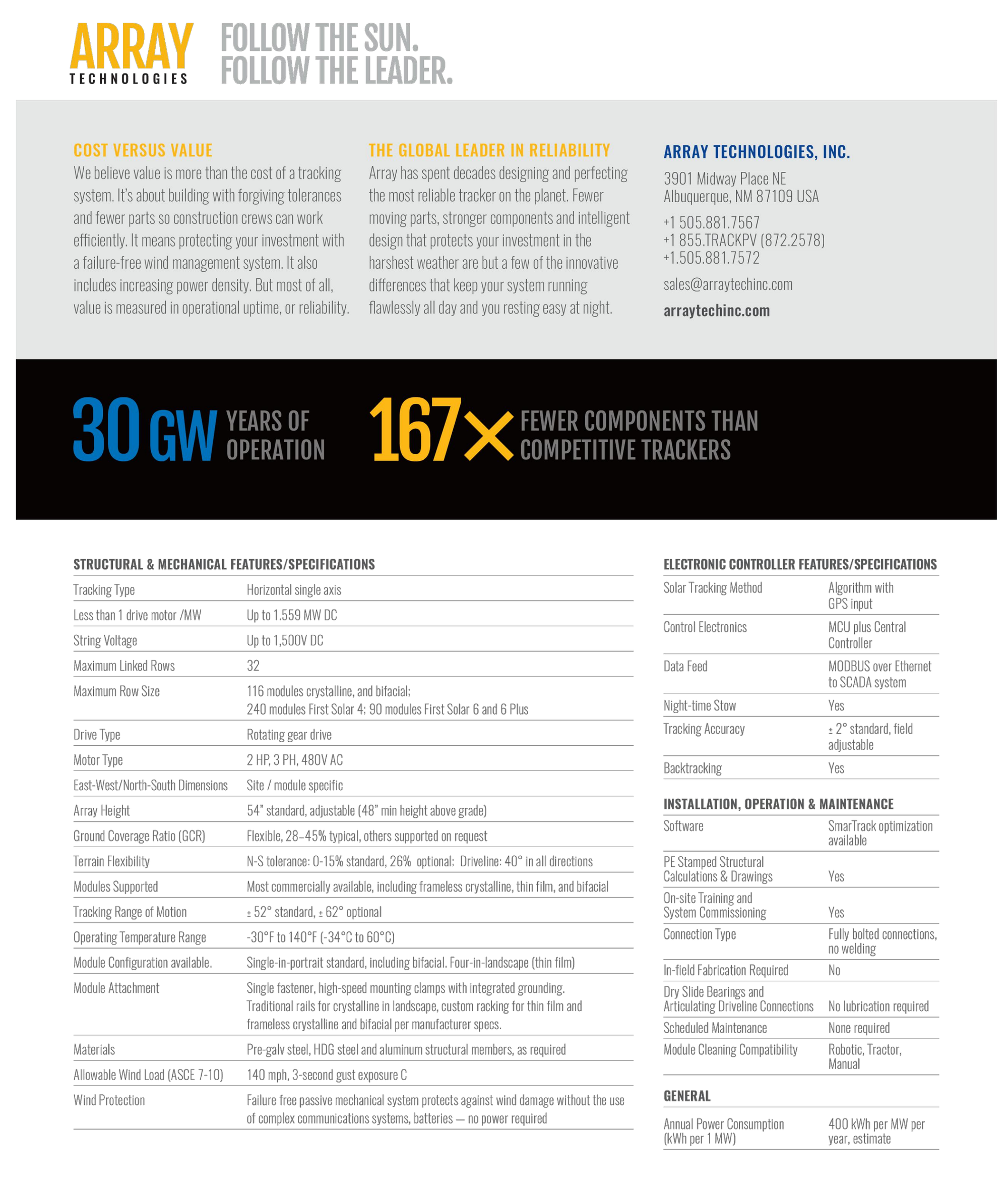
DC SYSTEM SIZE	5,922.24 kWdc
AC SYSTEM SIZE	4,000.00 kWac
DC/AC RATIO	1.481
MODULES	QCELL Q.TRON XL-G2 620 (620Wp) OR EQUIV.
MODULE QUANTITY	9,552
INVERTERS	CHINT CPS SCH125KTL-DO/US-600 OR EQUIV.
INVERTER QUANTITY	34
AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft

PV MODULE DATA SHEET



PV TRACKER DATA SHEET

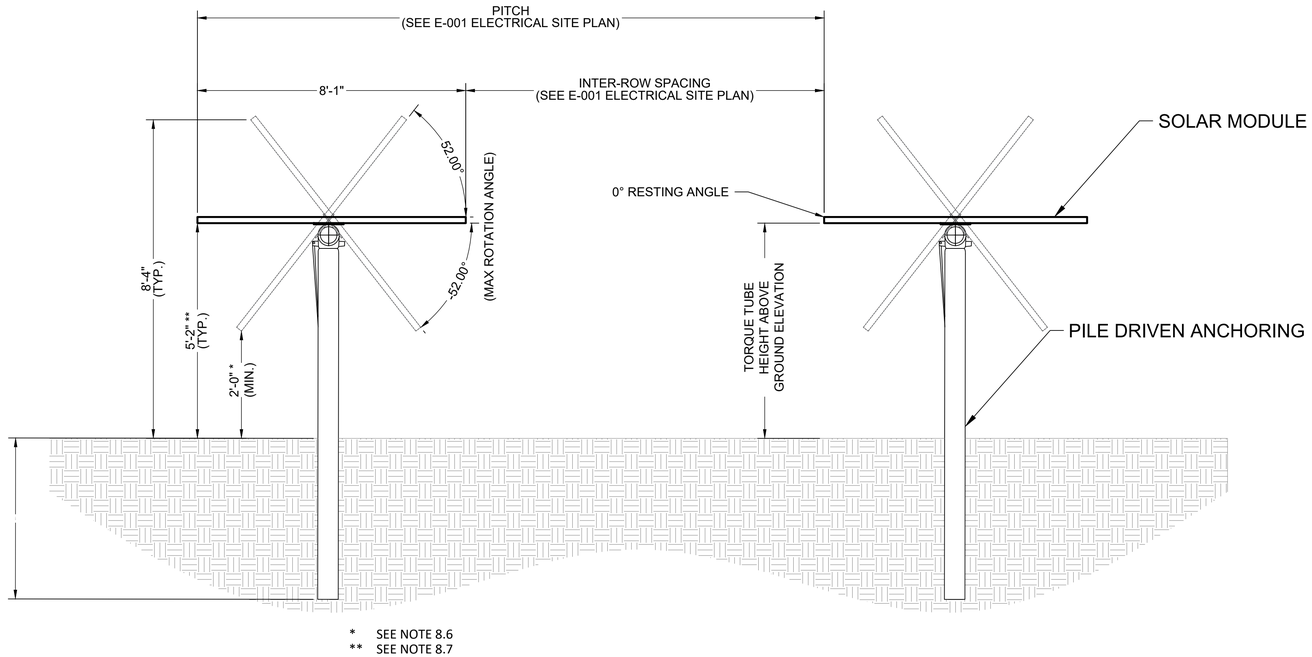




NOT FOR CONSTRUCTION

10% DESIGN 01/04/2024

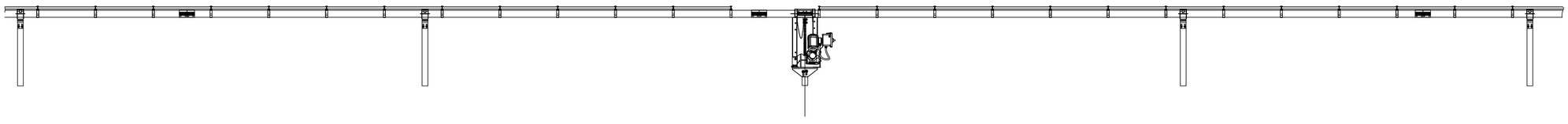
PROJECT	DEVELOPER		REV.	DESCRIPTION	DATE		
CHABERTON SOLAR SUGARLOAF LLC 5.92 MWdc / 4.00 MWac GROUND MOUNT AT 20507 DARNESTOWN RD. DICKERSON, MD 20842 39.2080°N, -77.4233°W	CHABERTON ENERGY 1700 Rockville Pike, Suite 305 Rockville, MD 20852	chaberton ENERGY	A	CPCN UPDATE/MANDATORY REFERRAL PROCESS	05/31/2024	APPROVED BY: JSG CHECKED BY: EJA DESIGNED BY: AOK	DRAWING TITLE: EQUIPMENT DATASHEETS REVISION: A DRAWING NO.: E-501



* SEE NOTE 8.6
** SEE NOTE 8.7

TYP. SIDE VIEW AT MAX 52° TILT

NOT TO SCALE



TYP. MODULE INTERIOR ROW

SCALE 1/4" = 1'

SYSTEM SUMMARY	
DC SYSTEM SIZE	5,922.24 kWdc
AC SYSTEM SIZE	4,000.00 kWac
DC/AC RATIO	1.481
MODULES	QCELL Q.TRON XL-G2 620 (620Wp) OR EQUIV.
MODULE QUANTITY	9,552
INVERTERS	CHINT CPS SCH125KTL-DO/US-600 OR EQUIV.
INVERTER QUANTITY	34
AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft

NOTES:

1. DRAWING IS DIAGRAMMATIC AS SHOWN AND INTENDED TO COMMUNICATE INTENT.
2. PILE SURVEYING SHALL BE PERFORMED BY A LICENSED SURVEYOR USING THE APPLICABLE STATE-PLANE COORDINATE SYSTEM.
3. EPC TO DETERMINE PILE EMBEDMENT AND FOUNDATIONS PER STRUCTURAL CALCULATIONS FOR EACH TORQUE TUBE HEIGHT AND BASE
4. FOUNDATION AND RACKING SHALL BE INSTALLED PER MANUFACTURER'S INSTALLATION MANUAL AND WITHIN STATED TOLERANCES.
5. ALL GRADING AND DRAINAGE SHALL BE PER CIVIL CONSTRUCTION DRAWINGS.
6. EPC TO DETERMINE RACKING SPACING
7. ALL STRUCTURAL AND MECHANICAL DESIGNS TO BE PERFORMED BY A QUALIFIED LICENSED PROFESSIONAL ENGINEER.
8. DESIGN CRITERIA:
   - 8.1. 105 MPH WIND SPEED, ASCE 7-10, CAT I OR COUNTY MINIMUM REQUIREMENTS; WHICHEVER IS HIGHER
   - 8.2. 25 PSF GROUND SNOW EXPOSURE OR COUNTY MINIMUM REQUIREMENTS; WHICHEVER IS HIGHER
   - 8.3. ANCHORING IS PILE DRIVEN UNLESS OTHERWISE REQUIRED BY SITE CONDITIONS.
   - 8.4. PANELS AZIMUTH TO BE 180°
   - 8.5. FINAL DESIGN MAY BE ADJUSTED PRIOR TO CONSTRUCTION. MAXIMUM HEIGHT NOT TO BE INCREASED WITHOUT APPROVAL FROM THE ENGINEER AND AHJ.
   - 8.6. <20% OF LEADING EDGES TO BE WITHIN 2' OF GROUND FOR PURPOSES OF POLLINATOR GROWTH.
   - 8.7. <5% OF TORQUE TUBE TO BE >8' ABOVE GROUND ELEVATION.
   - 8.8. RACKING TO BE SINGLE PORTRAIT ORIENTATION.
9. MAXIMUM RACKING TOLERANCE ASSUMED AT 15%

NOT FOR CONSTRUCTION

10% DESIGN 01/04/2024

PROJECT

CHABERTON SOLAR SUGARLOAF LLC
5.92 MWdc / 4.00 MWac GROUND MOUNT AT
20507 DARNESTOWN RD. DICKERSON, MD 20842
39.2080°N, -77.4233°W

DEVELOPER

CHABERTON ENERGY
1700 Rockville Pike, Suite 305
Rockville, MD 20852

chaberton ENERGY

REV.	DESCRIPTION	DATE
B	CPCN UPDATE/MANDATORY REFERRAL PROCESS	05/31/2024

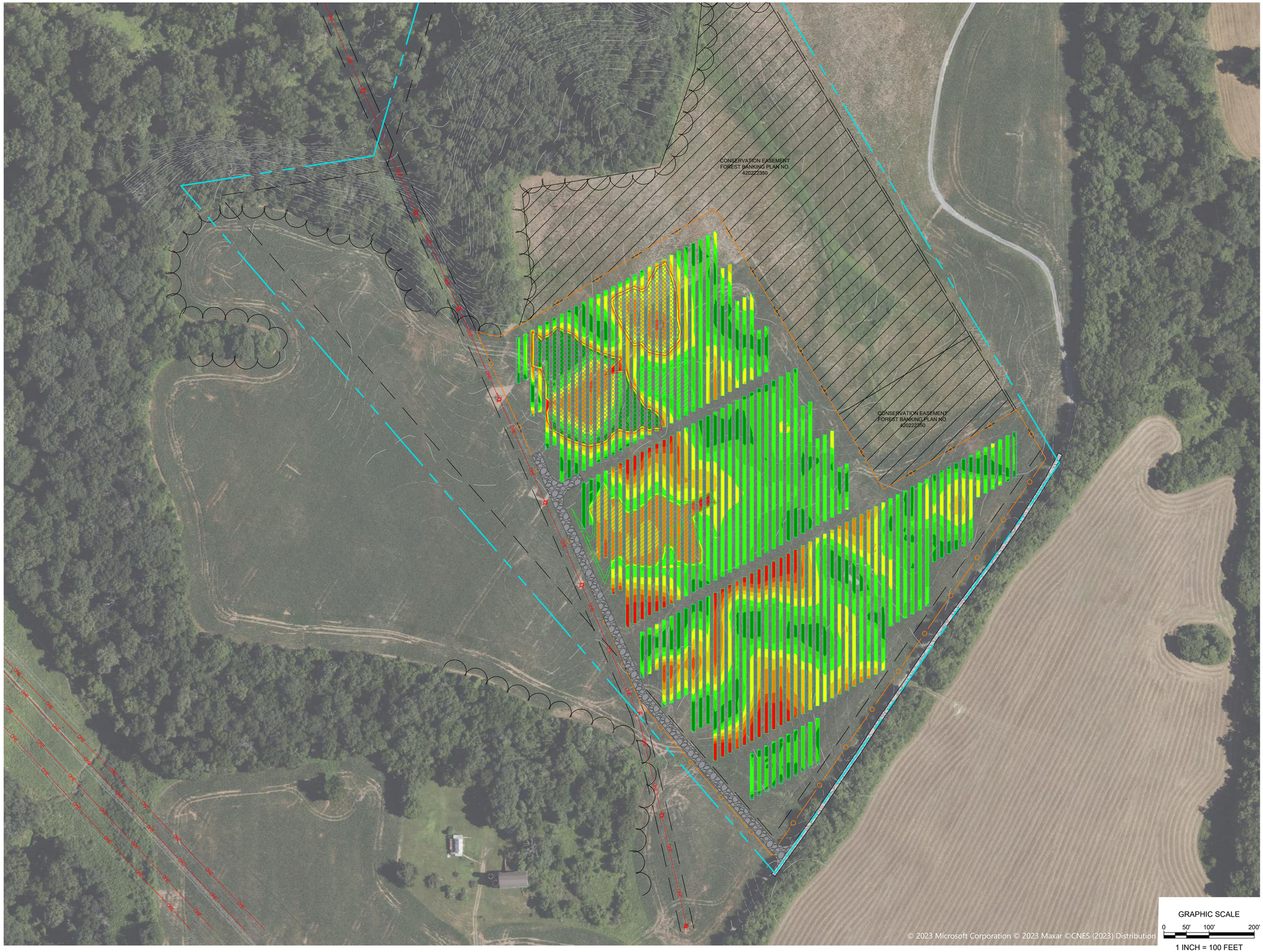
APPROVED BY: JSG
CHECKED BY: EJA
DESIGNED BY: AOK

DRAWING TITLE

RACKING DETAILS

REVISION A

DRAWING NO. M-001



GRAPHIC SCALE
0 50' 100' 200'
1 INCH = 100 FEET

SYSTEM SUMMARY

DC SYSTEM SIZE	5,922.24 kWdc
AC SYSTEM SIZE	4,000.00 kWac
DC/AC RATIO	1.481
MODULES	QCELL Q.TRON XL-G2 620 (620Wp) OR EQUIV.
MODULE QUANTITY	9,552
INVERTERS	CHINT CPS SCH125KTL-DO/US-600 OR EQUIV.
INVERTER QUANTITY	34
AZIMUTH/TILT	180° / SINGLE AXIS TRACKER
PITCH	16.2 ft

LAYER LEGEND

PROP UNDERGROUND ELECTRIC	UGE UGE UGE UGE
PROP OVERHEAD ELECTRIC	OHE OHE OHE OHE
EX UNDERGROUND ELECTRIC	UGE UGE UGE UGE
EX OVERHEAD ELECTRIC	OHE OHE OHE OHE
PROP FENCE	
PROPERTY LINE	
SOLAR PV MODULES	

ELEVATION TABLE

COLOR	MIN HEIGHT	MAX HEIGHT	AREA (sf)	PERCENT AREA
	4.274	5.180	43,531	14.49%
	5.180	5.500	60,579	20.16%
	5.500	6.000	71,159	23.68%
	6.000	6.500	44,619	14.85%
	6.500	7.000	35,817	11.92%
	7.000	7.500	27,707	9.22%
	7.500	8.000	8,083	2.69%
	8.000	9.738	8,976	2.99%

NOTES:

1. MINIMAL GRADING NECESSARY FOR CONSTRUCTION OF ROADS AND TRANSFORMERS ARE TO BE BALANCED ON-SITE.
2. ELEVATIONS ARE MEASURED FROM THE LONGITUDINAL MIDPOINT OF THE ARRAY TO THE GROUND ELEVATION.

AREA OF FILL: 1.16 FT DEPTH

AREA OF CUT: 0.75 FT DEPTH

NOTE: THERE IS APPROXIMATELY 1,600 CY OF CUT AND 1,600 CY OF FILL GRADING FOR THIS SITE UNDERNEATH THE SOLAR ARRAYS. MINIMAL GRADING NECESSARY FOR CONSTRUCTION OF ROADS AND TRANSFORMERS ARE TO BE BALANCED ON-SITE.

N W E S

NOT FOR CONSTRUCTION

10% DESIGN 01/04/2024

PROJECT

CHABERTON SOLAR SUGARLOAF LLC
5.92 MWdc / 4.00 MWac GROUND MOUNT AT
20507 DARNESTOWN RD. DICKERSON, MD 20842
39.2080°N, -77.4233°W

DEVELOPER

CHABERTON ENERGY
1700 Rockville Pike, Suite 305
Rockville, MD 20852

chaberton ENERGY

REV.	DESCRIPTION	DATE
C	GRADING QUANTITY CORRECTION	07/16/2024
B	PIER HEIGHT REVISION	07/02/2024
A	CPCN UPDATE/MANDATORY REFERRAL PROCESS	05/31/2024

APPROVED BY: JSG
CHECKED BY: EJA
DESIGNED BY: AOK

DRAWING TITLE

PLANAR STUDY

REVISION B

DRAWING NO. M-101

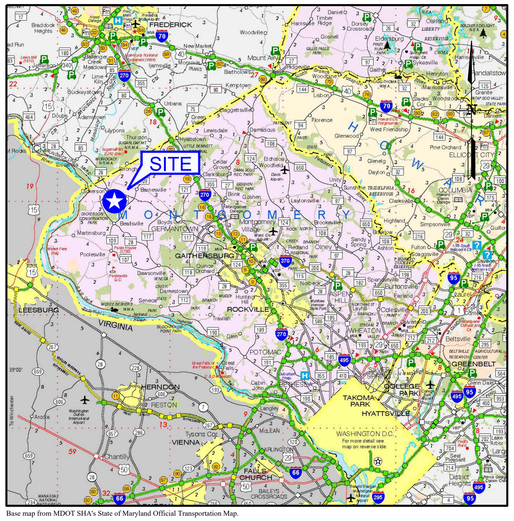
DRAWINGS FOR CONCEPT STORMWATER PLAN

SUGARLOAF 4.0 MW AC SOLAR PROJECT

DICKERSON, MONTGOMERY COUNTY, MARYLAND

JULY 2024

TECHNICAL REVIEW OF SEDIMENT CONTROL
REVIEWED DATE
TECHNICAL REVIEW OF STORMWATER MANAGEMENT
REVIEWED DATE
ADMINISTRATIVE REVIEW
REVIEWED DATE
SMALL LOT DRAINAGE APPROVAL
N/A: ☐ OR
REVIEWED DATE
NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT.
MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.
DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.
SEDIMENT CONTROL PERMIT NO.
SM. FILE NO. STORMWATER MANAGEMENT:



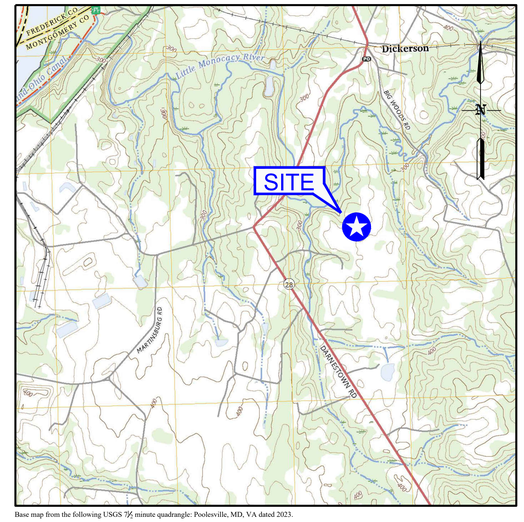
Base map from MDOT SHA's State of Maryland Official Transportation Map.

VICINITY MAP

SCALE: 1" = 6 Miles

LIST OF SHEETS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	EXISTING SITE CONDITIONS PLAN
3	PROPOSED SITE CONDITIONS PLAN (SHEET 1 OF 2)
4	PROPOSED SITE CONDITIONS PLAN (SHEET 2 OF 2)
5	PROPOSED SITE DETAILS (SHEET 1 OF 2)
6	PROPOSED SITE DETAILS (SHEET 2 OF 2)



Base map from the following USGS 7½ minute quadrangle: Poolesville, MD, VA dated 2023.

LOCATION MAP

SCALE: 1" = 2000'

PREPARED FOR DEVELOPER:
CHABERTON SOLAR SUGARLOAF LLC
1700 ROCKVILLE PIKE, SUITE 305
ROCKVILLE, MD 20852
(804) 929-8418

PROPERTY OWNER:
DOUGLAS BOUCHER
20507 DARNESTOWN ROAD
DICKERSON, MD 20842

SITE ADDRESS:
20507 DARNESTOWN ROAD, DICKERSON, MD 20842 (39.2080°N, -77.4233°W)

PROJECT SITE:

1. EXISTING ZONING: AGRICULTURAL RESERVE (AR) ZONE
2. EXISTING USE: AGRICULTURAL
3. PROPOSED USE: COMMUNITY SOLAR ENERGY GENERATING SYSTEM (CSEGS)
4. TOTAL SITE AREA: 52.46 AC
5. TOTAL PROPOSED DEVELOPMENT AREA (LIMIT OF DISTURBANCE): 860,462 SF (19.8± AC)
6. TAX MAP NO. 11-03023873, DEED BOOK: 12458, PAGE: 017
7. SYSTEM SIZE: 5,886 kW DC / 4,000 kW AC

MISS UTILITY

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.

August 2023

RELATED REQUIRED PERMITS

To be completed by the consultant and placed on the first sheet of the Sediment Control / Stormwater Management plan set for all projects.

IT IS THE RESPONSIBILITY OF THE PERMITTEE/OWNER OF THIS SITE TO OBTAIN ALL REQUIRED PERMITS PRIOR TO ISSUANCE OF THE SEDIMENT CONTROL PERMIT

TYPE OF PERMIT	REQD	NOT REQD	PERMIT #	EXPIRATION DATE	WORK RESTRICTION DATES
MCDPS Floodplain District		X			
WATERWAYS/WETLAND(S):		X			
a. Corps of Engineers					
b. MDE					
c. MDE Water Quality Certification					
MDE Dam Safety		X			
MSCD Small Pond Approval		X			
* DPS Roadside Trees Protection Plan		X		Approval Date	
**N.P.D.E.S. NOTICE OF INTENT	X				
FEMA LOMR (Required Post Construction)		X			
OTHERS (Please List):					

*A copy of the approved Roadside Trees Protection Plan must be delivered to the Sediment Control Inspector at the Preconstruction Meeting.

**When a Notice of Intent is required, the sediment control permit may not be issued until confirmation of authorization under the MDE's 20-CP permit has been submitted to DPS.

OWNER'S/DEVELOPER'S CERTIFICATION

I/We hereby certify that all clearing, grading, construction, and or development will be done pursuant to this plan and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.

Signature _____ Date _____

Printed Name and Title _____

SWM Concept Summary Table:

Contact Information for Design Engineer (for technical issues): Charles Walker
ARM Group LLC 9175 Guilford Road Suite 310 Columbia, MD 21046
Phone: 667-240-2533

General Property Information:
SM# 293586
Type of Concept: SWM Concept
MNCP&PC Process/No: Mandatory Referral
Property Address: 20507 Darnestown Road Dickerson, MD 20842
Property Legal Description: Parcel 127
Property Size (ac/sq. ft.): 52.46 ac/ 2,284,997 sq. ft.
Total Concept Area (ac./sq. ft.): 19.8 ac. / 860,462 sq. ft.
Zoning: AR (Agricultural Reserve)
Watershed(s) and Stream Class: Middle Potomac River Watershed/ Class I-P
Special Protection Area: n/a
100 YR Floodplain: FEMA 24031C0135D
Ex. % impervious / Redevelopment or New Development: 5% impervious / New Development
SWM Summary:
Target PE/Proposed PE : 1.0" / 3.44"
Target ESDv/Provided ESDv: 7,067 cf / 24,309 cf
ESD Measures: Non-rooftop Disconnect
Structural Storage Required/Provided: n/a
Structural Measures: n/a
Waiver Request/QL/QN/Both: No
Provided ESDv + Structural Storage Provided + Requested to be Waived = 24,309 cf
Other Information:

CERTIFICATION OF THE QUANTITIES

I hereby certify that the estimated total amount of excavation and fill as shown on these plans has been computed to 789 cubic yards of excavation, 789 cubic yards of fill and the total area to be disturbed as shown on these plans has been determined to be 860,462 square feet.

Signature 7/31/24 Date

Charles D. Walker 61081
Printed Name and Title Registration Number

DESIGN CERTIFICATION

I hereby certify that this plan has been prepared in accordance with the "2011 Maryland Standards and Specification for Soil Erosion and Sediment Control," Montgomery County Department of Permitting Services Executive Regulations 5-90, 7-02AM and 36-90, and Montgomery County Department of Public Works and Transportation "Storm Drain Design Criteria" dated August 1988.

Design Engineer Signature 7/31/24 Date

Charles D. Walker 61081
Printed Name Registration Number

NOT FOR CONSTRUCTION

STATE OF MARYLAND — CHARLES D. WALKER — No. 61081 — PROFESSIONAL ENGINEER

7/31/24

CHARLES D. WALKER, P.E. NO. 61081

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I A AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 61081 , EXPIRATION DATE: 06-11-25.

PREPARED BY:

ARM Group LLC
Engineers and Scientists
www.armgroup.net

HEADQUARTERS:
1129 West Governor Road • Hershey, PA 17033-0797
Ph: (717) 533-8600 Fax: (717) 533-8605

ARM Group LLC
Engineers and Scientists
www.armgroup.net

No.	Revision	Date	By
0	ISSUED FOR CONCEPT SWM REVIEW	06/18/2024	ARM

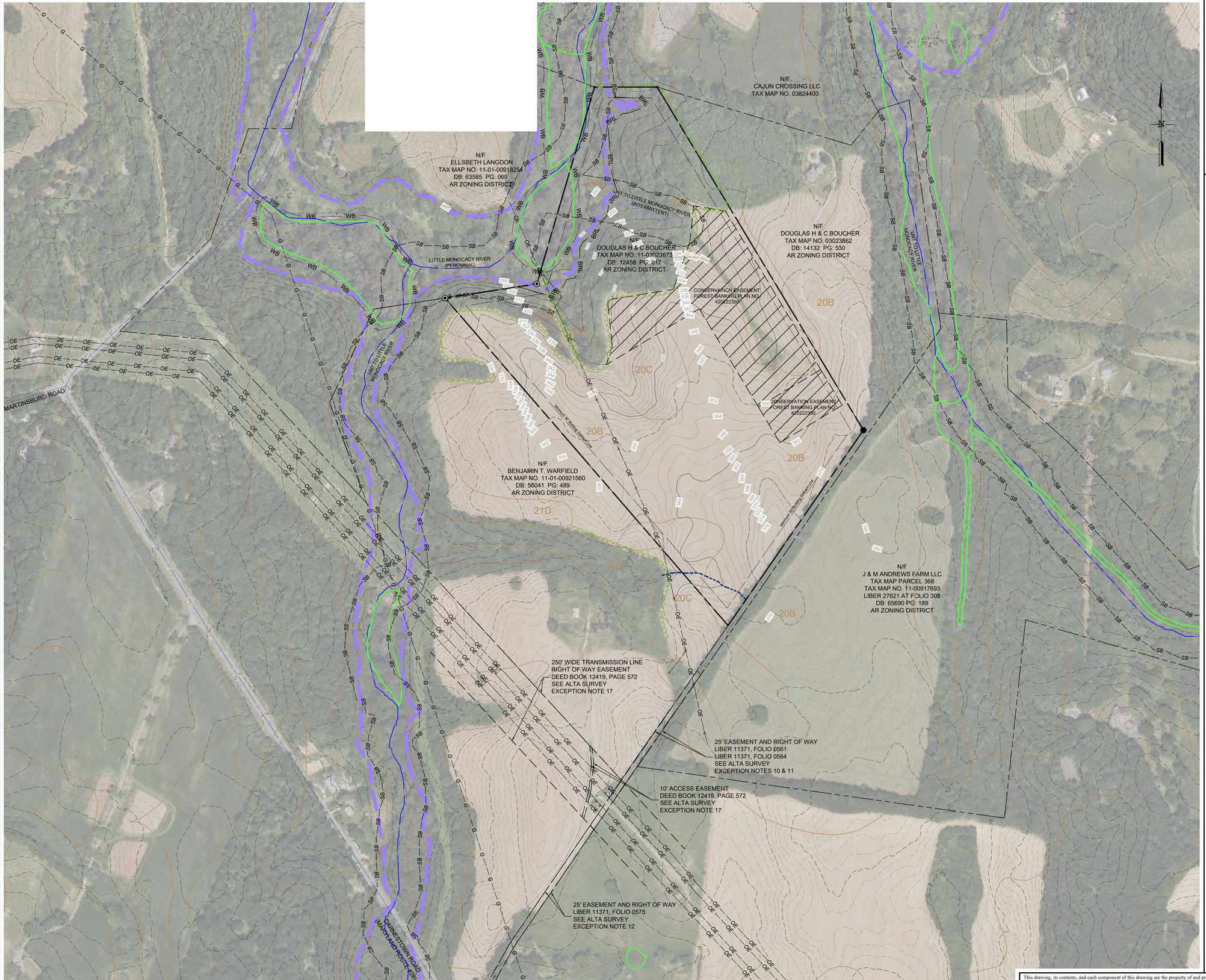
scale: AS NOTED
date: 07/29/2024
project no.: 23010892
designed: CDW
checked: KJM
drawn: CDW
graphic scale:

drawing title: COVER SHEET
CONCEPT STORMWATER PLAN
DICKERSON
MONTGOMERY COUNTY, MARYLAND

project title: SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF LLC

Sheet 1

F:\Libraries\Projects\23010892\Sugarloaf\Dwg\Docksheet\Concept Plan\23010892-Sht1_Cover Sheet.dwg - Plotted: July 30, 2024



NOTES:

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LEGEND

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- PROPERTY LINE SETBACK
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- 20B — EXISTING SOIL BOUNDARY AND DESCRIPTOR
- EXISTING TREELINE
- x — EXISTING FENCE
- EXISTING CULVERT
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- EXISTING EDGE OF UNPAVED ROAD
- EXISTING ROAD CENTERLINE
- EXISTING EASEMENT
- EXISTING ROCK WALL

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No.	Revision	Date	By
0	ISSUED FOR CONCEPT SWM REVIEW	06/18/2024	ARM

designed	CDW
checked	KJM
drawn	CDW
scale	1" = 200'
date	07/29/2024
project no.	23010892

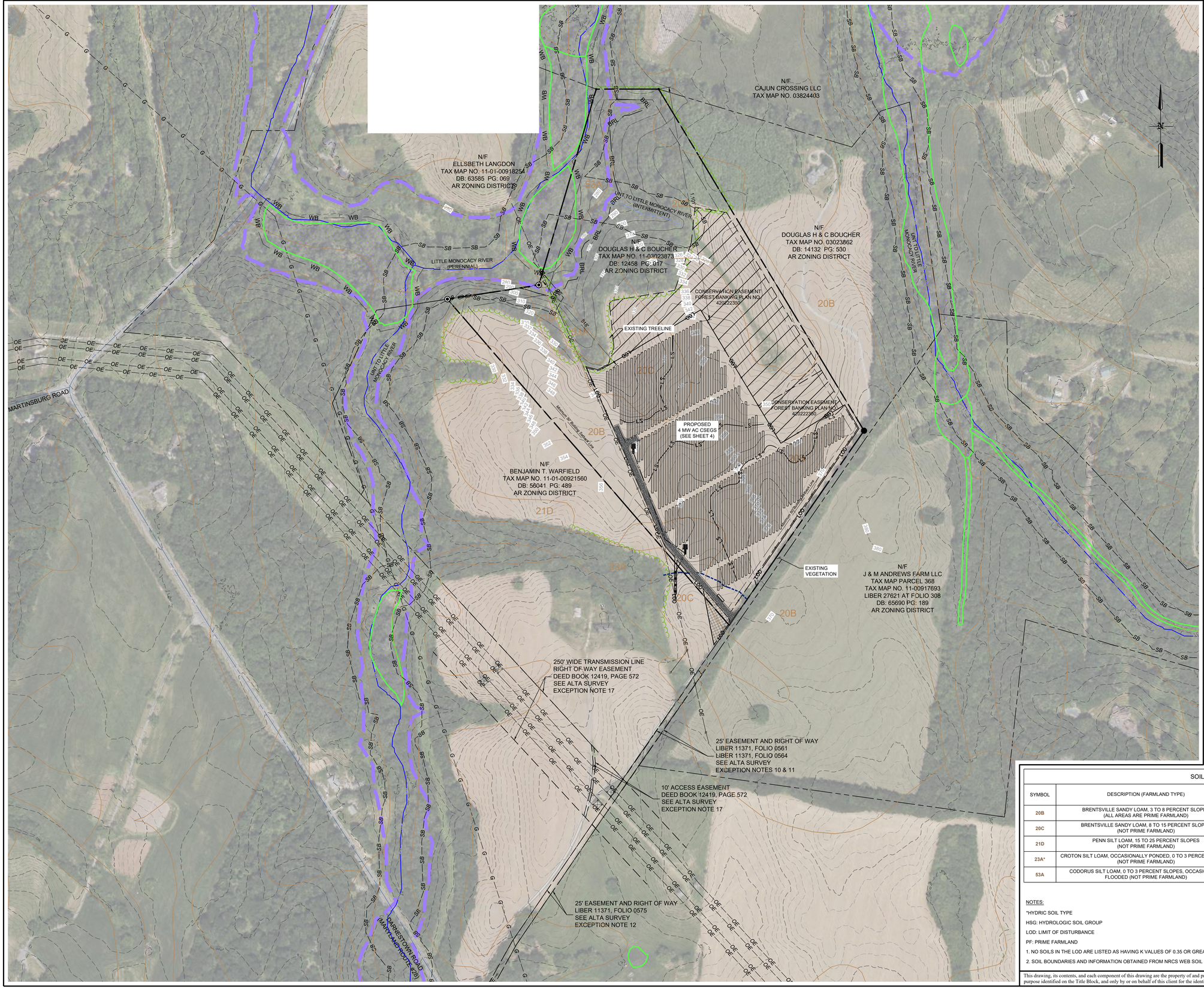
graphic scale: 0, 200, 400, 600 SCALE IN FEET

drawing title: EXISTING SITE CONDITIONS PLAN
CONCEPT STORMWATER PLAN

project title: SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF LLC

DICKERSON
MONTGOMERY COUNTY, MARYLAND

Sheet 2



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9. SETBACKS SHALL BE PROVIDED PER MONTGOMERY COUNTY ZONING ORDINANCE SUBSECTION 3.7.2.B, USE STANDARDS. NO PROPOSED LANDSCAPING IS REQUIRED BECAUSE EXISTING VEGETATION MEETS BUFFERING REQUIREMENTS.
10. SOLAR ARRAY IS AN UNMANNED FACILITY AND WILL NOT REQUIRE WATER OR SEWERAGE FACILITIES.
11. THIS PROJECT DOES NOT DISTURB ANY STREAM, WETLANDS OR THEIR ASSOCIATED BUFFERS.
12. THERE ARE NO SLOPES GREATER THAN 15% WITHIN THE SOLAR ARRAY. HOWEVER, LIMITED AREAS WITH SLOPES GREATER THAN 15% OCCUR ALONG FENCE INSTALLATION.

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- PROPOSED SECURITY FENCE
- UE — UE — PROPOSED UNDERGROUND ELECTRIC LINE
- OE — OE — PROPOSED OVERHEAD ELECTRIC LINE W/ POLE
- PROPOSED ACCESS ROAD/ EQUIPMENT PAD
- PROPOSED LAYDOWN AREA
- PROPOSED SOLAR MODULES

SOILS LEGEND

SYMBOL	DESCRIPTION (FARMLAND TYPE)	HSG	AREA OF PARCEL (AC)	% OF PARCEL	AREA OF PF WITHIN LOD (AC)	% OF LOD
20B	BRENTSVILLE SANDY LOAM, 3 TO 8 PERCENT SLOPES (ALL AREAS ARE PRIME FARMLAND)	C	27.2	51.5	15.0	78.7
20C	BRENTSVILLE SANDY LOAM, 8 TO 15 PERCENT SLOPES (NOT PRIME FARMLAND)	C	20.2	38.2	0.0	0.0
21D	PENN SILT LOAM, 15 TO 25 PERCENT SLOPES (NOT PRIME FARMLAND)	B	1.0	2.0	0.0	0.0
23A*	CROTON SILT LOAM, OCCASIONALLY PONDED, 0 TO 3 PERCENT SLOPES (NOT PRIME FARMLAND)	D	0.00	0.0	0.0	0.0
53A	CODORUS SILT LOAM, 0 TO 3 PERCENT SLOPES, OCCASIONALLY FLOODED (NOT PRIME FARMLAND)	C	4.3	8.2	0.0	0.0
		TOTAL	52.7	100	15.0	78.7

NOTES:

*HYDRIC SOIL TYPE

HSG: HYDROLOGIC SOIL GROUP

LOD: LIMIT OF DISTURBANCE

PF: PRIME FARMLAND

1. NO SOILS IN THE LOD ARE LISTED AS HAVING K VALUES OF 0.35 OR GREATER (HIGHLY ERODIBLE).
2. SOIL BOUNDARIES AND INFORMATION OBTAINED FROM NRCS WEB SOIL SURVEY.

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Engineers and Scientists
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0	ISSUED FOR CONCEPT SWM REVIEW	06/18/2024	ARM

scale:	1" = 200'	
date:	07/29/2024	
project no.	23010892	
designed	CDW	
checked	KJM	
drawn	CDW	
graphic scale	0 200 400 800 SCALE IN FEET	

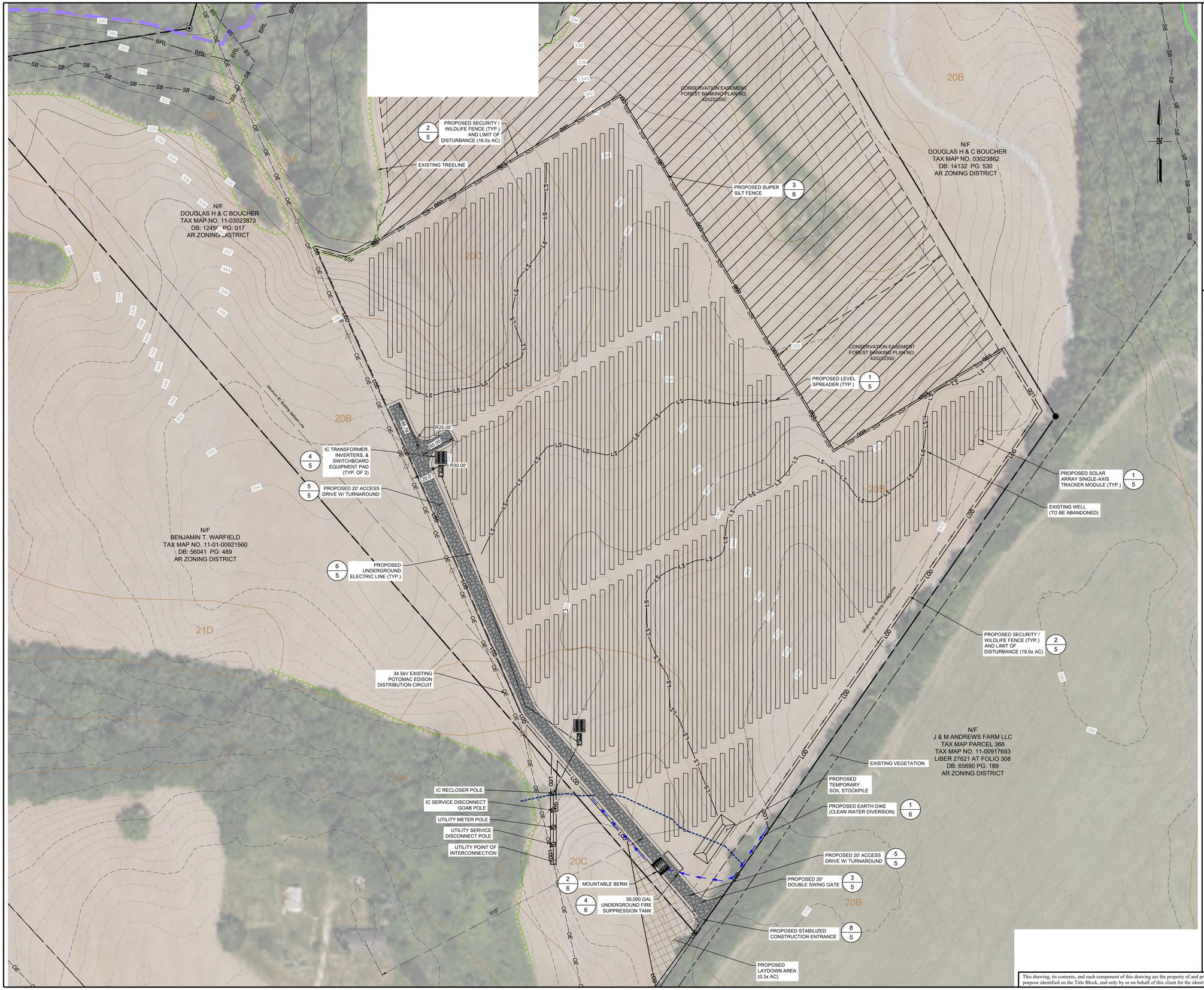
drawing title: PROPOSED SITE CONDITIONS PLAN (SHEET 1 OF 2)
CONCEPT STORMWATER PLAN

DICKERSON
MONTGOMERY COUNTY, MARYLAND

project title: SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF LLC

Sheet 3

C:\Chaberton Project\23010892 Sugarloaf\Dwg\Production\Concept Plan\23010892-SKD108_Proposed Site Conditions Plan.dwg Plotted: July 11, 2024



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No.	Revision	Date	By
0	ISSUED FOR CONCEPT SWM REVIEW	06/18/2024	ARM

scale: 1" = 75'
date: 07/29/2024
project no.: 23010892

SCALE IN FEET: 0, 75, 150, 225

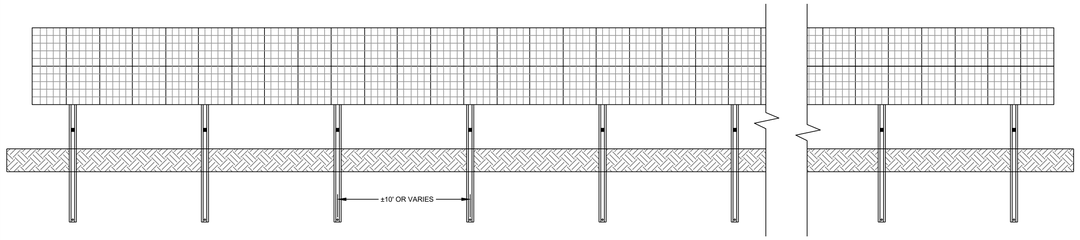
designed: CDW
checked: KJM
drawn: CDW
graphic scale:

drawing title: PROPOSED SITE CONDITIONS PLAN (SHEET 2 OF 2)
CONCEPT STORMWATER PLAN
DICKERSON
MONTGOMERY COUNTY, MARYLAND

project title: SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF LLC

Sheet 4

P:\Active Projects\23010892 Sugarloaf Solar\Production\Concept Plan\23010892-SS01-04_Proposed Site Conditions Plan.dwg Printed: July 17, 2024

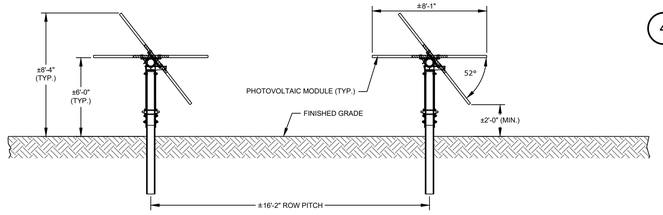


FRONT ELEVATION

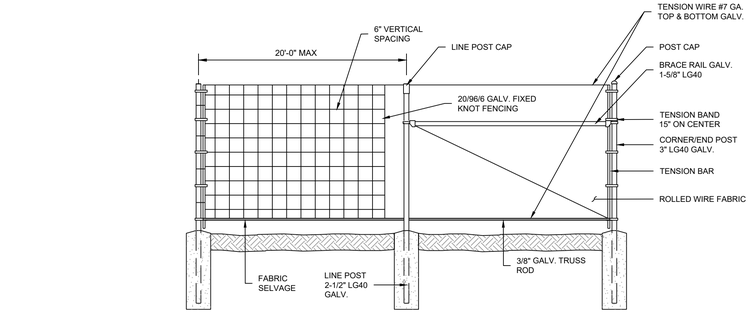
NOTES:

1. THE INFORMATION SHOWN HERE IS FOR GENERAL REFERENCE ONLY. ARRAY CONFIGURATION DIMENSIONS SHOWN HERE MAY VARY.

1 DETAIL
PHOTOVOLTAIC ARRAY (TYP.)
NOT TO SCALE



TYPICAL SIDE ELEVATION

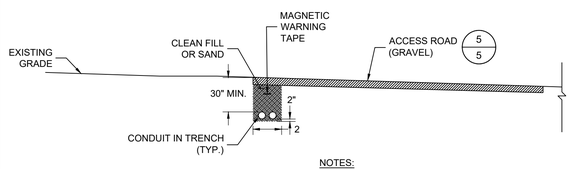


NOTES:

1. FENCE SHALL BE PLACED ALONG ENTIRE PROPOSED PROJECT PERIMETER.
2. POSTS SHALL BE SPACED EQUAL DISTANCES APART. MAXIMUM SPACING SHALL BE 20 FEET UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
3. POST TOPS SHALL BE SECURELY FASTENED TO POST.
4. BRACE RAILS AND TRUSS RODS SHALL BE SECURELY FASTENED TO POST WITH BRACE BANDS WITH THREADED TAKE-UP ADAPTOR FOR TRUSS RODS.
5. GROUND WIRE SHALL BE ATTACHED TO FENCE FABRIC BY MEANS OF A SPLIT BOLT.
6. FABRIC SHALL BE STRETCHED TO A SMOOTH UNIFORM BY MEANS OF A SPLIT BOLT.
7. DETAILS SHOWN INDICATE GENERAL DESIGN OF WILDLIFE FENCE WITH GALVANIZED MESH AND POSTS. APPROVED EQUIVALENT WILDLIFE FENCE WITH TIMBER POSTS, CEDAR OR TREATED PINE, AND GALVANIZED MESH MAY BE UTILIZED. DIMENSIONS MAY VARY AMONG MANUFACTURERS.
8. LINE POST SHALL BE SET IN CONCRETE AT CORNERS AND GATES ONLY.

	HEIGHT	MESH	GAGE	SELVAGE	FINISH
FABRIC	7'-0"	F.K.	N/A	N/A	GALV.
FRAMEWORK		O.D.	WALL	WT. PER FT.	LENGTH
END/CORNER POST		3"	0.16	4.64	11'-0"
LINE POST		2-1/2"	0.13	3.12	11'-0"
RAILS		1-5/8"	0.11	1.84	20'-0" MAX
GATE FRAME		1-5/8"	0.11	1.84	VARIES
GATE POST		6"	0.16	6.56	11'-0"

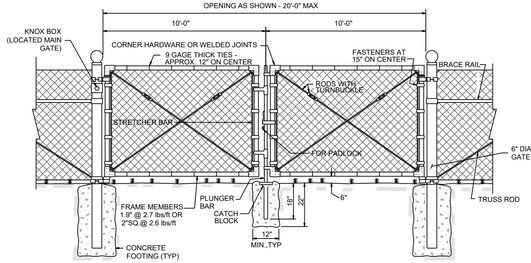
2 DETAIL
SECURITY / WILDLIFE FENCE (TYP.)
NOT TO SCALE



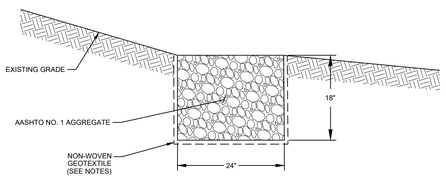
NOTES:

1. CONDUIT LAYOUTS TO BE DETERMINED.

6 DETAIL
CONDUIT TRENCH (TYP.)
NOT TO SCALE



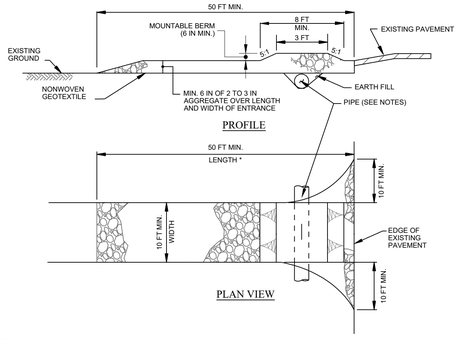
3 DETAIL
DOUBLE SWING GATE (20')
NOT TO SCALE



NOTES:

1. LEVEL SPREADER DESIGN AS PER MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
2. ESTABLISH PREPARED SUBGRADE AND STABILIZE SIDES OF LEVEL SPREADER TRENCH PRIOR TO INSTALLATION OF GEOTEXTILE FABRIC AND BACKFILLING WITH STONE.
3. GEOTEXTILE TO BE INSTALLED ON ALL SIDE FACES AND BOTTOM SURFACE OF TRENCH. GEOTEXTILE TO BE NON-WOVEN, 8 OZ/SY MINIMUM, OR APPROVED EQUAL.
4. LEVEL SPREADERS SHALL BE INSTALLED PARALLEL TO CONTOURS AT MAXIMUM INTERVALS OF 300 FEET.

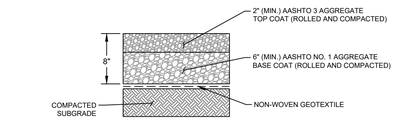
7 DETAIL
LEVEL SPREADER (TYP.)
NOT TO SCALE



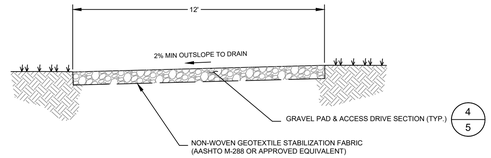
NOTES:

1. STABILIZED CONSTRUCTION ENTRANCE DESIGN AS PER MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL (DETAIL B-1).
2. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
3. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
4. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
5. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
6. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

8 DETAIL
ROCK CONSTRUCTION ENTRANCE (TYP.)
NOT TO SCALE



4 DETAIL
GRAVEL EQUIPMENT PAD & ACCESS DRIVE SECTION (TYP.)
NOT TO SCALE



NOTES:

1. EXCAVATE TO SUITABLE MATERIAL FOR SUBGRADE AND COMPACT TO PROVIDE SUITABLE SURFACE TO PLACE ROAD.
2. GEOTEXTILE FABRIC SHALL MEET FOLLOWING REQUIREMENTS AND FOLLOW GEOTEXTILE MANUFACTURER INSTALLATION PROCEDURES.
   - TENSILE STRENGTH: 150 LB MIN.
   - ELONGATION: 50%
   - CBR PUNCTURE: 400 LB MIN.
   - MINIMUM FLOW RATE: 120 GPM / FT²
3. WHERE OVERLAPPING OF GEOTEXTILE FABRIC IS REQUIRED, SUBCONTRACTOR SHALL OVERLAP A MINIMUM OF 24".
4. REMOVE TEMPORARY CONSTRUCTION ACCESS ROAD AND RESTORE TO PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE OWNER AND THE GOVERNING AGENCIES.

5 DETAIL
GRAVEL ACCESS ROAD
NOT TO SCALE

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0	ISSUED FOR CONCEPT SWM REVIEW	06/18/2024	ARM

scale:	AS NOTED
date:	07/29/2024
project no.	23010892
designed	CDW
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drawn	CDW
graphic scale	

drawing title
PROPOSED SITE DETAILS
CONCEPT STORMWATER PLAN

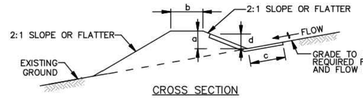
project title
SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF LLC

DICKERSON
MONTGOMERY COUNTY, MARYLAND

Sheet 5

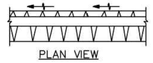
DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: A-1 — PLACE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE.



CROSS SECTION

CONTINUOUS GRADE 0.5% MIN. TO 10% MAX. SLOPE



PLAN VIEW

	DIKE TYPE A	DIKE TYPE B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A–1	SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
A–2/B–2	SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
A–3/B–3	4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

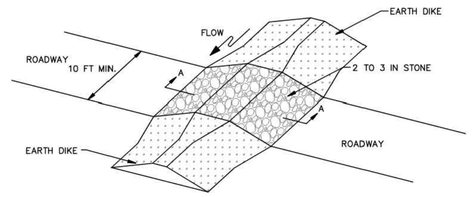
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

C.5

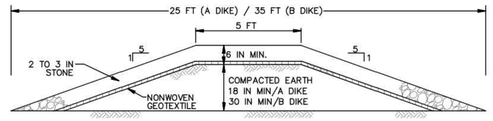
1 DETAIL EARTH DIKE
NOT TO SCALE

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL: MB



ISOMETRIC VIEW



SECTION A–A

CONSTRUCTION SPECIFICATIONS

1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

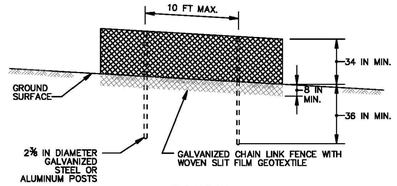
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

C.24

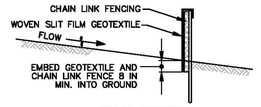
2 DETAIL MOUNTABLE BERM
NOT TO SCALE

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



ELEVATION



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

3 DETAIL SUPER SILT FENCE
NOT TO SCALE

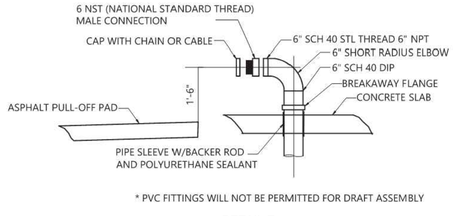
NOTES:
1. A VERIFICATION OF SITE STAKING AND LAYOUT SHALL BE CONDUCTED PRIOR TO EXCAVATION.
2. ALL EXCAVATION, BACKFILL, AND COVER SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. DIMENSIONS AND DETAILS SHOWN ARE FOR REFERENCE AND SHALL NOT SUPERSEDE MANUFACTURER'S REQUIREMENTS. EXCAVATION DEPTH SHALL BE DETERMINED BY SITE CONDITIONS AND MANUFACTURER'S SPECIFICATIONS. SHORE AS NECESSARY. ELEVATIONS SHOWN IN TABLE 2 REPRESENT THE MAXIMUM ALLOWABLE CONDITION FOR PROPER TANK OPERATION AND SHALL NOT BE EXCEEDED.
3. ALL WORK SHALL BE COMPLETED IN A TIMELY AND WORKMANLIKE MANNER. ALL WORK SHALL CONFORM TO APPLICABLE CODES AND STANDARDS.
4. EXCAVATION AND SITE WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE AND CURRENT OSHA AND MOSHA REGULATIONS.
5. PRESSURE TEST PROCEDURES SHALL BE PERFORMED BY THE INSTALLER PRIOR TO AND AFTER INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
6. AN OPERATIONAL TEST SHALL BE CONDUCTED AFTER INSTALLATION PER THE SPECIFICATIONS.
7. ALL STEEL PIPING BELOW GRADE SHALL BE WRAPPED AND COATED WITH AN APPROVED MATERIAL TO PREVENT CORROSION.
8. ALL STEEL AND PVC PIPE AND FITTINGS ABOVE GRADE SHALL BE PAINTED WITH EXTERIOR ENAMEL. UNLESS OTHERWISE SPECIFIED, COLOR YELLOW.
9. INSTALLER SHALL RETURN SITE TO ORIGINAL CONDITION AFTER FINAL TESTING, INCLUDING BUT NOT LIMITED TO FINE GRADING, SEEDING, MULCHING AND GENERAL CLEANUP.
10. DISTANCE FROM THE CENTERLINE OF THE DRAFT FITTING SHALL BE 7' 0" OR LESS TO THE EDGE OF THE ROADWAY OR PULLOFF. THIS DIMENSION SHALL APPLY TO BOTH -1 AND -2 CONFIGURATIONS.
11. WATER LEVEL INDICATOR ON THE VENT ASSEMBLY SHALL BE ORIENTED TOWARD THE ACCESS AREA OR PULLOFF FOR VISIBILITY.
12. INSTALL POST AND DOT R7 STYLE NO PARKING SIGN. TOP OF POST SHALL BE 7' ABOVE GRADE.
13. UNLESS OTHERWISE SPECIFIED, 4" DIA. CONCRETE FILLED PIPE BOLLARDS SHALL BE PLACED AS SHOWN TO PROTECT FITTINGS NEAR TRAFFIC AREAS. BOLLARDS SHALL BE PAINTED FOR HIGH VISIBILITY. PLACE BOLLARDS 12" FROM EDGES OF CONCRETE SLAB AND NO DEEPER THAN 1/2 DEPTH OF FILL OVER TANK.
14. VARIATION IN FITTING LOCATIONS OF UP TO 10" FROM DIMENSIONS SHOWN ARE ALLOWABLE IN TANKS FROM DIFFERENT VENDORS. SECTION NUMBERS USED WILL BE THE SAME, THE BASIC CONFIGURATION AND CRITICAL DIMENSIONS SHALL BE MAINTAINED. OTHER VARIATIONS OR SPECIAL FEATURES SHALL BE REVIEWED AND APPROVED BY THE DESIGN ACTIVITY PRIOR TO INSTALLATION.
15. MANWAY EXTENSION SHALL BE ADJUSTED FOR HEIGHT TO PLACE THE TOP OF BOLT COVER WITHIN AND NO LOWER THAN THE BOTTOM OF THE MANHOLE FRAME.

TABLE 1 - FITTING SCHEDULE

FITTING	SPECIFICATION	-1 CENTER DRAFT SECTION	-1 CENTER DRAFT OFFSET	-2 END DRAFT SECTION	-2 END DRAFT OFFSET
DRAFT	6" NST FULL COUPLING	16	20' - 7 3/4"	1	0'-0"
FILL	4" NST HALF COUPLING	6	6' - 10 1/2"	6	6' - 10 1/2"
VENT	10" CLASS 150 FLANGE	10	12' - 4 1/2"	10	12' - 4 1/2"
MANWAY	32" MANWAY, EXTENSION, 4" NPT COUPLING AND PLUG	12/13	15' - 9 3/4"	12/13	15' - 9 1/2"

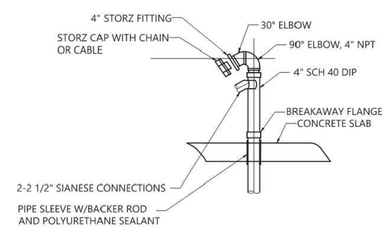
TABLE 2 - ELEVATIONS

ELEVATION	DESCRIPTION
15' - 0" MAX	DRAFT PIPE CENTERLINE
13' - 0"	TOP OF SLAB
0	BOTTOM OF TANK
-10"	BOTTOM OF EXCAVATION

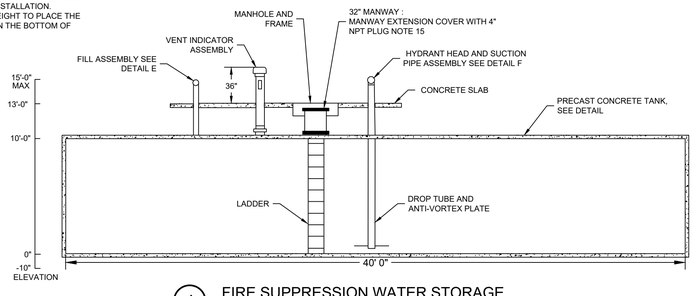


* PVC FITTINGS WILL NOT BE PERMITTED FOR DRAFT ASSEMBLY

DETAIL E
FILL PIPE ASSEMBLY

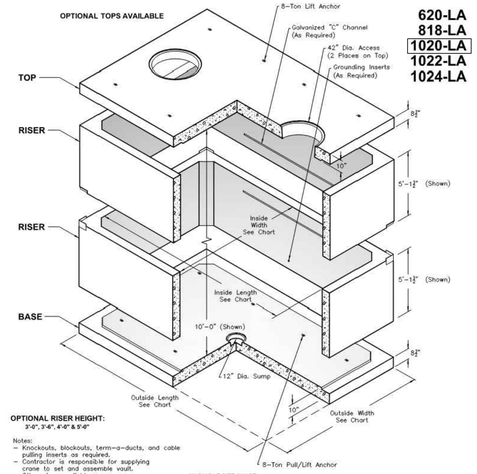


DETAIL F
HYDRANT HEAD ASSEMBLY



4 FIRE SUPPRESSION WATER STORAGE TANK DETAIL (30,000 GAL)
NOT TO SCALE

LARGE SECTIONAL VAULT



OPTIONAL RISER HEIGHT:
3'-0", 3'-6", 4'-0" & 5'-0"

Notes:
- Knockouts, blockouts, term–a–ducts, and cable pulling inserts as required.
- Contractor is responsible for supplying crane to set and assemble vault.
- Other sizes available.

VARIABLE SIZE CHART

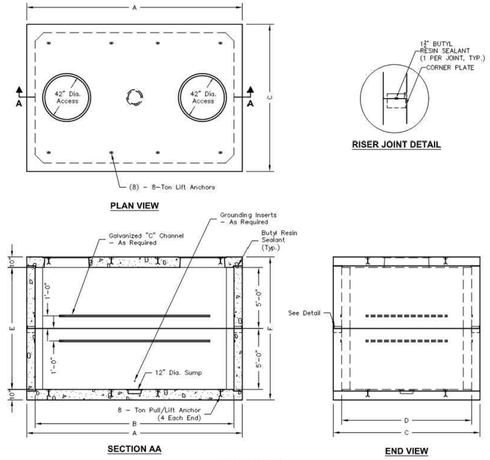
Vault No.	Inside Width	Inside Length	Outside Width	Outside Length	Base No.	Base Weight	Riser No.	Riser Weight	Top No.	Top Weight
620-LA-10	6'–0"	20'–0"	7'–4"	21'–4"	620–B	22,600 lbs.	620–R–60"	28,150 lbs.	620–T–42EE	19,760 lbs.
818-LA-10	8'–0"	18'–0"	9'–4"	19'–4"	818–B	26,200 lbs.	818–R–60"	28,150 lbs.	818–T–42EE	23,350 lbs.
1020-LA-10	10'–0"	40'-0"	11'–4"	41'-4"	1020–B	35,290 lbs.	1020–R–60"	32,800 lbs.	1020–T–42EE	32,460 lbs.
1022-LA-10	10'–0"	22'–0"	11'–4"	23'–4"	1022–B	38,620 lbs.	1022–R–60"	33,300 lbs.	1022–T–42EE	35,770 lbs.
1024-LA-10	10'–0"	24'–0"	11'–4"	25'–4"	1024–B	41,960 lbs.	1024–R–60"	36,350 lbs.	1024–T–42EE	39,110 lbs.

Note: Designed for 0 to 2'–0" of Cover

Oldcastle Precast®	SECTIONAL VAULT	SECTIONAL VAULT - SIZE AS REQUIRED - WATER MODIFIED
PO Box 323, Wilsonville, Oregon 97070-0323 Tel: (503) 682-2844 Fax: (503) 682-2657	File Name: 020-LG-SECTIONAL Issue Date: 2016 oldcastleprecast.com/wilsonville	

5 DETAIL FIRE SUPPRESSION TANK DETAIL
NOT TO SCALE

LARGE SECTIONAL VAULT



VARIABLE SIZE CHART

Vault No.	A	B	C	D	E	F
620-LA-10	21'–4"	20'–0"	7'–4"	6'–0"	10'–0"	11'–8"
818-LA-10	19'–4"	18'–0"	9'–4"	8'–0"	10'–0"	11'–8"
1020-LA-10	41'-4"	40'-0"	11'–4"	10'–0"	10'–0"	11'–8"
1022-LA-10	23'–4"	22'–0"	11'–4"	10'–0"	10'–0"	11'–8"
1024-LA-10	25'–4"	24'–0"	11'–4"	10'–0"	10'–0"	11'–8"

Oldcastle Precast®	SECTIONAL VAULT	SECTIONAL VAULT - SIZE AS REQUIRED - WATER MODIFIED
PO Box 323, Wilsonville, Oregon 97070-0323 Tel: (503) 682-2844 Fax: (503) 682-2657	File Name: 020-LG-SECTIONAL Issue Date: 2016 oldcastleprecast.com/wilsonville	

6 DETAIL FIRE SUPPRESSION TANK SECTION
NOT TO SCALE

ARM Group LLC
Engineers and Scientists
www.armgroup.net

No.	Revision	Date	By
0	ISSUED FOR CONCEPT SWM REVIEW	06/18/2024	ARM

scale: AS NOTED
date: 07/29/2024
project no.: 23010892
designed: CDW
checked: KJM
drawn: CDW
graphic scale:

PROPOSED SITE DETAILS
CONCEPT STORMWATER PLAN
DICKERSON
MONTGOMERY COUNTY, MARYLAND

project title: SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF LLC

drawing title:

Sheet 6

P:\Albums\Project 23010892\Sugarloaf Dwg Production\Concept Plan\23010892-SMP_Details.dwg Plotted: July 30, 2024

Attachment B

PRELIMINARY FOREST CONSERVATION PLAN

SUGARLOAF 4.0 MW AC SOLAR PROJECT

DICKERSON, MONTGOMERY COUNTY, MARYLAND

OCT 2024

LIST OF SHEETS

ENVIRONMENTAL NOTES:

1. THE FOREST STAND DELINEATION WAS CONDUCTED ON SEPTEMBER 29, 2023, BY MICHELLE S. COHEN, QUALIFIED PROFESSIONAL, AND DETERMINED THAT THERE WERE NO FOREST STANDS, SPECIMEN TREES OR CHAMPION TREES PRESENT WITHIN THE PROJECT AREA. A DIAMETER TAPE WAS USED TO MEASURE THE DIAMETER OF THE TREES. NRI #420250100 WAS APPROVED ON 09/16/2024.
2. FOREST CONSERVATION PLAN WAS PREPARED BY MICHELLE S. COHEN, QUALIFIED PROFESSIONAL.
3. WETLANDS AND OTHER SURFACE WATERS WERE DELINEATED BY ARM GROUP LLC ON JULY 13, 2023 FOR THE PROJECT AREA (+21.6 AC). NO WETLANDS OR STREAMS WERE IDENTIFIED WITHIN THE PROJECT AREA. NO MARYLAND SPECIAL STATE CONCERN WETLANDS ARE MAPPED IN THE PROJECT AREA.
4. SIGNIFICANT (>24") AND SPECIMEN TREES ARE PRESENT IN THE WOODLOT TO THE NORTH AND SOUTHWEST OF THE PROJECT AREA. THESE TREE LOCATIONS WERE LOCATED ON AUGUST 6, 2024. HOWEVER, ANY CRITICAL ROOT ZONE LIMITS ARE WITHIN THE FORESTED TREELINE AND ARE AVOIDED.
5. THE PURPOSE OF THIS PROJECT IS FOR THE INSTALLATION OF A COMMUNITY SOLAR ENERGY SYSTEM WITHIN AN AGRICULTURAL RESERVE AREA. APPROXIMATELY 6.31 ACRES WILL REMAIN IN AGRICULTURAL LAND USE.
6. THE PROJECT IS WITHIN THE LITTLE MONOCACY RIVER, WHICH FLOWS TO THE CHESAPEAKE BAY VIA THE POTOMAC RIVER. THE PROJECT IS WITHIN THE MIDDLE POTOMAC-CATOCTIN WATERSHED (HYDROLOGIC, UNIT CODE, HUC 02070008, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY). ACCORDING TO CODE OF MARYLAND REGULATIONS (COMAR) 26.08.02.08, LITTLE MONOCACY RIVER HAS A USE OF CLASS I-P - WATER CONTACT RECREATION, PROTECTION OF AQUATIC LIFE, AND PUBLIC WATER SUPPLY. LITTLE MONOCACY RIVER HAS NOT BEEN DESIGNATED AS A TIER II STREAM.
7. ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP PANEL NO. 24031C0135D, EFFECTIVE ON 09/29/2006, THE PROJECT IS LOCATED ENTIRELY OUT OF THE 100-YEAR FLOODPLAIN.
8. A LETTER WAS SUBMITTED ON AUGUST 22, 2023 TO THE MARYLAND DEPARTMENT OF NATURAL RESOURCES (MDNR) WILDLIFE AND HERITAGE DIVISION REQUESTING INFORMATION ON ANY KNOWN STATE LISTED, RARE, THREATENED OR ENDANGERED SPECIES KNOWN TO OCCUR WITHIN THE PROJECT AREA. A LETTER RESPONSE, DATED OCTOBER 10, 2023, WAS RECEIVED FROM MDNR, WHICH INIDICATED THERE ARE NO OFFICIAL RECORDS FOR STATE OR FEDERAL LISTED CANDIDATE, PROPOSED OR RARE PLANT OR ANIMALS SPECIES KNOWN TO THE AREA.
9. THE UNITED STATES FISH AND WILDLIFE SERVICE (USFWS) INFORMATION FOR PLANNING AND CONSULTATION GENERATED ON AUGUST 10, 2023 REVEALING A NO EFFECT DETERMINATION FOR THE NORTHERN LONG-EARED BAT, A FEDERALLY LISTED ENDANGERED SPECIES. ADDITIONALLY, THE MONARCH BUTTERFLY, A CANDIDATE SPECIES, WAS IDENTIFIED AND MEASURES FOR CONSERVATION OF SPECIES SHOULD BE CONSIDERED.
10. A LETTER WAS SUBMITTED ON AUGUST 22, 2023 TO THE MARYLAND HISTORICAL TRUST (MHT) REQUESTING INFORMATION ON ANY KNOWN HISTORICAL RESOURCES WITHIN THE PROJECT AREA. A LETTER RESPONSE, DATED SEPTEMBER 19, 2023, WAS RECEIVED FROM MHT, DETERMINING THAT THERE ARE NO HISTORIC PROPERTIES AFFECTED BY THE PROPOSED PROJECT.
11. OVERALL THE FOREST TO THE NORTH ADJACENT TO THE PROJECT AREA IS PRIMARILY CLASSIFIED AS DECIDUOUS, MIXED HARDWOOD. THE FOREST TO THE NORTH (STAND A AND STAND B) WOULD BE CONSIDERED PRIORITY AREA 1 DUE TO THE PRESENCE OF STREAMS, WETLANDS, AND FLOODPLAINS AS WELL AS ITS CONTIGUOUSNESS WITH A LARGER FOREST TRACT. THE FOREST LAND (STAND B) IS PRIMARILY COMPRISED OF TULIP POPLAR (*LIRIODENDRON TULIPIFERA*) WITH ASSOCIATED SPECIES SUCH AS PIGNUT HICKORY (*CARYA GLABRA*), BITTERNUT HICKORY (*CARYA CORDIFORMIS*), BLACK CHERRY (*PRUNUS SEROTINA*), BLACK OAK (*QUERCUS VELUTINA*), AND BLACK GUM (*NYSSA SYLVATICA*). SPECIMEN (>30") AND SIGNIFICANT (24"-29") TREES ARE PRESENT IN THE FOREST. FOREST SEEDLING RESEARCH PLOT ALONG FLOODPLAIN AND WETLAND OF LITTLE MONCACY RIVER.
12. THE NORTHEASTERN PORTION OF THE FOREST (STAND A) IS COMPRISED OF A STAND OF TULIP POLAR THAT APPEARS TO BE PART OF A RESEARCH PLOT. GREEN BRIAR (*SMILAX ROTUNDIFOLIA*), JAPANESE HONEYSUCKLE (*LONICERA JAPONICA*), MULITFLORA ROSE (*ROSA MULTIFLORA*) AND WINEBERRY (*RUBUS PHOENICOLASIUS*) ARE PRESENT ESPECIALLY ALONG THE FOREST EDGES AND BENEATH FOREST OPENINGS. SPECIMEN (>30") AND SIGNIFICANT (24"-29") TREES ARE PRESENT IN THE FOREST.
13. THE INVASIVE SPECIES OF CONCERN, ESPECIALLY MULTIFLORA ROSE, JAPANESE HONEYSUCKLE, MULTIFLORA ROSE AND WINEBERRY ARE DOMINANT SEVERAL HUNDRED FEET INTO THE FOREST FROM THE EDGE AND BENEATH FOREST OPENINGS. POISON IVY (*TOXICODENDRON RADICANS*) IS A COMMON VINE SPECIES IN THE FOREST.
14. A FORESTED FLOODPLAIN AND ASSOCIATED FORESTED WETLANDS ARE PRESENT ALONG THE LITTLE MONOCACY RIVER TO THE NORTH. OTHER FOREST RESEARCH PLOTS ARE OBSERVED IN THIS LOCATION AND CONSIST OF ASH (*FRAXINUS SP.*) SEEDLINGS.
15. THE FOREST TO THE FAR WEST (STAND C) IS NARROW AND ON A STEEP SLOPE AND CONSISTS OF THE SAME UNDERSTORY OF INVASIVE SPECIES. TREE OF HEAVEN (*AILANTHUS ALTISSIMA*) ARE PRESENT IN THIS NARROW FOREST EDGE AS WELL.
16. OVERALL, THE MAJORITY OF THE FOREST IS HEALTHY AND PROVIDES HABITAT FOR WILDLIFE. THE UNDERSTORY IS OPEN TO MODERATE IN DENSITY. SNAGS ARE PRESENT BUT DOWNED WOODY DEBRIS IS SOMEWHAT LIMITED. PLEASE NOTE, FOREST BANKING AREA IS PRESENT WITHIN THE PARCEL AND ADJACENT TO THE PROJECT.

DEVELOPER'S CERTIFICATE

The Undersigned agrees to execute all the features of the Approved Final Forest Conservation Plan No. F20250220 including, financial bonding, forest planting, maintenance, and all other applicable agreements.

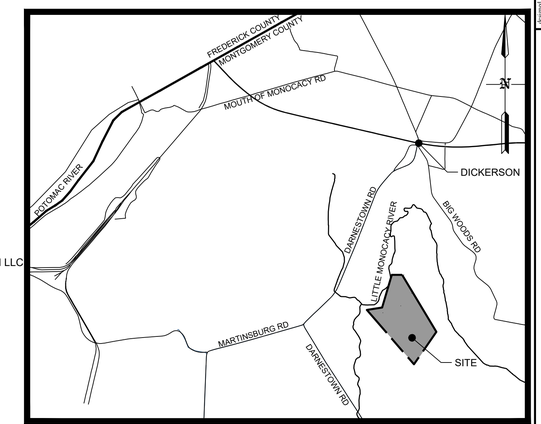
Developer's Name: CHABERTON SOLAR SUGARLOAF I LLC
Printed Company Name

Contact Person or Owner: MICHAEL DONIGER
Printed Name

Address: 1700 ROCKVILLE PIKE, SUITE 305 ROCKVILLE, MD 20852

Phone and Email: (804) 929-8418 MIKE.DONIGER@CHABERTON.COM

Signature:



Base map from the following USGS 7½ minute quadrangle: Poolesville, MD/VA dated 2023.

VICINITY MAP

SCALE: 1" = 2000'

PREPARED FOR DEVELOPER:
CHABERTON SOLAR SUGARLOAF I LLC
1700 ROCKVILLE PIKE, SUITE 305
ROCKVILLE, MD 20852
(804) 929-8418

PROPERTY OWNER:
DOUGLAS BOUCHER
20507 DARNESTOWN ROAD
DICKERSON, MD 20842

PREPARER
MICHELLE S. COHEN
ARM GROUP LLC
1129 W GOVERNOR ROAD
HERSHEY, PA 17033
(717)508-0528

PLAN PREPARER CERTIFICATE

MICHELLE S. COHEN — Michelle S. Cohen — 10/08/2024
ARM GROUP LLC — SIGNATURE — DATE
QUALIFIED PROFESSIONAL

ARM Group LLC
Engineers and Scientists
www.armgroup.net

No.	Revision	Date	By
1	SUBMITTED FOR COUNTY REVIEW	10/7/2024	ARM

scale: 1" = 100'
date: 10/7/2024
project no.: 23010892
designed: MSC
checked: MSC
drawn: SCE
graphic scale: 0 100 200 SCALE IN FEET

drawing title: COVER SHEET
PRELIMINARY FOREST CONSERVATION PLAN (F20250220)
ELECTION DISTRICT: 7 WSSC: 229NW20 TM: CV11
DICKERSON, MONTGOMERY COUNTY, MARYLAND

project title: SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF I LLC

Sheet 1

Sheet 2

drawing title
FUTURE APPROVALS
PRELIMINARY FOREST CONSERVATION PLAN (F20250220)

project title
SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF I LLC

ELECTION DISTRICT: 7 WSSC: 229NW20 TM: CV11
DICKERSON,
MONTGOMERY COUNTY, MARYLAND

designed	MSC
checked	MSC
drawn	SCE
graphic scale	0 100 200 300 SCALE IN FEET
scale	1" = 100'
date	10/7/2024
project no.	23010892

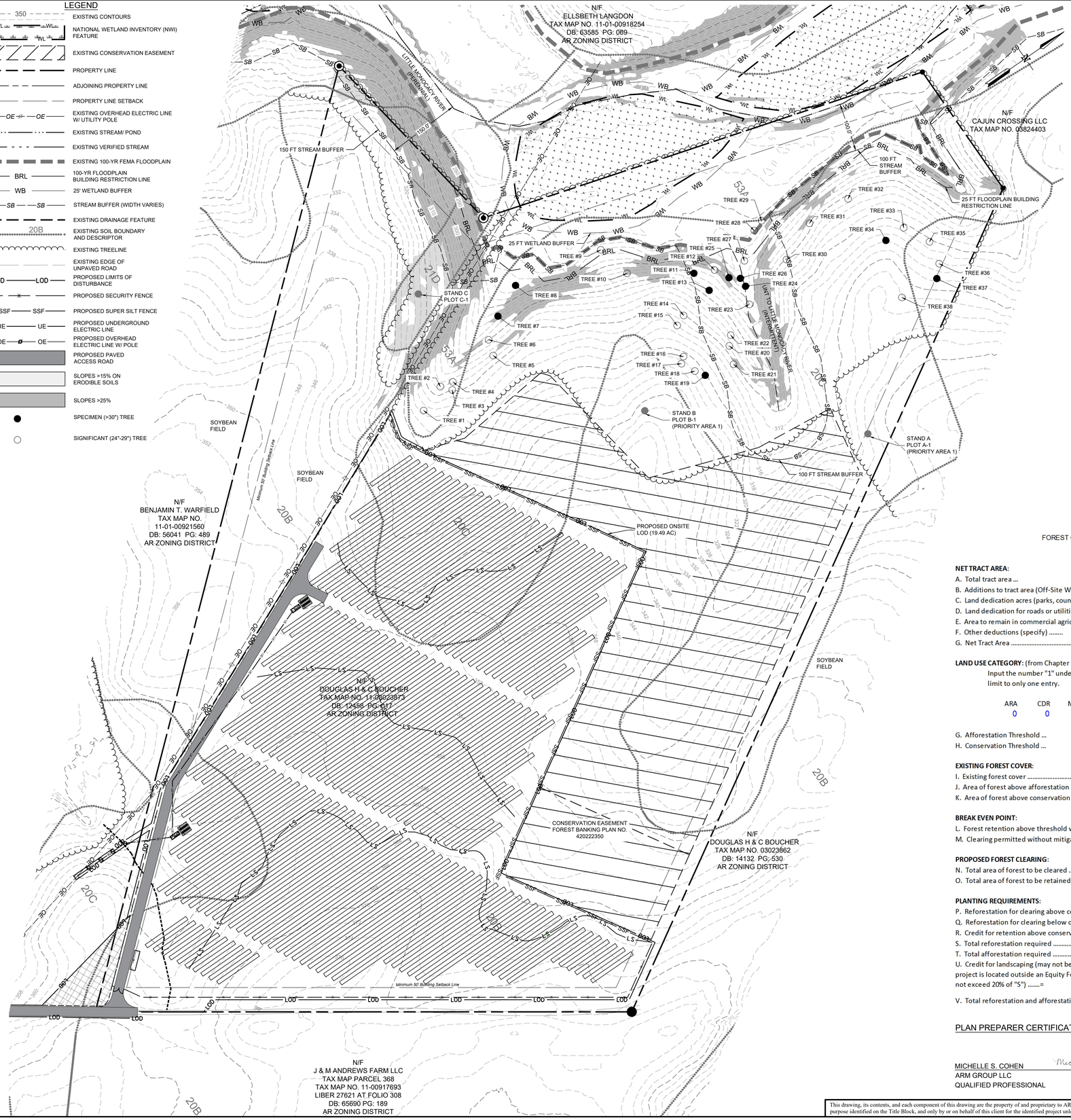
No.	Revision	Date	By
1	SUBMITTED FOR COUNTY REVIEW	10/7/2024	ARM

ARM Group LLC
Engineers and Scientists
www.armgroup.net

Tree #	Species (Scientific Name)	Species (Common Name)	Diameter at breast (dbh)	Health
1	*Platanus occidentalis*	American Sycamore	29''	Fair
2	*Cary glabra*	Pignut Hickory	25''	Good
3	*Cary glabra*	Pignut Hickory	26''	Fair
4	*Platanus occidentalis*	American Sycamore	29''	Fair
5	*Platanus occidentalis*	American Sycamore	26''	Fair
6	*Platanus occidentalis*	American Sycamore	26''	Good
7	*Cary glabra*	Pignut Hickory	32''	Good
8	*Liriodendron tulipifera*	Tulip Tree	40''	Good
9	*Liriodendron tulipifera*	Tulip Tree	25''	Good
10	*Liriodendron tulipifera*	Tulip Tree	29''	Good
11	*Liriodendron tulipifera*	Tulip Tree	30''	Good
12	*Fagus grandifolia*	American Beech	26''	Good
13	*Liriodendron tulipifera*	Tulip Tree	32''	Good
14	*Liriodendron tulipifera*	Tulip Tree	27''	Good
15	*Liriodendron tulipifera*	Tulip Tree	25''	Good
16	*Liriodendron tulipifera*	Tulip Tree	26''	Good
17	*Liriodendron tulipifera*	Tulip Tree	26''	Good
18	*Liriodendron tulipifera*	Tulip Tree	29.5''	Good
19	*Liriodendron tulipifera*	Tulip Tree	32''	Good
20	*Liriodendron tulipifera*	Tulip Tree	27''	Good
21	*Liriodendron tulipifera*	Tulip Tree	28''	Good
22	*Liriodendron tulipifera*	Tulip Tree	27''	Good
23	*Liriodendron tulipifera*	Tulip Tree	26''	Good
24	*Liriodendron tulipifera*	Tulip Tree	31''	Good
25	*Liriodendron tulipifera*	Tulip Tree	32''	Fair
26	*Platanus occidentalis*	American Sycamore	30''	Good
27	*Platanus occidentalis*	American Sycamore	27''	Good
28	*Liriodendron tulipifera*	Tulip Tree	27''	Fair
29	*Liriodendron tulipifera*	Tulip Tree	28''	Fair
30	*Liriodendron tulipifera*	Tulip Tree	27.5''	Fair
31	*Liriodendron tulipifera*	Tulip Tree	26''	Good
32	*Liriodendron tulipifera*	Tulip Tree	24''	Good
33	*Liriodendron tulipifera*	Tulip Tree	25''	Good
34	*Quercus rubra*	Red Oak	30''	Good
35	*Liriodendron tulipifera*	Tulip Tree	26''	Good
36	*Quercus rubra*	Red Oak	26''	Good
37	*Quercus rubra*	Red Oak	34''	Fair
38	*Quercus rubra*	Red Oak	28''	Fair

LEGEND

- EXISTING CONTOURS
- NATIONAL WETLAND INVENTORY (NWI) FEATURE
- EXISTING CONSERVATION EASEMENT
- PROPERTY LINE
- ADJOINING PROPERTY LINE
- PROPERTY LINE SETBACK
- EXISTING OVERHEAD ELECTRIC LINE W/ UTILITY POLE
- EXISTING STREAM/ POND
- EXISTING VERIFIED STREAM
- EXISTING 100-YR FEMA FLOODPLAIN
- 100-YR FLOODPLAIN BUILDING RESTRICTION LINE
- 25' WETLAND BUFFER
- STREAM BUFFER (WIDTH VARIES)
- EXISTING DRAINAGE FEATURE
- EXISTING SOIL BOUNDARY AND DESCRIPTOR
- EXISTING TREELINE
- EXISTING EDGE OF UNPAVED ROAD
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED SECURITY FENCE
- PROPOSED SUPER SILT FENCE
- PROPOSED UNDERGROUND ELECTRIC LINE
- PROPOSED OVERHEAD ELECTRIC LINE W/ POLE
- PROPOSED PAVED ACCESS ROAD
- SLOPES >15% ON ERODIBLE SOILS
- SLOPES >25%
- SPECIMEN (>30") TREE
- SIGNIFICANT (24"-29") TREE



SOILS LEGEND				
SYMBOL	DESCRIPTION (FARMLAND TYPE)	HSG	AREA OF PARCEL	% OF PARCEL
20B	BRENTSVILLE SANDY LOAM, 3 TO 8 PERCENT SLOPES (ALL AREAS ARE PRIME FARMLAND)	C	29.0	55.1
20C	BRENTSVILLE SANDY LOAM, 8 TO 15 PERCENT SLOPES (NOT PRIME FARMLAND	C	19.6	37.3
21C	PENN SILT LOAM, 8 TO 15 PERCENT SLOPES (FARMLAND OF STATEWIDE IMPORTANCE)	B	0.1	0.1
21D**	PENN SILT LOAM, 15 TO 25 PERCENT SLOPES (NOT PRIME FARMLAND)	B	0.7	1.3
53A	CODORUS SILT LOAM, 0 TO 3 PERCENT SLOPES (NOT PRIME FARMLAND)	C	3.3	6.3
		TOTAL	52.7	100.0

NOTES:

*HYDRIC SOIL TYPE

**HIGHLY ERODIBLE SOIL (PER "GUIDELINES FOR ENVIRONMENTAL MANAGEMENT OF DEVELOPMENT IN MONTGOMERY COUNTY (2021)"

HSG: HYDROLOGIC SOIL GROUP

1. SOIL BOUNDARIES AND INFORMATION OBTAINED FROM NRCS WEB SOIL SURVEY.

NATURAL RESOURCE INVENTORY INFORMATION :

1. GROSS TRACT AREA (PROPERTY): 2,284,997 SF (52.46 AC)
2. NET TRACT AREA: 2,009,989 SF (46.15 AC)
3. EXISTING AREA TO REMAIN IN AGRICULTURE: 275,008 SF (6.31 AC)
4. AREA OF FOREST CONSERVATION REQUIRED: 0.00 AC
5. PROPOSED AREA OF FOREST CONSERVATION (ON-SITE / OFF-SITE): 0.00 AC
6. PLANTING REQUIREMENT: IN ACCORDANCE WITH MARYLAND NATURAL RESOURCES ARTICLE SECTION 5-1606(a)(6) (SEE MARYLAND SENATE BILL 526, 2023 AND HOUSE BILL 1511, 2024), AFFORESTATION PLANTING REQUIREMENTS ARE NOT APPLICABLE.
7. EXISTING LAND USE: AGRICULTURAL
8. ZONING: AGRICULTURAL RESERVE
9. INTENDED LAND USE: COMMUNITY SOLAR ENERGY GENERATING SYSTEM
10. PROJECT LOCATION:
    - 10.1. ADDRESS: 20597 DARNESTOWN ROAD, DICKERSON, MD 20842
    - 10.2. TAX MAP: CV12, GRID: 0000, PARCEL NUMBER: P944
    - 10.3. TAX ID NUMBER: 3023873
    - 10.4. LATITUDE 30.2080°N AND LONGITUDE -77.4233°W (NORTH AMERICAN DATUM NAD83)
11. CRITICAL AREA: NOT APPLICABLE, CHESAPEAKE AND ATLANTIC COASTAL BAY CRITICAL AREAS ARE NOT LOCATED WITHIN THE PROPERTY VICINITY.
12. THIS PROJECT IS NOT WITHIN ANY SPECIAL PROTECTION AREAS OR PRIMARY MANAGEMENT AREAS.
13. SLOPES GREATER THAN 15% DO NOT OCCUR WITHIN THE PROJECT AREA.
14. FOREST STAND A IS APPROXIMATELY 0.70 AC
15. FOREST STAND B IS APPROXIMATELY 13.44 AC
16. FOREST STAND C IS APPROXIMATELY 1.49 AC

RESOURCE DATA TABLE	
RESOURCE	SIZE
TOTAL TRACT AREA	52.46 AC
FOREST	15.63 AC
WETLANDS	0.62 AC
FORESTED WETLANDS	0.62 AC
FLOODPLAIN	3.11 AC
FORESTED FLOODPLAIN	3.11 AC
STREAM BUFFER	5.99 AC
FORESTED STREAM BUFFER	5.73 AC

FOREST CONSERVATION WORKSHEET
Sugarloaf Solar Project

NET TRACT AREA:

A.	Total tract area ...	52.74
B.	Additions to tract area (Off-Site Work, etc.; construction required by this plan)...	0.00
C.	Land dedication acres (parks, county facility, etc.) ...	0.00
D.	Land dedication for roads or utilities (construction not required by this plan) ...	0.00
E.	Area to remain in commercial agricultural production/use ...	6.31
F.	Other deductions (specify)	0.00
G.	Net Tract Area .....=	46.43

LAND USE CATEGORY: (from Chapter 22A-3. Definitions)
Input the number "1" under the appropriate land use, limit to only one entry.

ARA	CDR	MDR	IDA	HDR	MPD	CIA
0	0	0	0	0	0	1

G.	Afforestation Threshold ...	15%	x G =	6.96
H.	Conservation Threshold ...	15%	x G =	6.96

EXISTING FOREST COVER:

I.	Existing forest cover .....=	15.63
J.	Area of forest above afforestation threshold .....=	8.67
K.	Area of forest above conservation threshold .....=	8.67

BREAK EVEN POINT:

L.	Forest retention above threshold with no mitigation ....=	8.70
M.	Clearing permitted without mitigation .....=	6.93

PROPOSED FOREST CLEARING:

N.	Total area of forest to be cleared .....=	0.00
O.	Total area of forest to be retained .....=	15.63

PLANTING REQUIREMENTS:

P.	Reforestation for clearing above conservation threshold ....=	0.00
Q.	Reforestation for clearing below conservation threshold ....=	0.00
R.	Credit for retention above conservation threshold .....=	8.67
S.	Total reforestation required .....=	0.00
T.	Total afforestation required .....=	0.00
U.	Credit for landscaping (may not be used to meet reforestation requirement if project is located outside an Equity Focus Area (EFA). For projects within EFA, may not exceed 20% of "S") .....=	0.00
V.	Total reforestation and afforestation required .....=	**0.00**

worksheet date 4/3/2023

PLAN PREPARER CERTIFICATE

MICHELLE S. COHEN — Michelle S. Cohen — 10/08/2024
ARM GROUP LLC — SIGNATURE — DATE
QUALIFIED PROFESSIONAL

ARM Group LLC
Engineers and Scientists
www.armgroup.net

No.	Revision	Date	By
1	SUBMITTED FOR COUNTY REVIEW	10/7/2024	ARM

scale: 1" = 100'
date: 10/7/2024
project no.: 23010892
designed: MSC
checked: MSC
drawn: SCE
graphic scale: 0 100 200 400 SCALE IN FEET

FOREST CONSERVATION PLAN
PRELIMINARY FOREST CONSERVATION PLAN (F20250220)
ELECTION DISTRICT: 7 WSSC: 229NW20 TM: CV11
DICKERSON,
MONTGOMERY COUNTY, MARYLAND

project title: SUGARLOAF SOLAR PROJECT
CHABERTON SOLAR SUGARLOAF I LLC

drawing title:

Sheet 3

F:\Libraries\Projects\23010892\Sugarloaf\Dwg\Checkset\FCP & FSD\23010892-SMU_FCP Planting Period October 2024

Attachment C

From: Butler, Patrick
To: Yearwood, Nkosi; Beall, Mark; Penn, Joshua
Subject: FW: The solar in the Reserve proposal before the Board
Date: Wednesday, December 11, 2024 12:07:56 PM

FYI.

From: Royce Hanson <oldroyce31@gmail.com>
Sent: Tuesday, September 17, 2024 3:09 PM
To: Harris, Artie <Artie.Harris@mncppc-mc.org>
Subject: The solar in the Reserve proposal before the Board

Dear Artie,

I try to avoid commenting on cases before the Planning Board, but the recent action on the mandatory referral for the Chaberton Solar Sugarloaf application caught my attention. I thought the staff report was thorough and its recommendation was logical and appropriate. I was, therefore, surprised that the Board deferred action to give the applicant an opportunity to determine if the site could be planted with pollinators, and if so, the board was inclined to approve it, rejecting the staff recommendation.

I sincerely hope the board will reconsider its inclination to allow this "pig in the parlor"--a classic example of the right thing in the wrong place. So, in addition to endorsing the staff recommendation, I offer some additional context and reasons why, even if pollinator plants are added on this site, the Board should recommend against approval of the project by the Public Service Commission.

First,The Agricultural Reserve is a fundamental and essential element of the comprehensive "Wedges and Corridors" Plan of 1969 and the General "Thrive" Plan of 2022.The 1980 Functional Master Plan for the Preservation of Agriculture and Rural Open Space (AROS), the AR Zone, and Transferable Development Rights Easements have protected the Reserve as a working landscape for 44 years and as a distinctive feature of the pattern of development and quality of life in Montgomery County. The Reserve is regarded in planning and agricultural literature as the outstanding model of farmland protection within a metropolitan area. Its most outstanding feature is its success. Today, 583 farms on over 70,000 acres flourish in the Reserve compared with a total 77 farms on 3600 acres in all of Fairfax County. The Reserve serves as a model for other areas across the country. In 2017 the American Planning Association (APA) designated the Agricultural Reserve a Planning Landmark. It is the most distinctive feature of Montgomery County, identifiable from a satellite

Second, the Planning Board is the primary public steward of the Reserve because of its central role as guardian of the General Plan, and for its responsibility to guide development and land use in consistency with plans. In that regard, both the AROS plan and the zoning ordinance specify that

agriculture is the primary use of land in the Reserve. The Reserve has been sustained because the Planning Board has protected it by opposing measures that could fragment the farming landscape with incompatible industrial, business, and residential uses.

Third, recognizing the potential of solar energy in the future of the county and, especially, of farming, the AR Zone was recently amended to accommodate solar facilities by allowing on-site solar to generate 200 percent of of need to encourage on-farm installations, enhancing the income of farmers. The amdnemnt also provided for installation of communitiy-scaled systems as conditional uses on non-prime (class 3) soils.

Fourth, the solar proposal under review by the Board meets neither the statutory requirement of consistency with the General Plan nor the AR zone as recently amended to accommodate solar in the Reserve. The statute--MD Land Use Code § 1-303 (2023)—requires that land use major actions, of which this clearly is one, if located outside a Priority Funding Area such as the Reserve, "will further and not be contrary to (1) policies; . . . (5) development patterns; (6) land uses" contained in the comprehensive plan.
The Chaberton project is solely an industrial use, Even with pollinate plants, the primary land use is industrial. It would, especially if replicated once the plan is broken, fragment agrciultural uses country to the policy of maintaining a critical mass of contiguous farms, and breaks the development pattern of the Reserve. It is proposed for prime soils, contrary to the zoning ordinance—even as a conditional use. One other factor should also be considered: Solar "farms" are not farms. They offer a financial incentive to place a nonagricultural use on farm land. We are not making more prime soil land.

Fifth, there are better places, including in the Reserve, to locate large solar complexes. Parking lots and garages, with which the county is richly endowed, offer many opportunities. Perhaps the best place for solar arrays is in the rights-of-way of high voltage transmission lines, which comprise hundreds of acres that are already dedicated to energy production. So long as there are better places, there is no excuse for messing with a good thing.

Finally, there is a moral constraint that should apply in a case where the discretion of the Public Service Commission is broad. An achievement such as the Montgomery County Agricultural Reserve is exceptional in a nation in which metropolitan sprawl and indiscriminate consumption of farmland has been largely unconstrained. The problem with essentially obliterating the opportunity for farming on a large tract of scarce farmland is that it not only tends to fragment the critical mass of farmland that helps keep farming viable, it reawakens the impermanence syndrome that discourages farming for other opportunities. Forty-four years have now been invested in the preservation of agriculture in Montgomery County at considerable private and public investment. It cannot be sustained if the land is preempted for other uses when there is no need to do it and other, better places are available for us to have both clean energy and local food. Things that are easy to do but difficult if not impossible to undo should not be done, especially when the risk is high and the benefit slight or negligible.

Sincerely,

Royce

Attachment D

chaberton ENERGY

Chaberton Solar Sugarloaf
Chaberton Solar Ramiere

FARMING REQUEST FOR PROPOSALS

DECEMBER 2, 2024

DRAFT

Table of Contents

1. Introduction and Background

About Chaberton
Chaberton Solar Sugarloaf ("Sugarloaf") and Chaberton Solar Ramiere ("Ramiere" or collectively, the "Projects") are solar projects developed by Chaberton Energy designed to incorporate agricultural activities alongside the solar panels as more fully described in this Request for Proposal ("RFP").

Chaberton Energy ("Chaberton") is a public benefit corporation headquartered in Maryland, dedicated to advancing sustainable infrastructure and renewable energy solutions. As a leader in community solar, Chaberton is committed to creating innovative projects that harmonize environmental stewardship with economic resilience. Our mission is to provide clean energy solutions that benefit local communities, landowners, and agricultural partners.

About Okovate
Okovate Sustainable Energy is a minority-owned and -operated Maryland-based firm that designs, develops, and consults on community solar projects that work in harmony with farming operations, accelerating the deployment of agrivoltaics. Okovate partners with a Stanford-backed group, Fundusol, that provides co-location modeling outputs and employed machine-learning algorithms and optimization techniques to balance system configurations, crop biomass, animal productivity, and array spacing to strengthen Okovate's data-driven recommendations for agricultural strategies.

Objective
The goal of this RFP is to identify qualified farmers to lease 28.5 acres at our Sugarloaf and Ramiere solar sites, with a focus on supporting new, beginning, and historically underserved farmers. By providing access to land and infrastructure, we aim to help established and/or new / growing local farm businesses while encouraging sustainable and innovative agricultural practices. Given the combination of agricultural and solar/photovoltaics (commonly referred to as agrivoltaics) is new, Chaberton is interested in proposals that result in proof of concept to enable future projects that combine agricultural and solar aspects in new ways or prepare for larger scale agrivoltaics than represented by these Projects.

Based on research by Okovate, attached as Appendix A, proposals are specifically invited for activities such as crop production, rotational grazing, and pollinator-friendly beekeeping, showcasing how renewable energy and agriculture can coexist harmoniously.

Together, we aspire to create a sustainable future for Maryland's farmland, farmers, and rural communities.

About the Sites

The Sugarloaf and Ramiere projects in Montgomery County, Maryland feature high-quality soils and are designed to support grazing, table crops, and pollinator habitats. Elevated and spaced solar arrays create a unique microclimate that reduces water use, enhances soil health, and provides crop protection.

Opportunity for Farmers

This RFP provides farmers access to land without lease costs, and the chance to participate in Montgomery County's first agrivoltaics projects. These cutting-edge Projects align with Maryland's renewable energy and agricultural sustainability goals and are being developed in consultation with Montgomery County Office of Agriculture and the Maryland Department of Agriculture. Selected farmers will collaborate with one or both Projects to develop tailored farm plans that integrate their expertise with the solar infrastructure.

Farmers also have access to the site-specific study produced by Okovate as an additional resource. The intent is to award multi-year contracts to selected famer(s). Additionally, the Projects may also entertain assisting in start-up or on-going costs for particularly innovative or "pilot" type solutions. Proposals should outline the opportunity and provide economic references as to the type and magnitude of assistance requested.

Release Date:	TBD; anticipated Spring 2025 following regulatory approvals
Site Visits:	TBD; within 45 days of RFP release
Proposals Due:	TBD; within 90 days of RFP release
Awardees Notified:	TBD; expected within 60 days of proposals submitted
Commence Agricultural Activities:	TBD; expected within 60 days of completion of construction (likely Summer 2026)

2. Site Overview

Location and Description

Both Projects are in the agricultural reserve in Montgomery County, MD. They are located just 8.3 miles (10 minutes) apart. While we prefer to lease the sites together, we are open to proposals for individual sites. Of note, successful farmers may be afforded the opportunity to expand to additional Chaberton project sites over time.

Sugarloaf: Located at 20507 Darnestown Road, Dickerson, MD, this site spans 19 acres, with 16 acres covered by the solar array and a 3-acre buffer zone. Approximately 10 acres of in-between-row land and a total of 13 arable acres are available for agricultural use. This is a single-axis tracker system, meaning the panels move with the sun throughout the day. The project abuts an area recently afforested to the north and east (shown with cross hatches). The field is currently in rotational crop farming (e.g., soy, corn, etc). The panels are planned to be mounted at varying heights above the ground which may be of interest to determine the optimal panel height for certain crops, for instance. Additionally, a limited area can be made available with double the interrow spacing. Which again may be of interest for collecting data on crop harvesting.

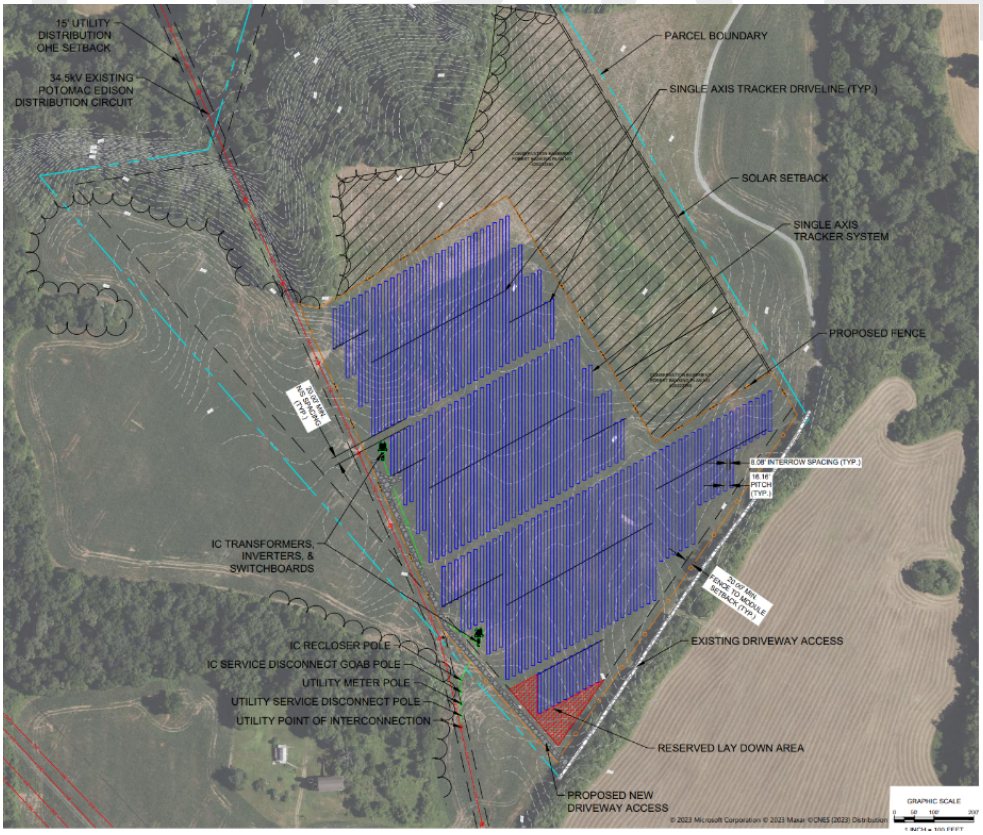


Figure 1: Sugarloaf site design

Ramiere: Situated at 17600 Whites Ferry Road, Poolesville, MD, this site covers 11 acres, with 8 acres under the solar array and a 2-acre buffer zone. It offers 5 acres of in-between-row farmable land, totaling 7 arable acres. This is a fixed-tilt system, meaning that the panels do not move with the sun. At this site, the height above ground will remain fairly constant; however, a limited area can be made available with double the interrow spacing. The field is currently in rotational crop farming (e.g., soy, corn, etc).

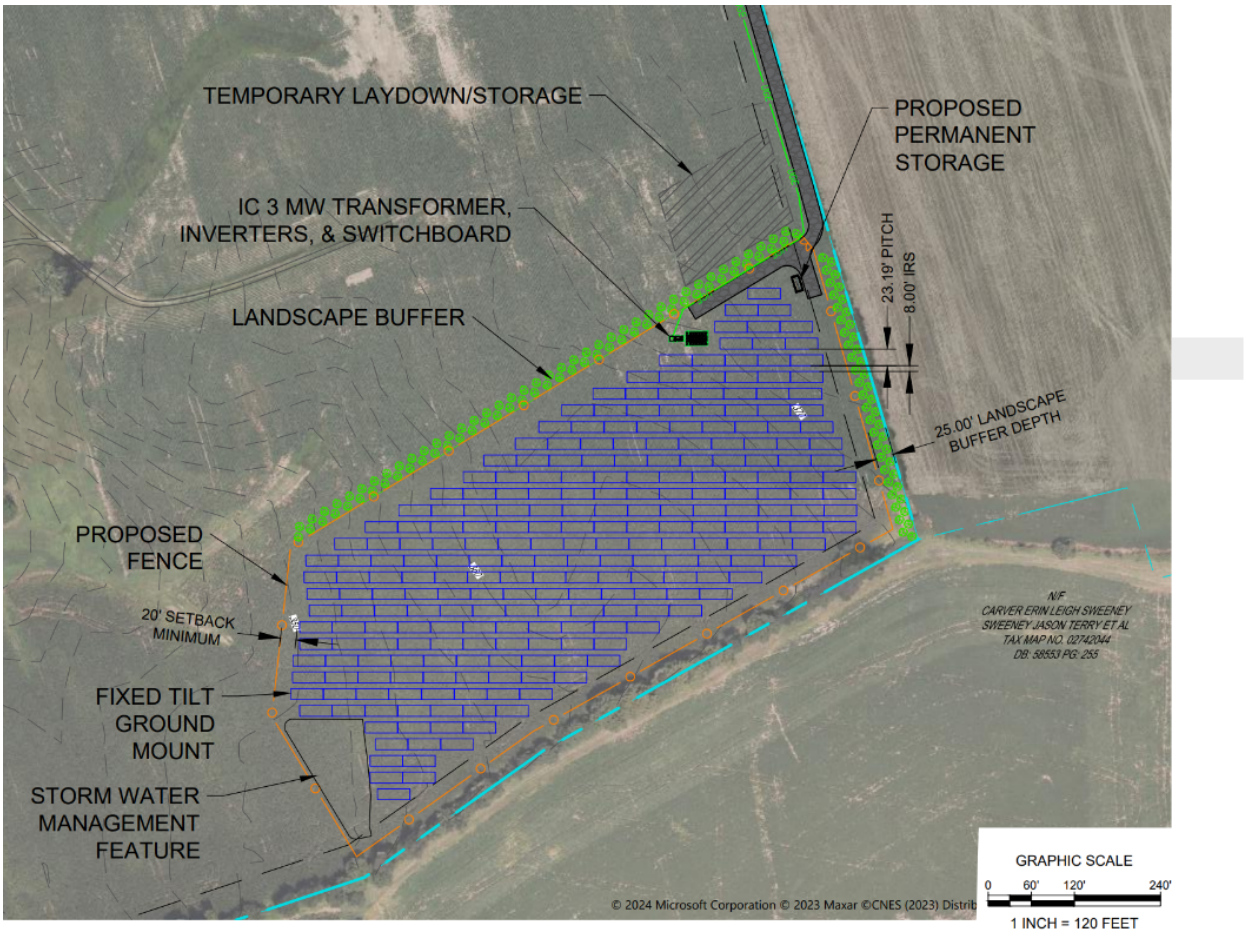


Figure 2: Ramiere site design

Agricultural Potential

To determine the agricultural potential of these sites, Chaberton collaborated with Okovate (www.okovate.com) agronomists to conduct a comprehensive site assessment. The findings from this study have been compiled into a detailed report, attached as Appendix A to provide prospective farmers with site-specific insights and guidance.

The Sugarloaf and Ramiere sites primarily feature Brentsville sandy loam with gentle slopes of 3 to 8 percent, classified as Class 2 soils—prime agricultural land. According to the agronomic assessment, these soils offer significant potential for diverse agricultural uses, including crop production, grazing, and apiary integration.

- **Crop Production**: Table crops can thrive with the use of irrigation to optimize soil moisture. However, the spacing of the solar panels may limit the feasibility of row crops unless farmers have access to smaller, specialized equipment. Modelling indicates crops such as summer squash, watermelon, and carrots perform particularly well under these conditions, with carrots showing a potential yield increase of 25%. Soy also benefits from the micro-climate, though its reliance on larger equipment poses challenges. It is important to note that these results are estimates based on desk analysis, and the Projects are not responsible for the agricultural outcomes. The Projects are open to considering other crop options, provided they comply with the site's physical constraints (to include potential for certain area(s) to have twice the row width as noted above).
- **Grazing**: Grazing systems yield the highest returns due to the well-drained nature of the soils and their suitability for rotational livestock grazing. The solar panel spacing, and buffer zones further enhance the viability of grazing, supporting a combined flock of approximately 80 sheep year-round. Stocking rates are estimated at 3 sheep per acre between the panels and 7 sheep per acre in the buffer zones, ensuring sustainable land use and productivity. The Projects are open to collaboration on a beneficial vegetative mix. However, it is the responsibility of the tenant to do on-site vegetation sampling to establish appropriate stocking rates. The American Solar Grazing Association (ASGA) website provides a protocol for estimated dry matter in agrivoltaic systems and there is a large and increasing number of solar sites with grazing incorporated.
- **Apiary and Pollinator Crops**: The sites provide an excellent opportunity for pollinator-friendly vegetation and apiary systems, enhancing biodiversity while supporting honey production. Absent another agricultural solution (or in areas not used by another agricultural solution), the Projects plan to comply with the pollinator program established by the Maryland Department of Agriculture. The

Projects are open to collaboration on the most beneficial vegetative mix to include planting of buffer zones and interrow spaces.

Table 1: Agronomic information of both sites

Environmental Parameters	**Sugarloaf**	**Ramiere**
Arable Acreage	13 acres	7 acres
Row spacing	8 ft	8 ft
Soil Type	Brentsville sandy loam, 3 to 8 percent slopes	Brentsville sandy loam, 3 to 8 percent slopes
Main Soil Texture	Sandy Loam	Silt Loam
Former land-use	Corn/soy rotation	Corn/soy rotation
pH Level	4.6	5.5
Organic matter	1.25%	2%
Drainage	Well Drained	Well Drained
Water Capacity (cm/cm)	0.13	0.16

Agrivoltaics and Yield Impact

Agrivoltaic systems reduce light availability between panel rows, with irradiance at the Sugarloaf and Ramiere sites decreasing by approximately 40%. While this reduction can affect yields, agrivoltaics creates a favorable micro-climate that often offsets the impact of reduced light. The panels moderate temperature extremes, reduce soil water evaporation, and extend the growing season by several weeks. Livestock benefit from the shade, which improves their well-being and productivity.

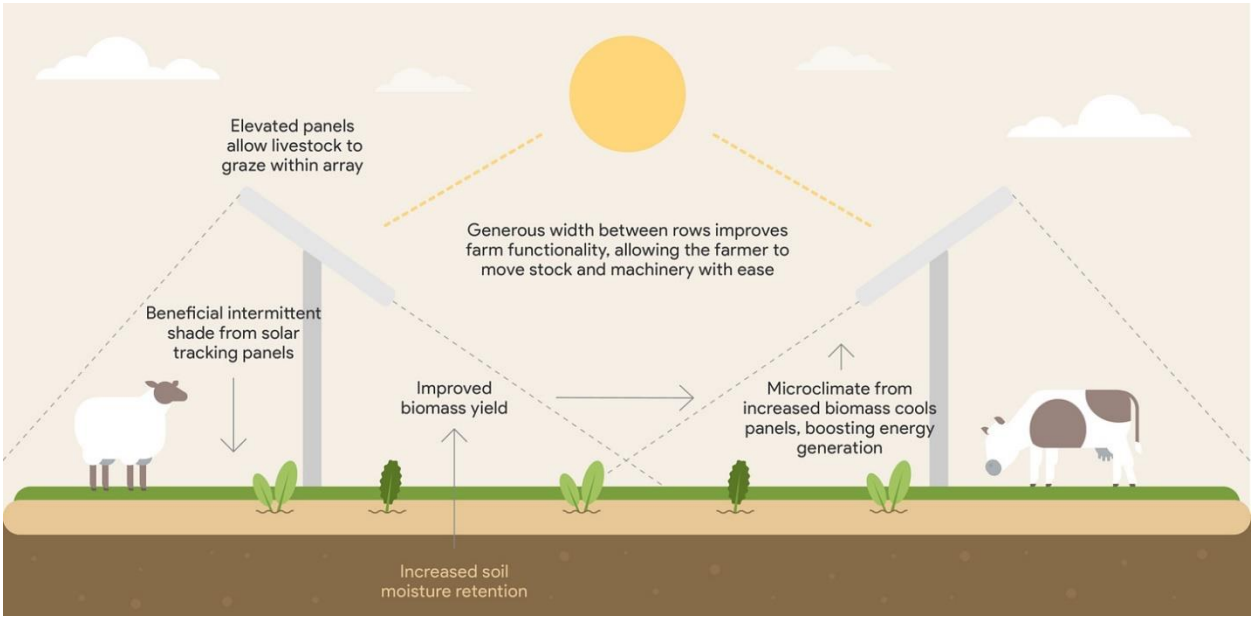


Figure 3: Benefits of agrivoltaics explained. (Source: the regeneration)

Economic Considerations

Agrivoltaics also impacts operational and economic factors. Reduced accessibility between panel rows may limit the use of large-scale equipment, increasing the need for manual labor or smaller machinery. Despite this, localized economic analysis identified summer squash, watermelon, and carrots as strong performers, with soy also benefiting from the system's micro-climate.

By integrating agrivoltaic systems, farmers can optimize land use while balancing productivity with sustainability. Grazing remains a top option for economic and environmental returns, while careful crop selection ensures viable production even under reduced irradiance conditions. Together, these practices showcase the potential of agrivoltaics to harmonize renewable energy generation with agricultural sustainability.

Infrastructure and Access

Both the Sugarloaf and Ramiere sites are designed to ensure that farmers have access to the necessary infrastructure to carry out their agricultural activities effectively. Below is an outline of the key infrastructure and access provisions:

- **Site Accessibility:** Farmer shall have 24/7 access to the site. An access map will be provided as part of the agreement.
- **Panel Spacing:** Solar panels are spaced 8 feet apart, providing sufficient room for activities such as rotational grazing and select crop production, and allowing space for small-scale or specialized machinery. As discussed above, it may be possible for a small section to have twice the row spacing. If this is of interest, be sure to specify the desired size of area in your proposal.
- **Panel Height:** The space beneath the solar panels has not been included in the agricultural analysis. However, in practice, this area offers potential for agricultural use, as the panel edges will be approximately 2.5 feet +/- ~1 foot above ground at their lowest point, although the exact height of each panel is subject to change as the design is finalized. If a specific height (or heights) are critical to a proposal, this should be specified in your submission. At the Sugarloaf site, the solar panels will feature a tracking system that follows the sun's path, whereas the panels at the Ramiere site will be fixed.
- **Fencing:** Both sites are enclosed by an outer perimeter fence for security and an internal fence is planned around the critical electrical components (i.e., transformer and inverters). Farmers will be responsible for installing and maintaining any additional fencing required within the solar array to manage livestock or protect crops.
- **Water Access:** Water access may be available on site. If required/beneficial, please include in your proposal include the anticipated amount of water to be used by season.
- **Electricity Access:** Access to 120V outlets can be provided inside the project area near the transformer/inverters to support various farming operations, including equipment usage, irrigation systems, or other energy needs.
- **Tool Storage:** Space for a small shed (exact dimensions TBD) can be made available on site, if desired.
- **Additional Infrastructure:** Farmers may outline any additional infrastructure improvements or equipment requirements in their proposal to include requests for potential grants that may be available from the Projects, particularly if they align with project goals such as enhancing sustainability, improving productivity, conducting agrivoltaics proof of concept solutions through innovative practices, or promoting access to new and/or underserved farmers. Such grants, if made available, to be awarded at the sole discretion of Sugarloaf and/or Ramiere. .

- This infrastructure framework ensures that the sites are equipped to support sustainable and productive dual-use systems, balancing renewable energy generation with diverse agricultural activities. Farmers are encouraged to detail their specific infrastructure needs in their proposals to ensure seamless operations.

Constraints and Considerations

While these sites are offered free of charge to the selected farmer, there are important constraints and considerations that must be taken into account:

- **Vegetation Management:** For each project, while an agricultural activity is in place, the farmer (or one of the awarded farmers in the case of multiple awards at on site) will be responsible for maintaining vegetation under and around the solar panels to meet both agricultural, operational, and fire safety housekeeping requirements. This includes managing plant height and ensuring compatibility with agrivoltaic system specifications. If agricultural activities alone do not suffice for vegetation control, the farmer must ensure vegetation is maintained according to contract specifications. Depending on the extent of the vegetation area outside the area being used for an agricultural activity, the Projects will reimburse the farmer for this maintenance activity commensurate with the applicable scope. Details to be discussed with selected proposals.
- **Communication:** Open and regular communication with the Projects is critical for aligning on project goals and site management. Farmers are expected to provide updates and collaborate on addressing any operational concerns with the designated project representative.
- **Risks:** Operating within a dual-use system carries risks, such as potential damage to equipment or crops due to panel shading or infrastructure challenges. Farmers must account for these risks in their proposals and outline mitigation strategies. Additionally, appropriate insurance coverage will be required per the applicable draft Terms and Conditions contained in Appendices C, D, or E.
- **Public Engagement:** Awarded farmers will be included in certain publicity related materials. The Projects will provide a release for use of photographs, videos, and related materials. Willingness to engage in a limited number of public events, such as ground breaking and media interviews is considered a plus.
- **Research Participation:** If applicable, farmers are requested to cooperate with ongoing research by collecting and sharing data annually to inform potential future agrivoltaic projects. This includes providing information on yields, operational challenges, and benefits of farming under agrivoltaic systems to

improve future developments. Any data requested will strive to minimize the time required to collect/report the data.

- **Restricted Areas:** Certain sections of the sites will be fenced off (e.g., transformer and inverter area) for safety or operational reasons. Farmers must respect these restrictions and avoid accessing these areas except for approved activities (e.g., vegetation maintenance).

3. Scope of Work

The selected farmer(s) will collaborate with Ramiere and/or Sugarloaf to manage the agricultural and vegetation aspects of the project sites under a dual use agrivoltaic system. The farmer(s) will engage in sustainable practices to meet the following objectives:

General Responsibilities

- Maintain vegetation to comply with agrivoltaic system requirements, ensuring plant height and density do not interfere with solar panel operation.
- Utilize approved agricultural activities, including grazing, crop cultivation, or pollinator-friendly practices, to enhance soil health, improve biodiversity, and support research efforts.
- Manage land access and livestock (if applicable) to align with operational constraints, while actively communicating and collaborating with the Projects to ensure seamless integration of agricultural activities with renewable energy generation and maintenance.
- Compliance with applicable state and local regulations, permits, and best practices.

Permitted Agricultural Activities

- **Crop Production**: Hand-harvestable crops such as carrots, squash, or watermelon. Proposals must account for panel spacing and microclimate effects, with a preference for small-scale or specialized equipment use.
- **Livestock Management**: Rotational grazing using sheep or other approved livestock that meet size and height constraints. Stocking rates must align with the agronomic assessment and ensure sustainable forage use.
- **Beekeeping and Pollinator friendly vegetation**: Establishing apiaries and planting pollinator-friendly vegetation in buffer zones and interrow spaces to improve biodiversity and support honey production.

Vegetation Management

Vegetation must be maintained in accordance with the (to be) approved vegetation management plan. The following parameters are expected.

- Vegetation under solar panels must not exceed 30 inches (2.5 ft) in height at any time unless approved by Ramiere or Sugarloaf, as applicable, to avoid shading the solar panels or interfering with system performance.

- Vegetation in buffer zones must be maintained below 36 inches (3ft), depending on its designated use and ecological objectives.
- Vegetation around the electrical infrastructure and access roads need to be maintained below 30 inches. The Projects may provide payment for this service as discussed above.

Sustainable Practices

The Projects prioritize agricultural practices that improve soil health, conserve water, and minimize environmental impact. Famers should demonstrate how they plan to comply with Maryland and Montgomery County agricultural best practices. Proposals must outline specific sustainable practices, including:

- **Soil Health**: Use practices like cover cropping, composting, and reduced/no-till farming to enhance soil quality and carbon storage. Annual reports on soil amendments, herbicides and pesticides usage, and fertilizers will be required.
- **Water Conservation**: Include strategies like efficient irrigation, rainwater harvesting, and minimizing runoff to address site-specific microclimates.
- **Pest and Weed Management**: Preference on non-chemical approaches, such as integrated pest management, organic fertilizer, and crop rotation. The Projects reserve the right to restrict inputs.
- **Nutrient Management**: Propose sustainable methods for fertilization and nutrient cycling, minimizing synthetic chemical inputs where possible.

Safety and Risk Management

- **Insurance:** Farmers must hold liability insurance as shown in the applicable draft Terms and Conditions appendix, listing Ramiere and/or Sugarloaf, as applicable, as an additional insured. Proof of coverage or acknowledgment to obtain it is required.
- **Security:** Farmers are responsible for securing their equipment, crops, and livestock. Perimeter fencing is provided, but additional measures for livestock or crop protection must be outlined.
- **Communication:** From time to time, preventive and corrective maintenance for the solar components will be required. Ramiere and Sugarloaf will strive to provide at least forty-eight (48) hours advance notice for preventive maintenance that might interfere with farming activities. Farmers will be notified as soon as possible regarding any corrective maintenance activities that might impact farming activities. Farmers are required to report any abnormal observations of solar equipment, landscaping, vegetation, etc so that these may be addressed as soon as possible. All reasonable commercial efforts will be made to avoid

impacts to farming activities. Proposals should include designated contacts / responsible persons to serve as the primary and alternate points of contact for operational communications.

Contract Duration

The farmer will be offered a multi-year contract, with Ramiere and/or Sugarloaf retaining the right to terminate the agreement if contractual obligations are not upheld. The initial term is expected to between 3 to 5 years, however, the Projects are open to considering alternate proposals with reasonable justification.

The farmer must comply with specified requirements, including allowing periodic inspections to ensure compliance with animal welfare standards, soil health maintenance, and environmental impact goals.

Compensation

The lease of this land is provided free of charge. As discussed above, the Projects may consider awarding grants to assist with upfront and/or on-going costs at their sole discretion. Compensation is also available for vegetation and landscaping maintenance outside of the agricultural activity area(s).

4. Farmer Qualifications

The Projects seek applicants with the qualifications, experience, and commitment necessary to ensure the success of the agrivoltaic system. Proposals must address the following.

Experience:

- Provide an overview of your agricultural experience, including specific expertise in vegetation management, livestock grazing, and crop production.
- Provide experience and plans for soil health management, pest management, and water management/irrigation
- Highlight any prior experience working with or near solar infrastructure.
- Detail your vegetation and landscape management experience and years of practice in each relevant area.
- If representing a new and/or historically underserved farmer demographic, discuss the resources you are able to rely on for guidance.

Proximity and Availability:

- Indicate your proximity to the Sugarloaf and Ramiere sites and how you will facilitate effective management.
- If you do not live nearby, provide a plan for regular site visits and ensuring consistent operations.
- As applicable, outline any time commitments for other professional activities and explain how these will be balanced with your responsibilities at these sites.

Training and Certification:

- Confirm your willingness to fulfill solar-related safety and operations training, which will be provided at by Ramiere and/or Sugarloaf as applicable at no expense to the famer.
- If applying for a grazing-focused proposal, AGSA (American Solar Grazing Association) certification is required. If not already certified, explain your plan to obtain certification.

Equipment Access:

- Specify what equipment you currently have access to and what you will bring to the farm site to fulfill project requirements, including:
    - Tractors (specify horsepower and any specialized attachments like front-end loaders, mowers, etc.)
    - Planting equipment (seeders, transplanters, etc.)
    - Harvesting equipment (combines, balers, etc.)
    - Sprayers and other application equipment
    - Trucks and trailers for transportation
    - Irrigation systems (if applicable)
- **Maintenance:** Describe how you plan to maintain your equipment to ensure reliability and functionality.
- **Compatibility:** Explain how your equipment is suitable for operating within the constraints of a solar farm environment (e.g., maneuverability around solar panel arrays, height restrictions).

Collaboration and Communication:

- **Experience:** Outline your experience working with other entities on collaborative projects, particularly those involving land sharing or coordinated activities.
- **References:** Provide contact information for individuals or organizations who can attest to your experience, work style, and communication skills.
- **Technology:** Describe your comfort level with using technology platforms for communication, data sharing, and project coordination (e.g., text, email, project management software, cloud-based document sharing).
- **Problem-Solving:** Provide an example of a situation where you had to effectively communicate and collaborate to overcome a challenge on a project.

Insurance:

- **Proof of Insurance:** Include proof of liability insurance or a written acknowledgment that you will obtain and provide proof of the required coverage prior to commencing activities on site.
- **Additional Insured:** Ensure that the insurance policy explicitly names Chaberton Solar Ramiere LLC and/or Chaberton Solar Sugarloaf LLC and

any associated companies (to be confirmed later) as additional insured parties.

Financial Stability

- **Business Structure:** Indicate your business structure (sole proprietorship, partnership, LLC, etc.)
- Provide number of years in farming business and number of years farming in Maryland.

5. Proposal Requirements

Farmers or agricultural operators responding to this RFP must submit a comprehensive proposal that provides a clear vision for how they will utilize one or both of the agrivoltaics sites (Sugarloaf and Ramiere) and outlines their approach to vegetation management, agricultural production, and sustainable practices. The proposal must address the following components.

General

- **Vision Statement**: Include a concise vision for your proposed activities, demonstrating alignment with the goals of this RFP integrating renewable energy and agriculture while enhancing soil health and biodiversity.
- **Site Preference**: Indicate whether you are applying for one or both sites. If applying for both, provide details on how you will coordinate and manage activities across the sites, including logistics for livestock or equipment transport.
- **Innovative Use of Space**: Explain how you will utilize available space, including opportunities under and around the solar panels, while complying with site constraints.
- **Size of Area**: Indicate whether the proposed agricultural activity will take place in the entire area available or whether a smaller area is desired. If a smaller area is desired, indicate whether your activity may be conducive for other activities to collocate near/adjacent at the same site.
- **Contracting:** Proposed edits to the applicable draft Terms and Conditions contained in **Appendix C, D, or** E. Edits should be reasonable with thoughtful explanations.

Agricultural Management Plan

- **Crop Cultivation**: Detail your crop rotation plan, including how it will enhance soil health, and sustain productivity. Describe your pest management strategies, such as integrated pest management or other (sustainable) practices and intended pesticide/fertilizer use. Also outline soil conservation measures like cover cropping to maintain soil quality and prevent erosion. Explain how you will ensure compliance with vegetation height requirements. Also share information about the equipment you intend to use, ensuring it aligns with the spatial constraints of the panels. If you plan to employ manual labor and hand-harvesting, describe your approach, including workforce logistics and scheduling, and outline strategies to mitigate potential risks such as worker safety and labor shortages.

- **Grazing**: Describe your (rotational) grazing strategy, including stocking rates, breeds, animal age, rest periods for pasture, and prevention of overgrazing. Include information about logistics and animal transport. Outline your approach to animal health and welfare, including parasite management and veterinary care.
- **For Pollinator-Friendly and Mixed-Use Proposals**: Explain how you will establish and maintain pollinator-friendly vegetation or integrate multiple agricultural activities. Explain how you will comply with the vegetation standards. Additionally, proposals must include methods to monitor the effectiveness of pollinator-friendly practices, such as conducting surveys or partnering with ecological organizations.

Economic Viability

Applicants must demonstrate the financial sustainability of their proposed agricultural activities under the agrivoltaic system. Proposals should include the following.

1. **Budgeting**: Provide a detailed budget example to demonstrate that the proposed operation is financially viable. The budget should include:
    - Expected income from agricultural activities, such as crop sales, livestock production, or pollinator-friendly practices.
    - Anticipated operational expenses, including transportation, equipment, seed or feed costs, water usage, and vegetation management.
    - If applicable, provide an estimation of costs associated with the proposed activities, including equipment, infrastructure needs such as fencing, water systems, or other improvements.
2. **Nature of the Business**:
    - Indicate whether the proposed agricultural operation will serve as the applicant’s primary business or a part-time or supplemental activity.
    - For part-time proposals, explain how this approach will ensure consistent and reliable management of the site.
3. **Infrastructure needs**:
    - Clearly outline any infrastructure improvements or equipment required to execute the proposed activities effectively.
    - Include cost estimates for any infrastructure not already in possession and offer insight into how potential financial support from Ramiere and/or Sugarloaf would be used to improve the sustainability and efficiency of the operation.

6. Evaluation Criteria

Proposals will be reviewed by a selection team composed of Ramiere / Sugarloaf staff and Okovate. The evaluation process will focus on how well the applicant's qualifications, experience, and proposed farm plan align with the goal of this RFP to integrate renewable energy and sustainable agriculture. Applicants will be assessed based on a structured scoring system designed to identify the most suitable candidates. However, the scoring system is intended to be flexible given the various potential proposals expected. Ramiere and Sugarloaf may award one or multiple contracts in its sole discretion.

The review process includes an initial screening to ensure proposals are complete and aligned with RFP requirements. Shortlisted applicants will then be invited for interviews, where their qualifications and farm plans will be further assessed. At the conclusion of the process, the review team will prioritize applicants who demonstrate both technical qualifications and a strong commitment to the project's goals. The evaluation will consider the following key criteria.

- **Alignment with the goals of the RFP:** Commitment to enhancing soil health, biodiversity, and sustainable farming practices within an agrivoltaic system.
- **Strength and Feasibility of Farm Plan:** Proposed crop or livestock management strategies, compatibility with the solar panel layout, and practices that promote soil health and long-term sustainability.
- **Farming Experience and Expertise:** Demonstrated experience in sustainable farming, including crop rotation, vegetation management, and livestock grazing. Prior experience will be considered an advantage. Alternately, a clear plan to obtain mentoring and advice may be substituted. A willingness to learn and adapt is also important.
- **Business Viability**: A detailed budget and financial projections demonstrating economic sustainability. If requested, thoughtful and effective utilization of potential one time or on-going grants (potentially from the Projects or outside sources) or other support, if applicable, to overcome constraints or enhance environmental impact.
- **Collaboration and Communication:** Ability to coordinate with solar technicians, energy managers, and other stakeholders, and flexibility in adapting practices to meet the system's needs. Also, a willingness to contribute to data collection efforts for research purposes.
- **Contract Structure:** Minimal edits to the proposed draft terms and conditions (see applicable Appendix C, D, or E. Where edits are made they are reasonable with thoughtful support/explanation.

- **Community Engagement:** Willingness to participate in educational programs, offer farm tours, and engage with the public regarding the agrivoltaic project.
- **References:** Contact information for previous landlords, clients, or collaborators who can verify the applicant's reliability, expertise, and ability to meet the demands of this project. Applicants are encouraged to include any supporting documentation that strengthens their case, such as a CV or other relevant materials.

7. Timeline and Submission

Proposals will be reviewed by a selection team consisting of Ramiere/Sugarloaf staff and representatives from Okovate Sustainable Energy. The evaluation will focus on alignment with the goal of the RFP, the applicant's technical qualifications, and the likelihood of successful implementation. Applicants may be contacted for additional information or interviews to support decision-making.

The selected farmer will not only demonstrate the necessary qualifications but also show a strong commitment to working within the integrated solar-agriculture system.

While non-conforming bids are a reason for non-selection, the Projects reserve the right to waive inconsistencies or missing components in proposals if it serves the project's best interests or is not applicable to the agricultural activity proposed.

Notification of selected applicants and lease signing will occur following the review process, with onboarding planned for the months leading up to the start of the first agricultural season, likely in the summer of 2026.

Site Visits and Questions

Potential applicants are encouraged to attend scheduled site visits planned for [DATES] to better understand project requirements and conditions. Soil sampling may be conducted during visits with prior approval.

To attend a site visit, contact [NAME] at [Phone Number] or Agrivoltaics@chaberton.com. Questions can be submitted via email to [Agrivoltaics@chaberton.com], and responses will be shared publicly on [Website] to ensure all bidders have equal access to information.

Submission Process

Submissions are due on [date] and must be sent to agrivoltaics@chaberton.com in PDF format. A confirmation email will be sent upon receipt, and the Projects may reach out for additional information.

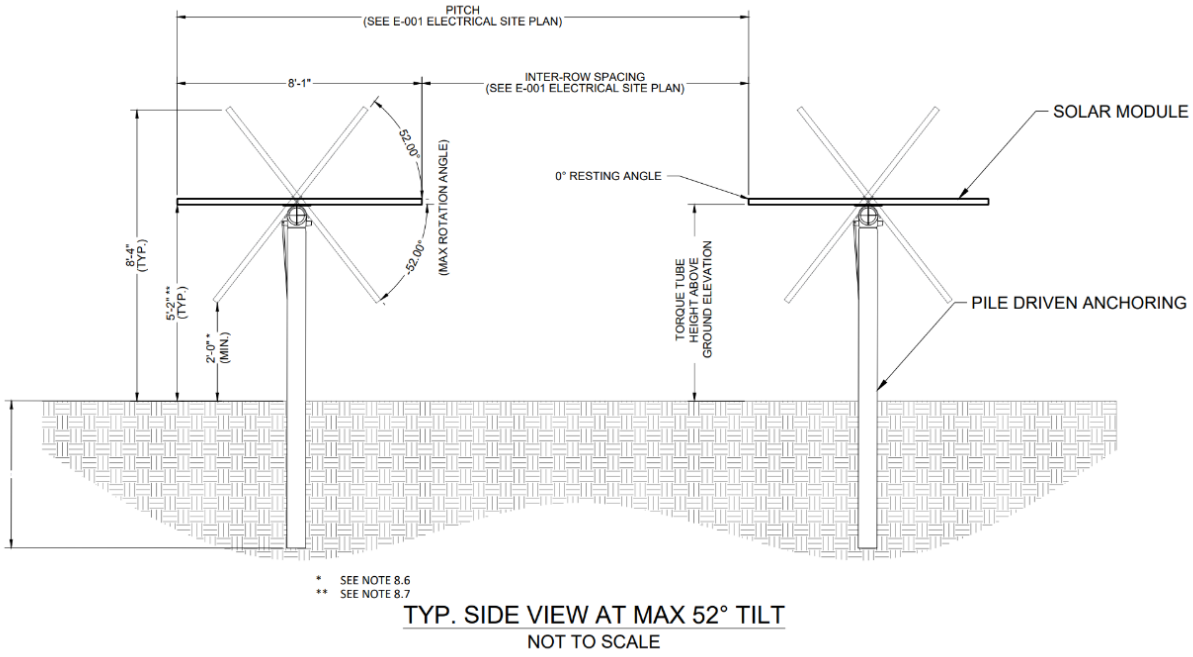


Figure 4: Preliminary design at Sugarloaf with single-axis tracker. Height dimension may change to favor agrivoltaics

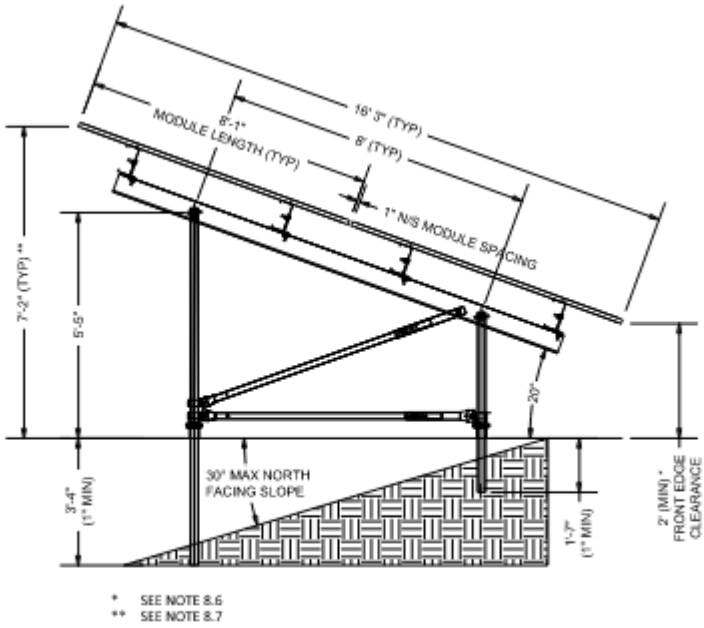


Figure 5: Preliminary design at Ramiere with fixed solar panels. Height dimensions might change to favor agrivoltaics.

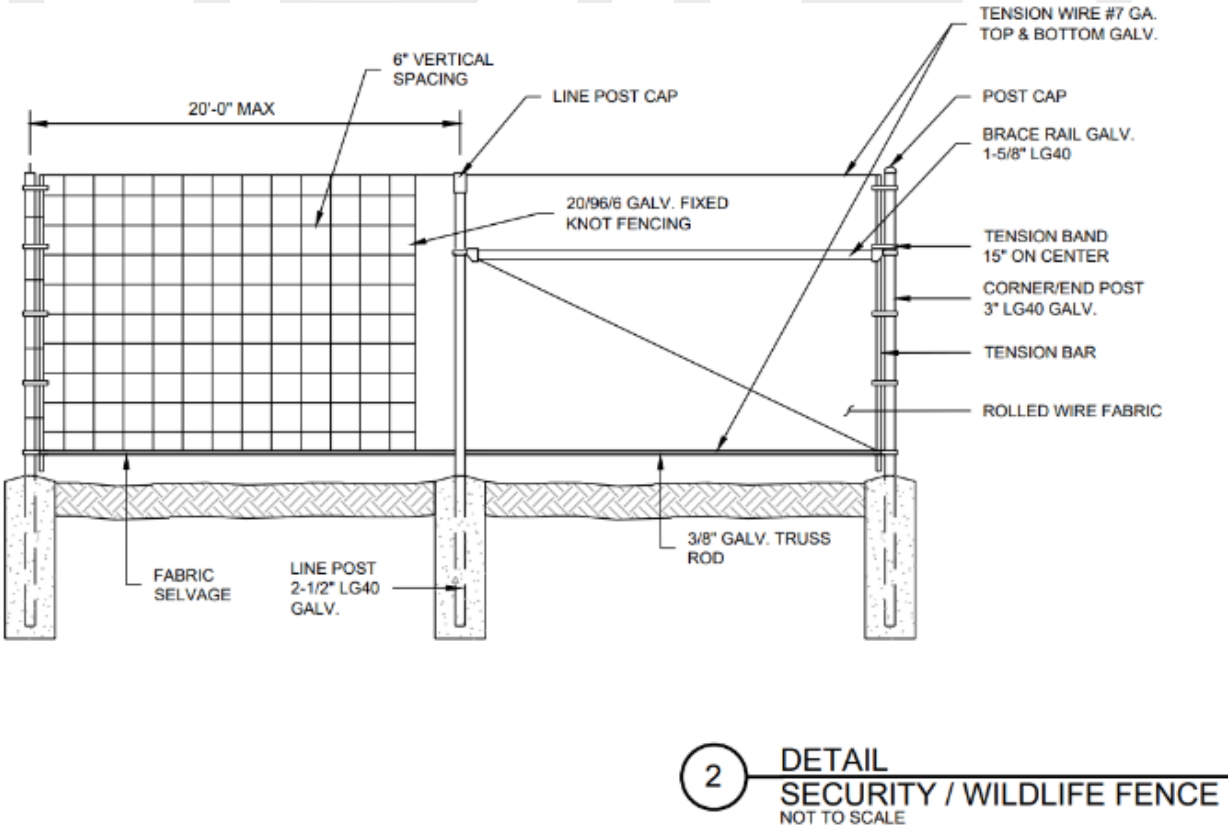


Figure 6: Typical perimeter fencing around solar sites

Appendix

Appendix A. Okovate APV Report

Sugarloaf & Ramiere Agrivoltaic Planning Report

For Chaberton Energy and Key Stakeholders

Okovate Sustainable Energy, Inc.

Executive Summary

Chaberton Energy, a public benefit corporation headquartered in Maryland, is committed to developing sustainable infrastructure and renewable energy projects that serve local communities. With over 650 MWdc in secured site control and nearly 1.5 GW of projects in development, Chaberton is at the forefront of renewable energy innovation, bringing together creativity, excellence, and humanity in every project.

For their agrivoltaics projects at **Sugarloaf** and **Ramiere**, Chaberton seeks to integrate solar energy with agricultural practices, providing a sustainable solution that maximizes land-use efficiency. By maintaining agricultural productivity while producing clean energy, these projects will help local communities thrive, benefiting landowners, neighbors, and stakeholders alike. These dual-use systems are key to Chaberton's mission of fostering long-term sustainability and community engagement.

Okovate Sustainable Energy is a minority-owned and -operated Maryland-based firm that designs, develops, and consults on community solar projects that work in harmony with farming operations, accelerating the deployment of agrivoltaics. Okovate partners with a Stanford-backed group, Fundusol, that provides co-location modeling outputs and employed machine-learning algorithms and optimization techniques to balance system configurations, crop biomass, animal productivity, and array spacing to strengthen Okovate's data-driven recommendations for agricultural strategies.

In this report Okovate carries out two comprehensive site studies evaluating potential agrivoltaics integration into Chaberton's Ramiere and Sugarloaf solar projects in Maryland. Our approach, powered by advanced machine-learning models in collaboration with our partner Fundusol, examine for each site what the optimal agrivoltaic land use would be to combine agriculture and solar energy production, ensuring high efficiency, economic viability, and environmental sustainability.

Okovate's Commitment

We are committed to delivering solar projects that align with Maryland's goals for sustainability, agricultural preservation, and community development. By integrating agrivoltaics, our tailored solutions support the state's renewable energy targets while enhancing local agricultural productivity. Okovate's ongoing stakeholder collaboration ensures long-term success, contributing to Maryland's leadership in clean energy innovation and protecting its agricultural heritage.

Key Focus Areas

- **Design and Optimization:** Tailoring agrivoltaic designs using machine learning, Okovate balances solar panel placement, crop selection, and grazing management to maximize efficiency and viability.
- **Community Engagement:** Okovate fosters community buy-in and streamlines the permitting process by building strong relationships with local stakeholders.
- **Regulatory Compliance:** Efficiently navigating Maryland's regulatory environment to secure necessary permits.
- **Environmental Impact:** Ensuring that project designs are carried out with minimal environmental impact to protect the land for agriculture and proactively mitigate any potential environmental risks.

- **Long-Term Partnership:** Ongoing support to Project Sugarloaf and Ramiere throughout the project lifecycle, including development, construction, and operational assistance to Project Sugarloaf and Ramiere, the landowners, and tenant farmers.

Methodology

- **Crop Production:** In Partnership with Fundusol, we modeled crop performance under agrivoltaic conditions through comprehensive irradiance studies and microclimate assessments. By analyzing empirical and local yield data alongside site-specific factors such as climate and soil we provide an overview of crop suitability optimizing both environmental conditions and economic viability.
- **Livestock:** We assessed optimal stocking densities, pasture species, and management strategies under the shading effects of solar panels in the agrivoltaic system. This approach allows us to balance vegetation control and herd productivity, supporting sustainable land use and economic viability.
- **Apiary:** Coupled with sustainable land management practices like grazing, we suggest collaborating with local beekeepers to install and manage hives, optimizing hive density based on the future vegetation and a pollen analysis, and potentially supplementing with pollinator-friendly plantings to enhance honey production.

Okovate's core values center on farmland protection, ensuring that solar energy development compliments agricultural activities that work in practice, not just on a theoretical basis. We are committed to creating a future where communities thrive by using local land to generate clean energy and sustainably produce food.

While Okovate empowers Chaberton and the Montgomery County Office of Agriculture to choose which agricultural solution to implement, our comprehensive analysis of the Sugarloaf and Ramiere sites revealed several key insights:

1. **Landscape assessment:** Located within Montgomery County's Agricultural Reserve, both sites benefit from a resilient agricultural economy with small-scale farms and a diverse crop and livestock base. Sugarloaf, with sandy loam soil and limited water retention, is suited for grazing, while Ramiere's fertile silt loam soil supports greater agricultural flexibility. The region's climate, with an annual rainfall slightly below evapotranspiration needs, makes agrivoltaics advantageous for reducing water deficits during. Key challenges at the sites include erosion, limited water retention and soil compaction risks. Mitigation measures, such as non-invasive construction and maintaining ground cover, help address these issues, ensuring sustainable agrivoltaic productivity.

2. **Crop Modeling:** Crop modeling analysis, conducted in partnership with Fundusol, revealed that certain crops, such as carrots, watermelon, and summer squash, show potential for cultivation within the agrivoltaic systems. However, due to limited row spacing and the small amount of tillable land at these sites, the viability of crop production is low.. Gaining market access was identified as one of the main challenges for crop production at these sites. Other challenges identified for some crops were high price volatility, disease risk, or physical limitations.

3. **Livestock Feasibility:** Livestock grazing, particularly with sheep, is a compatible option for both sites. We determined that smaller sheep breeds under rotational grazing are ideal for balancing pasture health and revenue. With recommended stocking densities of 3 ewes per acre under solar panels and 7 ewes per acre on open pasture, these sites can sustain a sheep herd of 80 ewes. This makes sheep grazing a viable option, especially for already established local farmers with additional land. Our analysis indicates that agrivoltaic sheep grazing could yield higher profits per sheep at these sites if including vegetation management payments to the farmer.

4. **Apiary:** The potential for integrating apiaries into the agrivoltaic systems was explored and recommended due to the benefits of co-locating beehives with solar farms, including increased honey production, creation of valuable pollinator habitats through installation of native grasses. The two sites can support a combined 450,000 honeybee population. We reviewed the costs of 1-lb honey sales from several local Maryland apiaries and determined that onsite apiaries would be profitable in Year 1 if Chaberton were to cover the nominal costs of hive installations.

Agricultural Activity	Best fit	Feasibility Score (1-5)	Economic for Local Farmer
Crop Production	Carrots, Summer Squash, Watermelon	2	Lack of market access and not enough space for equipment
Livestock	Sheep grazing	5	Suitable option, especially if local farmer is found
Apiary	Pollinator habitat with apiary	5	Yes if hive installation covered by Chaberton

Based on these insights, a phased approach is recommended for Chaberton, prioritizing livestock grazing (sheep recommended) as the primary agricultural activity and considering the integration of apiaries simultaneously or in later phases. This approach allows for flexibility, adaptability, and optimization of the agrivoltaic system over time. Okovate recommends Chaberton follow the RFP process outlined in the report to source local livestock farmers and beekeepers.

Contents

Project Overview

Project Sugarloaf is a 4 MW-AC community solar installation located on approximately 19 acres of a 52.7-acre property at 20507 Darnestown Road, Dickerson, Montgomery County, Maryland. The solar array covers around 16 acres, and the buffer zone outside the array about 3 acres. The system features 8 ft interrow spacing and uses a single-axis tracker to optimize solar energy production while maintaining agricultural use. The project will support approximately 634 households and reduce greenhouse gas emissions by about 5,100 tons per year, benefiting both the local community and the

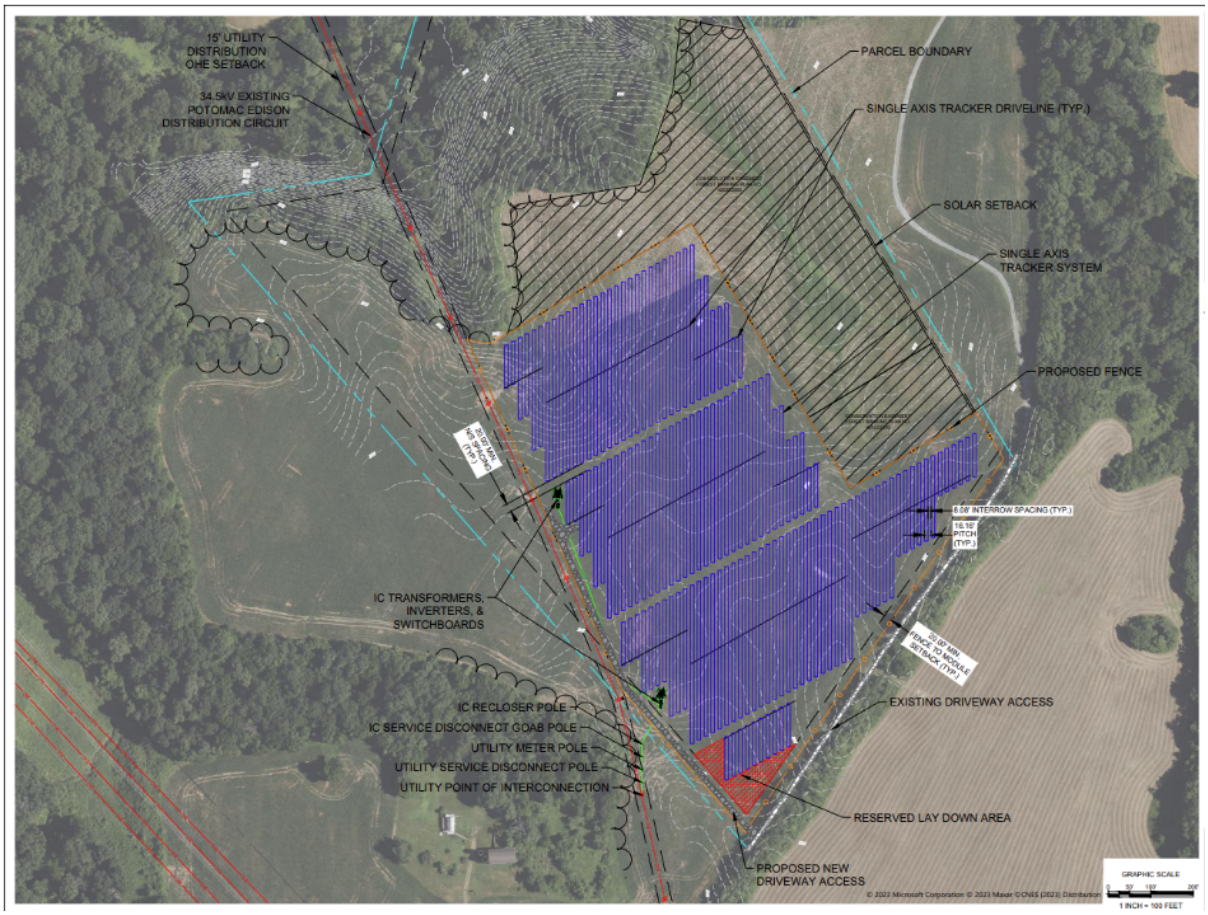


Figure 1: Sugarloaf project design

environment.

Project Ramiere is a 3 MW-AC community solar installation on approximately 11 acres of a 118-acre property at 17600 Whites Ferry Rd., Poolesville, Montgomery County, Maryland. The solar array covers around 8 acres, and the buffer zone outside the array about 2 acres. The project incorporates 8 ft interrow spacing to maintain agricultural productivity. The project will support approximately 415 households and reduce greenhouse gas emissions by about 3,820 tons of CO2 every year, while supporting local economic growth.

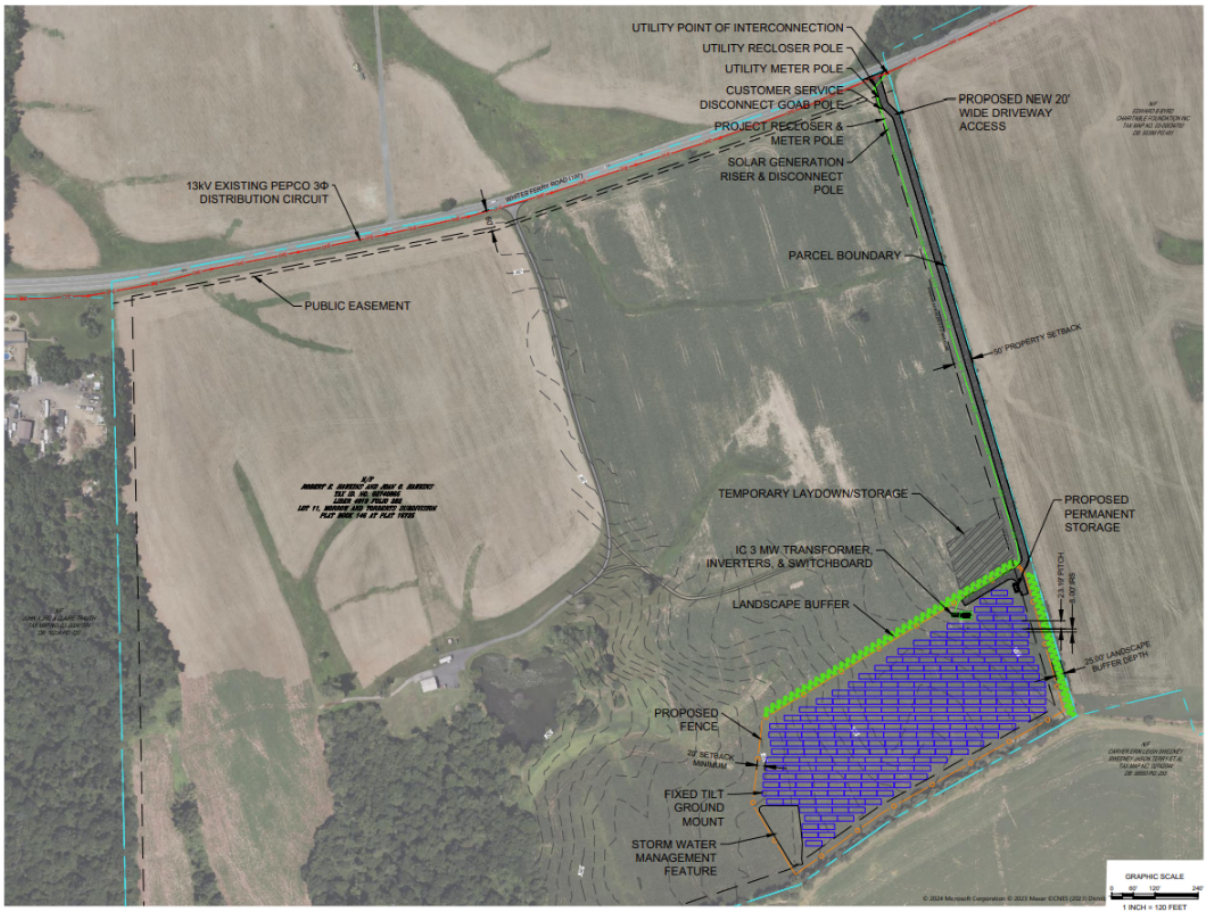


Figure 2: Ramiere project design

Scope of Analysis

Chaberton requested Okovate to analyze various agricultural solutions that might be feasible to incorporate in conjunction with the planned solar projects and recommend one or more alternatives based on their ability to be sustainably and economically integrated on these sites. Chaberton indicated it was important to comply with Maryland Department of Agriculture guidelines regarding agrivoltaics, HB 0908, to incorporate local considerations specific to agricultural practices in Montgomery County and these sites in particular and ensure any recommended solution would have a high confidence of success over the life of the project.

To achieve this, Okovate considered the following:

- Maryland Department of Agriculture guidelines regarding agrivoltaics HB 0908
- Proposed CPCN licensing condition per Case Numbers 9733 (Ramiere) and 9726 (Sugarloaf)
- Feasibility of solutions based on local soil and sunlight conditions.
- Economic feasibility based on current market conditions
- Use of sustainable development best practices.
- For each proposed solution, Okovate provides:
    - Tailored design solutions that maximize land-use efficiency.
    - Agronomic assessment and agricultural co-location modeling.

- Full support through the permitting process to meet all agrivoltaics regulatory requirements.
- Stakeholder engagement and farmer sourcing plans.

Agrivoltaics

To achieve the goal of maintaining agricultural land use in conjunction with the proposed solar projects, Chaberton aims to utilize agrivoltaic practices. Agrivoltaics, or dual-use solar, integrates solar energy production with agricultural activities on the same land, potentially increasing land-use efficiency by over 60%. This dual-use approach can not only provide an additional income stream but also offers significant environmental benefits. Solar panels create microclimates that protect crops from extreme weather, reduce evapotranspiration, and conserve water, improving crop resilience in drier climates. Additionally, they help prevent soil erosion and preserve soil moisture, promoting long-term soil health and sustainability. This synergy enhances the economic viability of both agriculture and renewable energy, making agrivoltaics a powerful tool for optimizing environmental and economic outcomes.

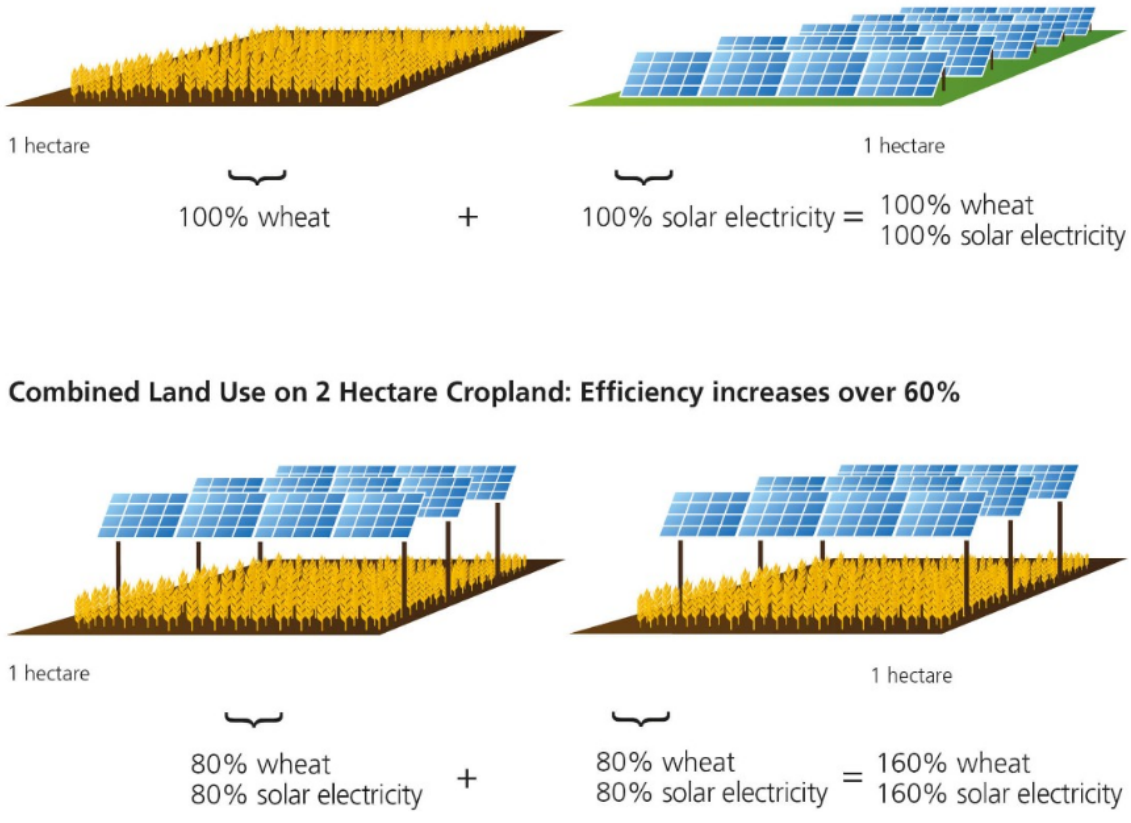


Figure 3: Dual Land use (Source: Fraunhofer Institute)

Successful agrivoltaic systems require thoughtful design that balances agricultural productivity with energy generation. Key factors include optimizing the tilt and spacing of photovoltaic panels to maximize sunlight distribution for both crops and energy production, as well as selecting appropriate crop varieties based on their light requirements. Additionally, the integration of environmental

factors such as soil health, water management, and microclimate conditions under the panels is critical to ensure that both solar and agricultural outputs are optimized[1]

Montgomery County Regulatory Landscape

The County has evolving policy on solar development, driven by the need to balance farmland preservation with renewable energy goals. While the County discourages solar project on prime agricultural soils (Class I and Class II), agrivoltaics systems are permitted in the Agricultural Reserve (AR) zone, with specific conditions and limitations. For example, a solar array only qualifies as agrivoltaics if it is accessory to the primary agricultural use of the land. That means that farming must remain the primary activity, and solar cannot displace agricultural production.

Chaberton follows all of the County's guidelines relating to project development and seeks authority to develop projects above the 2 MW-AC limit on Class II soils in the Agricultural Reserve. However, Chaberton complies with all other Montgomery County's regulations:

- No development activity on wetlands or floodplains
- No scraping of topsoil planned in civil work
- Very minimal grading and soil removal that will not impact soil quality requisite to host operating agriculture
- Proper setbacks and screening to minimize visual impacts on surrounding properties and public roads
- Designated pollinator-friendly under Maryland Pollinator-Friendly Designation Program where sites are not incorporating agriculture
- Grazing, crop production, and/or apiary activities (in conjunction with grazing or crop production) at both sites
- Formal approval of interconnection from Potomac Edison (Sugarloaf) and PEPCO (Ramiere)
- Concrete-use solely for pad transformers and electrical equipment and pavement as required by Montgomery County Fire and Rescue
- Undisturbed forestry and natural landscaping

State of Maryland Regulatory Landscape

Chaberton's commitment to compliance extends beyond Montgomery County to encompass state-level legislation aimed at promoting responsible solar development

House Bill 0908: Enacted in 2022 to streamline the approval process for community solar projects while encouraging the integration of agriculture. Per HB 0908, Maryland defines agrivoltaics as the simultaneous use of land for both solar energy generation and agriculture, which includes:

- Raising grains, fruits, herbs, melons, mushrooms, nuts, seeds, tobacco, or vegetables
- Raising poultry, including chicken and turkeys, for meat or egg production
- Dairy production, such as the raising of milking cows
- Raising livestock, including cattle, sheep, goats, or pigs

[1] Dupraz, C., et al., "Combining solar photovoltaic panels and food crops for optimizing land use: Towards new agrivoltaic schemes," Renewable Energy 36, no. 10 (2011): 2725-2732, https://doi.org/10.1016/j.renene.2011.03.005.

- Horse boarding, breeding, or training
- Turf farming
- Raising ornamental shrubs, plants, or flowers, including aquatic plants
- Aquaculture
- Silviculture

While this definition emphasizes the dual-use nature of the land and requires that agricultural activities remain a primary focus, it is very broad. Chaberton's Sugarloaf and Ramiere projects aim to advance agrivoltaics by innovatively integrating agricultural practices that are comparable to the activity in the state and Montgomery County. They recognize that agrivoltaics is not merely about co-locating solar panels and agriculture but about creating a synergistic system where both solar energy and agriculture can thrive.

Chaberton's projects align with this legislation by prioritizing dual-use land and incorporating agricultural practices. They go beyond simply placing solar panels on farmland; they actively seek ways to enhance agricultural productivity through engaging groups like Okovate to analyze practices such as pollinator-friendly plantings, managed grazing, crop production, and apiary activity beneath the panels. This approach maximizes land use efficiency and ensures that solar development complements, rather than displaces, agricultural activities.

House Bill 1309: Passed in 2021, this bill established the Maryland Pollinator-Friendly Solar Energy Generating System Designation Program. Chaberton actively participates in this program by incorporating pollinator-friendly ground cover and creating suitable habitats for bees and other pollinators where agrivoltaics is not implemented. This not only benefits local ecosystems and supports biodiversity but also contributes to the productivity of nearby farms by enhancing pollination services. Chaberton's commitment to pollinator-friendly practices showcases their understanding of the interconnectedness between solar energy, agriculture, and environmental health.

Current State of Agrivoltaics

National Renewable Energy Laboratory (NREL) manages a map of all U.S.-based agrivoltaics projects called InSPIRE (Innovative Site Preparation and Impact Reductions on the Environment). This initiative within NREL focuses on researching and promoting agrivoltaics to maximize the benefits of solar development while minimizing environmental impacts. Last updated in June of 2024, this map shows that there are 584 solar projects utilizing over 62,000 acres, representing over 10 GW, that qualify as agrivoltaics either for sheep grazing, crop production, or pollinator habitat[2]. Of these over 70% of the sites incorporate a pollinator habitat and nearly 40% incorporate grazing, being especially prevalent on larger sites (average of 226 acres/project). Only 6% (35 sites representing 360 acres) incorporate crop harvesting. In addition to the small number, these projects are small, with an average of only 10 acres / project demonstrating that this form of agrivoltaics is extremely nascent; dominated by what would be considered pilot or demonstration projects. Of note, none of these are located in Maryland. On the positive side, agrivoltaics is growing rapidly be a core part of the solar industry. The Solar Energy Industries Association (SEIA) states that as of September 9, 2024, there a

[2] InSPIRE, Agrivoltaics Map https://openei.org/wiki/InSPIRE/Agrivoltaics_Map

re 209.8 GW of installed solar capacity in the U.S.[3] This means that agrivoltaics makes up at least 4.7% of solar projects in the United States. With more and more projects coming online incorporating agrivoltaics – at least with pollinator friendly habitats – this percentage is growing rapidly.

Okovate Credentials

Okovate is a minority- and woman-owned and operated firm headquartered in Maryland making community solar deployment more sustainable and economic through agrivoltaics. We prioritize farmland protection and ensure that solar development works with the food system instead of against it. Our team has a deep background in agriculture and agronomy alongside experience in solar project design in order to understand how best to optimize these projects.

Our vision is to create a future where communities thrive by harnessing local land to simultaneously generate clean energy and sustainably produce food through innovative technologies.

We are a leading innovator in agrivoltaic solutions, specializing in the research, design, and implementation of systems that seamlessly integrate agricultural practices with solar energy production. Our expertise lies in developing customized agrivoltaic strategies that optimize land use efficiency, enhance agricultural yields, and promote sustainable farming practices. Our deep understanding of both the agricultural and solar sectors allows us to create synergistic systems that maximize the benefits of both.

This report was spearheaded by Okovate's Chief Agricultural Officer, Jorrit Becking. Mr. Becking brings extensive experience in the development and implementation of agrivoltaic projects across the globe. His educational background includes a Master of Science degree in Plant Science from Wageningen University, a renowned agricultural research institution in the Netherlands, and a Master of Environmental Management from Yale University.

Collaboration with Fundusol

Backed by experts at Stanford University and Carnegie Mellon University, Fundusol's proprietary agrivoltaic software provides optimized system designs for electricity and agricultural performance, across locations, crop profiles, and livestock systems. They provided co-location modeling outputs to strengthen our data-driven recommendations for agricultural strategies. They employed machine-learning algorithms and optimization techniques to balance system configurations, crop biomass, animal productivity, and array spacing. Their model integrates ASCE standards, cost functions, and environmental constraints, producing scenario analyses that explore the spatial and economic interactions between solar energy and agriculture.

[3] Solar Market Insight Report, SEIA, https://seia.org/research-resources/us-solar-market-insight/

Landscape Assessment

This chapter explores key environmental and agricultural factors at the Sugarloaf and Ramiere sites, focusing on soil, water, and climate conditions. These factors are crucial in determining the viability of integrating agrivoltaic systems with farming practices.

Montgomery County

Agricultural Economy

Montgomery County's agricultural landscape is characterized by various crop and livestock operations. With 583 farms spanning nearly 70,000 acres, more than 75% of these farms are under 50 acres, reflecting the small-scale nature of much of the county's agriculture[4]. Montgomery County's farmland is overwhelmingly used for commodity grain production, primarily feeding into the livestock industry. However, with a market value of $26,725,000, the Montgomery County horticultural industry still ranks fourth in the State[5]. The County's agricultural economy has remained resilient, with net farm income increasing and the number of farms holding steady since 2017, even amid reduced government support. This reflects a strong and diversified agricultural community, providing the foundation to support successful agrivoltaics projects.[6]

Agricultural Reserve[7]

Both sites are in the Montgomery County Agricultural Reserve. The Montgomery County Agricultural Reserve, created in 1980, protects 93,000 acres of farmland and open space by limiting development to one house per 25 acres through the Rural Density Transfer Zone and the Transferable Development Rights (TDR) program. These measures, alongside the Building Lot Termination (BLT) program, have preserved over 63,000 acres for farming, supporting 540 farms. However, rising land values, limited diversification options, and reliance on fluctuating TDR markets create financial challenges for farmers, potentially impacting the Reserve's long-term sustainability as land-use demands shift.

Climate

The climate in Montgomery County, Maryland, plays a significant role in shaping the agricultural potential and the feasibility of agrivoltaic systems at the Sugarloaf and Ramiere sites. The region experiences a temperate climate characterized by moderate rainfall and warm summers, making it conducive for both crop cultivation (mainly soybeans, corn, hay, and wheat) and livestock grazing.

With an annual rainfall of approximately 1,028 mm, the region generally provides sufficient moisture for agricultural activities. However, the evapotranspiration rate of 1,115 mm suggests that, during warmer months, there can be a slight water deficit. This is where agrivoltaics offers a potential

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[4] United States Department of Agriculture, National Agricultural Statistics Service. (2022). *2022 Census of Agriculture County Profile: Montgomery County, Maryland* (Publication No. cp24031). https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Maryland/cp24031.pdf

[5] https://www.montgomerycountymd.gov/agservices/ag-facts.html

[6] https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Maryland/cp24031.pdf

[7] Montgomery County Planning. (n.d.). *Agricultural Reserve Award.* Retrieved from https://montgomeryplanning.org/awards/ag-reserve-award/

advantage over traditional farming. The partial shading from solar panels can reduce the water needs of crops by minimizing evapotranspiration, helping to conserve water during drier periods.

Sugarloaf

Project Sugarloaf presents strong potential for agrivoltaic systems thanks to its well-drained sandy loam soil. Although the pH level of 4.6[8] is slightly lower than optimal, indicating that some soil treatment might be necessary to support production, the site benefits from excellent drainage, reducing the risk of waterlogging. The soil's erosion risk (K factor) is low, which supports long-term land stability, but wind erosion is a moderate concern, highlighting the importance of maintaining vegetative cover. The water holding capacity is somewhat limited at 0.13 cm/cm, increasing the need for irrigation during drier crop seasons. Given these conditions, grazing is more suitable than intensive crop production, as it requires fewer inputs and is less affected by the site's susceptibility to drought and wind erosion.

Table 1: Sugarloaf environmental parameters[9]

Category	Value	Score
Soil Type	Sandy Loam	6.5
pH Level	4.6	5
Erosion Risk (K Factor)	0.28	10
Wind Erosion Risk	Moderate	7
Drainage	Well Drained	8
Water Capacity (cm/cm)	0.13	7

Ramiere

Project Ramiere offers promising conditions for agrivoltaic systems, particularly due to its well-drained silt loam soil, which provides better fertility and water retention compared to sandy loam soils. The site's pH level of 5.5[10] is closer to the optimal range for most crops, reducing the need for soil treatment. However, the higher erosion risk (K factor of 0.49) and susceptibility to soil compaction highlight potential challenges for intensive crop production, necessitating careful land management practices. Wind erosion is also a moderate concern, reinforcing the importance of maintaining good ground cover. With a strong water-holding capacity of 0.16 cm/cm, irrigation demands are less pronounced than in other sites, making this location more flexible for agricultural u

[8] USDA Web Soil Survey: https://websoilsurvey.nrcs.usda.gov/app/
[9] USDA Web Soil Survey: https://websoilsurvey.nrcs.usda.gov/app/
[10] USDA Web Soil Survey

se. Nonetheless, the susceptibility to erosion and compaction makes grazing a more sustainable than crop farming, ensuring the land remains productive over time with fewer inputs.

Table 2: Ramiere Environmental Parameters[11]

Category	Value	Score
Soil Type	Silt Loam	7.5
pH Level	5.5	7
Erosion Risk (K Factor)	0.49	4
Wind Erosion Risk	Moderate	7
Drainage	Well Drained	9
Water Capacity (cm/cm)	0.16	10

Agronomic Assessment

This chapter provides a comprehensive analysis of the agrivoltaic potential for crops and grazing at the Chaberton Ramiere and Sugarloaf sites, including financial analyses. The crop modeling evaluates the performance of different crops under solar panels, examining yield variations and the financial impact of reduced production. The grazing section outlines sheep stocking densities, management strategies, and economic viability assessments.

Based on the ground coverage ratio of around 40% in the designs, we calculated the tillable in-between-row acreage at Sugarloaf to be around 10 acres and around 5 acres at Ramiere. Combined for both sites there is an additional 5 acres outside the solar array but within the project boundary, that could be used for agricultural activities. However, these 5 acres are only included in the grazing assessment, as straight rows required for crop farming are not feasible in this area. These numbers were used to calculate the total yields since the area directly under the solar panels will be less productive. Due to the proximity of both sites and the total acreage of the plots, the total tillable land will be around 20 acres, allowing for a wide range of agricultural activities. In our assessment, we model the yields and profits for farmers under agrivoltaics and, for comparison, calculate the same metrics for conventional agriculture at the same site. For conventional agriculture (without solar) we assumed a land lease of $250 for cropland and $50 for pasture and for agrivoltaics we use a $250 vegetation management subsidy. Final rate decisions will be up to Chaberton.

[11] USDA Web Soil Survey: https://websoilsurvey.nrcs.usda.gov/app/

Crop Modelling

We modeled a variety of common Maryland crops to evaluate their performance, profitability and feasibility in an agrivoltaics design. We combined all results in the table below. Further information on sources and assumptions for this analysis can be found in the table in Annex 1. The risk score is based on crop vulnerability and market vulnerabilities. The APV feasibility score is based on the physical limitations of crop production in the proposed designs, it deals mainly with equipment access and plant height. In both categories, a high score indicates optimal conditions for agrivoltaics: a high-risk score signifies low risk, while a high feasibility score means the crop is highly feasible.

Since both locations are so similar, and closely located we modeled Ramiere and utilized the results for Sugarloaf as well. The results for crops show that for all cases, the crop profits are lower than without agrivoltaics. However, when considering the additional income from solar leases, the total economic output of the land is significantly higher. Important to note is that for this analysis we used a $250/ acre cash rent for conventional agriculture, and a $250/acre payment to the farmer for the agrivoltaics analysis.

The best performing crops were watermelon, summer squash and carrots.

We modeled for different designs. Interestingly, elevating the panels resulted in an insignificant increase in irradiance but negatively impacted crop yields. This occurs because, with the same row spacing, the shading effect remains almost consistent, while the micro-climate benefits diminish as panel height increases.

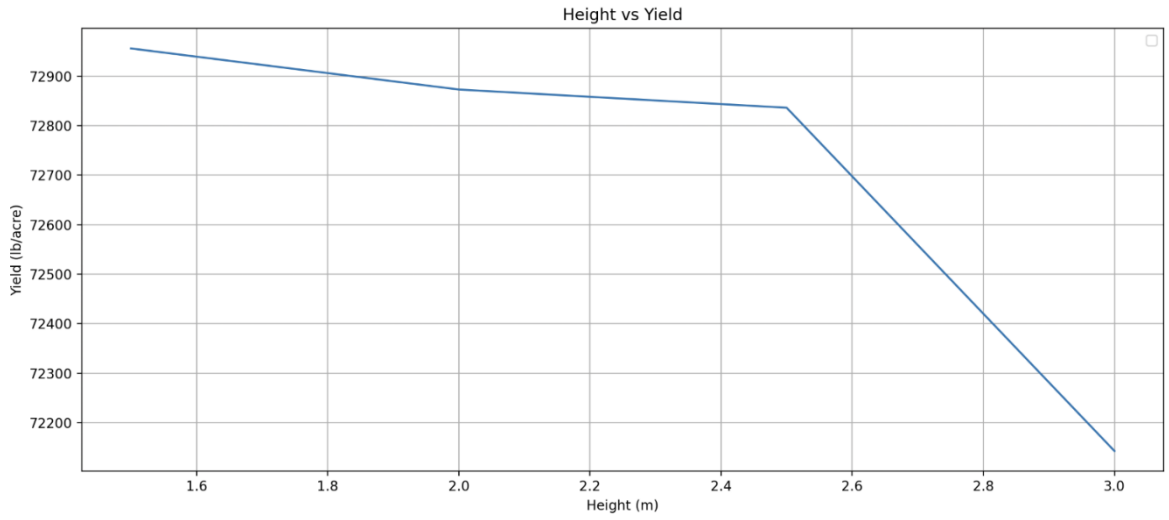

Figure 4: Panel height and tomato yield at Ramiere

Table 3: Crop analysis results for Ramiere and Sugarloaf I. Annex II for references.

Crop System	Conventional agriculture	Agrivoltaics	Agrivoltaics + subsidy	Risk Score	APV Feasibility
Sweet Corn				4	2
Yield (lb/acre)	12,000	10,560	10,560		
Revenue ($/acre)	4,020	3,538	3,538		
Costs ($/acre)	3,200	2,950	2,700		
Profit ($/acre)	820	588	838		
Soy				3	3
Yield (lb/acre)	2,820	3,187	3,187		
Revenue ($/acre)	556	628	628		
Costs ($/acre)	549	299	49		
Profit ($/acre)	7	329	579		
Lettuce				1	5
Yield (lb/acre)	23,100	16,586	16,586		
Revenue ($/acre)	16,586	11,909	11,909		
Costs ($/acre)	13,780	13,280	13,030		
Profit ($/acre)	2,806	-1,371	-1,121		
Tomato				3	3
Yield (lb/acre)	13,000	11,440	11,440		
Revenue ($/acre)	6,370	5,606	5,606		
Costs ($/acre)	14,587	14,337	14,087		
Profit ($/acre)	-1,587	-2,897	-2,647		
Carrot				3	4
Yield (lb/acre)	27,500	34,375	34,375		
Revenue ($/acre)	10,340	12,925	12,925		
Costs ($/acre)	8,820	12,820	12,570		
Profit ($/acre)	1,520	105	355		
Potato				3	2
Yield (lb/acre)	25,500	18,870	18,870		
Revenue ($/acre)	3,698	2,736	2,736		
Costs ($/acre)	2,698	2,948	2,698		
Profit ($/acre)	1,000	-212	38		
Watermelons				3	4
Yield (lb/acre)	13,300	7,980	7,980		
Revenue ($/acre)	7,730	4,788	4,788		
Costs ($/acre)	4,700	4,450	4,200		
Profit ($/acre)	3,030	338	588		
Summer Squash				5	5
Yield (lb/acre)	25,000	15,000	15,000		
Revenue ($/acre)	15,000	9,000	9,000		
Costs ($/acre)	8,438	7,938	7,688		
Profit ($/acre)	6,562	1,062	1,312		

Crop analysis results

Our assessment indicates that certain crops are better suited for growth under solar panels in agrivoltaic (APV) systems at the Sugarloaf and Ramiere sites. Summer squash, watermelons, and carrots performed best in our analysis, with carrots expected to yield 25% more under agrivoltaics.

Although sweet corn and soy also showed positive results, these crops are less feasible at these sites due to plant height requirements (sweet corn) and the need for large equipment (soy). While soy is anticipated to yield 13% more in agrivoltaic systems, limited equipment access would likely render its cultivation impractical, as harvesting soy by hand is not feasible.

Crops such as lettuce, tomatoes, and potatoes are not suitable for these sites due to their high light requirements and sensitivity to humidity in the soil (which increases disease pressure).

An important consideration for all crops grown at these sites is the challenge of establishing reliable market access. Many crops are perishable, and supply chain logistics heavily influence their viability. For specialty crops, farmers often depend on local markets, such as farmer's markets or co-ops, due to challenges in transporting them over long distances.

Additionally, although our analysis indicates that squash and watermelon can generate substantial profits, these crops cannot be grown in the same soil year after year. Crop rotation is essential to prevent disease build-up and allow the soils to rest. Using a rotation of carrots, squash, and watermelon, the average profit per acre is $500 without a solar subsidy and $750 with it. For the total tillable acreage (15 acres), total profits would range from $7,500 to $11,250 per year, respectively. This demonstrates that, for these sites, crop production may not be feasible unless a nearby farmer is found that can easily extend their operations to these sites.

Crop-Specific Analysis

Sweet Corn

Sweet corn demonstrates reasonable adaptability to agrivoltaic systems, but its taller plant structure can interfere with solar panel layout.

Soy

Significant marketing challenges exist for small-scale soy production, which traditionally benefits from economies of scale. Additionally, specialized equipment requirements increase the complexity of production under agrivoltaics. For the row spacing at these solar sites, this likely means that equipment needs to be important from countries where these small-scale systems are more prevalent, like China.

Lettuce

Lettuce is a high-risk crop due to its sensitivity to environmental conditions and high spoilage potential. Its perishability makes it vulnerable to fluctuating temperatures, a concern in partial shade environments that may not provide consistent microclimate conditions ideal for lettuce production. Lettuce can be grown in small-scale systems, and its production doesn’t interfere with solar yield. However, the modeling analysis shows that lettuce can be expected to have a yield reduction of 40%. This makes the crop unprofitable.

Tomato

Tomato production is impacted by high price volatility. Shade conditions can increase the risk of diseases like blight because of the more humid environment. Plant height complicates integration with agrivoltaics. However, the models show that the reduction of tomatoes is only reduced by 12% under the agrivoltaic setup. Still, due to the high production costs, tomatoes are not expected to be profitable on these sites.

Carrot

Carrots are moderately compatible with agrivoltaic systems, as they can tolerate partial shading and perform well in cooler, stable conditions. though labor requirements and limited availability of small-scale equipment pose production challenges. Carrots are moderately sensitive to diseases such as alternaria leaf blight and bacterial blight, which thrive in moist, shaded conditions often created by APV. They require good soil quality and consistent moisture levels, which APV systems help maintain. This also shows from our modeling where carrots yield up to 25% more in the APV system. However, in the cost analysis, we added 300 hours of labor for the agrivoltaics cost calculation because traditional harvesting equipment can't access the crops with the current row spacing.

Potato

Potatoes show moderate suitability for agrivoltaics. They are highly sensitive to certain pests and diseases and the soil often needs to 'rest' several years in the crop rotation before potatoes can be planted again. Factors such as soil type and irrigation practices play a significant role in maximizing yield potential under partial shade systems. Potatoes will likely need to be hand-harvested in an APV system adding to the production costs.

Watermelons[12]

Watermelons are highly susceptible to pests like cucumber beetles and diseases such as fusarium wilt, which is soil-borne and requires a crop rotation of 5-6 years for control. Watermelons have a stable market demand but are hindered by high spoilage risks and considerable water requirements. Agrivoltaic shading can aid in moisture retention, potentially reducing irrigation needs and helping maintain crop quality. However, the crop also has high light requirements, and yield reductions might be significant under partial shade. We estimated a yield reduction of 40% which still allows for some profits, but the long crop rotation reduces long-term profitability.

Summer Squash[13]

Summer squash aligns well with agrivoltaic conditions, showing low spoilage risk and strong market demand. Most varieties are relatively resilient to pests and diseases, but crop rotation is important to avoid the build-up of soil-borne pathogens. We estimate a 40% yield reduction for summer squash under APV and the crop still remains profitable. Squash is highly dependent on pollination,

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[12] University of Maryland Extension. (1999). *Crop Profile for Watermelons in Maryland.* University of Maryland Extension.

[13] University of Kentucky Center for Crop Diversification. (n.d.). *Summer squash* (CCD-CP-121). University of Kentucky. Retrieved October 27, 2024, from https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/summersquash.pdf

which could pose an additional risk which could potentially be mitigated by pairing with an apiary and pollinator friendly plantings.

Modeling Methods

For the expected control yields, USDA data was sourced (unless otherwise specified) from the USDA/NASS Quickstats Ad-hoc Query Tool.[14] For each crop, the most specific location available was used (Maryland in most cases), and the most recent year available for that location was used. For crop budgeting, we strived to find the most accurate budgeting tool. This meant that the tools needed to be locally relevant, with up-to-date costs and prices. We accounted for inflation when budget tools were from before 2022. Unskilled labor cost was estimated at $15/hr. Finally, for all crops, a land lease of $250/acre was assumed, and for all agrivoltaic budgets, a subsidy of $250/acre was assumed.

One of the most critical factors for plant growth is irradiance. To assess the agrivoltaic potential of a site, we first evaluate the light available for crops in the spaces between solar panel rows. Modeling analysis by Fundusol indicates that the current setup results in an approximate 36% reduction in between-row irradiance. While raising the panels slightly increased light availability, the effect was minimal. Additionally, we observed that irradiance is slightly lower for single axis tracker systems. Consequently, the irradiance at Sugarloaf is about 5% lower than at Ramiere. However, given the similarities between the sites and the small scale of this difference relative to other modeling factors, we consider the two sites as comparable. For our estimates, we use a conservative irradiance reduction value of 40%.

Table 4: Daily Light Integral figures between rows (Ramiere)

	DLI	**Reduction**
Control (same site, no panels)	83055 Wh/m^2	
With panels at the listed height (2.46m):	53594 Wh/m^2	35.7%
With panels at 2.7m	54448 Wh/m^2	34.44%

With the irradiance results the modeling simulations were done using Fundusol's in-house agrivoltaic modeling suite (described below) with crop growth modeled over the growing seasons described in the University of Maryland Extension Planting Calendar.[15] The model was run twice for each crop: once as a control and once with the solar panel setup. This produced the following changes in crop yield for each crop. Since both sites have a very similar design (differences in crop yield between both sites are <5%), we only modeled for Ramiere.

Table 5: Modeled Crop Yield Changes Under Agrivoltaics System

Crop	**Change (Ramiere site)**
Corn	-12%
Soy	+13%
Lettuce	-39%

[14] https://quickstats.nass.usda.gov/results/5B142C1E-343F-3ADB-B746-531600CB1811
[15] https://extension.umd.edu/resource/vegetable-planting-calendar

Tomato (fresh market)	-12%
Carrot	+25%
Potato	-26%
Watermelon	-40% (based on estimate, no modeling data available)
Summer Squash	-40% (based on estimate, no modeling data available)

Table 6: Model Assumptions

	Sugarloaf	**Ramiere**
Panel height	5'2" panel height	8' maximum panel height
Row spacing	8.08' interrow row spacing	8' interrow row spacing
Tilt	Single-axis tracking system	Fixed-tilt system

Fundusol's modeling suite consists of proprietary thermal and irradiance models, which are then fed into publicly available research-based biomass models. For soybeans, the WOFOST model was used, and for the remaining crops, the SIMPLE model was used.

Thermal Model

Fundusol's thermal model provides a detailed, climate-responsive prediction of microclimate temperature distributions at both the panel and crop level, along with relative humidity. Temperature predictions integrate environmental and system-specific variables like array height, using energy conservation and computational Fluid Dynamics (CFD) principles to predict thermodynamics. The projections also factor in the influence of crops, especially through evapotranspiration, on humidity and temperature. The model then calculates relative humidity beneath the panels and supplies this data to Fundusol's crop biomass models.

Irradiance Model

Fundusol's irradiance model leverages PV system geometry to assess solar projects' impact on ground-level irradiance. Using local irradiance data and matrix-based ray tracing, the model evaluates irradiance over hundreds of field points hourly, aggregating to daily light integrals (DLI). To ensure DLI aligns with crop growth, it applies a Light Saturation Point (LSP) cap tailored to each crop's light saturation limit, refining inputs for Fundusol's biomass models.

WOFOST Model

The WOFOST model, a mechanistic and dynamic system, calculates daily crop growth by examining processes such as photosynthesis and respiration and how they are influenced by environmental conditions. Crop-specific parameters include initial dry weight, life span of leaves, rate of phenological development, death rates, fractions of assimilates partitioned to plant organs, and the minimum and maximum nutrient concentrations per plant organ. Climate data inputs required include minimum, average, and maximum air temperature (°C), irradiation (W/m²), humidity (relative humidity in %), windspeed (m/s), monthly rainfall (mm), and number of rainy days (count). WOFOST has been utilized by researchers worldwide and applied to many crops across various climatic and management conditions. For further information, reference Wit, et. Al. 2019.[16]

[16] https://doi.org/10.1016/j.agsy.2018.06.018

SIMPLE Model[17]

The simple generic crop model (SIMPLE) model was calibrated and evaluated for the simulated crops using observations for biomass growth, solar radiation interception, and yield from 25 detailed field experiments for a total of 70 treatments from 17 sites, resulting in an RRMSE of 25.4% for final yield. The paper has been cited 125 times. The parameters involved include the cumulative temperature requirement from sowing to maturity (°C d), potential harvest index, cumulative temperature requirement for leaf area development to intercept 50% of radiation (°C d), maximum daily reductions in leaf area index due to heat stress and drought stress (°C d), the threshold temperature to start accelerating senescence from heat stress (°C), the relative increase in radiation use efficiency per ppm elevated CO2 above 350 ppm, and the sensitivity of radiation use efficiency (or harvest index) to drought stress measured by the ARID index, which is calculated based on water scarcity. Environmental variables required to run the SIMPLE model include daily maximum temperature (°C), rainfall (mm), irrigation (mm), solar radiation (MJ m−2), atmospheric CO2 concentration (Ppm), sowing date, and harvesting date.

All simulations were conducted (apart from where otherwise noted) using the data listed for the Ramiere site. Environmental data fed into all models was based on ten-year averages of local data.

[17] Please read the full formulation in the paper “A SIMPLE crop model” by Zhao et. al.

Animal System Modeling

Grazing modelling

This section covers our modeling and resulting recommendations regarding grazing density, pasture species selection, and grazing management strategies to protect both animals and solar panels. Additionally, we provide a financial scenario analysis to better understand the costs and benefits of grazing-integrated agrivoltaics. For successful grazing at these sites, we recommend raising the ground clearance to at least 3.5 feet. This will ensure animal safety and allow for easier access to farming activities. In Appendix B, an overview can be found of Fundusol's construction cost estimates. While we focus on sheep grazing given the high level of compatibility with solar, a discussion of other potential grazing options is included as well.

Grazing Management Strategies

Across the two projects, which would ideally be farmed by the same tenant, the total pasture acreage will be around 170 acres of which 30 acres will be on the solar array. To manage the land effectively, a grazing plan needs to be designed to optimize sheep production, pasture health, compliance with vegetation management obligations, and the logistics of co-location with a PV site. Below we summarize several grazing strategies that can be employed. Typically, the more intensive management strategies lead to higher revenues but also increase costs. We recommend rotational grazing, but the decision will be up to the tenant farmer, which may also be impacted by additional sites the farmer has under contract

- **Continuous grazing:** Sheep have unrestricted access to the entire pasture, reducing fencing costs and maintenance. However, this can result in uneven grazing, overgrazing of preferred plants, weed growth, and long-term issues like parasites. An unknown of this system is that sheep can access the solar array for shelter when they like, which could mean they don't fulfill their proper vegetation management role around the panels, but it can also lead to overgrazing and soil degradation on those sites if they prefer them more.
- **Rotational grazing:** Sheep rotate through multiple paddocks with shorter grazing periods, typically lasting a few days to a week. This promotes better pasture recovery, more even grazing, improved forage, and better weed control, but it requires higher upfront costs for fencing and water infrastructure. To reduce the labor intensity of this grazing strategy, the farmer could use geofencing; this technology uses geo-located collars and warns the sheep when they leave their virtual paddock.
- **Intensive rotational grazing:** Pastures are divided into numerous small paddocks, with sheep moved every 1-3 days. This system maximizes pasture productivity and soil health but demands significant investment in fencing, water infrastructure, and frequent management.[18]

[18] https://www.sheep101.info/201/grazingsystems.html

Pasture Species

Solar grazing can easily be combined with pollinator-friendly habitat. Sheep are selective grazers meaning that they favor the more digestible forage, which allows for more biodiversity in the species mix. We recommend the Fuzz and Buzz seed mix from the American Solar Grazing Association[19].

For the estimation of the appropriate stocking rate below, we simplified the pasture mix and use ryegrass for the purpose of our calculations and assumed that other pasture species in the mix have similar yields. The dry matter (DM) yield for perennial ryegrass on well-managed pastures in Maryland typically ranges from 2.5 to 5 tons/acre/year, depending on the intensity of management and environmental conditions. Lower yields around 1 to 2 tons/acre/year are observed in unimproved or less intensively managed pastures[20].

Stocking Density

For an Agrivoltaic site, the number of sheep per acre will differ from a typical sheep grazing operation. The stocking density is a management decision based on the expected pasture yield. The pasture yield is influenced by the following factors:

- Pasture improvement: liming, fertilization, weed removal, a healthy mix of grasses and legumes, appropriate shading, and water.
- Correct level of nutrition available for the sheep depending on their production stage.
- Appropriate grazing management strategy (continuous grazing, low rotational grazing, moderate rotational grazing, intensive rotational grazing).[21]

As can be seen from this list, pasture growth rates are highly variable and largely determined by environmental and management conditions, with irradiance (Photosynthetically Active Radiation - PAR) being one of the most significant drivers[22]. To make an estimate of the pasture yield under solar, at both sites, we assume a directly proportional relationship between the yield and PAR irradiance. Based on our irradiance studies, we estimate an in-row PAR reduction of around 40% at both sites. This would mean that the range for ryegrass production would be reduced to a DM yield of 1.5 – 3 tons/acre/year with a mid-point of 2.25. For this analysis, we use the Katahdin sheep breed**,** one of the most common breeds for solar grazing[23]. They are very docile and have little complications with lambing. A mature ewe weighs between 120 to 160 pounds**,** with a midpoint of 140 pounds**[24]**. The recommended dry matter (DM) intake is 3% of body weight, amounting to 4.2 lbs./day of DM per sheep[25]. This means that for pasture in the solar array, the stocking rate is estimated at 2.7 to 4.1 ewes per acre, with a midpoint of 3.4 ewes/acre. And for the pasture outside the

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[19] https://solargrazing.org/fuzz-and-buzz-solar-seed-mix/

[20]: Barrett, P. D., Laidlaw, A. S., & Mayne, C. S. (2005). Giria, K., Chia, K., & Chandra, S. (2019). USDA NRCS Idaho State Office. (2008). University of New Hampshire, College of Life Sciences and Agriculture. (2021). Smith, R. G., Atwood, L. W., & Warren, N. D. (2014).

[21] https://extension.wvu.edu/files/d/38c2e0b8-0c0c-4f1e-8dd8-68c3496a9690/stocking-rate.pdf

[22] Barrett, P. D., Laidlaw, A. S., & Mayne, C. S. (2005).

[23] American Solar Grazing Association. (2019). *Solar Grazing: A New Farm Income*. Retrieved from https://solargrazing.org/wp-content/uploads/2019/06/Solar-Grazing-Brochure.pdf

[24] Oklahoma State University. (n.d.). *Katahdin Sheep*. Breeds of Livestock. Retrieved from https://breeds.okstate.edu/sheep/katahdin-sheep.html

[25] University of Maryland Extension. (n.d.). *Determining Your Pasture Stocking Rate*. Retrieved from https://extension.umd.edu/resource/determining-your-pasture-stocking-rate/

array, with a full yield of 2.5–5 tons/acre/year, the stocking rate increases to 4.6 to 6.9 ewes per acre, with a midpoint of 5.7 ewes/acre. For simplicity, we continue the calculations with 3 ewes/acre in the solar array and 7 ewes/acre on the rest of the land. It will again be up to the farmer to select an appropriate stocking rate and this calculation is mainly to support the broader analysis contained in this report to understand the options. Improved pastures can reach stocking rates of 10 sheep per acre.[26] Our estimates for the total stocking rates for the acreage of the two sites are around 80 ewes. It is important to note that we conservatively assume zero productivity on the land under the solar panels. In reality there will be grass growth under the panels as well so the total stocking rate will likely be slightly higher. But we chose to exclude this for conservatism against overgrazing.

Table 7: Stocking rate calculation

	Solar array	Outside array	Total
Total acreage	15	5	20
Stocking rate / acre	3	7	4
Total sheep	45	35	80

Sheep Farmer Budget and Profits

To understand the expected profit a sheep farmer can make, a budget from The University of Maryland is shown below.[27] This is a typical commercial sheep budget that sells live lambs (hair or wooled) as its main source of income. It assumes that lambs are replaced annually. All costs in the model were increased by 20%, accounting for inflation since 2016. The selling prices were updated using the USDA *Centennial livestock sheep and goat auction prices* (October 23, 2024). Selling weights were adapted to the smaller Katahdin sheep. Current prices are: Male lambs at $1.91/pound, ewe lambs at 1.80, cull rams at 0.80, and cull ewes at $0.88/pound. We assumed no income from wool because Katahdin sheep don't grow enough fleece.

From our analysis (table 6), we find that a farmer could earn a yearly profit of $14,700 from sheep farming at both sites. This includes a payment to the farmer for vegetation management services around the solar array (including the areas directly below the panels). If we exclude this payment ($250/acre), total annual profit would be $7200. For comparison with a conventional grazing operation at this site, we assumed a $50 lease payment, total annual profit for both sites would be $17,200.

Table 8: Sheep farming budget (based on the University of Maryland Ag. Extension Excel Tool)

	Solar Array	**Outside Array**	**Total**	**Conventional**	**unit**
Stocking density	3	7	3	7	Ewes/acre
grazable area	15	5	30	30	Acres
Ewes	45	35	80	210	
Relative sheep revenue	294	294	294	294	$/ewe
Total relative income	882	2058	784	2058	$/acre

[26] https://www.raisingsheep.net/how-many-sheep-per-acre
[27] https://solargrazing.org/resources/solar-grazing-budgets/

PV subsidy	250	250	250		$/acre
Lease	-			50[28]	$/acre
Total income	16980	11540	31020	60240	$
Relative annual expenses	204	204	204	204	$/ewe
Total annual expenses	9180	7140	16320	42840	$
Total profit	**7800**	**4400**	**14700**	**17400**	**$**
Relative profit	**520**	**880**	**490**	**580**	**$/acre**
Relative profit	**173**	**126**	**184**	**83**	**$/ewe**

Wire Management

Effective wire management is crucial for the success of agrivoltaic projects, especially when integrating sheep grazing. To minimize interference with sheep movement and grazing, cables and conduits should be elevated to a height that allows sheep to pass comfortably underneath. This can be achieved through various methods, including:

- **Raised cable trays:** Installing cable trays suspended above grazing height.
- **Underground conduit:** Burying conduit below the grazing surface to protect cables and eliminate obstacles for sheep.
- **Pole-mounted wiring:** Using existing or dedicated poles to elevate cables above the grazing area.

These strategies are incorporated into Chaberton's design and installation considerations and will prevent sheep from becoming entangled in wires, reduce the potential for damage to the wiring system, and maintain a safe grazing environment.

Other Animal Grazing Options

Other livestock options may be available such as miniature (e.g. Dexter) cows and certain types of pigs. The analysis of suitability for these animals is similar to those for sheep as discussed above.

However, the subset of animals suitable for grazing alongside solar projects is not very long. Animals like pigs, which dig, or goats, which climb and chew on cables/etc, pose risks to the system. Larger livestock might damage the panels or face electric shock hazards.

The integration of poultry with agrivoltaic systems presents another possible model for sustainable farming. For pasture-raised poultry, small-scale farmers can report gross profits of $2–3 per bird,

[28] https://extension.umd.edu/sites/extension.umd.edu/files/2023-10/2022Maryland%20Cash%20Rental%20Rates.pdf

depending on the management level and inputs[29]. Stocking rates for poultry typically range from 500 to 1,000 chickens per acre[30]. To avoid damaging the pasture, the chickens must be moved frequently, using mobile coops or chicken tractors. Combining poultry with agrivoltaic systems could be a viable and profitable option. However, it will likely be much more labor intensive than normal pasture poultry because the mobile coops must be small enough to fit in between the solar panels.

Combining Poultry, particularly when raised on pasture, contributes to soil fertility through manure deposition. However, challenges such as predator management, labor intensity, and maintaining pasture quality need to be addressed. Additionally, poultry operations are usually more limited by labor availability and disease pressure than space and are not common in Montgomery County, making this a less likely option for these projects.

Apiary Solution

Introduction

The concept of co-locating beehives with solar farms is gaining traction nationwide. Studies have shown that solar sites can provide suitable habitats for honeybees, with the panels offering shade and shelter while the surrounding vegetation provides foraging resources.

According to the USDA, U.S. honey production has declined over the last several decades, while honey imports have only continued to grow[31]. In the U.S., over 70% of the honey we consume is imported. However, solar farms offer an opportunity to support and grow our U.S. honey industry.

By planting pollinator-friendly habitats, solar farms can serve as safe, stable homes for honeybees. In place of or in addition to the other options presented in this report, the project may opt to work directly with local beekeepers and private beekeeping businesses to locate hives at the solar farm.

Examples of Apiary-integrated solar in the U.S. include:

- Dominion Energy's 1.6 MW Black Bear Solar project in Buckingham County, VA[32]
- Pine Gate Renewable's 13 MW Eagle Point Solar Farm in Medford, OR[33]

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[29] University of Minnesota. (n.d.). Operating Costs and Revenues of Pastured Poultry Systems: A Comparative Analysis. University of Minnesota Digital Conservancy. https://conservancy.umn.edu/server/api/core/bitstreams/36b16705-a53d-47ca-89e0-e1d27673d93e/content

[30] Salatin, J. (2016). Pastured Poultry Profits: How to Net $25,000 in 6 Months on 20 Acres. Polyface Farms.
[31] USDA (2022), Honey imports continue to rise, offsetting declining U.S. production, https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=104135
[32] Paullin, C. (2024). Dominion Energy pairs solar with honey bees to preserve agricultural land, https://virginiamercury.com/2024/10/18/dominion-energy-pairs-solar-with-honey-bees-to-preserve-agricultural-land/
[33] Peters, A. (2018). This new solar farm combines clean energy and beehives, https://www.fastcompany.com/40588875/this-new-solar-farm-combines-clean-energy-and-beehives

- Lightsource BP's 153 MW Briar Creek Solar project outside of Dallas, TX[34]
- Lightsource BP's 173 MW Bellflower Solar project near Indianapolis, IN[35]

Dominion's Black Bear Solar Project is a prime example of a distributed generation, small-scale solar project that integrates an apiary system. The array hosts 4 beehives (3.5/acre) that are home to about 180,000 bees in total. Mountain House Apiaries manages the beehives and are responsible for installation and maintenance costs but get to benefit from the free pollinator and natural grass production on the site. This is a model that can be replicated at Sugarloaf and Ramiere, integrated with sheep grazing.

Projects	Array Acreage	# of Hives	Beekeper Installation Costs	Hive Population	Honey Production (pounds)	Honey Revenue (65% of production)	Profitable in Year 1?
Sugarloaf Bees w/o PV	17.9	6	$4800	270,000	210	$1,841	No
Sugarloaf Bees w/APV	17.9	6	$0	270,000	300	$2,630	Yes
Ramiere Bees w/o PV	10.6	4	$3200	180,000	140	$1,227	No
Ramiere Bees w/APV	10.6	4	$0	180,000	200	$1,753	Yes

Table 6: Cost model for Beekeeping with Agrivoltaics

Hive Density

Determining the appropriate number of beehives per acre involves considering the availability of floral resources within and around the solar farms. A common guideline suggests 2-3 hives per acre, but this can be adjusted based on the diversity and abundance of flowering plants[36]. For instance, the Minnesota Native Landscapes project discovered that solar sites with diverse native plantings supported larger bee populations and increased honey production. A careful assessment of the existing vegetation at Sugarloaf and Ramiere, along with a pollen analysis, will inform the optimal hive density for these specific locations. Chaberton can engage local beekeepers in an RFP to receive a proposed apiary layout, given their expertise.

[34] https://lightsourcebp.com/us/project/briar-creek-solar/

[35] Ludt, B. (2023). Lightsource bp completes 152 MW pollinator-friedly solar project in Indiana, https://www.solarpowerworldonline.com/2023/05/lightsource-bp-completes-pollinator-friendly-solar-project-in-indiana/

[36] College of Agriculture, Purdue University, Whitford, F. (et. al), The Complex Life of the Honey Bee, https://ag.purdue.edu/department/extension/ppp/resources/ppp-publications/ppp-116-pol-9.html

Figure 8: Depicting Potential Hive Locations at Project Sugarloaf

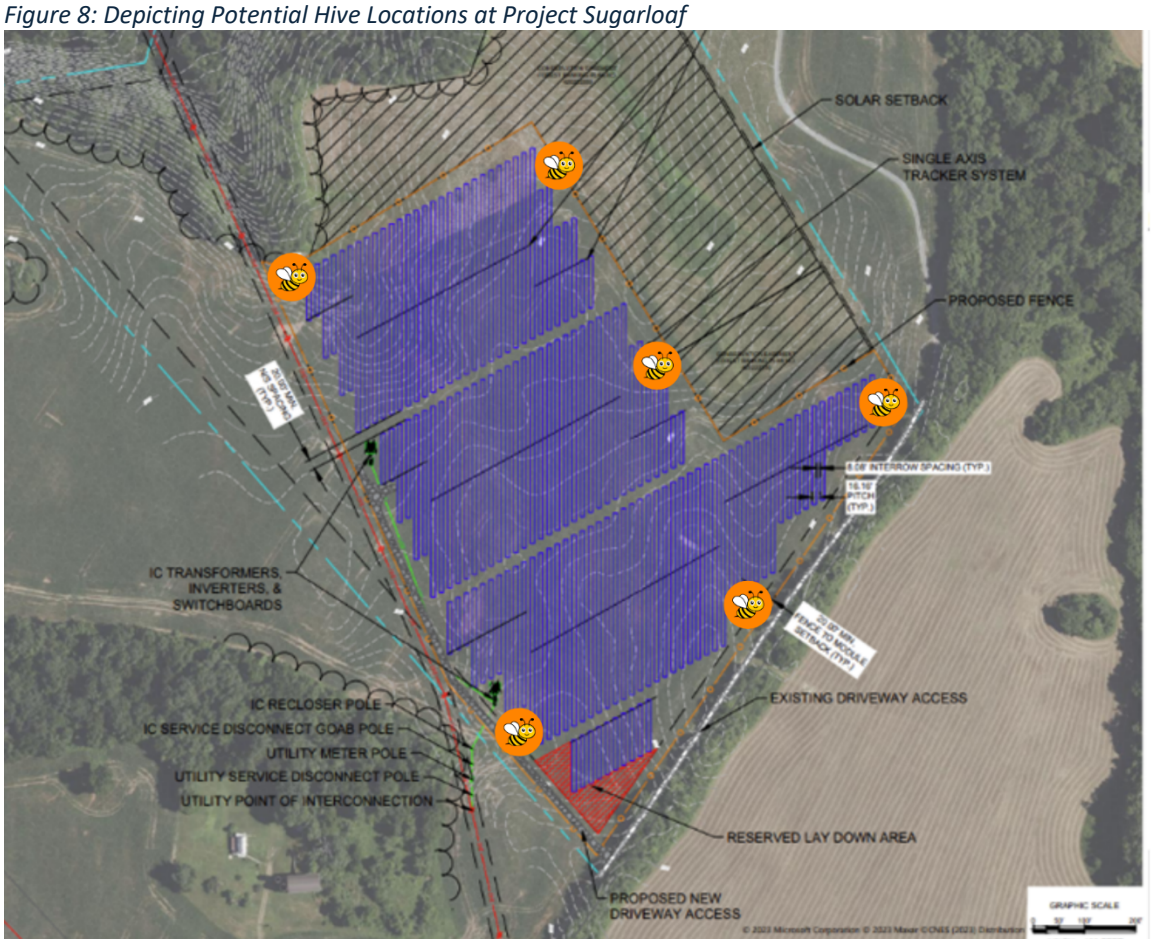
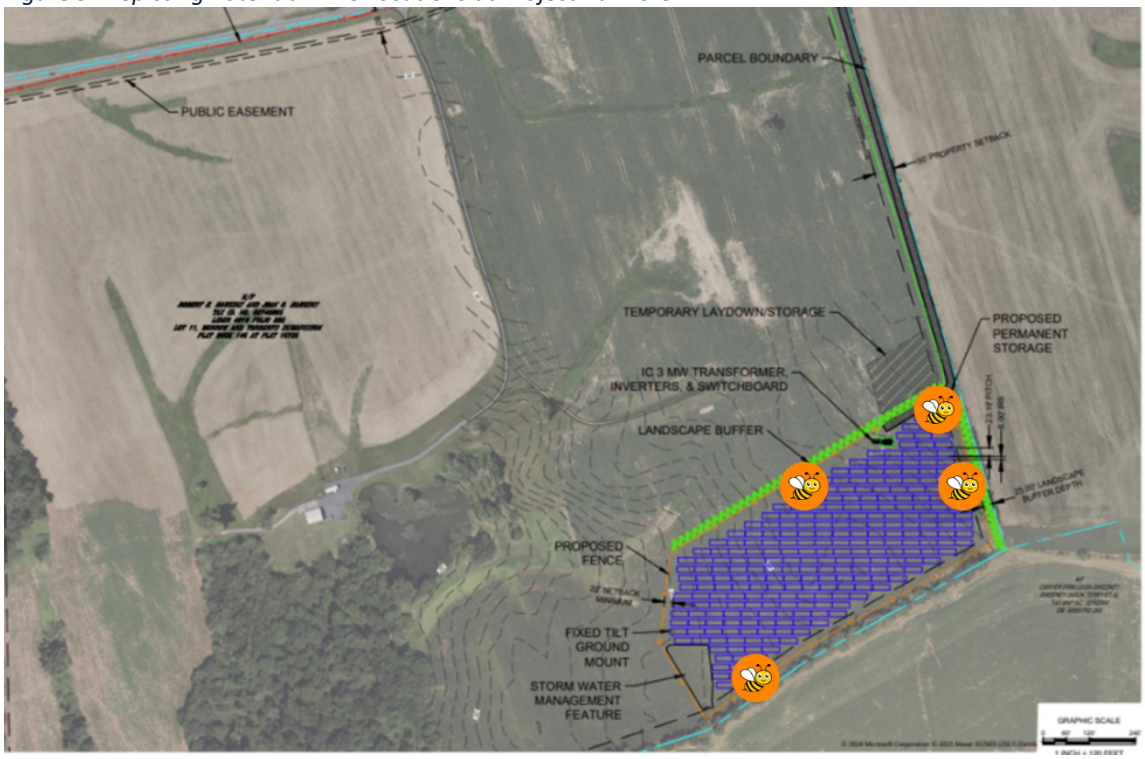


Figure 9: Depicting Potential Hive Locations at Project Ramiere



Hive Population

A single healthy beehive can house a population of 40,000 to 60,000 bees at its peak. This number naturally fluctuates throughout the year, influenced by factors such as weather patterns, the availability of nectar and pollen, and the overall health and productivity of the colony. The solar panels at the two sites create unique microclimates that can be beneficial for bees. The panels provide shade, reducing harsh temperatures and water evaporation, which can be especially important during hot Maryland summers. This moderated environment can help flowering plants thrive beneath the panels, providing a consistent and diverse source of nectar and pollen for bees. Additionally, the panels can offer shelter from wind and rain, further enhancing the habitat's suitability for pollinators. These stable microclimates, coupled with abundant forage, can lead to increased bee activity, stronger colonies, and potentially higher honey yields.

Honey Production

Honey yields vary significantly based on the richness of floral resources in the surrounding landscape, weather conditions throughout the season, and beekeeping management practices. In Maryland, a typical hive can produce 30-60 pounds of honey annually. However, research by the National Renewable Energy Laboratory (NREL) indicates that hives located on solar farms with pollinator-friendly plantings can often exceed these averages[37]. Cultivating a diverse mix of flowering plants at Sugarloaf and Ramiere, Chaberton, partnered with local beekeepers, can create a thriving environment for bees and potentially boost honey yields compared to standard apiaries. The APV-case used in Figure 6 is 50 pounds of honey produced at each beehive in the APV scenario, hosting pollinator-friendly vegetation for sheep. The base case in which the site is farmed for soy, hay, and corn rotations, uses 35 pounds per beehive production given the lower number of resources for bees.

Honey Consumption and Winter Survival

A crucial aspect of managing apiaries, especially in temperate climates like Maryland, is ensuring that honeybee colonies have adequate food stores to survive the winter. This involves understanding the colony's consumption patterns and conserving a sufficient percentage of honey within the hive. Honeybees rely on honey stores as their primary energy source during the winter when foraging opportunities are limited. The amount of honey a colony needs to survive depends on factors such as colony size, winter length and severity, and the availability of alternative food sources like pollen. Research and beekeeping practices suggest that a colony should retain approximately 30-45% of the total honey produced during the active season.

- **Northern climates:** In colder regions with longer winters, colonies may require the higher end of this range (45% of honey retained).
- **Southern climates:** In milder regions with shorter winters, colonies may survive with less honey (30% of honey retained).

[37] National Renewable Energy Laboratory, Dreves, H., Beneath Solar Panels, the Seeds of Opportunity Sprout https://www.nrel.gov/news/features/2019/beneath-solar-panels-the-seeds-of-opportunity-sprout.html

The local beekeeper chosen by Chaberton shall be responsible for proper hive management, including disease control, swarm prevention, and providing adequate space for honey storage, which can optimize honey production. To understand how much honey is produced and how much to conserve, the beekeeper may need to weigh the hives and the bees from season to season. For the purposes of this report, we will assume 35% of honey is retained for the bees to survive Maryland winters.

Native Grasses, Sheep Grazing, and Bees

Integrating native grasses with sheep grazing can further enhance the ecological value of solar farms. The grasses provide additional foraging resources for bees, while the sheep help manage vegetation growth, reducing competition for resources and promoting plant diversity. This managed grazing can also create open areas within the grasslands, which are essential nesting sites for many native bee species. The combination of native grasses, sheep grazing, and pollinator-friendly plantings creates a dynamic and resilient ecosystem that supports a wide range of pollinators, including honeybees.

Installation Costs

Establishing a new beehive involves costs for the hive itself, essential equipment, and the initial colony of bees. These can be up to $800 per hive.[38] Additional costs include smokers, protective gear for beekeepers, hive tools, and ongoing maintenance expenses such as varroa mite treatments and supplemental feeding during lean periods. Careful budgeting and planning can help manage these costs and ensure the long-term sustainability of the apiary. Chaberton can choose to offset the costs of beehive installation to make beekeeping more attractive to farmers on both sites. This is evidenced by the Beekeeper incurring no installation costs in the "w/o APV" scenarios in Table 6.

Honey Revenue

Locally produced, raw honey is a sought-after commodity, often commanding a premium price in the market. Farmers in Maryland can generally sell their honey for $10-$20 per pound, with the final price influenced by the honey variety, packaging, and marketing strategy.

Apiary	**Cost per 1b of Raw Honey**	**Locality**
Chesapeake Queen Company	$16.50[39]	Frederick, MD
McDaniel Honey Farm	$15.00[40]	Manchester, MD
John Newman Honeybee Co.	$18.99[41]	Baltimore, MD
Cybee's Honey	$13.49[42]	Jarrettsville, MD

[38] Anderson, C. (2023), Beekeeping Costs, https://carolinahoneybees.com/cost-of-beekeeping/
[39] https://www.chesapeakequeencompany.com/product-page/1-pound-jar-of-raw-honey
[40] https://themarylandstore.com/products/pure-natural-honey-1lb-bottle?srsltid=AfmBOor92CmKvVRmwe-tBxKPhtNi6ZRDnksDjD82rryxDr-6NgE5IxaZ
[41] https://www.thejohnnewmanhoneybeeco.com/
[42] https://freedomvalleyfarmmd.com/shop/honey-and-produce/maryland-raw-honey/

Furthermore, exploring value-added products like beeswax candles, lip balms, and lotions can diversify income streams and enhance the economic viability of the apiary. Replicating the Dominion Black Bear Solar project model, a local apiary will be selected through an RFP process to install and manage the apiary integration for the project's life. We have used the lowest price from Figure 7 ($13.49) to calculate the potential revenue from selling solely raw honey from the two sites. Chaberton would not be responsible for selling or marketing apiary products.

By thoughtfully integrating apiaries into the Sugarloaf and Ramiere agrivoltaic projects, Montgomery County can demonstrate a commitment to sustainable land use that benefits both the environment and the local agricultural economy. Though beekeeper(s) will be solely responsible for the economics of the apiary-integration, Figure 6 shows that they can see profitability in Year 1 if combined with solar and nominal hive installation costs are covered by Chaberton.

Farmer Sourcing Plan

Introduction

By transferring vegetation management contracts from landscaping companies to farmers, solar developers can create mutually beneficial relationships. In this arrangement, the solar developer essentially pays the farmer a fee for his services as a contractor.

A **Scope of Work** (SOW) would be advertised, inviting farmers to submit crop or grazing management strategies that meet the specific criteria outlined by the solar developer, including maintaining appropriate plant height, effective weed management, and navigating solar infrastructure. These strategies would be thoroughly evaluated to ensure they align with the required vegetation management standards. Upon agreement, the responsibilities of both parties would be clearly defined, including the site manager's duty to provide compensation and maintain perimeter fencing, while the farmer manages interior fencing and ensures the health and welfare of the sheep or crops.

This collaborative approach allows both the solar developer and the farmer to establish a tailored agreement that meets the operational needs of the solar facility while supporting the farmer's agricultural practices. The following **Services Agreement** outlines some of the most important terms and conditions that govern this partnership.

Services Agreement

This agreement outlines the terms between the site manager and the sheep farmer for grazing services as a method of vegetation management.

The sheep farmer agrees to manage grazing to control vegetation, ensuring it does not interfere with solar panel function. In return, the site manager will compensate the sheep farmer for these services. In cases where sheep cannot access certain areas or during times outside the grazing season, in accordance with the vegetation management plan filed with Case No 9726 and 9733.

The agreement should specify the duration of the contract, including conditions for renewal or termination. The sheep farmer is responsible for the health and welfare of the sheep, while the site manager must ensure access to a reliable water source.

Both parties will agree on a communication protocol regarding sheep health issues and any potential damage to solar equipment. The site manager is responsible for informing the sheep farmer of any required sheep relocation due to site maintenance. Prohibited plants and chemical usage must be agreed upon, and no unauthorized chemicals are allowed on the site.

Fencing responsibilities are shared: the site manager finances and maintains the permanent perimeter fencing, while the sheep farmer manages any interior fencing needed for effective grazing.

Both parties are indemnified from liabilities arising from a breach of contract by the other party. The sheep farmer must carry appropriate insurance—including general liability, auto liability, and workers' compensation—while the solar site must be insured separately by the site manager.

The site manager and sheep farmer can agree on additional terms such as a system for tracking third-party access, as well as recording the presence of both the site manager and sheep farmer. They can also establish rules for vehicle access and parking for sheep transport or solar site maintenance. Additionally, both parties can agree on protocols for informing third parties about proper interaction with the sheep to ensure safety.

Application Process

In short, farmer sourcing will be conducted as a hiring search. See below for an outline of the application process, a list of places to advertise job postings and interview questions.

Job Posting

Principally, a SOW will be disseminated within the farming community. The SOW and associated job posting will have the following characteristics.

1. General Farmer Profile
    i. Applicant’s crop/livestock experience and years of experience with each
    ii. Applicant’s vegetation/landscape management experience
    iii. Necessary access to equipment (what does the farmer need to bring to the farm site?)
2. Site Details
    i. Site location and description (size, irrigation, soil types, infrastructure, etc.)
    ii. Description of solar array, necessary considerations
3. Compensation structure
    i. Access to farmland
    ii. Annual payments. We recommend a range of $200 to $450 per acre per year for the tenant farmer in exchange for the contractual duties that the tenant needs to perform.
4. A contractual SOW

i. A legal contract delineating specific duties, obligations, indemnification, term, etc. It must contain a vegetation maintenance standard. See an example contract standardized through the American Solar Grazing Association (ASGA) here, and an example vegetation maintenance standard below:

Vegetation Maintenance Standard for Agrivoltaic Solar Site

Farmer shall have all vegetation on the Solar Site to be maintained as follows at substantially all times on substantially all areas specified in SOW, subject to the following standards:

Check all that apply:

- ❑ Vegetation will not shade the solar panels.
- ❑ Vegetation will not reach a height taller than approximately _____ inches.
- ❑ Vegetation will remain between approximately _____ inches and ____ inches.
- ❑ *Describe other standard:* _____

[Vegetation Maintenance Standard for Other Areas. Sheep Farmer shall cause all vegetation in [*describe area outside the fence line or other areas outside Solar Site itself that are subject to this SOW, if applicable*] to be maintained as follows at substantially all times on substantially all such areas, subject to the schedule set forth in Section 7 below:

Check all that apply:

- ❑ Vegetation will not reach a height taller than approximately _____ inches.
- ❑ Vegetation will remain between approximately _____ inches and ____ inches.
- ❑ *Describe other standard:* _____]

[1]

Dissemination of Job Post

This job posting will be placed on a list of job boards, organization sites, social media forums, and Maryland-specific forums aggregated by Okovate, Chaberton, and its partners:

Job boards:

- AgCareers.com - Large agricultural job site
- AgHires.com - Specialized in agriculture and food production jobs
- FarmWork.com - Focus on farm labor and management
- Indeed.com - General job site with farm category

- GoodFoodJobs.com - Sustainable food industry jobs
- Coolworks.com - Seasonal and year-round outdoor jobs including farming
- Attra.ncat.org - Sustainable agriculture network

Organization sites:

- Montgomery County Land Link[43]
- National Farmers Union Job Board (nfu.org/careers)
- American Farm Bureau Federation (fb.org)
- Sustainable Farming Association Job Listings
- National Young Farmers Coalition (youngfarmers.org)
- Agrisolar Clearinghouse (agrisolarclearinghouse.org/)

Social media forums:

- LinkedIn - Use hashtags: #AgJobs #FarmingJobs
- Facebook Groups:
    - "Agriculture Jobs and Careers"
    - "Farmers Helping Farmers"
    - "American Farmers"

Maryland-Specific Job Resources

- Maryland Farm Bureau
- University of Maryland Extension
    - The Maryland Beginning Farmer Success Project
    - Maryland Rural Enterprise Development Center

State Organizations

- Maryland Farm Bureau (mdfarmbureau.com)
- University of Maryland Extension
    - University of Maryland Extension Job Board
    - The Maryland Beginning Farmer Success Project
    - Maryland Rural Enterprise Development Center
- Maryland Department of Agriculture Career Page
- Southern Maryland Agricultural Development Commission (SMADC)

Regional Job Boards

- MarylandJobNetwork.com - Agriculture section
- Delmarva Farmer Classifieds
- Lancaster Farming - Maryland section (lancasterfarming.com)

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[43] https://www.mocolandlink.org/farm-listings/farmers-seeking-land

Local Resources

- Future Harvest CASA (futureharvest.org)
- Maryland Organic Food & Farming Association (marylandorganic.org)

County-Level Resources

- County Extension Offices - All 23 counties
- Local Soil Conservation Districts
- County Farm Bureaus

Print Publications

- The Delmarva Farmer - Classified section
- Maryland Farmer Magazine
- Local county newspapers - Agriculture sections

Application Screening

Initial review will identify applicants that match the criteria within the job posting. This can be done manually or with machine learning recruiting tools. Applicants will be screened through an interview in accordance with the following hiring Matrix.

Applicants will be scored on the following criteria. The interviewer will rank their score within each category on a scale of 0-3 (0 = No demonstrated experience/skill, 3 = Very high level of experience/skill) based on the applicant's answers to the questions. This system identifies farmers with the most compatible farming and vegetation management plans. See below for specific interview questions within each category.

- Experience with agrivoltaics:
    - Have they worked in an agrivoltaic system before?
    - If not, are they willing to learn and adapt their practices?

- Crop selection:
    - What crops do they recommend that are well-suited for partial shade conditions? [This is a resource Okovate can assist with]
    - How do they plan to optimize crop yield in areas with varying sunlight exposure? [This is a resource Okovate can assist with]

- Equipment and infrastructure compatibility:
    - Is their farming equipment compatible with the solar panel layout?
    - Do they have or need specialized equipment for working around solar installations?
    - What infrastructure (fencing, roads, toolsheds, wash/pack, etc.) do they need for their operation?

- Understanding of solar infrastructure:
    - How familiar are they with solar panel systems and their maintenance needs? [Okovate provides on-site training]

- Do they know how to work safely around the electrical components? [Okovate provides on-site training]

- Agricultural Practices:
  - How will they design the irrigation system to work with the solar array layout? [This is a resource Okovate can assist with]
  - Do they have experience with rainwater harvesting from solar panels or other structures, if applicable?
  - How do they plan to manage the unique microclimates created by the solar panels (e.g., shaded areas, heat islands)? [This is a resource Okovate can assist with]
  - What strategies will they use to maintain soil health in areas with less direct rainfall due to panel coverage? [This is a resource Okovate can assist with]

- Vegetation management:
  - How do they plan to manage vegetation growth under the panels, as determined by the solar developer? Something as simple as landscape fabric and weed-whacking as necessary.

- Adaptability / Collaboration:
  - How flexible are they in adjusting farming practices based on the performance and needs of the solar array?
  - How flexible are they with the solar company visiting the site and working on the panels, as necessary?
  - How will they coordinate their farming activities with necessary system maintenance? [This is a resource Okovate can assist with]
  - How do they envision working with solar technicians and energy managers in this integrated system?

- Long-term sustainability:
  - What ideas do they have for ensuring the long-term sustainability of their crop system, in coordination with the agrivoltaic system? [This is a resource Okovate can assist with]

- Data collection and analysis:
  - Do they have experience or willingness to participate in data collection to optimize the agrivoltaic system over time?

Final Selection

The final selection phase of the Farmer Sourcing Plan is a collaborative process, ensuring that the most suitable farmer is chosen to manage vegetation in the agrivoltaic system. After the interviews and evaluations, all relevant stakeholders—including representatives from Okovate Sustainable Energy, Chaberton Solar Sugarloaf and Chaberton Solar Ramiere, and possibly external advisors with expertise in both agriculture and solar energy—will convene to review each applicant's scorecard, generated from the interview matrix. Stakeholders will compare notes on the highest-ranked candidates, discuss any concerns or additional considerations that arose during the interview process, and reach a consensus on the farmer who best aligns with the project's goals. The selected farmer will not only possess the necessary technical qualifications but will also demonstrate a strong commitment to working within this integrated solar-agriculture system.

Community Benefits Plan

Okovate and Chaberton are dedicated to creating a thriving agrivoltaic project in Montgomery County that benefits both the environment and the local farming community. We recognize the value of local expertise and are committed to providing opportunities for Montgomery County farmers to participate in this innovative project.

Engaging the Agricultural Community

- **Targeted Outreach:** We will directly contact farmers in Montgomery County through the Montgomery County Office of Agriculture, relevant agricultural organizations (e.g., Farm Bureau, Future Harvest CASA), and online platforms to inform them about the agrivoltaic project and the opportunity to farm the land.
- **Clear Contractual Agreements:** We will develop clear and concise lease agreements or farming contracts that outline the terms of the partnership, including land-use rights, crop selection, revenue sharing, and other relevant details.
- **Farmer Training and Support:** We will offer workshops and training sessions to familiarize interested farmers with agrivoltaic practices, including crop selection suitable for solar arrays, integrated pest management strategies, and any specialized techniques required for this type of farming.
- **Ongoing Collaboration:** We will establish a communication channel (e.g., regular meetings, online forum) to facilitate ongoing dialogue and collaboration between the project

developers and the selected farmer(s). This will ensure that both parties are informed and can address any challenges or opportunities that arise.

Benefits for Montgomery County Farmers

- **Land Access:** Farmers gain access to land for agricultural production, which can be a significant barrier to entry in Montgomery County.
- **New Revenue Streams:** Participating in the agrivoltaic project can diversify income sources for farmers.
- **Sustainable Farming Practices:** The project promotes environmentally friendly farming methods that can benefit soil health, water quality, and biodiversity.
- **Community Partnership:** Farmers become active partners in a project that contributes to the county's renewable energy goals and agricultural sustainability.

Selection Criteria

We will use a transparent and competitive process to select the farmer(s) who will work on the project. Criteria may include:

- **Farming Experience:** Demonstrated experience in agricultural practices relevant to the project (e.g., vegetable production, livestock grazing).
- **Commitment to Sustainability:** A commitment to environmentally sound farming methods and land stewardship.
- **Local Knowledge:** Familiarity with Montgomery County's agricultural landscape and climate.
- **Business Plan:** A clear and viable business plan for the proposed agricultural activities within the agrivoltaic system.

Environmental Stewardship

The project will prioritize environmental stewardship through practices such as:

- **Improved Soil Health:** Implementing measures to enhance soil health, including organic matter accumulation, microbial activity, and reduced soil compaction.
- **Pollinator Habitat:** Creating pollinator-friendly habitats by planting native grasses and wildflowers.
- **Erosion Control:** Utilizing appropriate vegetation and soil management techniques to prevent erosion and protect water quality.
- **Carbon Sequestration:** Promoting carbon storage in the soil through healthy soil management practices.

By partnering with local farmers, Okovate and Chaberton aim to create a model agrivoltaic project that supports sustainable agriculture, strengthens the community, and contributes to a cleaner energy future for Montgomery County.

Appendix A – Crop Modeling

Table 9: Crop modeling data and resources

	Ent. budget	Unit price	USDA Yield Benchmark	Notes
Corn	University of Georgia College of Agricultural and Environmental Sciences. 2024 sweetcorn budget. https://agecon.uga.edu/extension/budgets.html	$33.5/CWT (MD, 2018) USDA Agricultural Marketing Service.	120 CWT (MD, 2018)	Excluded marketing costs from budget
Soy	University of Maryland Extension. https://extension.umd.edu/resource/field-crop-budgets	$11.8/BU (MD, 2023) USDA Agricultural Marketing Service.	47 Bushels (MD, 2023)	Assumed that smaller-scale equipment is available for harvests.
Lettuce	https://coststudyfiles.ucdavis.edu/uploads/cs_public/52/c9/52c99335-fcc8-44fe-9ce0-6a0bd5fbe006/2017headlettuce-final_-_5-25-2017.pdf	$71.8/CWT (USA, 2023) USDA Agricultural Marketing Service.	231 CWT (USA, 2023)	Cost inflation of 20% added. Requires irrigation.

Tomato (fresh market)	University of Arkansas Division of Agriculture. Tomato production budget. University of Arkansas System, Division of Agriculture https://www.uaex.uada.edu/farm-ranch/economics-marketing/farm-planning/budgets/Tomato.pdf	$49/CWT (MD, 2004)	130 CWT (MD, 2004)	
Carrot	University of Georgia extension: https://agecon.uga.edu/extension/budgets.html	$37.6/CWT (USA, 2023) USDA Agricultural Marketing Service.	275 CWT (GA, 2023)	Adding 300 hrs of labor at 15$/hr for agrivoltaics case, since machinery can't access for harvesting. (https://www.nofavt.org/sites/default/files/files/resources/carrots-cop-factsheet_0.pdf). (https://extension.umd.edu/resource/custom-work-charges-maryland-and-delaware/)
Potato	https://www.ag.ndsu.edu/potatoextension/non-irrigated-red-norland-crop-budget	$14.47 per CWT (https://tradingeconomics.com/commodity/potatoes)	255 CWT (MD, 2018)	50 hrs of labor for hand harvesting added to agrivoltaics case https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/potatoes.pdf

Summer Squash	Food and Agricultural Policy Research Institute. 2020 Squash Budget. Specialty crops. University of Missouri. https://fapri.missouri.edu/specialty-crops/	We used a 0.8$/lbs price. USDA Agricultural Marketing Service.	Food and Agricultural Policy Research Institute. 2020 Squash Budget. Specialty crops. University of Missouri. https://fapri.missouri.edu/specialty-crops/	Unable to find trustworthy information. Squash prices range from 0.6 to 1.6 $/lbs. Resulting in very high potential profits. But it is not clear if products can find a market in Maryland.
Watermelons	https://www.uaex.uada.edu/farm-ranch/economics-marketing/farm-planning/budgets/Watermelon.pdf	USDA Agricultural Marketing Service. (2023, March 1). Watermelon market prices	https://ipmwww.ncsu.edu/cipm	

Appendix B – Sheep Grazing

Table 10: Variable System Attributes

System Attribute	Base Case	Sheep Case 1	Sheep Case 2	Unit
Pole height above ground	2.5	2.7	3.0	meters
Ground clearance	0.6	0.8	1.1	meters
Pole height below ground	4.2728	4.6146	5.1274	meters
Vertical pole steel density	22.1996	23.9755	26.6395	kg/meter
Steel per pole	0.1506	0.1627	0.1807	tonnes

Table 11: Variable Costs due to Sheep

Cost Component	Base Case	Sheep Case 1	Sheep Case 2	Unit
Insurance	0.008	0.011	0.011	$/W/year
Installation labor and equipment	0.25	0.35	0.35	$/W
Vegetation management	Sheep	Sheep	Sheep	
Vegetation management cost	385	250	250	$/acre/year
Steel	34,047.60	36,771.40	40,857.11	$

Consultant C.V.

Jorrit Becking brings a wealth of experience and expertise to the field of agrivoltaics as the Chief Agricultural Officer at Okovate. His educational background reflects a strong foundation in environmental science, agriculture, and renewable energy. He holds a Master of Environmental Management degree from Yale University, where he focused on business, environment, and renewable energy. During his studies at Yale, he conducted independent research on decarbonizing the residential energy grid and ESG stakeholder materiality assessments. Prior to Yale, Jorrit earned a Master of Science degree in Agricultural Sciences from Wageningen University and Research Center in the Netherlands, specializing in natural resource management. His academic foundation also includes a Bachelor of Science degree in Environmental Engineering from the same institution, where he focused on soil science, meteorology, and hydrology.

Jorrit's professional experience is equally impressive. He currently serves as an Associate in Agrivoltaics Project Development at Pacifico Energy Partners in Munich, Germany, where he develops yield estimation tools and business cases for solar-regenerative agriculture projects. He has also collaborated with research institutions on agrivoltaics pilot projects. Before joining Pacifico Energy Partners, Jorrit worked as an Agriculture Consultant at the World Bank in Washington, DC, where he secured significant grant funding, led global teams on climate-related initiatives, and developed tools for climate adaptation risk screening.

His previous roles include leading case studies on farming systems resilience with the SURE-Farm Project in Madrid, Spain, consulting on agricultural innovation for the "Countryside, The Future" exhibition at the Guggenheim Museum in New York with the Office for Metropolitan Architecture in Rotterdam, and developing a regenerative cattle ranching pilot project in Kenya with the Osotua Foundation.

Jorrit's expertise is further demonstrated through his authorship of various publications on sustainable agriculture, climate resilience, and farming systems analysis. His work has been featured in publications by the World Bank and presented at seminars of the European Association of Agricultural Economists. He is a dedicated and knowledgeable professional with a passion for sustainable agriculture and renewable energy, making him a valuable contributor to the field of agrivoltaics.

Selected Publications

- Becking, J.B.T., Ramirez Diaz, M., Diaz Rios, L.B. (2021). *Building Pathways to Sustainable Cattle Ranching in Colombia*. Washington, D.C.: World Bank Group.
- Becking, J.B. (2019). *An assessment of the sustainability and resilience of two livestock farming systems in Europe using a participatory approach*.
- Isabeau, C., Bijttebier, J., Becking, J., et al. (2019). *Stakeholder assessment of the resilience of the Flemish dairy farming system.* 173rd Seminar of the European Association of Agricultural Economists, Bucharest.

Appendix B. Site Conceptual Design

Placeholder to be updated with most recent Concept Plan at time of release

Appendix C. Draft Terms and Conditions for Crop Harvesting

PLACEHOLDER

Appendix D. Draft Terms and Conditions for Grazing

PLACEHOLDER

Appendix E. Draft Terms and Conditions for Apiaries

PLACEHOLDER

Attachment E

Montgomery Planning

MR2024016 – CHABERTON SOLAR SUGARLOAF

Description

Proposal to construct a Solar Collection System over 2MW in the Agricultural Reserve located at 20597 Darnestown Road, Dickerson, MD. A Forest Conservation Plan has not been submitted pursuant to Chapter 22A the Forest Conservation Law.

No. MR2024016

Completed: August 23, 2024

MCPB
Item No. 7
September 5, 2024

2425 Reedie Drive
Floor 13
Wheaton, MD 20902

Planning Staff

MAB	Mark Beall, Planner IV, Mark.Beall@montgomeryplanning.org , 301-495-1330
	Patrick Butler, Chief, Patrick.Butler@montgomeryplanning.org, 301-495-4561

LOCATION

20597 Darnestown Road, Dickerson, MD 20842

MASTER PLAN

1980 *Preservation of Agriculture & Rural Open Space Functional Master Plan* (AROS)

PROPERTY SIZE

52.46 acres

APPLICANT

Chaberton Energy Holdings, Inc.

ACCEPTANCE DATE

July 1, 2024

REVIEW BASIS

Md. Land Use Article, Section 20-301, et seq. and Chapter 22A

Summary:

- Staff recommends Denial and transmittal of comments to Public Service Commission (PSC).
- The Applicant is proposing a ground-mounted Solar Collection System over 2 Megawatts (MW) in size, primarily on Class II soils, with no commitment to agrivoltaics, in the AR zone.
- The Planning Board review of the location, construction or authorization of a publicly or privately owned utility is through the Mandatory Referral process set forth in the Land Use Articles of the Maryland Annotated Code, Section 20-301 et. Seq.
- The Project falls under the Community Solar Program within the State of Maryland Regulations.
- The Proposed Solar Collection System is in conflict with the AR zone, the 1980 *Preservation of Agriculture and Rural Open Space Functional Master Plan* and Thrive Montgomery 2050 (General Plan).
- The Applicant has not filed a Forest Conservation Plan pursuant to Chapter 22A the Forest Conservation Law.

SECTION 1 - RECOMMENDATIONS

Staff recommends denial of the Mandatory Referral and the transmittal of the following comments to the Applicant and the Public Service Commission (PSC):

1. The Application does not comply with the Comprehensive Plan for Montgomery County, Thrive Montgomery 2050.
2. The Application is contrary to the goals of the 1980 *Preservation of Agriculture & Rural Open Space Functional Master Plan*.
3. The Application fails to provide agrivoltaic solar installation, with an approved agricultural activity (by Montgomery County Office of Agriculture) occurring underneath and/or around the solar panels within the Solar Collection Compound on Prime Agricultural Soils in the AR zone.
4. The Application does not comply with the Montgomery County Forest Conservation Law pursuant to Chapter 22A which requires an approved Forest Conservation Plan from the Montgomery County Planning Board, prior to approval of PSC – 9726.
5. The Application conflicts with the intent and requirements of the Agricultural Reserve (AR).

SECTION 2 - INTRODUCTION

Review Process

This proposal for the construction of a new Solar Collection System over 2 MW (megawatts) which is subject to Mandatory Referral. Mandatory Referral review is guided by the Montgomery Planning Mandatory Referral Review Uniform Standards (December 2022), and the authority granted through the Maryland Land Use Article, Section 20-301, et.seq. As set forth in Sections 20-301 and -302, the Montgomery County Planning Board, part of the of The Maryland-National Capital Park and Planning Commission ("Commission"), has exclusive jurisdiction over mandatory referral projects presented by a publicly owned or privately owned public utility, and a public board, body or official may not locate, construct , or authorize a publicly owned or privately owned public utility without going through the Mandatory Referral process. Accordingly, the Planning Board must review such projects and transmit comments on the proposed location, character, grade and extent of the activity.

In this case, the Maryland PSC will be required to issue a Certificate of Public Convenience and Necessity (CPCN) to provide authority for the Applicant to construct a new generating station over 2 Megawatts. Although the PSC may preempt local zoning and land use authority if the PSC determines that applying the regulations results in an effective ban on solar, as outlined below, Planning Staff believe there is more than sufficient capacity within the Agricultural Reserve and within the larger County to contribute significantly to the State's renewable energy goals.

SECTION 3 – PROJECT DESCRIPTION

Background

The Property is currently being farmed and has an agricultural assessment through the Maryland State Department of Assessments and Taxation (SDAT). The Property contains an existing Forest Conservation Easement approved under 420222350, which was to establish a Forest Conservation Mitigation Bank.

Surrounding Neighborhood

The property is located at 20597 Darnestown Road approximately one mile south of the town limits of Dickerson. The immediately adjacent properties to the north, south, east, and west are all zone AR and are agricultural in nature. The properties abutting to the northeast and southwest consist of single-family houses along with the agricultural uses.

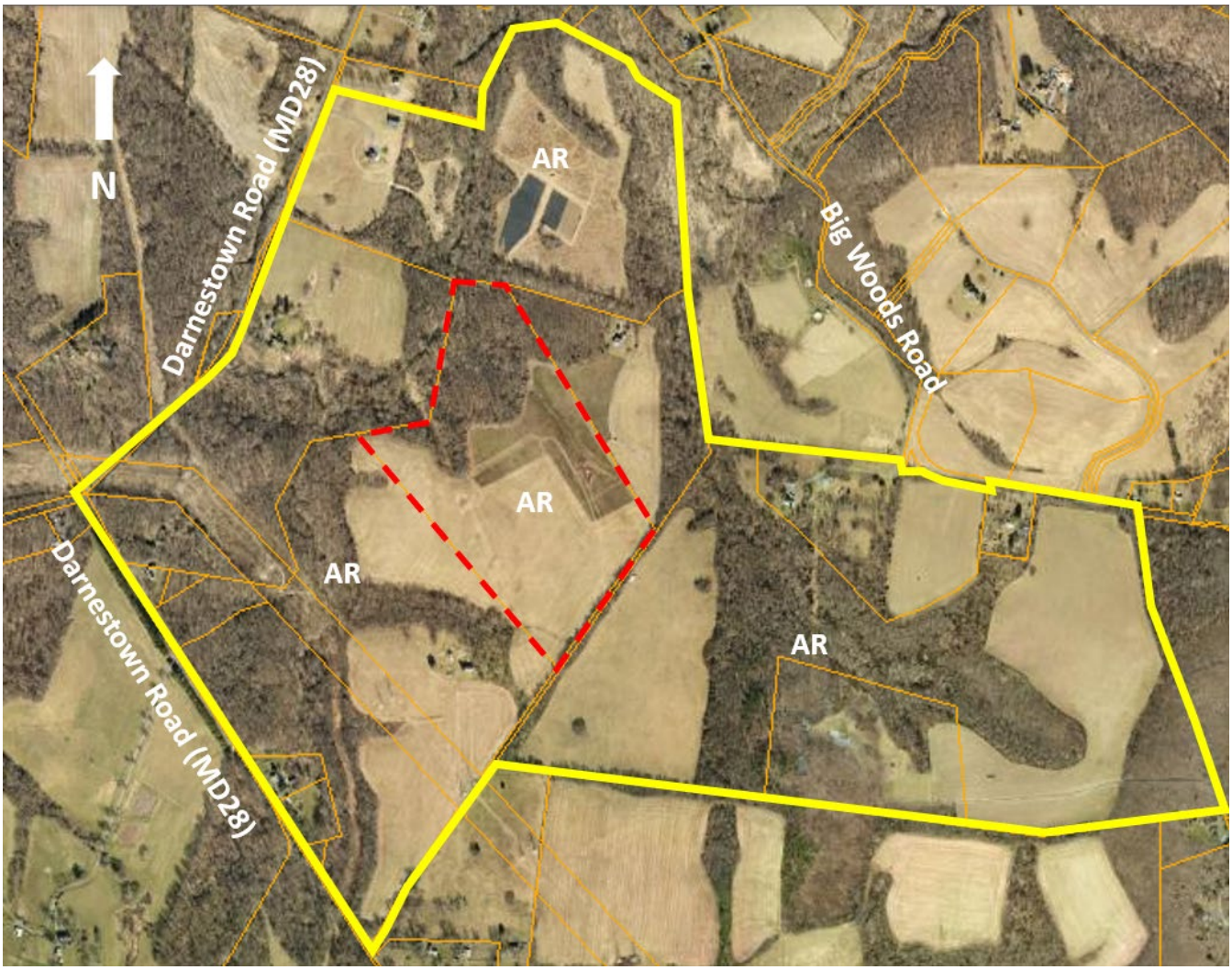


Figure 1: Vicinity and Zoning

Site Description

The Subject Property (outlined in bold red line in Figure 1) is located at 20597 Darnestown Road. The Property is identified by Parcel P127 on Tax Map 11-03023873 on the Tax Map, Zoned AR, containing 52.46 AC ("Property"). The Property is currently being farmed and contains an existing approved Forest Conservation Easement (FCE) along the northeast side. The Forest Conservation Easement is an approved Forest Conservation Mitigation Bank. The proposed project will occur on approximately 19.8 acres of the overall Property. A forested area with a stream is located along the north side of the Property. The property is withing the Little Monocacy Watershed (Use I-P). The Property is accessed from an existing driveway on Darnestown Road that is shared with the properties to the northeast and southwest.

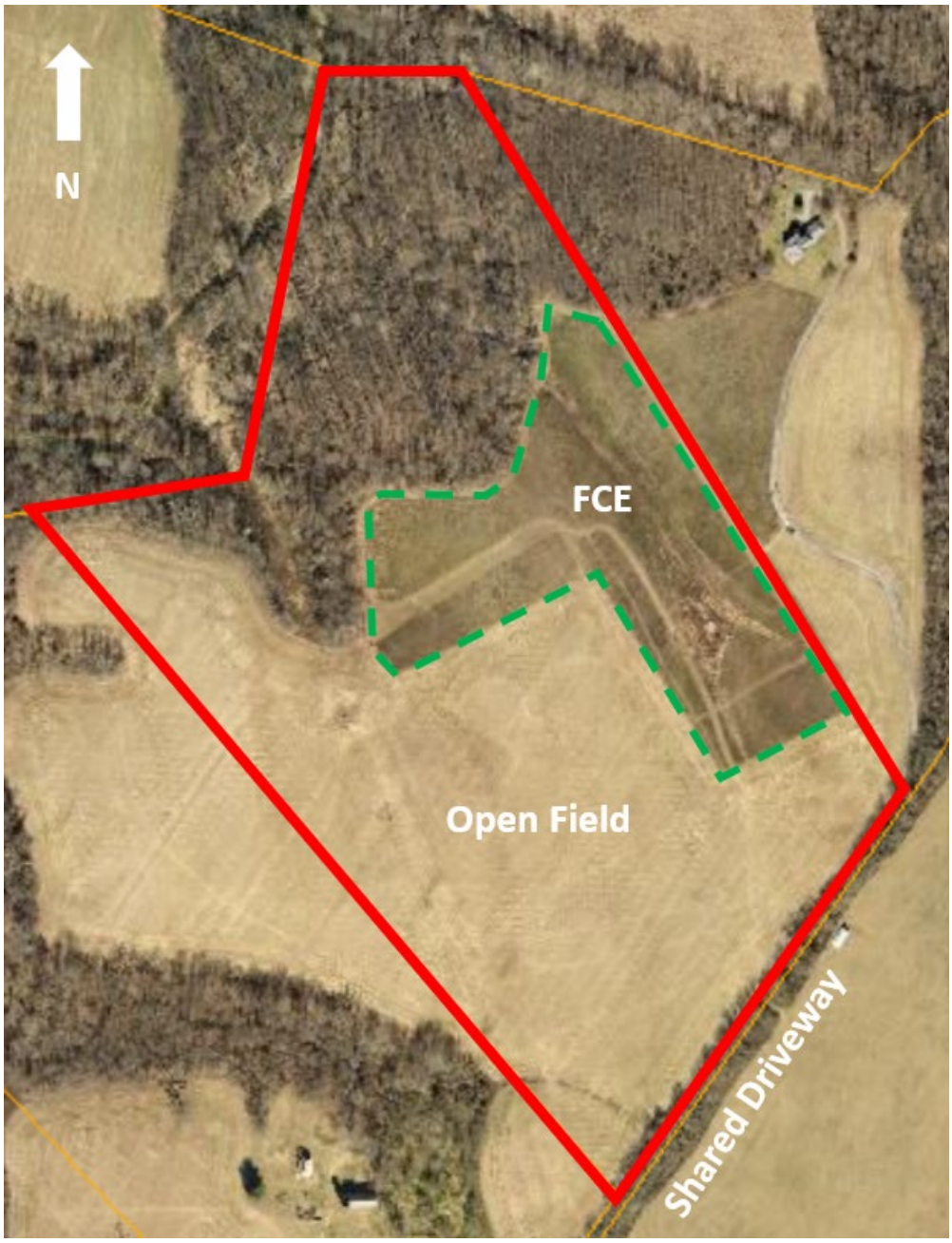


Figure 2: Aerial View of Property

Project Description

The Applicant is proposing a 4 MW Solar Collection System which will be reviewed by the Maryland Public Service Commission. The Project is proposed on 19.8 acres of the 52.46 acres property. Most of the unused portion of the Property consists of a Forest Conservation Easement and a forested area with a stream. A majority of the land used for the proposed Solar Collection System consists of USDA

Class II soils which are considered prime soils for agriculture. The project will be encompassed by a chain link fence. The applicant is proposing a fire department access lane from the shared driveway into the fenced area along with a 30,000-gallon underground water tank for fire protection purposes. The proposed solar arrays may tilt to a height of up to 9 feet. The propose Solar Collection System will be setback a minimum of 50 feet from the closest property lines.

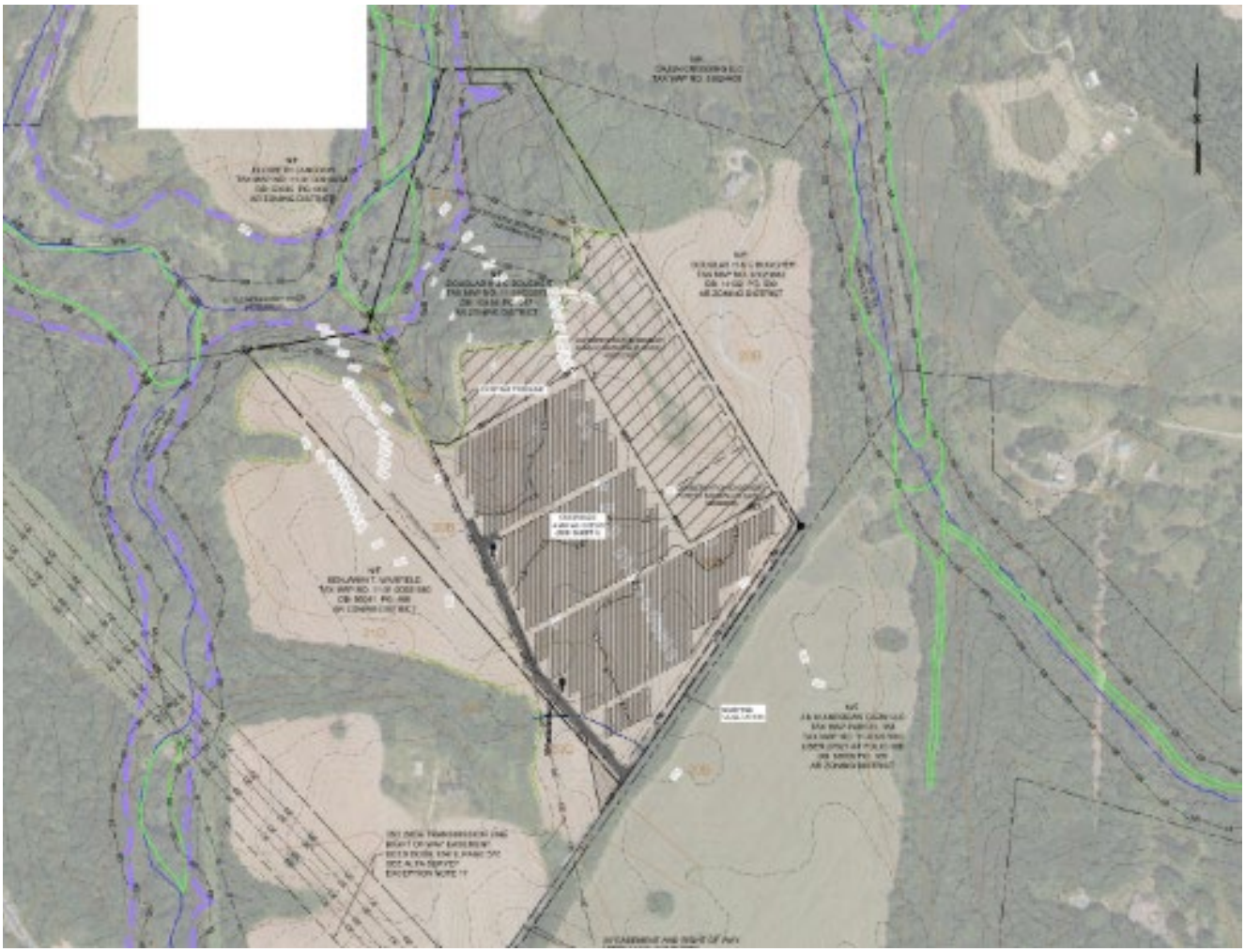


Figure 3: Overall Proposed Site

Figure 4: Close Up Proposed Site

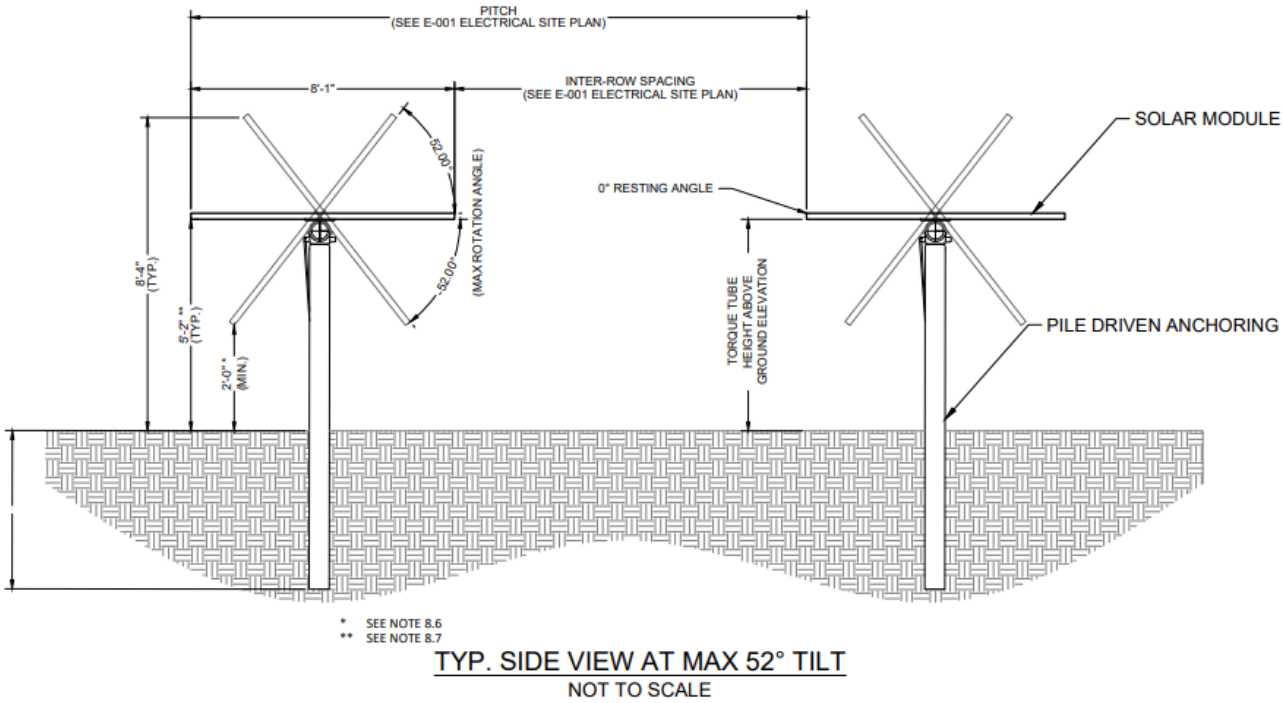


Figure 5: Solar Array Elevation

Public Service Commission Certificate of Public Convenience and Necessity Process

A Solar Collection System of this size must go through a multi-step quasi-judicial process which commences and concludes with the Maryland Public Service Commission and is presided over by a law judge. The Applicant must notify the local jurisdiction when they are submitting a project to go through the PSC process. The local jurisdiction and notified parties have the right to petition to be established as an intervenor (party of record) in the PSC process, which several parties have done. See Figure 6 and Figure 7 for a general description of the PSC process and typical procedural schedule. The PSC law judge has established a procedural schedule for this case that must be adhered to. The intervenors have until September 26, 2024, to submit evidence and testimony for the PSC to consider. The Evidentiary Hearing is scheduled for October 16, 2024, at 10:00 a.m. An official Order (decision) from the PSC will be issued subsequent to the Evidentiary Hearing. The PSC process is governed by state law under Public Utilities Article § 7-207, Certificate of Public Convenience and Necessity:

Final action by Commission required:
(e) The Commission shall take final action on an application for a certificate of public convenience and necessity only after due consideration of:

(1) the recommendation of the governing body of each county or municipal corporation in which any portion of the construction of the generating station, overhead transmission line, or qualified generator lead line is proposed to be located;

(2) the effect of the generating station, overhead transmission line, or qualified generator lead line on:

(i) the stability and reliability of the electric system;

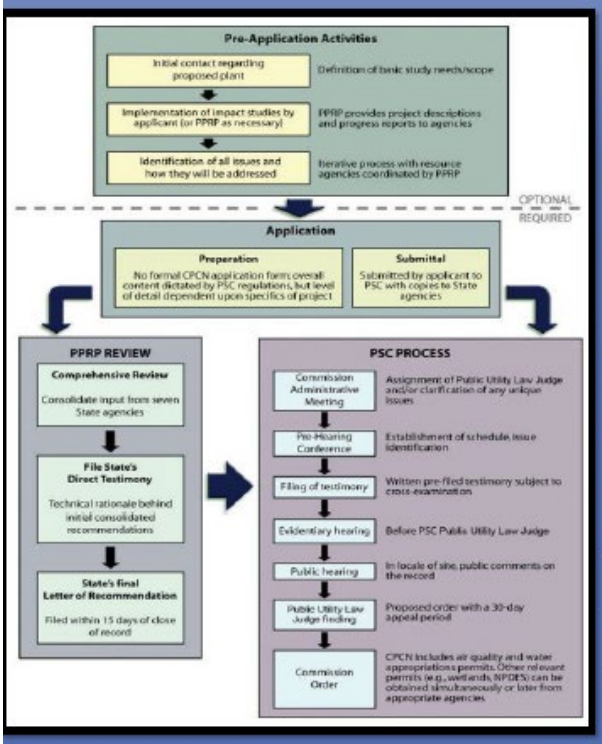
(ii) economics;
(iii) esthetics;
(iv) historic sites;
(v) aviation safety as determined by the Maryland Aviation Administration and the administrator of the Federal Aviation Administration;
(vi) when applicable, air quality and water pollution; and
(vii) the availability of means for the required timely disposal of wastes produced by any generating station;
(3) the effect of climate change on the generating station, overhead transmission line, or qualified generator lead line based on the best available scientific information recognized by the Intergovernmental Panel on Climate Change; and
(4) for a generating station:
(i) the consistency of the application with the comprehensive plan and zoning of each county or municipal corporation where any portion of the generating station is proposed to be located;
(ii) the efforts to resolve any issues presented by a county or municipal corporation where any portion of the generating station is proposed to be located;
(iii) the impact of the generating station on the quantity of annual and long-term statewide greenhouse gas emissions, measured in the manner specified in § 2-1202 of the Environment Article and based on the best available scientific information recognized by the Intergovernmental Panel on Climate Change; and
(iv) the consistency of the application with the State's climate commitments for reducing statewide greenhouse gas emissions, including those specified in Title 2, Subtitle 12 of the Environment Article.

* * *

Local permits
(h) (1) A county or municipal corporation has the authority to approve or deny any local permit required under a certificate of public convenience and necessity issued under this section.
(2) A county or municipal corporation shall approve or deny any local permits required under a certificate of public convenience and necessity issued under this section:
(i) within a reasonable time; and
(ii) to the extent local laws are not preempted by State law, in accordance with local laws.
(3) A county or municipal corporation may not condition the approval of a local permit required under a certificate of public convenience and necessity issued under this section on receipt of any of the following approvals for any aspect of a generating station, an overhead transmission line, or a qualified lead line proposed to be constructed under the certificate:
(i) a conditional use approval;
(ii) a special exception approval; or
(iii) a floating zone approval.

CPCN Process

MARYLAND DEPARTMENT OF NATURAL RESOURCES



1) Application filed with the PSC (starts the process)
   Includes: Applicant's ERD and written testimony
2) PPRP intervenes on behalf of the state agencies
3) Determination if the application is deemed complete
4) PSC conducts a Prehearing Conference
5) Establishes procedural schedule
6) Discovery (Data Requests)
7) Public Hearing #1
8) PPRP files our PAR, Recommended Conditions and testimony
9) Public Hearing #2
10) Evidentiary Hearing
11) PSC issues Proposed Order
12) Proposed Order becomes final
    30 days later (or agreed upon time) absent an appeal

Figure 6: PSC Process

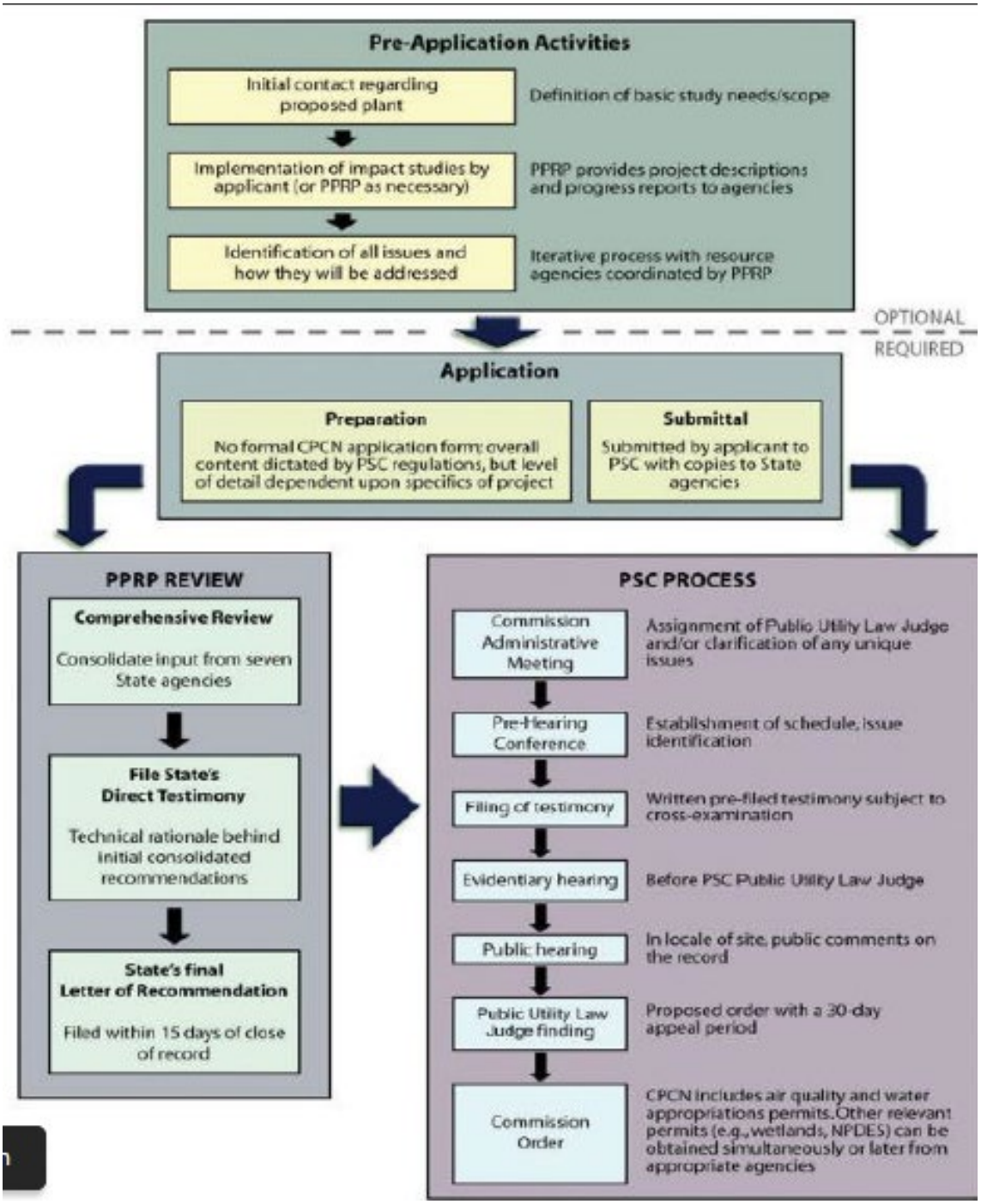


Figure 7: PSC Flowchart

Planning Board Mandatory Referral Process

The Land Use Article of the Maryland Annotated Code, Section 20-301 et. Seq. requires the Planning Board review of the location, construction or authorization of a publicly or privately owned utility is through the Mandatory Referral process. Additionally, the Mandatory Referral process already has a process established to coordinate and obtain input from residents, civic organizations, and county agencies for Planning Staff to produce a staff report. This report and any other information and testimony provided will be considered by the Planning Board at a public hearing, and the Planning Board will then transmit comments to the Applicant, the PSC, and the County Council and County Executive as the Governing Body of Montgomery County.

To date, Planning Staff has received over 140 emails and letters from citizens, civic organizations and farming organizations in opposition of this Application. Once the Mandatory Referral has been processed through the Planning Board, Planning Staff will send the Staff Report and Planning Board recommendations to County Council and County Executive who will take the information into consideration when providing their recommendations and comments as the Governing Body of Montgomery County to the PSC.

Montgomery County Zoning Ordinance

Solar Collection Systems are regulated through Chapter 59, the Montgomery County Zoning Ordinance. The definition and use standards for a Solar Collection System are located in Section 59.3.7.2.

Section 3.7.2. Solar Collection System

A. Defined

Solar Collection System means an arrangement of panels or other solar energy devices that provide for the collection, inversion, storage, and distribution of solar energy for electricity generation, space heating, space cooling, or water heating. A Solar Collection System includes freestanding or mounted devices. Solar Collection Systems are facilities that comply with the requirements of the State's net metering program under Maryland Code §7-306, COMAR 20.50.10, and COMAR 20.62, including Community Solar Energy Generating Systems, Aggregate Net Energy Metering Systems, and projects limited to a percentage of on-site energy use. A Solar Collection System larger than 2 megawatts (AC) is prohibited in the Agricultural Reserve Zone.

B. Use Standards

* * *

2. A Solar Collection System may be allowed as a <u>Conditional Use in the AR zone if it exceeds a facility rated at more than 200% of on-site energy use and is less than 2 megawatts (AC).</u> Where a Solar Collection System is allowed as a conditional use in the AR zone, it may be permitted by the Hearing Examiner under Section 7.3.1. Conditional Use and the following standards:

a. The Solar Collection System is prohibited:

i. on soils classified by the United States Department of Agriculture as either Soil Classification Category I or Category II;

ii. in a stream buffer;

iii. on wetlands; or

iv. on slopes equal to or greater than 15%.

b. Scraping topsoil from the site is prohibited.

c. Grading and any soil removal are minimized.

d. The solar collection system is compliant with the requirements of the State's net metering program under Maryland Code §7-306, COMAR 20.50.10, and COMAR 20.62.

e. The area under the solar facility must be actively used for farming or agricultural purposes by satisfying one or more of the following requirements:

(i) designated pollinator-friendly under the Maryland Pollinator-Friendly Designation Program;

(ii) planted, managed, maintained, and used for grazing farm animals; or

(iii) planted, managed, maintained, and used for any other agrivoltaic plant material.

f. The applicant must provide evidence that the local utility company will allow the Solar Collection System to be connected to the utility grid.

g. The applicant must provide evidence that the application was submitted to the Office of Agriculture.

h. Removal of trees or landscaping otherwise required or attached as a condition of approval of any plan, application, or permit for the installation or operation of a Solar Collection System is prohibited.

i. Any tree in or on a floodplain, stream buffer, steep slope, critical habitat, contiguous forest, or historic site, and any champion tree or other exceptionally large tree is left undisturbed unless a disturbance is allowed under Section 22A-12(b)(1).

j. Except for pad areas for transformers and electrical equipment, the use of concrete is prohibited.

k. Screening that satisfies Section 59.6.5.3.C.8 (Option A) on the sides of the facility within 200 feet of any neighboring house is required; however, a fence may not be required or prohibited.

l. The Hearing Examiner's decision must consider the recommendations of the Office of Agriculture.

m. The applicant must include a calculation of the total acreage used for the Solar Collection System, including any required setbacks and all acreage within the fenced or shrubbed area.

n. The land area approved for the Conditional Use, in addition to all other Conditional Use approvals for solar facilities in the AR zone, will not exceed 1,800 acres of land.

SECTION 4 - COMMUNITY OUTREACH

After staff accepted the Mandatory Referral for review, Montgomery Planning notified local civic and homeowners' associations and other interested parties of this proposal. As of the date of this report, Staff and the Planning Board Chair have received over 140 emails and letters contesting this application and one letter in support of the application. The primary concerns of the opposition include not conforming to the Master Plan, being located on Class II soils in the AR zone, not providing agrivoltaics, and exceeding the 2MW cap.

SECTION 5 – MANDATORY REFERRAL ANALYSIS

Mandatory Referral review is guided by the Montgomery Planning Mandatory Referral Review Uniform Standards (December 2022), and the authority granted through the Maryland Land Use Article, Section 20-301, et. seq. As set forth in Sections 20-301 and -302, and stated above, the Montgomery County Planning Board has jurisdiction over mandatory referral projects that include locating, constructing or authorizing a road, park, public way or ground, public building or structure, or publicly or privately owned utility, which includes this Project. The Planning Board must review such projects and transmit comments on the proposed location, character, grade and extent of the activity.

As described in the Uniform Standards, the Planning Board considers all relevant land use and planning aspects of the proposal including, but not limited to, the following:

1. ***Whether the proposal is consistent with the County's General Plan, functional plans such as the master plan of highways, environmental guidelines, the approved and adopted area master plan or sector plan, and other public plans, guidance documents, or programs for the area;***

   Thrive Montgomery 2050

   As proposed, the Project is not in substantial conformance with Thrive Montgomery 2050 (General Plan).

   The General Plan recommends maintaining agriculture as the primary land use in the Agricultura Reserve, through policies, regulations, easements, and incentives that maintain a critical mass of farmland (page 74).

   The General Plan also recommends maximizing benefits of the Agricultural Reserve through policies designed to ensure the continued viability of farming as an economically productive and sustainable activity, discourage sprawl, facilitate a broad range of outdoor recreation and tourism activities (page 74).

   As proposed, the Project will further fragment farmland and encourages sprawling style of solar development, taking up large areas of greenfield and precluding agriculture or any other agricultural, recreation, and/or tourism related activity from occurring on the Property.

   1980 Preservation of Agriculture and Rural Open Space Functional (AROS) Master Plan

   As proposed, the Project is not in substantial conformance with the 1980 AROS Master Plan.

In 1980, the Montgomery County Council made one of the most significant land-use decisions in county history by approving and adopting the Preservation of Agriculture and Rural Open Space Functional Master Plan, which established the 93,000-acre Agricultural Reserve. Heralded as one of the best examples of farmland policies in the country, the Agricultural Reserve encompasses almost a third of the county's land resources along the county's northern, western, and eastern borders.

The Agricultural Reserve and its accompanying Master Plan, zoning elements, and the 2020 *Agritourism Study* were designed to protect and promote farmland and agriculture. Along with a sustained commitment to agriculture through the county's Office of Agriculture, this combination of tools helps retain more than 500 farms that contribute nearly $300 million to Montgomery County's annual economy. This is a notable achievement in an area so close to the nation's capital, where development pressure remains perpetual and intense.

Solar Potential within the Agricultural Reserve and County

Montgomery County is committed to contributing to the State's renewable energy goals. Based on solar legislation that was introduced this past year, and the anticipated legislation for the next legislative session in Maryland, Planning Staff has been conducting research and producing information via Geographic Information Systems, to better support and add clarity to the discussion around solar production in Montgomery County. Montgomery County is much more developed, and considering the population of over 1 million people, Montgomery County has a relatively small area of land designated for agricultural use. With the anticipated legislation so narrowly focused on our agricultural lands instead of rooftop, parking lot, and developed areas, the State is potentially missing out on greater solar production in Montgomery County.

Thus, Planning Staff has produced the following two figures that represent data synthesized over the past few months. The first figure represents the conceptual megawatt production potential within the Agricultural Reserve and at the County as a whole, with the focus on the Agricultural Reserve. The second figure represents the conceptual megawatt production potential in the County as a whole. Further explanation of the methodology and information contained within the figures will be provided as an addendum and/or in the presentation at the public hearing for this Mandatory Referral.

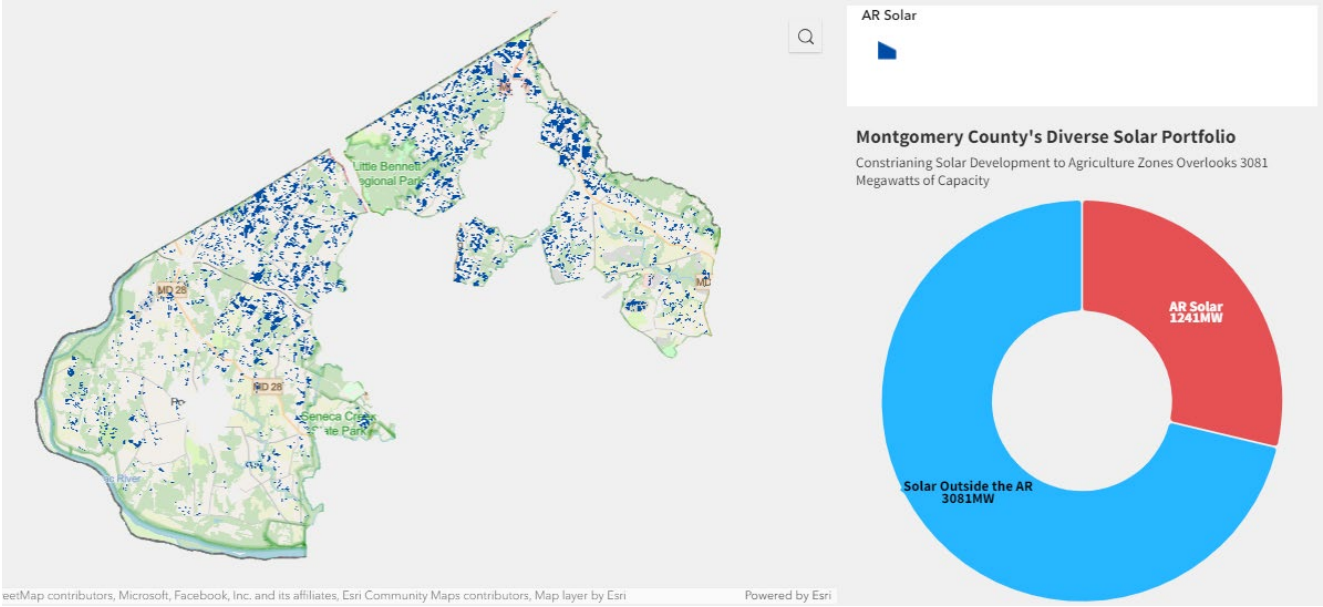


Figure 8: Solar capacity outside of AR zone vs in AR zone.

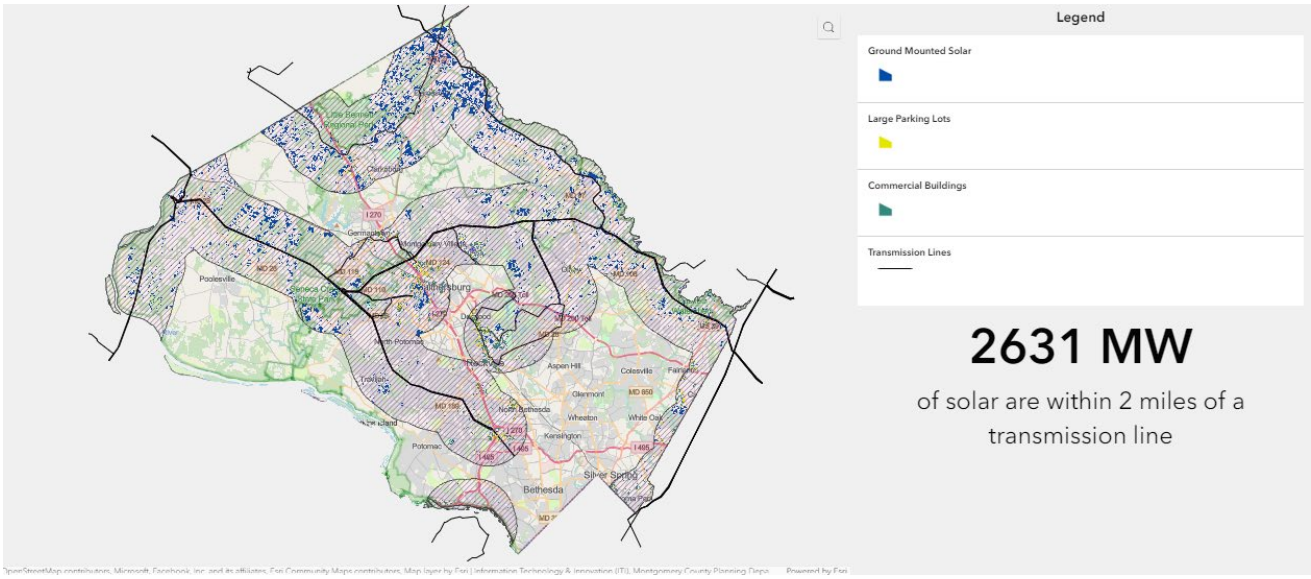


Figure 9: Solar Capacity withing 2 miles of transmission lines.

As they exist today, Montgomery County land use and zoning controls allow for a significant amount of solar production in the County, and do not result in an effective ban on solar in County. The General Plan, Master Plan, and Zoning Ordinance land use controls appropriately allow solar production in the Agricultural Reserve to meet renewable energy goals, while preserving and protecting the most productive soils for the primary use in the Agricultural Reserve, agriculture.

2. ***Whether the proposal is consistent with the intent and the requirements of the zone in which it is located;***

The Property is zoned Agricultural Reserve (AR) and the proposed project is not consistent with the intent or requirements of the AR zone. The intent of the requirements in the AR zone, is to preserve farming and other agricultural uses. A Solar Collection System producing over 200% of what is consumed onsite, requires a conditional use. Section 59.3.7.2.B.2 prohibits a Solar Collection System over 2 MW and the proposed systems is 4MW in size. Section 59.3.7.2.B.2.a.i states a Solar Collection System is prohibited in USDA Soil Classification Category I or Category II and the proposed project is primarily in Category II soils. Class II soils are productive soils for farming and this Application will be removing productive soils from the Ag Reserve.

Per Chapter 59 Section 3.7.2 of the Montgomery County Zoning Ordinance, Solar Collection Systems are permitted as either a limited use or conditional use in certain zones provided certain criteria are met. For the purposes of this testimony, we will focus on solar projects in the AR Zone, which require a conditional use approval from the Montgomery County Hearing Examiner, subject to demonstrating that the application meets certain criteria. In particular, Section 59.3.7.2.B.2., requires that a Solar Collection System exceed a facility rated at more than 200% of on-site energy and produce less than 2 megawatts.

To ensure that agriculture remains the primary use in the Agricultural Reserve, in addition to coordination with the Montgomery County Office of Agriculture, the Montgomery County Planning Department, the Montgomery County Department of Permitting Services, and the Montgomery County Planning Board, Solar Collection Systems are prohibited on soils classified by the United States Department of Agriculture as either Soil Classification Category I or Category II. The total area of all solar projects in the Agricultural Preserve cannot exceed 1,800 acres of land. Currently there are 20.37 acres of approved solar projects.

Pursuant to Section 59.3.7.2.B.2.e to regenerate and improve non-prime agricultural soils in the Agricultural Reserve, the area under the solar facility must be actively used for farming or agricultural purposes by either: pollinator-friendly plantings under the Maryland Pollinator-Friendly Designation Program; planted, managed, maintained, and used for grazing farm animals; and/or, planted, managed, maintained, and used for any other agrivoltaics plant material.

As stated previously, Montgomery County's Agricultural Reserve is a prized and valuable resource. It is a significant economic driver in terms of commodity farming, food systems, and agritourism, and provides opportunities for diverse communities to access and remain in farming. These standards were developed after a lengthy public process and are intended to promote up to 1,800 acres of Solar Collection Systems on agricultural land in Montgomery

County, while also promoting and preserving agriculture as the primary use and industry within the Agricultural Reserve.

3. ***Whether the nature of the proposed site and development, including its size, shape, scale, height, arrangement, design of structure, massing, setback(s), site layout, and location(s) of parking is compatible with the surrounding neighborhood and properties;***

The surrounding properties are all agricultural uses with some low-density housing. The Project will meet the required setbacks for the use in the Zoning Ordinance. Parking is not required so there will not be any actual parking. Fire department access is still not approved at the time this report was completed, the Applicant is proposing fire department access into and along the southwest property line of the site. The 4-Megawatt size proposed is double what would be allowed through the conditional use for a Solar Collection System. The solar arrays will tilt to a height of around 9 feet which will not be seen from Darnestown Road.

Additionally, Staff looked at noise and lighting for compatibility:

Noise

The Application is for an unmanned Solar Collection System. The system will generate very little to no noise when in operation with maybe some humming from some of the electrical equipment.

Lighting

The Applicant is not proposing any lighting with this Application.

4. ***Whether the locations of buildings and structures, the open spaces, the landscaping, recreation facilities, and the pedestrian and vehicular circulation systems are adequate, safe, and efficient;***

The proposed Solar Collection System will be located away from Darnestown Road. The fenced area will be abutting an approved Forest Bank (The FCE shown previously) along the northeast and northwest sides of the Property. The Applicant has provided a Fire Department Access Plan, but this plan has not been approved at this time. The Fire Department Access Plan will need to be approved prior to any permits being issued. The Project will access Darnestown Road from an existing driveway that is shared with the properties to the northeast and southwest.

5. ***Whether the proposal has an approved NRI/FSD and a preliminary SWM concept plan, and meets the requirements of the Forest Conservation Law (Chapter 22A of the County Code). Forest Conservation Plan, if applicable, must be approved by the Planning Board, either before or at the time of the Board's mandatory referral review and action on the project. Unlike the mandatory referral review by the Board, the conditions of the Forest Conservation Plan are binding on all county projects and require a Resolution of Approval.***

   At the time of this report, the Applicant has not demonstrated compliance with the Forest Conservation Law.

   The Applicant submitted the NRI/FSD on July 11, 2024 and resubmitted revised plans with the Application officially accepted on August 9, 2024. To comply with the Forest Conservation Law, Chapter 22A, after approval of the NRI/FSD, the Applicant is required to submit a Forest Conservation Plan for review and approval by the Planning Board. Solar projects proceeding through the PSC CPCN process must comply with Forest Conservation Law.

6. ***Whether a Preliminary or a Final Water Quality Plan has been reviewed by the Planning Board if the project is located in a Special Protection Area. In addition, for a Water Quality Plan for a project on public property, the Board must determine if the plan meets the standards of Article V. WATER QUALITY REVIEW IN SPECIAL PROTECTION AREAS, of the County Code (pursuant to Section 19-65(d)(4));***

   This Property is not in a Special Protection Area and does not require a water quality plan.

7. ***Whether or not the site would be needed for park use if the proposal is for disposition of a surplus school.***

   This Property is not a surplus school site

8. ***Whether alternatives or mitigation measures have been considered for the project if the proposal is inconsistent with the General Plan or other plans and policies for the area, or has discernible negative impacts on the surrounding properties or neighborhood, the transportation network, the environment, historic resources (including burial sites) or other resources.***

   As stated previously, the Project is not in substantial conformance with Thrive Montgomery 2050 and the AROS Master Plan. Staff has requested the Applicant explore integrating agrivoltaics with the solar application prior to filing the application with the PSC. No meetings

or discussions have occurred between the Office of Agriculture and the Applicant between January 2024 and the time of this report.

Although staff recommends denial of this plan, if the PSC approves this project, we strongly urge the PSC to require an agrivoltaic installation, with the agricultural activity to occur onsite to be subject to review and approval by the Montgomery County Office of Agriculture.

TRANSPORTATION VEHICULAR ACCESS

The Subject Property has no frontage on any State or County roadway. Vehicular access to the Site will be provided through an existing driveway from Darnestown Road, which is classified as a two-lane Country Connector under the Master Plan of Highways and Transitways. The master planned right-of-way for Darnestown Road is 120 feet. No dedication is necessary as part of this Application. Darnestown Road provides the Subject Property with access to Martinsburg Road and Dickerson Road to the north, both classified as Country Connectors under the Master Plan of Highways and Transitways, and to West Hunter Road and Beallsville Road to the south. The first is classified as a Rustic Road and the latter is classified as part Rustic Road and part Country Connector.

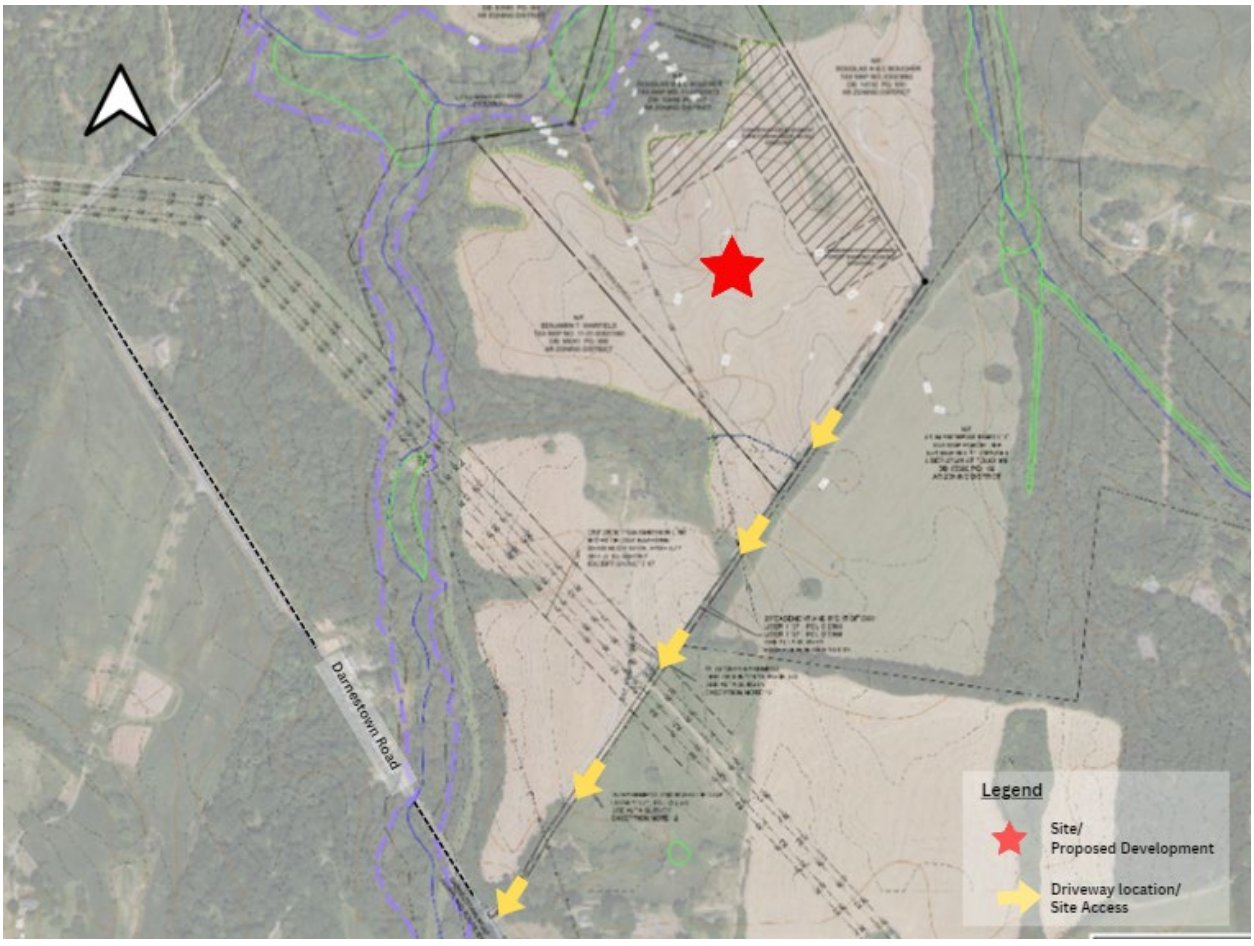


Figure 10: Access to the Proposed Development.

LOCAL AREA TRANSPORTATION REVIEW

The Transportation Exemption Statement ("TES") submitted by the Applicant on May 6, 2024, specified that the Proposed Development will not have daily operational personnel on-site. Therefore, the Proposed Development is not expected to generate any net new trips during the morning and evening peak hours. Periodically, maintenance personnel will access the Site to provide routine or corrective maintenance, which will average less than one net new trips per day.

The Subject Property is located in the Rural West Policy Area, which is categorized as a Green Policy Area under the *2020-2024 Growth and Infrastructure Policy* ("the GIP"). As mentioned before, the submitted TES by the Applicant states that the Proposed Development will not generate any net new peak hour trips, as there will be no personnel operating the facilities. The Proposed Development falls under the 50-person threshold to trigger a transportation impact study. Therefore, this Application is not subject to additional Local Area Transportation Review ("LATR") and is exempt from completing further transportation adequacy analysis.

PEDESTRIAN AND BICYCLE FACILITIES

There are no existing pedestrian or bicycle facilities within the vicinity of the Subject Property. The closest pedestrian facility is the existing C&O Canal Towpath northwest of the Subject Property, adjacent to the CSX Transportation Railroad. The C&O Canal Towpath extends all the way south to other parts of the County and north to Frederick County. There are no bicycle or pedestrian facilities to access the C&O Canal Towpath from the Subject Property.

The 2018 *Bicycle Master Plan* recommends bikeable shoulders along Darnestown Road. The proposed bikeable shoulders will connect to existing bicycle facilities along Darnestown Road intersection with Turkey Foot Road. According to the *2024 Complete Streets Design Guide*, the recommended bikeable shoulders should be 10-foot-wide. The *2018 Bicycle Master Plan* also recommends an off-street trail that will cross through the Subject Property from Dickerson Road to Schaeffer Road. The master planned trail will connect to master planned bikeable shoulders along Dickerson Road to the northwest of the Proposed Development.

PUBLIC TRANSIT SERVICE

There is no Ride-On or public bus service near the Subject Property. The closest bus stop is located along the Whites Ferry Road and Sugarland Road intersection approximately 7.1 miles away from the Proposed Development. The nearest access to public transit service is through the existing MARC stations around the Subject Property. The Dickerson MARC station is approximately 1.8 miles north of the Site, and the Barnesville MARC station is approximately 4.5 miles northeast.

PARKING

The Proposed Development is not expected to provide any parking spaces. There is no expected daily vehicular access to the Site. No personnel will be operating the Proposed Development. Therefore, there are no parking facilities being provided as part of this Application.

Environment

ENVIRONMENTAL GUIDELINES

The Applicant submitted the NRI/FSD on July 11 ,2024. The NRI/FSD has not been accepted by IRC at this time. The Applicant must submit a Forest Conservation Plan immediately after the NRI/FSD is approved. The PSC process requires conformance with the Forest Conservation Law and at this point, the Applicant has not submitted a Forest Conservation Plan application.

FOREST CONSERVATION

The Application is subject to Chapter 22A, and the Application is not in compliance with the Forest Conservation Law. The Applicant must file for a Forest Conservation Plan once the NRI/FSD has been approved.

STORMWATER MANAGEMENT

The Applicant has applied for the Stormwater Management Concept Plan (#293586).

SECTION 6 - CONCLUSION

Staff recommends denial of the Subject Application and requests approval for the transmittal of comments to the Applicant and the Public Service Commission (PSC). Staff is recommending denial because the Applicant is placing the Solar Collection System on Class II soils which are prime soils best for crop production, food production and other farming activities. Staff is also recommending denial because:

1. The Application does not comply with the Comprehensive Plan for Montgomery County, Thrive Montgomery 2050.
2. The Application is contrary to the goals of the 1980 *Preservation of Agriculture & Rural Open Space Functional Master Plan*.
3. The Application fails to provide agrivoltaic solar installation, with an approved agricultural activity (by Montgomery County Office of Agriculture) occurring underneath and/or around the solar panels within the Solar Collection Compound on Prime Agricultural Soils in the AR zone.

4. The Application does not comply with the Montgomery County Forest Conservation Law pursuant to Chapter 22A which requires an approved Forest Conservation Plan from the Montgomery County Planning Board, prior to approval of PSC – 9726.
5. The Application conflicts with the intent and requirements of the Agricultural Reserve (AR).

SECTION 7 - ATTACHMENTS

Attachment A: Mandatory Referral Plans

Attachment B: Community emails and letters