EXPEDITED
MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION
STAFF REPORT

Address: 1 Montgomery Ave., Takoma Park  
Meeting Date: 1/27/2021

Resource: Non-Contributing Resource  
Report Date: 1/20/2021

Takoma Park Historic District

Applicant: Scott Wallston  
Public Notice: 1/13/2021

Review: HAWP  
Tax Credit: n/a

Permit No.: 937640  
Staff: Dan Bruechert

Proposal: Solar Panel Installation

STAFF RECOMMENDATION

✓ Approve  
☐ Approve with conditions

ARCHITECTURAL DESCRIPTION

SIGNIFICANCE: Non-Contributing Resource to the Takoma Park Historic District

STYLE: Craftsman/Eclectic

DATE: 1983

Figure 1: 1 Montgomery Ave. is at the intersection of Montgomery Ave. and Pine Ave.
PROPOSAL

The applicant proposes to install 17 (seventeen) solar panels in three arrays. The three arrays are all on the south elevation, which is minimally visible from the right-of-way. The proposal will not change the massing of the non-contributing resource and, based on the Design Guidelines, should be approved as a matter of course.

Figure 1: Partial view of 1 Montgomery Ave. from the south.

APPLICABLE GUIDELINES

Policy On Use of Expedited Staff Reports for Simple HAWP Cases

IV. The Expedited Staff Report format may be used on the following type of cases:

2. Modifications to a property, which do not significantly alter its visual character.

Historic Preservation Commission Policy No. 20-01: ADDRESSING EMERGENCY CLIMATE MOBILIZATION THROUGH THE INSTALLATION OF ROOF-MOUNTED SOLAR PANELS
Montgomery County Code; Chapter 24A-8

(b) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to ensure conformity with the purposes and requirements of this chapter, if it finds that:

1. The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or
2. The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter; or

(d) In the case of an application for work on an historic resource located within an historic district, the commission shall be lenient in its judgment of plans for structures of little historical or design significance or for plans involving new construction, unless such plans would seriously impair the historic or architectural value of surrounding historic resources or would impair the character of the historic district. (Ord. No. 9-4, §1; Ord. No. 11-59)

Secretary of Interior’s Standards for Rehabilitation

The Secretary of the Interior defines rehabilitation as “the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values.” The relevant Standards are as follows:

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportions, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

STAFF RECOMMENDATION

Staff recommends that the Commission approve the HAWP application under the Criteria for Issuance in Chapter 24A-8(b)(1) (2), and (d), having found that the proposal will not substantially alter the exterior features of the historic resource and is compatible in character with the district and the purposes of Chapter 24A; the Historic Preservation Commission Policy No. 20-01: ADDRESSING EMERGENCY CLIMATE MOBILIZATION THROUGH THE INSTALLATION OF ROOF-MOUNTED SOLAR PANELS;

and with the Secretary of the Interior’s Standards for Rehabilitation #2, 9, and 10;

and with the general condition that the applicant shall present the 3 permit sets of drawings, if applicable, to Historic Preservation Commission (HPC) staff for review and stamping prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits;

and with the general condition that final project design details, not specifically delineated by the Commission, shall be approved by HPC staff or brought back to the Commission as a revised HAWP
application at staff’s discretion;

and with the general condition that the applicant shall notify the Historic Preservation Staff if they propose to make **any alterations** to the approved plans. Once the work is completed the applicant will contact the staff person assigned to this application at 301-563-3400 or dan.bruechert@montgomeryplanning.org to schedule a follow-up site visit.
APPLICATION FOR
HISTORIC AREA WORK PERMIT
HISTORIC PRESERVATION COMMISSION
301.563.3400

APPLICANT:

Name: SCOTT WALLSTON E-mail: SCOTT.WALLSTEN@GMAIL.COM
Address: 1 MONTGOMERY AVE City: TAKOMA PARK Zip: 20912
Daytime Phone: 202-730-9441 Tax Account No.: 01074530

AGENT/CONTACT (if applicable):

Name: AARON WILLIAMS E-mail: AWILLIAMS@FUSIONSS.NET
Address: 3600 COMMERCE DR #601 City: BALTIMORE Zip: 21227
Daytime Phone: 443-425-5988 Contractor Registration No.: MHIC 30991

LOCATION OF BUILDING/PREMISE: MIHP # of Historic Property TAKOMA PARK

Is the Property Located within an Historic District? Yes/District Name TAKOMA PARK
No/Individual Site Name

Is there an Historic Preservation/Land Trust/Environmental Easement on the Property? If YES, include a map of the easement, and documentation from the Easement Holder supporting this application.

Are other Planning and/or Hearing Examiner Approvals /Reviews Required as part of this Application? (Conditional Use, Variance, Record Plat, etc.?) If YES, include information on these reviews as supplemental information.

Building Number: ________________ Street: ______________________________________________

Town/City: __________________________ Nearest Cross Street: __________________________________

Lot: ____________ Block: ___________ Subdivision: _______ Parcel: _____

TYPE OF WORK PROPOSED: See the checklist on Page 4 to verify that all supporting items for proposed work are submitted with this application. Incomplete Applications will not be accepted for review. Check all that apply:

- New Construction
- Addition
- Demolition
- Grading/Excavation
- Deck/Porch
- Fence
- Hardscape/Landscape
- Roof
- Shed/Garage/Accessory Structure
- Solar
- Tree removal/planting
- Window/Door
- Other: ________________________

I hereby certify that I have the authority to make the foregoing application, that the application is correct and accurate and that the construction will comply with plans reviewed and approved by all necessary agencies and hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent ____________________________ Date

For Staff only:
HAWP# ____________
Assign date ________

Yes/District Name TAKOMA PARK
No/Individual Site Name

12/30/2020

5
### HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFYING
[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

<table>
<thead>
<tr>
<th>Owner's mailing address</th>
<th>Owner's Agent’s mailing address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MONTGOMERY AVE TAKOMA, PARK, MD 20912</td>
<td>3600 COMMERCE DR #601 BALTIMORE, MD 21227</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adjacent and confronting Property Owners mailing addresses</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAH CURRY 5 MONTGOMERY AVE TAKOMA PARK, MD 20912</td>
</tr>
<tr>
<td>10 MONTGOMERY AVE TAKOMA PARK, MD 20912 JEN SERMONETA 19 PINE AVE TAKOMA PARK, MD 20912</td>
</tr>
<tr>
<td>ELLIOTT ANDALMAN 6 MONTGOMERY AVE TAKOMA PARK, MD 20912</td>
</tr>
<tr>
<td>HUGH MORALES 10 PINE AVE TAKOMA PARK, MD 20912</td>
</tr>
</tbody>
</table>
Description of Property: Please describe the building and surrounding environment. Include information on significant structures, landscape features, or other significant features of the property:

HOME IS IN EXCELLENT CONDITION AND TREES WILL AID IN CONCEALING PROPOSED SOLAR PANELS

Description of Work Proposed: Please give an overview of the work to be undertaken:

INSTALLATION OF 17 ROOF MOUNTED SOLAR PANELS. ALL PANELS WILL BE REAR ROOF SURFACES AND NOT VISIBLE TO NEIGHBORING HOMES
<table>
<thead>
<tr>
<th>Work Item 1:</th>
<th>__________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of Current Condition:</td>
<td>Proposed Work:</td>
</tr>
<tr>
<td>SFD IN EXCELLENT CONDITION</td>
<td>INSTALLING 17 ROOF MOUNTED SOLAR PANELS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Item 2:</th>
<th>__________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of Current Condition:</td>
<td>Proposed Work:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Item 3:</th>
<th>__________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of Current Condition:</td>
<td>Proposed Work:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SOLAR PV SYSTEM: 6.12 kWp

WALLSTEN RESIDENCE
1 MONTGOMERY AVENUE TAKOMA PARK, MD UNITED STATES 20912

PROJECT INFORMATION
OWNER: SCOTT WALLSTEN
ADDRESS: 1 MONTGOMERY AVENUE
TAKOMA PARK, MD UNITED STATES 20912

AHJ: MONTGOMERY
ADDRESS: 255 ROCKVILLE PIKE, 2ND FLOOR ROCKVILLE, MD 20850

ZONING: RESIDENTIAL
BUILDING CODE: IBC 2018
ELECTRICAL CODE: NEC 2017
ASCE VERSION: ASCE 7-16

SNOW LOAD: 30 PSF
WIND SPEED: 110 MPH
WIND EXPOSURE: B

DC RATING: 6.12 kW
AC RATING: 4.93 kW
RACKING: UNIRAC SM LIGHT RAIL
MODULE: (17) REC360AA
INVERTER: (17) IQ7PLUS-72-2-US

PROJECT SCOPE

This project involves the installation of (17) REC 360 solar modules. The solar modules will be racked using a pre-engineered racking system. The racked modules will be electrically connected to (17) Enphase DC to AC power inverters and interconnected to the local utility using means and methods consistent with the rules enforced by the local utility and permitting jurisdiction.

INDEX OF PAGES

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S001 ASSEMBLY & LOAD CALCS
E001 ELECTRICAL - LINE DIAGRAM
E002 ELECTRICAL - WIRE CALCS
E003 STRING & CONDUIT LAYOUT
E004 EQUIP. RATINGS & SIGNAGE

APPENDIX

MODULE DATASHEET
INVERTER DATASHEET
RACKING DATASHEET
ANCHOR DATASHEET

GENERAL NOTES

1) This photovoltaic (PV) system shall comply with the National Electric Code (NEC) article 690, all manufacturers' listing and installation instructions, and the relevant codes as specified by the authority having jurisdiction (AHJ).
2) All signage to be placed in accordance with local building code and as required by the NEC and AHJ.
3) PV system circuits installed on or in buildings shall include a rapid shutdown function to reduce shock hazard for emergency responders.
4) This system is a utility interactive system, and the PV modules are considered non-combustible.

PROJECT ADDRESS:
1 MONTGOMERY AVENUE
TAKOMA PARK, MD 20912

CONTRACTOR INFO:
SCOTT WALLSTEN
1 MONTGOMERY AVENUE
TAKOMA PARK, MD 20912
(443) 955-0779

LICENSE NUMBER:
MHIC-30991

FOR ENGINEERING USE ONLY
1) All solar modules supported by roof attachments staggered at 48" O.C. (or as indicated)

2) Solar photovoltaic system installed parallel to roof surface

3) Solar photovoltaic system installed at a maximum height of 6" above roof surface (or as indicated)

4) Any roofing penetrations shall have proper flashing sealant used to provide watertight assembly

TOTAL ROOF PLAN AREA = 2,890 SQ.FT.
TOTAL SOLAR ARRAY AREA = 320 SQ.FT.
ARRAY ROOF COVERAGE = 12% SQ.FT.
**INSTALLATION NOTES**

1) ALL RACKING SHALL BE INSTALLED PER MANUFACTURER SPECIFICATIONS

2) M.L.E.'S = MODULE LEVEL ELECTRONICS (IE, POWER OPTIMIZERS, MICRO-INVERTERS, CABLES, ETC)

3) USE 5/16" X 4" HEX HEAD STAINLESS STEEL LAG SCREWS
When the AC utility source is removed from the inverter output circuits via any means, such as an AC breaker, AC disconnect or removal of the solar or main utility service meter, this equipment performs the rapid shutdown function per 690.12.

All conduit sizing will be in accordance to the NEC, Chapter 9.

2) Working clearances around all new and existing electrical equipment shall comply with NEC

3) If used, PV power source breaker to be located at bottom of bus

4) Listing agency name and number to be indicated on inverters and modules

5) AC combiner panels shall be labeled as "inverter AC combiner panel"

5) PV power source to be suitable for backfeed.
### ELECTRICAL NOTES

1. **All conductors shall be copper, rated for 90°C and wet environment, unless otherwise noted.**
2. **All wire terminations shall be appropriately labeled and readily visible.**
3. **Module grounding clips to be installed between module frame and module support rail, per manufacturer's instruction.**
4. **Module support rail to be bonded to continuous copper GEC via Weeb lug.**

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**Calculation for PV breaker & circuits**

- **CIRCUIT #1 =**
  - Design current: 20.57 A
  - Use 200 A breaker
  - Max solar breaker: 200 A
  - Circuit #1 = 20.57 x 125% = 25.7125 A
  - Circuit #2 = 13 x 12.1 = 157.3 A

### Calculation for PV breaker

- **System current =**
  - 1.21 x 125% = 1.5125 A

### Calculation for Main PV breaker & circuits

- **Main Bus rating =**
  - 200 x 120% = 240 A

### Circuit Details

- **CIRCUIT #1 =**
  - 8 x 121 x 125% = 121 A

- **CIRCUIT #2 =**
  - 9 x 136 x 125% = 112.5 A
**SIGNAGE NOTES**

1. All plaques and labels shall have a red background (or as shown here).
2. All lettering shall be white and have a minimum height of 3/8" (or as shown here).
3. Font shall be Arial (or similar) and all lettering shall be capitalized.
4. All plaques and labels shall be of a material suitable for the environment installed.

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**WARNING: PHOTOVOLTAIC POWER SOURCE**

Label to be installed at exposed raceways, cable trays, and other wiring methods, spaced at maximum 20" section or where separated by enclosures, walls, partitions, ceilings, or floors.

Letters at least 3/8" in white on red background, reflective.

**WARNING**

**ELECTRICAL SHOCK HAZARD**

Do not touch terminals! Terminals on both line and load sides may be energized in the open position.

**WARNING**

**DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM**

Label to be applied to the distribution equipment.

**WARNING**

**INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE**

Label to be applied to the distribution equipment.

**INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED**

Label to be installed on exterior of main electrical panel.

**WARNING**

**INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE**

Label to be applied to the distribution equipment.

**INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED**

Label to be installed on exterior of main electrical panel.

**PHOTOVOLTAIC DC DISCONNECT**

Label to be installed at each DC disconnecting means.

**PHOTOVOLTAIC AC DISCONNECT**

Label to be installed at each AC disconnecting means.

**PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

Label to be installed at rapid shutdown switch.

**SOLAR PV SYSTEM DISCONNECT**

Rated AC output current: 20.57 A

Nominal operating AC voltage: 240 V

Label to be installed at an accessible location at the disconnecting means as a power source.
**PART TABLE**

<table>
<thead>
<tr>
<th>P/N</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>004085M</td>
<td>FLASHLOC COMP KIT MILL, 20 PACK</td>
</tr>
<tr>
<td>004085D</td>
<td>FLASHLOC COMP KIT DARK, 20 PACK</td>
</tr>
</tbody>
</table>

**PRODUCT LINE:** SOLARmount  
**DRAWING TYPE:** PART DRAWING  
**DESCRIPTION:** FLASHLOC COMP KIT  
**REVISION DATE:** 10/3/2019
Enphase AC Combiner Box

The **Enphase AC Combiner Box™** with Enphase Envoy-S™ consolidates interconnection equipment into a single enclosure and streamlines PV installations by providing a consistent, pre-wired solution for residential applications.

### Smart
- Includes Envoy-S for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular

### Simple
- Three pre-installed 20 A / 240 VAC circuit breakers
- Pre-configured revenue-grade metering available

### Reliable
- Durable NRTL-certified NEMA type 3R enclosure
- Five-year warranty

To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)
Enphase AC Combiner Box

**MODEL NUMBERS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XAM1-120-B (880-00834) or XAM1-120 (880-00211)</td>
<td>AC Combiner with Enphase Envoy-S Metered™ for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional consumption monitoring (+/- 2.5%).</td>
</tr>
</tbody>
</table>

**ACCESSORIES** (order separately)

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enphase Mobile Connect™ CELLMODEM-01 (3G) or CELLMODEM-03 (4G)</td>
<td>Plug and play industrial grade cellular modem with five-year data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)</td>
</tr>
<tr>
<td>Consumption Monitoring CT CT-200-SPLIT</td>
<td>Split core current transformers enable whole home consumption metering (+/- 2.5%).</td>
</tr>
</tbody>
</table>

**ELECTRICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>Continuous duty</td>
</tr>
<tr>
<td>Solar branch circuit breakers</td>
<td>Three 2-pole 20 A / 240 VAC DIN rail-mounted breakers</td>
</tr>
<tr>
<td>Maximum system voltage</td>
<td>240 VAC</td>
</tr>
<tr>
<td>Rated output current</td>
<td>48 A</td>
</tr>
<tr>
<td>Rated input current, each input</td>
<td>16 A</td>
</tr>
<tr>
<td>Maximum fuse/circuit breaker rating (output)</td>
<td>60 A</td>
</tr>
<tr>
<td>Production Metering CT</td>
<td>200 A solid core pre-installed on solar busbar and wired to Envoy-S</td>
</tr>
</tbody>
</table>

**MECHANICAL DATA**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (WxHxD)</td>
<td>38.0 x 38.7 x 20.3 cm (15.0&quot; x 15.3&quot; x 8.0&quot;)</td>
</tr>
<tr>
<td>Weight</td>
<td>5.1 kg (11.2 lbs)</td>
</tr>
<tr>
<td>Ambient temperature range</td>
<td>-40º C to +46º C (-40º to 115º F)</td>
</tr>
<tr>
<td>Cooling</td>
<td>Vented, natural convection, plus heat shield</td>
</tr>
<tr>
<td>Enclosure environmental rating</td>
<td>Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction</td>
</tr>
<tr>
<td>Altitude</td>
<td>To 2000 meters (6,560 feet)</td>
</tr>
<tr>
<td>Wire size:</td>
<td>Follow local code requirements for conductor sizing.</td>
</tr>
</tbody>
</table>
| Model XAM1-120-B | • 14 to 6 AWG copper conductors for branch inputs.  
  • 14 to 4 AWG copper conductors for combined output. |
| Model XAM1-120 | • 12 to 6 AWG copper conductors for branch inputs.  
  • 12 to 4 AWG copper conductors for combined output. |

**INTERNET CONNECTION OPTIONS**

<table>
<thead>
<tr>
<th>Option</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Wi-Fi</td>
<td>802.11b/g/n</td>
</tr>
<tr>
<td>Ethernet</td>
<td>802.3, Cat5E (or Cat 6) UTP Ethernet cable - (not included)</td>
</tr>
<tr>
<td>Cellular</td>
<td>Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) - (not included)</td>
</tr>
</tbody>
</table>

**COMPLIANCE**

<table>
<thead>
<tr>
<th>Compliance</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance, Combiner Box</td>
<td>UL 1741</td>
</tr>
</tbody>
</table>
| Compliance, Envoy-S | UL 916  
  CAN/CSA C22.2 No. 61010-1  
  47 CFR, Part 15, Class B, ICES 003  
  IEC/EN 61010-1:2010,  
  EN50065-1, EN61000-4-5, EN61000-6-1, EN61000-6-2  
  Metering: ANSI C12.20 accuracy class 0.5 |
Solar disconnect and combiner will be mounted here, next to the meter.
The high-powered smart grid-ready Enphase IQ 7 Micro™ and Enphase IQ 7+ Micro™ dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

---

**Enphase IQ 7 and IQ 7+ Microinverters**

**Easy to Install**
- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

**Productive and Reliable**
- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

**Smart Grid Ready**
- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

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* The IQ 7+ Micro is required to support 72-cell modules.

To learn more about Enphase offerings, visit enphase.com
Enphase IQ 7 and IQ 7+ Microinverters

### INPUT DATA (DC)

<table>
<thead>
<tr>
<th>Commonly used module pairings¹</th>
<th>235 W - 350 W +</th>
<th>235 W - 440 W +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module compatibility</td>
<td>60-cell PV modules only</td>
<td>60-cell and 72-cell PV modules</td>
</tr>
<tr>
<td>Maximum input DC voltage</td>
<td>48 V</td>
<td>60 V</td>
</tr>
<tr>
<td>Peak power tracking voltage</td>
<td>27 V - 37 V</td>
<td>27 V - 45 V</td>
</tr>
<tr>
<td>Operating range</td>
<td>16 V - 48 V</td>
<td>16 V - 60 V</td>
</tr>
<tr>
<td>Min/Max start voltage</td>
<td>22 V / 48 V</td>
<td>22 V / 60 V</td>
</tr>
<tr>
<td>Max DC short circuit (module Isc)</td>
<td>15 A</td>
<td>15 A</td>
</tr>
<tr>
<td>Overvoltage class DC port</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>DC port backfeed current</td>
<td>0 A</td>
<td>0 A</td>
</tr>
<tr>
<td>PV array configuration</td>
<td>1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit</td>
<td></td>
</tr>
</tbody>
</table>

### OUTPUT DATA (AC)

<table>
<thead>
<tr>
<th>Peak output power</th>
<th>250 VA</th>
<th>295 VA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum continuous output power</td>
<td>240 VA</td>
<td>290 VA</td>
</tr>
<tr>
<td>Nominal (L-L) voltage/range²</td>
<td>240 V / 211-264 V</td>
<td>208 V / 183-229 V</td>
</tr>
<tr>
<td>Maximum continuous output current</td>
<td>1.0 A (240 V) / 1.15 A (208 V)</td>
<td>1.21 A (240 V) / 1.39 A (208 V)</td>
</tr>
<tr>
<td>Nominal frequency</td>
<td>60 Hz</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Extended frequency range</td>
<td>47 - 68 Hz</td>
<td>47 - 68 Hz</td>
</tr>
<tr>
<td>AC short circuit fault current over 3 cycles</td>
<td>5.8 Arms</td>
<td>5.8 Arms</td>
</tr>
<tr>
<td>Maximum units per 20 A (L-L) branch circuit³</td>
<td>16 (240 VAC) / 13 (208 VAC)</td>
<td>13 (240 VAC) / 11 (208 VAC)</td>
</tr>
<tr>
<td>Overvoltage class AC port</td>
<td>III</td>
<td>III</td>
</tr>
<tr>
<td>AC port backfeed current</td>
<td>0 A</td>
<td>0 A</td>
</tr>
<tr>
<td>Power factor setting</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Power factor (adjustable)</td>
<td>0.85 leading ... 0.85 lagging</td>
<td>0.85 leading ... 0.85 lagging</td>
</tr>
</tbody>
</table>

### EFFICIENCY

<table>
<thead>
<tr>
<th>@240 V</th>
<th>@208 V</th>
<th>@240 V</th>
<th>@208 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak efficiency</td>
<td>97.6 %</td>
<td>97.6 %</td>
<td>97.5 %</td>
</tr>
<tr>
<td>CEC weighted efficiency</td>
<td>97.0 %</td>
<td>97.0 %</td>
<td>97.0 %</td>
</tr>
</tbody>
</table>

### MECHANICAL DATA

| Ambient temperature range | -40°C to +65°C |
| Relative humidity range   | 4% to 100% (condensing) |
| Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US) | MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter) |
| Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US) | Friends PV2 (MC4 intermateable). Adaptors for modules with MC4 or UTX connectors: - PV2 to MC4: order ECA-S20-S22 - PV2 to UTX: order ECA-S20-S25 |
| Dimensions (WxHxD) | 212 mm x 175 mm x 30.2 mm (without bracket) |
| Weight | 1.08 kg (2.38 lbs) |
| Cooling | Natural convection - No fans |
| Approved for wet locations | Yes |
| Pollution degree | PD3 |
| Enclosure | Class II double-insulated, corrosion resistant polymeric enclosure |
| Environmental category / UV exposure rating | NEMA Type 6 / outdoor |

### FEATURES

| Communication | Power Line Communication (PLC) |
| Monitoring | Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy. |
| Disconnecting means | The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690. |


² Nominal voltage range can be extended beyond nominal if required by the utility.

³ Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

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2018-11-19
PART # TABLE

<table>
<thead>
<tr>
<th>P/N</th>
<th>DESCRIPTION</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>315168M</td>
<td>SM LIGHT RAIL 168&quot; MILL</td>
<td>168&quot;</td>
</tr>
<tr>
<td>315168D</td>
<td>SM LIGHT RAIL 168&quot; DRK</td>
<td>168&quot;</td>
</tr>
<tr>
<td>315240M</td>
<td>SM LIGHT RAIL 240&quot; MILL</td>
<td>240&quot;</td>
</tr>
<tr>
<td>315240D</td>
<td>SM LIGHT RAIL 240&quot; DRK</td>
<td>240&quot;</td>
</tr>
</tbody>
</table>

1/4" BOLT LOCATION

3/8" BOLT LOCATION

111/16"
REC ALPHA\(\alpha\) SERIES

380 W\(_P\)  POWER

20 YEAR  PRODUCT WARRANTY

25 YEAR  POWER OUTPUT WARRANTY

recgroup.com/alpha
ELECTRICAL DATA @ STC

<table>
<thead>
<tr>
<th>Product Code: RECxxxAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Power - $P_{mpp}$ (Wp)</td>
</tr>
<tr>
<td>Watt Class Sorting - (W)</td>
</tr>
<tr>
<td>Nominal Power Voltage - $V_{mpp}$ (V)</td>
</tr>
<tr>
<td>Nominal Power Current - $I_{mpp}$ (A)</td>
</tr>
<tr>
<td>Open Circuit Voltage - $V_{oc}$ (V)</td>
</tr>
<tr>
<td>Short Circuit Current - $I_{sc}$ (A)</td>
</tr>
<tr>
<td>Panel Efficiency (%)</td>
</tr>
</tbody>
</table>

Values at standard test conditions (STC: air mass AM 1.5, irradiance 10.75 W/sq ft [1000 W/m²], temperature 77°F [25°C], based on a production spread with a tolerance of $V_{oc}$ and $I_{sc} ±3%$ within one watt class. *Where xxx indicates the nominal power class ($P_{mpp}$) at STC above.

ELECTRICAL DATA @ NMOT

<table>
<thead>
<tr>
<th>Product Code: RECxxxAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Power - $P_{mpp}$ (Wp)</td>
</tr>
<tr>
<td>Nominal Power Voltage - $V_{mpp}$ (V)</td>
</tr>
<tr>
<td>Nominal Power Current - $I_{mpp}$ (A)</td>
</tr>
<tr>
<td>Open Circuit Voltage - $V_{oc}$ (V)</td>
</tr>
<tr>
<td>Short Circuit Current - $I_{sc}$ (A)</td>
</tr>
</tbody>
</table>

Nominal module operating temperature (NMOT: air mass AM 1.5, irradiance 800 W/m², temperature 68°F [20°C], windspeed 3.3 ft/s [1 m/s]. *Where xxx indicates the nominal power class ($P_{mpp}$) at STC above.

CERTIFICATIONS


WARRANTY

- 20 year product warranty
- 25 year linear power output warranty
- Maximum annual power degression of 0.25% p.a.
- Guarantees 92% of power after 25 years

See warranty conditions for further details.

www.recgroup.com

24
HISTORIC AREA WORK PERMIT
CHECKLIST OF
APPLICATION REQUIREMENTS

<table>
<thead>
<tr>
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<tr>
<td>New Construction</td>
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<tr>
<td>Additions/Alterations</td>
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<td>Demolition</td>
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<tr>
<td>Deck/Porch</td>
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<tr>
<td>Fence/Wall</td>
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<tr>
<td>Driveway/Parking Area</td>
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<tr>
<td>Grading/Excavation/Land</td>
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<td>*</td>
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<tr>
<td>Tree Removal</td>
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<tr>
<td>Siding/Roof Changes</td>
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<tr>
<td>Window/Door Changes</td>
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<tr>
<td>Masonry Repair/Repoint</td>
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<td>Signs</td>
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</tbody>
</table>
abuting on the left of the Wallstens

Zac Hare
Director of Sales, MD
301.697.1837
luminasolar.com
3600 Commerce Dr., Ste 601
Baltimore, MD 21227

Leave us a Review!
Google - Lumina Solar
SolarReviews - Lumina Solar
Facebook - Lumina Solar
Energysage - Lumina Solar
Home Advisor - Lumina Solar

---------- Forwarded message ---------
From: Jen Sermoneta <jen.sermoneta@gmail.com>
Date: Tue, Jan 5, 2021 at 12:42 PM
Subject: Re: Solar permit request
To: Leah Curry-Rood <leahcrood@gmail.com>, Scott Wallsten <scott.wallsten@gmail.com>, zac@luminasolar.com <zac@luminasolar.com>

Thanks Leah! Yeah, they always told us that in the past too. Maybe it's your time now— that would be a silver lining I guess.

Jen

On Tue, Jan 5, 2021 at 12:17 PM Leah Curry-Rood <leahcrood@gmail.com> wrote:

Jen and Scott,
What a GRAND idea!! You have our blessings and congratulations . We have always wanted to do solar panels and have always been told we have too many trees in the back yard. Last summer , (2019) we lost 3 big white oaks. Sad, but we might be able to have them now. Perhaps we should talk with Zac. I think we should wait until spring to revisit the idea.

Glad to hear you're taking the plunge.

Leah

Leah Curry-Rood

On Jan 4, 2021, at 9:49 PM, Jen Sermoneta <jen.sermoneta@gmail.com> wrote:

Dear Leah and Chip of 5 Montgomery Ave Takoma Park, MD,

Happy New Year! Let's hope it's a better one!

Scott and I have signed up to have 17 solar panels installed on our roof (hooray!). Most will be facing away from Montgomery Ave, although some will be on the eastern roof, facing west.

We are working with Zac Hare at Lumina, cc'd here. Zac and Lumina are wading through the Historic Commission Process to get the Historic Area Work Permit. We want to make sure that, as our immediate neighbors, you know we are doing this. We would be very grateful if you could reply-all (to include Zac) to this email saying that you approve of our getting the solar panels.

If you have any questions, please feel free to contact me or Zac of Lumina Solar, who is cc'd on this email (and has been great to work with if you are looking into solar!).

Thank you so much.
best to you,

Jen

--

Jen Sermoneta, PsyD
Pronouns: She/Her
Licensed Psychologist, Takoma Park, MD
Cell/Text: (202) 415-6414

Please remember that email is not a secure medium.

--

Jen Sermoneta, PsyD
Pronouns: She/Her
Licensed Psychologist, Takoma Park, MD
Cell/Text: (202) 415-6414

Please remember that email is not a secure medium.
Fwd: Solar permission
1 message

Zachary Hare <zac@luminasolar.com> To: Aaron Williams <awilliams@fusionss.net>

Andalmans at 6 Montgomery ave confronting diagonally from the Wallstens

Zac Hare
Director of Sales, MD
301.697.1837
luminasolar.com
3600 Commerce Dr., Ste 601
Baltimore, MD 21227

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Facebook - Lumina Solar
Energysage - Lumina Solar
Home Advisor - Lumina Solar

---------- Forwarded message ---------
From: Martha Bergmark <marthabergmark@gmail.com>
Date: Tue, Jan 5, 2021 at 10:50 AM
Subject: Re: Solar permission
To: Jen Sermoneta <jen.sermoneta@gmail.com>, Elliott Andalman <eandalman@gmail.com>, Martha Bergmark <marthabergmark@gmail.com>, Scott Wallsten <scott.wallsten@gmail.com>, zac@luminasolar.com

We approve! Thanks for keeping us posted. Martha and Elliott

From: "Jen Sermoneta" <jen.sermoneta@gmail.com>
To: "Elliott Andalman" <eandalman@gmail.com>, "Martha Bergmark" <marthabergmark@gmail.com>, "Scott Wallsten" <scott.wallsten@gmail.com>, zac@luminasolar.com
Sent: Monday, January 4, 2021 10:33:55 PM
Subject: Solar permission

Hi Martha and Elliott of 6 Montgomery Ave Takoma Park, MD,

Happy New Year — Here’s to a better one!

Scott and I have signed up to have 17 solar panels installed on our roof (hooray!). Most will be facing away from Montgomery Ave, although some will be on the eastern roof, facing west.

We are working with Zac Hare at Lumina, cc'd here. Zac and Lumina are wading through the Historic Commission Process to get the Historic Area Work Permit. We want to make sure that, as our immediate neighbors, you know we are doing this. **We would be very grateful if you could reply-all (to include Zac) to this email saying that you approve of our getting the solar panels.**

If you have any questions, please feel free to contact me or Zac of Lumina Solar, who is cc'd on this email (and has been great to work with if you are looking into more solar, though I think you already have it!).

Thank you so much.

best to you,

Jen

--
Please remember that email is not a secure medium.
Zachary Hare <zac@luminasolar.com>
To: Aaron Williams <awilliams@fusionss.net>

Sending you 4 emails with neighbor approvals for Wallsten. I think the deadline is tomorrow right. This one is for 10 Pine Ave confronting directly across the street

Zac Hare
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luminasolar.com
3600 Commerce Dr., Ste 601
Baltimore, MD 21227

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Energysage - Lumina Solar
Home Advisor - Lumina Solar

On Tue, Jan 5, 2021 at 1:26 PM Hugh Taft-Morales <hughtm@gmail.com> wrote:
Yes, Jen, Maureen and I approve of your plan for getting solar panels!

Hugh

On Mon, Jan 4, 2021 at 9:44 PM Jen Sermoneta <jen.sermoneta@gmail.com> wrote:

Dear Maureen and Hugh of 10 Pine Ave Takoma Park, MD,

Happy New Year! I sure missed Joe and Lane's party this year... I hope you're doing well.

Scott and I have signed up to have 17 solar panels installed on our roof (hooray!). Most will be facing away from Montgomery Ave, although some will be on the eastern roof, facing west.

We are working with Zac Hare at Lumina, cc'd here. Zac and Lumina are wading through the Historic Commission Process to get the Historic Area Work Permit. We want to make sure that, as our immediate neighbors, you know we are doing this. We would be very grateful if you could reply-all (to include Zac) to this email saying that you approve of our getting the solar panels.

If you have any questions, please feel free to contact me or Zac of Lumina Solar, who is cc'd on this email (and has been great to work with if you are looking into solar!).

Thank you so much.

best to you,

Jen

--
Jen Sermoneta, PsyD
Pronouns: She/Her
Licensed Psychologist, Takoma Park, MD
Cell/Text: (202) 415-6414

--

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--
Hugh Taft-Morales
Ethical Humanist Leader in Baltimore and Philadelphia
American Ethical Union
preferred pronouns: he, him, his
301-580-1481
abuting across the street to the right of the Wallstens

--- Forwarded message -------
From: Lynne d'Eustachio <lynnedeu@msn.com>
Date: Tue, Jan 5, 2021 at 8:37 AM
Subject: Re: Solar permission question
To: Jen Sermoneta <jen.sermoneta@gmail.com>, Scott Wallsten <scott.wallsten@gmail.com>, zac@luminasolar.com <zac@luminasolar.com>

Hi Jen and Scott of 19 Pine Ave Takoma Park, MD,

A very Happy New Year to you both too! We are both well and feeling grateful for that. Gemma, our paramedic/firefighter daughter, received the vaccine this week and we are very relieved about that.

We approve of the solar panels - what a great thing to do.

Take care,

Lynne

---
From: Jen Sermoneta <jen.sermoneta@gmail.com>
Sent: Monday, January 4, 2021 9:46 PM
To: Scott Wallsten <scott.wallsten@gmail.com>; lynne d'Eustachio <lynnedeu@msn.com>; zac@luminasolar.com <zac@luminasolar.com>
Subject: Solar permission question

Dear Lynne and Paul,

Happy New Year! I hope you’re doing ok.

Scott and I have signed up to have 17 solar panels installed on our roof (hooray!). Most will be facing away from Montgomery Ave, although some will be on the eastern roof, facing west.

We are working with Zac Hare at Lumina, cc'd here. Zac and Lumina are wading through the Historic Commission Process to get the Historic Area Work Permit. We want to make sure that, as our immediate neighbors, you know we are doing this. **We would be very grateful if you could reply-all (to include Zac) to this email saying that you approve of our getting the solar panels.**

If you have any questions, please feel free to contact me or Zac of Lumina Solar, who is cc'd on this email (and has been great to work with if you are looking into solar!).

Thank you so much.

best to you,
Please remember that email is not a secure medium.