**MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION**
**STAFF REPORT**

| | | | |
|---|---|---|---|
| **Address:** | 7230 Spruce Avenue, Takoma Park | **Meeting Date:** | 2/22/2023 |
| **Resource:** | Contributing Resource<br>**Takoma Park Historic District** | **Report Date:** | 2/15/2023 |
| | | **Public Notice:** | 2/8/2023 |
| **Applicant:** | Ryan Doyle (Agent) | **Tax Credit:** | N/A |
| **Review:** | HAWP | **Staff:** | John Liebertz |
| **Permit Number:** | 1019756 | | |
| **PROPOSAL:** | Solar panel installation. | | |

## STAFF RECOMMENDATION

Staff recommends that the Historic Preservation Commission (HPC) **approve** the HAWP application.

## ARCHITECTURAL DESCRIPTION

SIGNIFICANCE: Contributing Resource within the Takoma Park Historic District
STYLE: Bungalow
DATE: c. 1915-1925


***Figure 1: The subject property, noted with the yellow star, at 7230 Spruce Avenue is located on the northwest side of Spruce Avenue (at a bend).***

## PROPOSAL

The applicant proposes to install twenty-three (23) roof-mounted solar panels in two arrays on non-historic shed dormers constructed ca. 2018. The arrays on the northern and southern roof slopes consists of fifteen (15) and eight (8) panels, respectively.

## APPLICABLE GUIDELINES

The Historic Preservation Office and Historic Preservation Commission (HPC) consult several documents when reviewing alterations and new construction within the Takoma Park Historic District. These documents include the historic preservation review guidelines in the approved and adopted amendment for the *Takoma Park Historic District (Guidelines)*, *Montgomery County Code Chapter 24A (Chapter 24A*), and *the Secretary of the Interior's Standards for Rehabilitation (Standards),* and the HPC's *Policy No. 20-01 ADDRESSING EMERGENCY CLIMATE MOBILIZATION THROUGH THE INSTALLATION OF ROOF-MOUNTED SOLAR PANELS.* The pertinent information in these four documents is outlined below.

### *Takoma Park Historic District Guidelines*

There are two broad planning and design concepts which apply to all categories. These are:

- The design review emphasis will be restricted to changes that are all visible from the public right-of-way, irrespective of landscaping or vegetation (it is expected that the majority of new additions will be reviewed for their impact on the overall district), and

- The importance of assuring that additions and other changes to existing structures act to reinforce and continue existing streetscape, landscape, and building patterns rather than to impair the character of the historic district.

A majority of the buildings in the Takoma Park Historic District have been assessed as being "Contributing Resources." While these buildings may not have the same level of architectural or historical significance as Outstanding Resources or may have lost some degree of integrity, collectively, they are the basic building blocks of the Takoma Park district. They are important to the overall character of the district and the streetscape due to their size, scale, and architectural qualities, rather than for their particular architectural features.

Contributing Resources should receive a more lenient level of design review than those structures that have been classified as Outstanding. This design review should emphasize the importance of the resource to the overall streetscape and its compatibility with existing patterns rather than focusing on a close scrutiny of architectural detailing. In general, however, changes to Contributing Resources should respect the predominant architectural style of the resource.

The following guidance which pertains to this project are as follows:

- All exterior alterations, including those to architectural features and details, should be generally consistent with the predominant architectural style and period of the resource and should preserve the predominant architectural features of the resource; exact replication of existing details and features is, however, not required.

- Minor alterations to areas that do not directly front on a public right-of-way such as vents, metal stovepipes, air conditioners, fences, skylights, etc. – should be allowed as a matter of course; alterations to areas that do not directly front on a public way-of-way which involve the

replacement of or damaged to original ornamental or architectural features are discouraged, but may be considered and approved on a case-by-case basis.

- Alterations to features that are not visible from the public right-of-way should be allowed as a matter of course.

- All changes and additions should respect existing environmental settings, landscaping, and patterns of open space.

***Montgomery County Code, Chapter 24A-8***

The following guidance which pertains to this project are as follows:

(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 the 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 applicable *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 shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall 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.

***Historic Preservation Commission Policy No. 20-01: Addressing Emergency Climate Mobilization Through The Installation of Roof-Mounted Solar Panels***

Now, THEREFORE:

WHEREAS, Historic Area Work Permit decisions are guided by the criteria in Section 24A, The Secretary of the Interior's Standards for Rehabilitation, and pertinent guidance from applicable master plan amendments and/or site or district-specific studies;

WHEREAS, The Secretary of the Interior's Standards for Rehabilitation as interpreted by the National Park Service limit the placement of rooftop solar panels under Standards 2, 9, and 10 to less conspicuous locations;

WHEREAS, the County Council has established a Climate Emergency;

WHEREAS, the Historic Preservation is a body established by the County Executive and County Council;

WHEREAS, Section 24-8(b)(6) states, "In balancing the interest of the public in preserving the historic site or historic resource located within an historic district, with the interests of the public from the use and benefit of the alternative proposal, the general public welfare is better served by granting the permit;"

WHEREAS, the widespread use of solar panels, both for hot water and for electricity production, will reduce greenhouse gases in the county, in accordance with the aims of the Emergency Climate Mobilization resolution (Resolution No.: 18-974), it shall be the policy of the Historic Preservation Commission that:

1. The preferred locations for solar panel installation(s) on a designated historic site or an historic resource located within an historic district is a) on the rear of the property, b) on non-historic building additions, c) on accessory structures, or d) in ground-mounted arrays;

2. If it is not feasible to install solar panels in one of the identified preferred locations due to resource orientation or other site limitations; and,

3. The roof is determined to be neither architecturally significant, nor a character-defining feature of the resource, nor is it a slate or tile roof, that unless it can be demonstrated that the solar array will be installed without damaging the historic character of the resource or historic fabric; then

4. The public welfare is better served by approving a Historic Area Work Permit for solar panels on all visible side or front roof slopes under Section 24A-8(b)(6).

5. A Historic Area Work Permit (HAWP) is required for all work referenced in this policy.

## STAFF DISCUSSION

The subject property is a Contributing Resource to the Takoma Park Historic District and features a one-and-a-half-story, wood-frame, bungalow constructed ca. 1915-1925. The house has undergone numerous alterations since its construction. Most importantly, in 2017, the Historic Preservation Commission approved HAWP 37/03-17EE that permitted the demolition and construction of numerous rear additions. This project included two new shed dormers where the applicant proposes to place the subject solar arrays.[1]

***Figure 2: View of the subject house from Spruce Avenue, ca. 1980s (left) and 2023 (right). The red arrow points to the location of the proposed solar array on the southern slope of the non-historic dormer.***
***Source: Montgomery Planning.***

***Figure 3: Aerial views in 2015 (left) and 2022 (right). The red arrow points to the proposed locations for the solar panels on the non-historic shed dormers.***
***Source: Eagleview, ConnectExplorer.***

The current proposal consists of the installation of twenty-three (23) roof-mounted solar panels in two arrays on non-historic shed dormers constructed ca. 2018. The arrays on the northern and southern roof slopes consists of fifteen (15) and eight (8) panels, respectively. The utility disconnect will be placed on the eastern end of the south elevation adjacent to the existing utility meter.

Staff finds that the proposal is consistent with the applicable guidelines. The use of a freestanding solar system is not possible due to the existing tree canopy, setback requirements, and lack of power generation. The property contains no accessory buildings (outbuildings, garages, etc.) which requires the installation of panels on the roof of the house. The proposed location of the panels on the non-historic shed dormers complies with the guidance (specifically Preference #3: Roof-mounted Solar Systems on Non-Historic Additions) outlined in *Policy Guidance #20-01: Solar Technology (2021)*. The dormer on the northern roof slope—that contains most of the panels—is not visible from any public rights-of-way (*Fig. 3)*. Likewise, the dormer on the southern elevation—that contains 8 of the 23 panels—is obscured

[1] For more information, https://montgomeryplanning.org/wp-content/uploads/2017/02/I.L-7230-Spruce-Avenue-Takoma-Park.pdf.

from the public rights-of-way due to the shallow pitch of the roof, the setback of the panels from the edge of the roof, and the panel's location behind the historic side-gable massing (*Figs. 2-3)*. While there are three Outstanding Resources with views of the subject property *(Fig. 4)*, these views are from the rear of the respective resources and there would be limited visibility of the panels due to their placement. Staff finds that the panels will not adversely affect the streetscape.


***Figure 4: Aerial view of the property, ca 2021. The red arrows point to the proposed locations for the solar panels on the non-historic dormers. The blue outline is the approximate property boundary. The orange "x"s are Outstanding Resources in the historic district.***
***Source: ConnectExplorer.***

Staff finds that the proposed panels have an organized configuration, are mounted less than or equal to six inches above the surface of the roof (from the roof to the face of the panel) and follow the existing slope. In addition, the panels are setback appropriately from the edge and ridge of the roof. The panels are setback from the ridge and edge of the southern slope (visible from the public right-of-way) by 1'4" and 1'9", respectively. All conduits are located within the attic. While the inverter is placed within view of the public right-of-way on the eastern extent of the southern elevation (near the front porch), it is adjacent to an existing utility meter and will not further diminish the integrity of the resource.

Staff finds that the proposed alterations are compatible with the house and overall master plan historic district.

After full and fair consideration of the applicant's submission, staff finds the proposal, as modified by the condition, consistent with the Criteria for Issuance in Chapter 24A-8(b)(1), (2). and (d), having found the proposal is consistent with the *Secretary of the Interior's Standards for Rehabilitation #2*, *#9*, and *#10*, and *Takoma Park Historic District Guidelines,* and the HPC's Policy No. 20-01 as outlined above.

## STAFF RECOMMENDATION

Staff recommends that the Commission **approve** the HAWP application under the Criteria for Issuance in Chapter 24A-8(b), (1), (2) & (d), having found that the proposal, as modified by the condition, is consistent with the *Takoma Park Historic District Guidelines*, and therefore 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;

and in conformance with HPC *Policy No.20-01*;

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 an electronic set 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 john.liebertz@montgomeryplanning.org to schedule a follow-up site visit.

FOR STAFF ONLY:
HAWP#_____
DATE ASSIGNED_____

# APPLICATION FOR HISTORIC AREA WORK PERMIT

HISTORIC PRESERVATION COMMISSION
301.563.3400

**APPLICANT:**

Name: Ryan Doyle E-mail: permitting@solarenergyworld.com

Address: 7230 Spruce Ave City: Takoma Park Zip: 20912

Daytime Phone: 410-579-5172 Tax Account No.: _____

**AGENT/CONTACT (if applicable):**

Name: Ryan Doyle E-mail: permitting@solarenergyworld.com

Address: 5681 Main Street City: Elkridge Zip: 21075

Daytime Phone: 410-579-5172 Contractor Registration No.: MHIC127353

**LOCATION OF BUILDING/PREMISE:** MIHP # of Historic Property_____

Is the Property Located within an Historic District? ☑ Yes/District Name_____
☐ 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: 7230 Street: Spruce

Town/City: Takoma Park Nearest Cross Street: Park Avenue

Lot: 27 Block: 8 Subdivision: 0025 Parcel: N/A

**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 | ☐ | Deck/Porch | ☐ | Shed/Garage/Accessory Structure |
| ☐ | Addition | ☐ | Fence | ☑ | Solar |
| ☐ | Demolition | ☐ | Hardscape/Landscape | ☐ | Tree removal/planting |
| ☐ | Grading/Excavation | ☐ | Roof | ☐ | 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.

Ryan Doyle 1/25/2023

Signature of owner or authorized agent Date

**HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFING**
[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

| **Owner's** mailing address | **Owner's Agent's** mailing address |
|---|---|
| Aaron Kofner<br>7230 Spruce Avenue<br>Takoma Park MD 20912 | Ryan Doyle<br>5681 Main Street<br>Elkridge MD 21075 |
| **Adjacent and confronting Property Owners** mailing addresses | |
| Paul Landefeld<br>7228 Spruce Avenue<br>Takoma Park MD 20912 | Marion Mudd<br>226 Park Avenue<br>Takoma Park MD 20912 |
| | |
| | |

Description of Property: Please describe the building and surrounding environment. Include information on significant structures, landscape features, or other significant features of the property:

Single Family home built between 1915-1925

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

- Install (23) roof mounted solar panels
- Micro-Inverters to be installed under each panel.
- Utility disconnect to be installed next to utility meter
- Galvanized Steel Conduit to run from equipment along and tucked into attic.

Written justification: Shading would be a problem for a free-standing array. The property is also .4 acres and there is high probability of not being able to put it anywhere based off setbacks and requirements for a ground mount. Location of the panels was selected based off the height of the roof and less foliage covering the array.

**Historical Area Work Permit Application for Roof Mounted Solar**
**Aaron Kofner, 7230 Spruce Avenue Takoma Park, MD 20912**

Existing Property Condition Photos

Front View

East View

West View

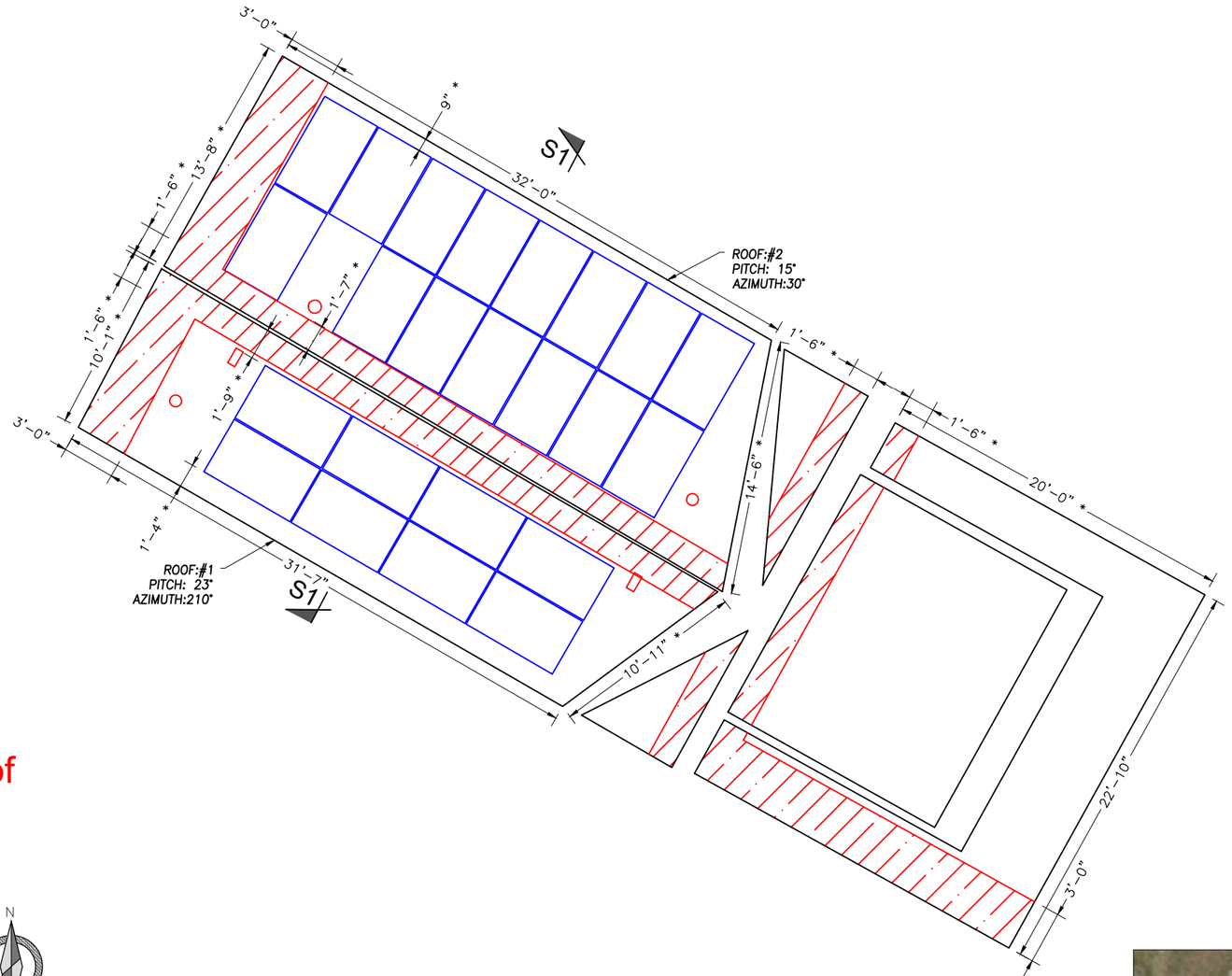
Utility Side Before Installation

Utility Side Example After Installation

NOTE: Conduits are located in the attic and puncture the eve.

Scanifly

IQ7+




Panels Follow
Slope of The Roof

KEY

FIRE SAFETY ZONE

N

S

*PLAN VIEW TOTAL ROOF AREA: 2084 SQFT*

*SOLAR ARRAY AREA: 444.13 SQFT*

*THE SOLAR ARRAY IS 21.3% OF THE PLAN VIEW TOTAL ROOF AREA*

SOLAR PANEL LAYOUT

Scale: 1/8" =1'-0"

NOTES:

1. THE SYSTEM SHALL INCLUDE [23] HANWHA Q.PEAK DUO BLK-G10+ 365W MODULES.
2. SNAPNRACK UR-40 RAIL WILL BE INSTALLED IN ACCORDANCE WITH SNAPNRACK INSTALLATION MANUAL.
3. DIMENSIONS MARKED (*) ARE ALONG ROOF SLOPE.
4. REFER TO STRUCTURAL DRAWING FOR SECTIONS MARKED AND ADDITIONAL NOTES.

PROPOSED PV ARRAY LOCATION


Solar Energy World
Because Tomorrow Matters

Solar Energy World LLC.
5681 Main Street
Elkridge, MD 21075
(888) 497-3233




Stamp

*STAMPED AND SIGNED FOR STRUCTURES ONLY

Revisions

| REV | DESCRIPTIONS | BY | DATE |
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Project Name and Address

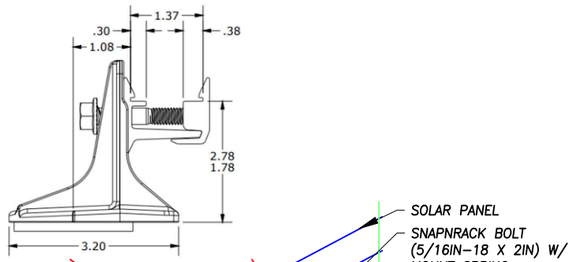
Aaron Kofner
7230 Spruce Ave
Takoma Park, MD 20912
8.395 kW
MD13782

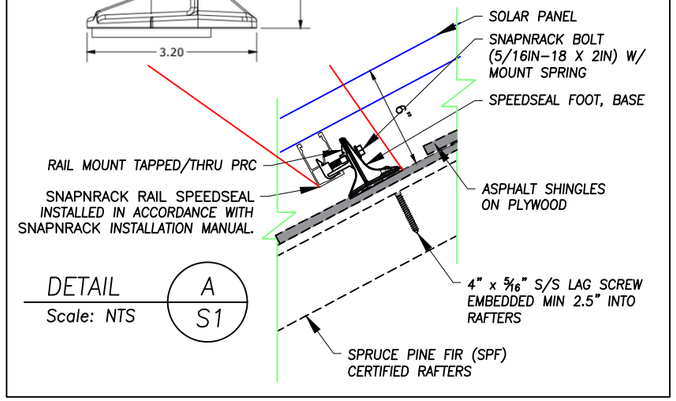
Drawn by: Cody Brehm

Date: 19-JAN-2023

Scale: AS NOTED

Sheet: A001




DETAIL A / S1
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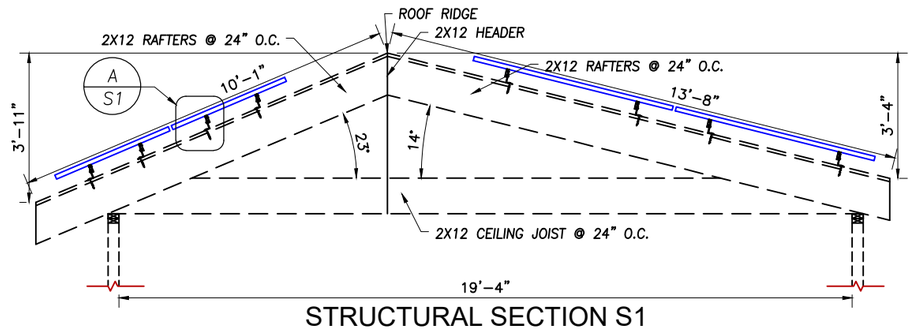


STRUCTURAL SECTION S1
Scale: 1/4" =1'-0"

NOTES:

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF INTERNATIONAL RESIDENTIAL CODE (IRC 2018), LOADING CODE (ASCE 7-16), WOOD DESIGN CODE (NDS 2015), AND LOCAL REQUIREMENTS.
2. LOAD CRITERIA PER :
   - EXPOSURE CATEGORY "B"
   - GROUND SNOW LOAD, Pg = 30 PSF
   - LATERAL LOAD RISK CATEGORY "II"
   - ULTIMATE DESIGN WIND SPEED = 115 MPH
3. SOLAR PANELS AND RACKING SYSTEMS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATION.
4. FOLLOW ALL LOCAL AND FEDERAL SAFETY REQUIREMENTS.

Solar Energy World
Because Tomorrow Matters

Solar Energy World LLC.
5681 Main Street
Elkridge, MD 21075
(888) 497-3233



Stamp

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Revisions

| REV | DESCRIPTIONS | BY | DATE |
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Project Name and Address
Aaron Kofner
7230 Spruce Ave
Takoma Park, MD 20912
8.395 kW
MD13782

Drawn by: Cody Brehm
Date: 19-JAN-2023
Scale: AS NOTED
Sheet: S001

powered by Q.ANTUM DUO Z

PRELIMINARY

# Q.PEAK DUO BLK-G10+
## 350-370

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Q CELLS Yield Security

### BREAKING THE 20 % EFFICIENCY BARRIER
Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9 %.

### THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY
Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

### INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behaviour.

### ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

### EXTREME WEATHER RATING
High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

### A RELIABLE INVESTMENT
Inclusive 25-year product warranty and 25-year linear performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (–1500 V, 96 h)
[2] See data sheet on rear for further information.

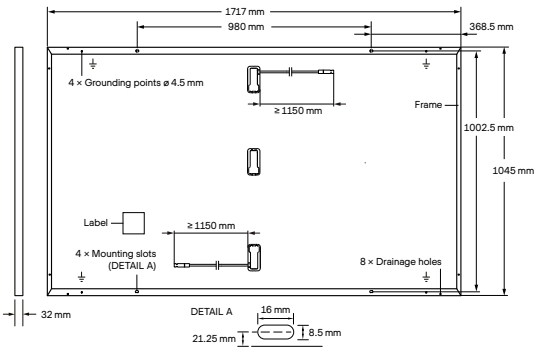
### THE IDEAL SOLUTION FOR:
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

## MECHANICAL SPECIFICATION

| | |
|---|---|
| Format | 1717 mm × 1045 mm × 32 mm (including frame) |
| Weight | 19.9 kg |
| Front Cover | 3.2 mm thermally pre-stressed glass with anti-reflection technology |
| Back Cover | Composite film |
| Frame | Black anodised aluminium |
| Cell | 6 × 20 monocrystalline Q.ANTUM solar half cells |
| Junction box | 53-101 mm × 32-60 mm × 15-18 mm<br>Protection class IP67, with bypass diodes |
| Cable | 4 mm² Solar cable; (+) ≥1150 mm, (–) ≥1150 mm |
| Connector | Stäubli MC4; IP68 |

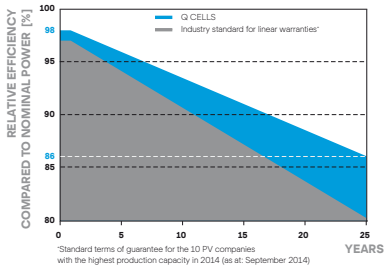



## ELECTRICAL CHARACTERISTICS

| POWER CLASS | | | | 350 | 355 | 360 | 365 | 370 |
|---|---|---|---|---|---|---|---|---|
| MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W) | | | | | | | | |
| Minimum | Power at MPP[1] | $P_{MPP}$ | [W] | 350 | 355 | 360 | 365 | 370 |
| | Short Circuit Current[1] | $I_{SC}$ | [A] | 10.97 | 11.00 | 11.04 | 11.07 | 11.10 |
| | Open Circuit Voltage[1] | $V_{OC}$ | [V] | 41.11 | 41.14 | 41.18 | 41.21 | 41.24 |
| | Current at MPP | $I_{MPP}$ | [A] | 10.37 | 10.43 | 10.49 | 10.56 | 10.62 |
| | Voltage at MPP | $V_{MPP}$ | [V] | 33.76 | 34.03 | 34.31 | 34.58 | 34.84 |
| | Efficiency[1] | η | [%] | ≥19.5 | ≥19.8 | ≥20.1 | ≥20.3 | ≥20.6 |
| MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2] | | | | | | | | |
| Minimum | Power at MPP | $P_{MPP}$ | [W] | 262.6 | 266.3 | 270.1 | 273.8 | 277.6 |
| | Short Circuit Current | $I_{SC}$ | [A] | 8.84 | 8.87 | 8.89 | 8.92 | 8.95 |
| | Open Circuit Voltage | $V_{OC}$ | [V] | 38.77 | 38.80 | 38.83 | 38.86 | 38.90 |
| | Current at MPP | $I_{MPP}$ | [A] | 8.14 | 8.20 | 8.26 | 8.31 | 8.37 |
| | Voltage at MPP | $V_{MPP}$ | [V] | 32.24 | 32.48 | 32.71 | 32.94 | 33.17 |

[1]Measurement tolerances $P_{MPP}$ ±3%; $I_{SC}$; $V_{OC}$ ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2]800 W/m², NMOT, spectrum AM 1.5

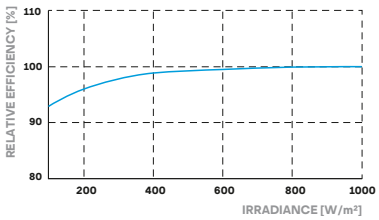
### Q CELLS PERFORMANCE WARRANTY




At least 98 % of nominal power during first year. Thereafter max. 0.5 % degradation per year. At least 93.5 % of nominal power up to 10 years. At least 86 % of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

### PERFORMANCE AT LOW IRRADIANCE




Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

| TEMPERATURE COEFFICIENTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Temperature Coefficient of $I_{SC}$ | α | [%/K] | +0.04 | Temperature Coefficient of $V_{OC}$ | β | [%/K] | –0.27 |
| Temperature Coefficient of $P_{MPP}$ | γ | [%/K] | –0.34 | Nominal Module Operating Temperature | NMOT | [°C] | 43±3 |

## PROPERTIES FOR SYSTEM DESIGN

| | | | | | |
|---|---|---|---|---|---|
| Maximum System Voltage | $V_{SYS}$ | [V] | 1000 | PV module classification | Class II |
| Maximum Reverse Current | $I_R$ | [A] | 20 | Fire Rating based on ANSI / UL 61730 | C / TYPE 2 |
| Max. Design Load, Push / Pull | | [Pa] | 3600 / 2660 | Permitted Module Temperature on Continuous Duty | –40 °C - +85 °C |
| Max. Test Load, Push / Pull | | [Pa] | 5400 / 4000 | | |

## QUALIFICATIONS AND CERTIFICATES

Quality Controlled PV - TÜV Rheinland;
IEC 61215:2016; IEC 61730:2016.
This data sheet complies
with DIN EN 50380.
QCPV Certification ongoing.

TÜVRheinland CERTIFIED
www.tuv.com
ID 1111220277

CE

**Note:** Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

**Hanwha Q CELLS GmbH**
Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | **TEL** +49 (0)3494 66 99-23444 | **FAX** +49 (0)3494 66 99-23000 | **EMAIL** sales@q-cells.com | **WEB** www.q-cells.com



Engineered in Germany

Q CELLS

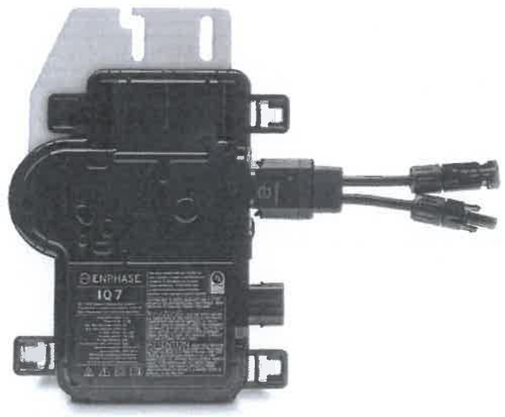
Data Sheet
**Enphase Microinverters**
Region: AMERICAS

# Enphase IQ 7 and IQ 7+ Microinverters

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.




## 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)

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

UL CERTIFIED SAFETY US CA E341165

To learn more about Enphase offerings, visit **enphase.com**

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## Enphase IQ 7 and IQ 7+ Microinverters

| INPUT DATA (DC) | IQ7-60-2-US / IQ7-60-B-US | | IQ7PLUS-72-2-US / IQ7PLUS-72-B-US | |
|---|---|---|---|---|
| Commonly used module pairings[1] | 235 W - 350 W + | | 235 W - 440 W + | |
| Module compatibility | 60-cell PV modules only | | 60-cell and 72-cell PV modules | |
| Maximum input DC voltage | 48 V | | 60 V | |
| Peak power tracking voltage | 27 V - 37 V | | 27 V - 45 V | |
| Operating range | 16 V - 48 V | | 16 V - 60 V | |
| Min/Max start voltage | 22 V / 48 V | | 22 V / 60 V | |
| Max DC short circuit current (module Isc) | 15 A | | 15 A | |
| Overvoltage class DC port | II | | II | |
| DC port backfeed current | 0 A | | 0 A | |
| PV array configuration | 1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit | | | |
| **OUTPUT DATA (AC)** | **IQ 7 Microinverter** | | **IQ 7+ Microinverter** | |
| Peak output power | 250 VA | | 295 VA | |
| Maximum continuous output power | 240 VA | | 290 VA | |
| Nominal (L-L) voltage/range[2] | 240 V / 211-264 V | 208 V / 183-229 V | 240 V / 211-264 V | 208 V / 183-229 V |
| Maximum continuous output current | 1.0 A (240 V) | 1.15 A (208 V) | 1.21 A (240 V) | 1.39 A (208 V) |
| Nominal frequency | 60 Hz | | 60 Hz | |
| Extended frequency range | 47 - 68 Hz | | 47 - 68 Hz | |
| AC short circuit fault current over 3 cycles | 5.8 Arms | | 5.8 Arms | |
| Maximum units per 20 A (L-L) branch circuit[3] | 16 (240 VAC) | 13 (208 VAC) | 13 (240 VAC) | 11 (208 VAC) |
| Overvoltage class AC port | III | | III | |
| AC port backfeed current | 0 A | | 0 A | |
| Power factor setting | 1.0 | | 1.0 | |
| Power factor (adjustable) | 0.85 leading ... 0.85 lagging | | 0.85 leading ... 0.85 lagging | |
| **EFFICIENCY** | **@240 V** | **@208 V** | **@240 V** | **@208 V** |
| Peak efficiency | 97.6 % | 97.6 % | 97.5 % | 97.3 % |
| CEC weighted efficiency | 97.0 % | 97.0 % | 97.0 % | 97.0 % |
| **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. | | | |
| Compliance | CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions. | | | |

1. No enforced DC/AC ratio. See the compatibility calculator at https://enphase.com/en-us/support/module-compatibility
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**

ENPHASE.


2018-11-19

# City of Takoma Park

## Housing and Community Development Department

**Main Office 301-891-7119**
**Fax 301-270-4568**
**www.takomaparkmd.gov**

**7500 Maple Avenue**
**Takoma Park, MD 20912**

### MUNICIPALITY LETTER

**To:** Aaron Kofner
7230 Spruce Avenue Takoma Park, MD 20912
aaron@sidehatch.net 301-483-7710

**To:** Department of Permitting Services
2425 Reedie Drive, 7th floor
Wheaton, Maryland 20902

**From**: Planning and Development Services Division

**THIS IS NOT A PERMIT – For Informational Purposes Only**

VALID FOR ONE YEAR FROM DATE OF ISSUE

The property owner is responsible for obtaining all required permits from Montgomery County and the City of Takoma Park. If this property is in the **Takoma Park Historic District,** it is subject to Montgomery County Historic Preservation requirements.

**Representative Name:** Ryan Doyle permitting@solarenergyworld.com 410-579-5172
**Location of Project:** 7230 Spruce Avenue
**Proposed Scope of Work:** Install (23) roof mounted solar panels, 8.395 KW

The purpose of this municipality letter is to inform you that the City of Takoma Park has regulations and city permit requirements that may apply to your project. This municipality letter serves as notification that, in addition to all Montgomery County requirements, you are required to comply with all City permitting requirements, including:

- Tree Impact Assessment/Tree Protection Plan
- Stormwater management
- City Right of Way

Failure to comply with these requirements could result in the issuance of a Stop Work Order and other administrative actions within the provisions of the law. Details of Takoma Park's permit requirements are attached on page 2.

The issuance of this letter does not indicate approval of the project nor does it authorize the property owner to proceed with the project. The City retains the right to review and comment on project plans during the Montgomery County review process.

# City Of Takoma Park

## The City of Takoma Park permits for the following issues:

### Tree Impact Assessment/Tree Protection Plan/Tree Removal Application:

Construction activities that occur within 50 feet of any urban forest tree (7 and 5/8" in trunk diameter or greater), located on the project property or on an adjacent property, may require a Tree Impact Assessment and possibly a Tree Protection Plan Permit. Make sure to submit a request for a Tree Impact Assessment and schedule a site visit with the City's Urban Forest Manager if any urban forest tree is in the vicinity of proposed construction activities. See the Tree Permits section of the City website for the specific conditions in which a Tree Impact Assessment is required. Depending on the Urban Forest Manager's conclusion following the Tree Impact Assessment, you may need to prepare a full Tree Protection Plan and apply for a Tree Protection Plan Permit as well. Separately, the removal of any urban forest tree will require a Tree Removal Permit application. The tree ordinance is detailed in the City Code, section 12.12. For permit information check: https://takomaparkmd.gov/services/permits/tree-permits. The City's Urban Forest Manager can be reached at 301-891-7612 or urbanforestmanager@takomaparkmd.gov.

### Stormwater Management:

If you plan to develop or redevelop property, you may be required to provide appropriate stormwater management measures to control or manage runoff, as detailed in City Code section 16.04. All commercial or institutional development in the city must apply for a Stormwater Management Permit regardless of the size of the land disturbance. Additions or modifications to existing detached single-family residential properties do not require a Stormwater Management permit if the project does not disturb more than 5,000 square feet of land area. For more information visit: https://takomaparkmd.gov/government/public-works/stormwater-management-program/. The City Engineer should be contacted to determine if a City permit is required. The City Engineer can be reached at 301-891-7620.

### City Right of Way:

- To place a **construction dumpster or storage container** temporarily on a City right of way (usually an adjacent road), you will need to obtain a permit. A permit is not required if the dumpster is placed in a privately-owned driveway or parking lot.
- If you plan to install a new **driveway apron**, or enlarge or replace an existing driveway apron, you need a Driveway Apron Permit.
- If you plan to construct a **fence** in the City right of way, you need to request a Fence Agreement. If approved, the Agreement will be recorded in the Land Records of Montgomery County.

For more information and applications for City permits, see: https://takomaparkmd.gov/services/permits/ or contact the Department of Public Works at 301-891-7633.

**Failure to comply with the City's permitting requirements could result in the issuance of a Stop Work Order and other administrative actions within the provisions of the law.**

eSigned via SeamlessDocs.com
Ryan Doyle
Key: 38bf2056622713c0bf979ea7ee94776a

Ryan Doyle 01-26-2023