



**City of Portland, Oregon**  
**Bureau of Development Services**  
**Land Use Services**  
FROM CONCEPT TO CONSTRUCTION

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**NOTICE OF FINAL  
FINDINGS, CONCLUSIONS, AND DECISION  
OF THE CITY OF PORTLAND HISTORIC LANDMARKS COMMISSION  
ON AN  
APPEALED ADMINISTRATIVE DECISION  
(Type II Process)**

**CASE FILE: LU 14-186226 HR – New Solar Array**  
**LOCATION: 1552 SE Hickory**

The administrative decision of denial for this case, published on December 16, 2014, was appealed to the Historic Landmarks Commission by the homeowner. At the 1<sup>st</sup> appeal hearing on January 26, 2015, the majority of the Historic Landmarks Commission believed that the approval criteria were met; however additional information was requested. At the 2<sup>nd</sup> appeal hearing on February 23, 2015, the proposal was approved with conditions.

This document is only a summary of the decision. The original analysis, findings and conclusion have been revised by the Historic Landmarks Commission and follow. This decision is available on line: <http://www.portlandonline.com/bds/index.cfm?c=46429&>. Click on the District Coalition then scroll to the relevant Neighborhood, and case number.

## **GENERAL INFORMATION**

**Appellant:** Stephen J Zylstra, Owner  
Laura Weiss, Owner  
1552 SE Hickory St  
Portland, OR 97214-5347

**Applicant:** Queena Coursen, Applicant  
Sunlight Solar Energy Inc  
50 SE Scott Street, Bldg 13  
Bend, OR 97702

**Site Address:** 1552 SE HICKORY ST

**Legal Description:** BLOCK 3 LOT 18, LADDS ADD  
**Tax Account No.:** R463300610  
**State ID No.:** 1S1E02DC 13900  
**Quarter Section:** 3232  
**Neighborhood:** Hosford-Abernethy, contact Joanne Stainbrook at 503-231-9245.  
**Business District:** Division-Clinton Business Association, contact Darice Robinson at 503-233-1888.  
**District Coalition:** Southeast Uplift, contact Bob Kellett at 503-232-0010.  
**Plan District:** None  
**Other Designations:** Contributing resource in the Ladd's Addition Historic District, listed in the National Register of Historic Places on August 31, 1988.

**Zoning:** R5 – Residential 5,000  
**Case Type:** HR – Historic Resource Review  
**Procedure:** Type II, an administrative decision with appeal to the Historic Landmarks Commission.

**PROPOSAL:**

The applicant proposes a new 216 square foot solar panel array on the roof to be located on the roof of the existing single dwelling. The solar panels are proposed to be mounted parallel to the east-sloping roof. Also proposed is an energy meter located on the east façade toward the rear of the building.

Because the proposal is for non-exempt exterior alterations to a contributing resource in the Ladd's Addition Historic District, historic resource review is required.

**RELEVANT APPROVAL CRITERIA:**

In order to be approved, this proposal must comply with the approval criteria of Title 33. The relevant criteria are:

- Ladd's Addition Conservation District Guidelines

**ANALYSIS**

**Site and Vicinity:** The subject property is a 1-story Bungalow with a front-facing gable roof, oriented north. It was built in 1923 on speculation by realtor-contractor G.C. Goldenberg, along with eight other houses on the block. Other than a 1939 front addition of the west side of the house and a 2009 rear addition, it is a twin of its neighbor at 1534 SE Hickory. Staff notes that in 2009, the current owners removed non-historic secondary siding and restored the original wood siding. A 1924 single car garage, constructed in 1924, faces the rear alley.

Ladd's Addition is characterized by its unique layout of diagonal streets, the circular public garden in the center of the district, and four smaller diamond-shaped public gardens. Platted in 1891, Ladd's Addition is one of the first planned suburban communities in Portland, and also one of the only subdivisions with rear alleys. With the vehicle access at the rear, there are few curbcuts on the street side of the blocks, making for a pleasant pedestrian environment along the heavily canopied avenues. The majority of the buildings are residences constructed during the years 1905-1939, primarily in Bungalow, Craftsman, and Period-Revival styles with a typical front-yard setback, front porches and rear garages. Multi-dwelling buildings and commercial properties are located at the edges of the district along SE Division, SE 12<sup>th</sup> Avenue and SE Hawthorne, with the exception of a sprinkling of churches and a school, and the Ladd Circle Grocery, since converted, at the center of the district. Ladd's Addition is unique among planned communities on the west coast, primarily due to its diagonal street pattern, and was listed on the National Register in 1988.

**Zoning:** The Residential 5,000 (R5) single-dwelling zone is intended to preserve land for housing and to provide housing opportunities for individual households. The zone implements the comprehensive plan policies and designations for single-dwelling housing. Minimum lot size is 3,000 square feet, with minimum width and depth dimensions of 36 and 50 feet, respectively. Minimum densities are based on lot size and street configuration. Maximum densities are 1 lot per 5,000 square feet of site area.

The Historic Resource Protection overlay is comprised of Historic and Conservation Districts, as well as Historic and Conservation Landmarks and protects certain historic resources in the region and preserves significant parts of the region's heritage. The regulations implement Portland's Comprehensive Plan policies that address historic preservation. These policies recognize the role historic resources have in promoting the education and enjoyment of those living in and visiting the region. The regulations foster pride among the region's citizens in their city and its heritage. Historic preservation beautifies the city, promotes the city's economic health, and helps to preserve and enhance the value of historic properties.

**Land Use History:** City records indicate the following prior land use reviews for this site:

- LU 09-110769 HDZ – Historic Design Review approval for restoration of original wood lap siding and trim as well as a new rear addition and deck.

**Agency Review:** A “Notice of Proposal in Your Neighborhood” was mailed **September 3, 2014**. The following Bureaus have responded with no issues or concerns:

- Life Safety Division of BDS

**Procedural History:**

**December 16, 2014** - Staff issued a Decision of Denial which stated that the proposal failed to meet Guidelines #1 and #4 Roof Form of the Ladd’s Addition Conservation District Guidelines. The homeowner appealed the staff decision and the proposal was presented to the Historic Landmarks Commission at the January 23, 2014 hearing.

**January 23, 2015** - The Historic Landmarks Commission was split with three commissioners in support of the proposal, two commissioners in support of the denial and one commissioner undecided. The commissioners requested that the appellant return with additional information, including skirting options for the array and an official statement from the neighborhood association, Hosford-Abernethy Neighborhood Development (HAND).

**February 23, 2015** – The appellant’s solar contractor provided skirting options for the solar array and HAND representative Linda Nettekoven presented a letter (See Exhibit H-18) and testimony on behalf of HAND, noting unanimous support of the proposal from both the HAND board and HAND historic resources subcommittee. Following discussion, the Historic Landmarks Commission approved the proposal with conditions.

## ZONING CODE APPROVAL CRITERIA

### Chapter 33.846.060 - Historic Resource Review

#### **Purpose of Historic Resource Review**

Historic Resource Review ensures the conservation and enhancement of the special characteristics of historic resources.

#### **Historic Resource Review Approval Criteria**

Requests for Historic Resource Review will be approved if the review body finds the applicant has shown that all of the approval criteria have been met.

**Findings:** The site is located within the Ladd's Addition Historic District and the proposal is for a non-exempt treatment not requiring a new foundation. Therefore Historic Resource Review approval is required. The approval criteria are the *Ladd’s Addition Conservation District Design Guidelines – Exterior Rehabilitation*.

*Staff has considered all guidelines and addressed only those applicable to this proposal.*

### Ladd's Addition Conservation District Guidelines – Exterior Rehabilitation

**1. Façades Oriented to a Street.** In rehabilitating existing buildings, the architectural integrity of street-oriented façades should be maintained. Additions and structural alterations should be limited to the rear and side yard façades and be minimally visible from the street.

**Findings:** Staff originally noted that the proposed solar panels are justified toward the rear of the primary roof, but would still occupy approximately 2/3 of the roof, would be offset 8” above the roof, and would therefore be plainly visible from the right-of-way and affect the front façade, as seen on sheet PV4.0. Staff also noted potential options for minimizing visibility such as splitting up the array so that fewer panels were located on the primary roof, by locating some of them on the roof of the rear addition or on the garage roof. Staff also noted that a separate structure of 200 square feet or less could be constructed to accommodate the array in the rear yard and would be exempt from historic resource review.

However, the majority of the Commission ultimately found that the array was minimally visible from the street in its proposed location, noting that it is on a 1-story building, is only visible from one side of the house and only for a limited number of paces as one walks down the street. The Commission noted that the proposed location was preferable

to the construction of a free-standing structure in the rear yard which may not be subject to historic resource review. The Commission also noted that the Ladd's Addition guidelines are specific to the visibility of the proposed alteration, affording the opportunity for subjective interpretations of the words "*minimally visible*" or "*inconspicuous*", rather than approval criteria that requires maintenance of historic character.

*Given these considerations, the Historic Landmarks Commission found that this guideline is met.*

**2. Foundations.** Changes to the foundation should match or be compatible with the original foundation in height and materials.

**Findings:** No changes to the foundation are proposed. *This guideline is not applicable.*

**3. Exterior Siding Material.** Restoration and maintenance of original siding materials is encouraged. Materials used on additions should match or be compatible with the predominant materials used on the original structure. Most single family residences and duplexes in Ladd's Addition feature stucco, horizontal wood siding, wood shingles, brick or a combination of these materials. Most commercial and multi-family structures feature stucco or brick. The following materials are discouraged: plywood, used brick, shakes, exposed concrete block and metal.

**Findings:** No changes to exterior siding are proposed. *This guideline is not applicable.*

**4. Roof Form.** Repair and alteration of roofs should retain:

- a. The original roof shape and pitch;
- b. Original structural and decorative features such as gables , dormers, chimneys, cornices, parapets, pediments, frieze boards , exposed rafters and other ornamental details; and,
- c. Whenever possible the original type, size, color, and pattern of roofing materials. New roof features including roof additions and new dormers should be compatible in size, scale, materials, and color with the original building. Skylights, solar, mechanical and service equipment, and new roof features should be inconspicuous from the street.

**Findings:** Staff originally noted that the proposed solar array was to have a silver frame to better blend with the gray shingled roof, that the array was to occupy approximately 2/3 of the west roof slope, and be offset from the roof 8 inches. Staff believed that because of the extent of the array and the conditions of the site, the array would be clearly visible, and not inconspicuous, from the street. The Commission noted that because these guidelines specifically mention solar equipment, it suggests that the incorporation of roof-mounted solar equipment is more acceptable in this historic district rather than other historic districts with different approval criteria.

As noted above, the majority of the Commission believed that the proposed array was relatively inconspicuous, due to its location on the rear 2/3 of a single slope of the roof, and suggested conditions of approval to ensure additional inconspicuousness and reinforce aspects of the proposal as presented. These conditions require that the panels be composed of black cells on a black backing, that the array be parallel to the roof slope and be offset no more than 5 inches above the roof as measured from the top of the roof shingles to the top of the panel, that the array be located at least 10 feet back from the front edge of the roof, and that the system be removable.

*With these above noted conditions, the Commission found that this guideline is met.*

**5. Front Façade Detailing.** Original entrances to buildings, front porches and projecting features, such as balconies, bays, and dormer windows should be retained or restored.

**Findings:** No changes to the front façade detailing are proposed. *This guideline is not applicable.*

**6. Windows and Doors.** Original windows and doors, including trim, should be retained or restored. If repair is not feasible, new windows or windows on additions should match or be compatible with original windows in form, materials, type, pattern and placement of openings. On residences, the removal of original wood sash windows and replacement with aluminum sash is especially discouraged. Restoration of commercial storefront windows with large fixed glass panes below and smaller glass panes above is especially encouraged.

**Findings:** No changes to windows or doors are proposed. *This guideline is not applicable.*

**7. Awnings.** On commercial structures, retractable fabric awnings, which are architecturally compatible with the historic integrity of the structure are encouraged. Awnings should fit within window bays. Existing traditional awnings should be rehabilitated.

**Findings:** The subject property is not a commercial structure. *This guideline is not applicable.*

**8. Color.** Restoration of original colors, or colors appropriate to the style and era of the building, is encouraged.

**Findings:** No changes in color are proposed. *This guideline is not applicable.*

**9. Signs.** Whenever possible retention or restoration of original pre-1940 signs is encouraged. For commercial buildings, wall signs, window signs, canopy, and projecting signs attached to the building are encouraged; freestanding signs are discouraged. Sign materials and design and letters appropriate to pre-1940 buildings, such as painted wood and neon are encouraged. Plastic sign faces are discouraged. Signs should not be the dominant feature of a building or site.

**Findings:** No signs are proposed. *This guideline is not applicable.*

**10. Front Lawn.** On sites of non-commercial structures, retention of front lawns, mature trees, and older shrubs and perennials are encouraged. Plants popular in the 1910's and 1920's are encouraged. The predominant use of ground covers, such as bark mulch and broadleaf evergreens, is discouraged. Original grades should be retained; berms and excavations are discouraged.

**Findings:** No changes to landscaping are proposed. *This guideline is not applicable.*

**11. Fences and Retaining Walls.** Front and side yards, which abut a street should be visually open to the street. Hedges, retaining walls and fences, which visually obscure front yards are discouraged. Fences should be kept behind building lines, as viewed from the street.

**Findings:** No fences or retaining walls are proposed. *This guideline is not applicable.*

**12. Parking.** Required on-site parking should be located in the rear yard and within original garages, if possible. Original garages should be maintained for vehicle storage and parking and not converted to other uses. Parking areas, providing space for three or more cars, should be screened from adjacent properties; hedges and canopy trees are recommended for screening. Parking areas and driveways should not be placed in the front yard.

**Findings:** No changes to parking are proposed. *This guideline is not applicable.*

**13. Crime Prevention.** Crime prevention elements should be included in the design with specific attention to landscaping, parking areas, walkways, lighting, entries, and visibility. Windows and entries should not be obscured. Parking areas, walkways, and entries should be adequately illuminated for visibility.

**Findings:** No changes are proposed that would affect the prevention of crime. *This guideline is not applicable.*

## **DEVELOPMENT STANDARDS**

Unless specifically required in the approval criteria listed above, this proposal does not have to meet the development standards in order to be approved during this review process. The plans submitted for a building or zoning permit must demonstrate that all development standards of Title 33 can be met, or have received an Adjustment or Modification via a land use review prior to the approval of a building or zoning permit.

## **CONCLUSIONS**

The purpose of the Historic Resource Review process is to ensure that additions, new construction, and exterior alterations to historic resources do not compromise their ability to convey historic significance. The addition of solar panels on the rear 2/3 of the west slope of the roof on this contributing resource, combined with the added conditions of approval, was found to be minimally visible and inconspicuous from the street. This proposal meets all the applicable Historic Resource Review criteria and described above and therefore warrants approval.

## **HISTORIC LANDMARKS COMMISSION DECISION**

Approval of a new 216 square foot solar panel array in the Ladd's Addition Historic District, to be located on, and mounted parallel to, the roof of an existing 1-story single dwelling. Also approved is an energy meter located on the east façade toward the rear of the building.

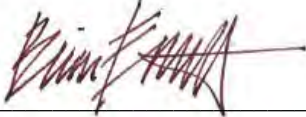
This approval is per Exhibits C-1 through C-7, signed and dated February 23, 2015, and subject to the following conditions (A-D):

- A. As part of the building permit application submittal, each of the 4 required site plans and any additional drawings must reflect the information and design approved by this land use review as indicated in Exhibits C-1 through C-7. The sheets on which this information appears must be labeled, "Proposal and design as approved in Case File # LU 14-186266 HR. No field changes allowed."
- B. The solar cells shall be black, on a black background.
- C. The array shall be parallel to the roof slope and offset no more than 5 inches from the top of the roof shingles to the top of the panel.
- D. The array shall be installed at least 10 feet back from the front edge of the roof and the system must be removable.

**Staff Planner: Hillary Adam**

**First Hearing Date: January 26, 2015**

**Findings and conclusions by the Historic Landmarks Commission on: February 23, 2015**

By:  \_\_\_\_\_, Chair, Historic Landmarks Commission  
Brian Emerick

**Date Final Decision Effective/Mailed: February 27, 2015**

**120<sup>th</sup> day date: June 19, 2015**

**Decision mailed: March 5, 2015**

**About this Decision.** This land use decision is **not a permit** for development. Permits may be required prior to any work. Contact the Development Services Center at 503-823-7310 for information about permits.

**Procedural Information.** The application for this land use review was submitted on March 21, 2013, and was determined to be complete on August 12, 2014.

*Zoning Code Section 33.700.080* states that Land Use Review applications are reviewed under the regulations in effect at the time the application was submitted, provided that the application is complete at the time of submittal, or complete within 180 days. Therefore this application was reviewed against the Zoning Code in effect on July 18, 2014.

ORS 227.178 states the City must issue a final decision on Land Use Review applications within 120-days of the application being deemed complete. The 120-day review period may be waived or extended at the request of the applicant. The applicant provided four extensions for a total of 191 additional days (See Exhibits A-7, A-8, H-13, and H-15. Unless further extended by the applicant, **the 120 days will expire on: June 19, 2015.**

**Appeal of this Decision.** This decision is final and becomes effective the day the notice of decision is mailed (noted above). This decision may not be appealed to City Council; however, it may be challenged by filing a "Notice of Intent to Appeal" with the State Land Use Board of Appeals (LUBA) within 21 days of the date the decision is mailed, pursuant to ORS 197.0 and 197.830. A fee is required, and the issue being appealed must have been raised by the close of the record and with sufficient specificity to afford the review body an opportunity to respond to the issue. For further information, contact LUBA at the Public Utility Commission Building, 550 Capitol Street NE, Salem, OR 97310. [Telephone: (503)373-1265]

**Recording the Final Decision.**

If this Land Use Review is approved, the final decision must be recorded with the Multnomah County Recorder. A building or zoning permit will be issued only after the final decision is recorded. The final decision may be recorded on or after March 5, 2015.

The applicant, builder, or a representative may record the final decision as follows:

- By Mail: Send the two recording sheets (sent in a separate mailing) and the final Land Use Review Decision with a check made payable to the Multnomah County Recorder to: Multnomah County Recorder, PO Box 5007, Portland OR 97208. The recording fee is identified on the recording sheet. Please include a self-addressed, stamped envelope.
- In person: Bring the two recording sheets (sent in separate mailing) and the final Land Use Review Decision with a check made payable to the Multnomah Recorder to the County Recorder's office located at 501 SE Hawthorne Boulevard, #158, Portland OR 97214. The recording fee is identified on the recording sheet.

For further information on recording, please call the County Recorder at 503-988-3034. For further information on your recording documents, please call the Bureau of Development Services Land Use Services Division at 503-823-0625.

**Expiration of this approval.** This decision expires three years from the date the Final Decision is rendered unless:

- A building permit has been issued, or
- The approved activity has begun, or
- In situations involving only the creation of lots, and the land decision has been recorded.

**Applying for permits.** A building permit, occupancy permit, or development permit must be obtained before carrying out this project. At the time they apply for a permit, permittees must demonstrate compliance with:

- All conditions imposed here.
- All applicable development standards, unless specifically exempted as part of this land use review.
- All requirements of the building code.
- All provisions of the Municipal Code of the City of Portland, and all other applicable ordinances, provisions and regulations of the city.

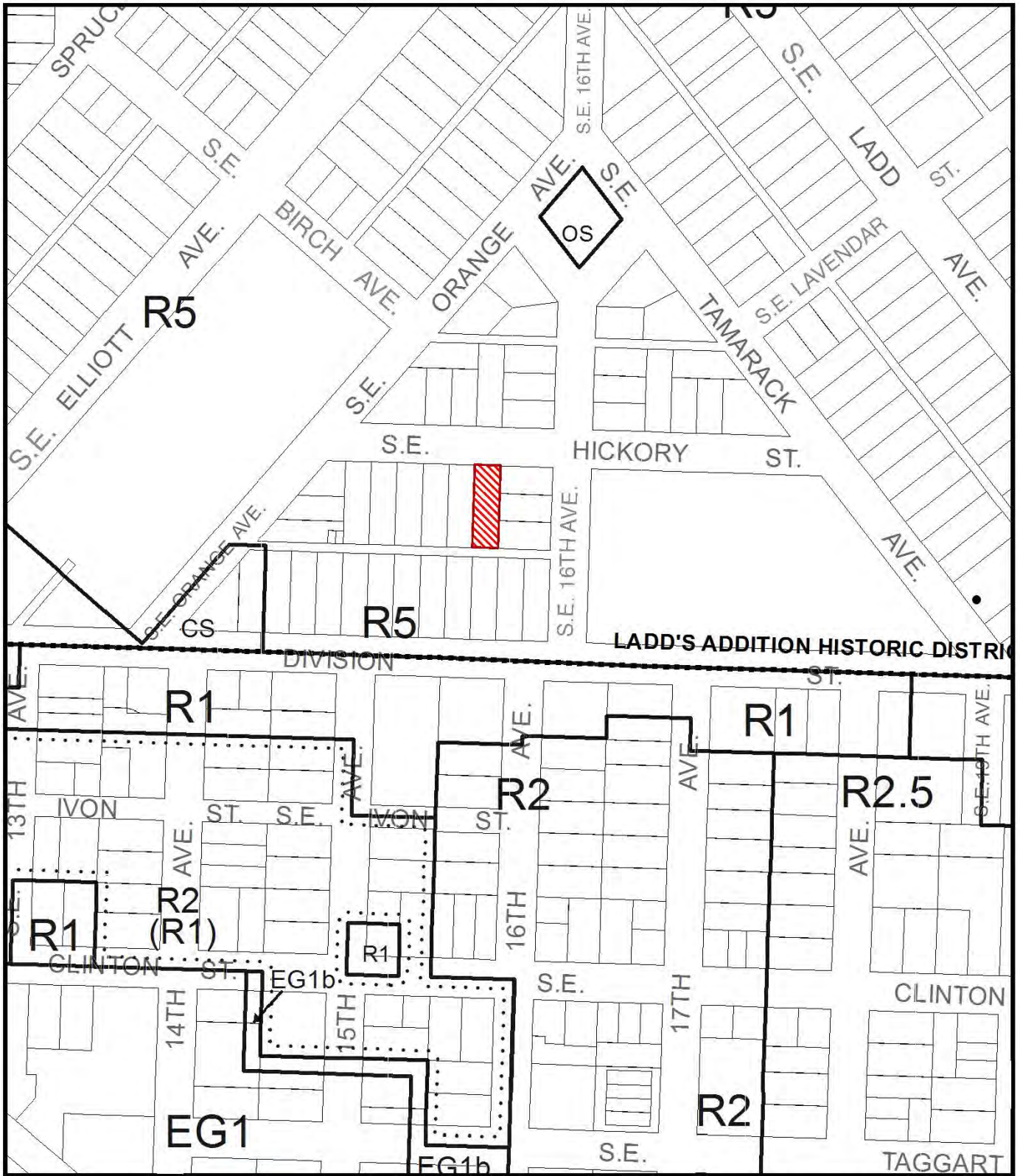
#### **EXHIBITS**

NOT ATTACHED UNLESS INDICATED

- A. Applicant's Statement
  1. Narrative
  2. Photos
  3. Response to Approval Criteria
  4. Original Drawing Submittal
  5. Response to Incomplete Letter
  6. Response to August 8, 2014 Memo
  7. 120-Day Extension, dated October 8, 2014
  8. 120-Day Extension, dated December 2, 2014
- B. Zoning Map (attached)
- C. Plans/Drawings:
  1. Site Plan (attached)
  2. Roof Plan (attached)
  3. Details (attached)
  4. Photo Simulation and Meter Details
  5. Electrical Specifications
  6. Electrical Specifications
  7. Sunmodule® Plus SW 275 mono Solar Panel Specifications
- D. Notification information:
  1. Mailing list
  2. Mailed notice
- E. Agency Responses:
  1. Life Safety Division of BDS
- F. Correspondence: none
- G. Other:
  1. Original LU Application
  2. Incomplete Letter, dated August 8, 2014
  3. Memo, dated August 18, 2014
  4. National Register Information
- H. Hearing Exhibits
  1. Appeal Submittal
  2. Notice of Decision of Denial and Appeal, dated December 16, 2014



3. Appeal Mailing List
4. Commission Appeal Packet Memo, dated January 16, 2015, and Decision (H-2)
5. Exhibits (3 sheets)
6. Photos of roof
7. Staff Presentation, dated January 23, 2015
8. Appellant Presentation, dated January 26, 2015
9. Appellant's Solar Contractor Presentation
10. Linda Nettekoven, on January 26, 2015, provided testimony in support of the proposal.
11. Dave Arena, on January 26, 2015, provided testimony in support of the proposal.
  
12. Corey Omev, on January 26, 2015, provided testimony and a presentation in support of the proposal.
13. 120-Day Extension, dated January 26, 2015
14. Skirting Options, received February 6, 2015
15. 120-Day Extension, dated February 13, 2015
16. Commission Packet Memo and Skirting Options for February 23, 2015 hearing, dated February 13, 2015
17. Staff Presentation, dated February 23, 2015
18. HAND letter of support, presented February 23, 2015



# ZONING



Site



This site lies within the:  
LADD'S ADDITION HISTORIC DISTRICT

File No.	LU 14-186226 HR
1/4 Section	3232
Scale	1 inch = 200 feet
State_Id	1S1E02DC 13900
Exhibit	B (Jul 22, 2014)

TITLE: GENERAL SPECS; VICINITY & SITE PLAN

PANEL ORIENTATION: 260°

ROOF PITCH: 29°

UTILITY CO./ INCENTIVE: PGE - ETO



www.sunlightsolar.com  
541-322-1910

184501204 HICKORY INC.  
30 SE SCOTT ST. BUILDING 13  
PORTLAND, OR 97202  
COPR. 1/2022 LITE 002

Weiss & Zylstra  
1552 SE Hickory Street  
Portland, OR 97214

REVISIONS

1. ISSUE FOR PERMIT (06-23-14)
2. REVISION #1 (06-25-14)

DATE DRAWN:

06-23-2014

D.B./C.B.:

JTD

SHEET TITLE:

GEN SPECS;  
VICINITY & SITE  
PLAN

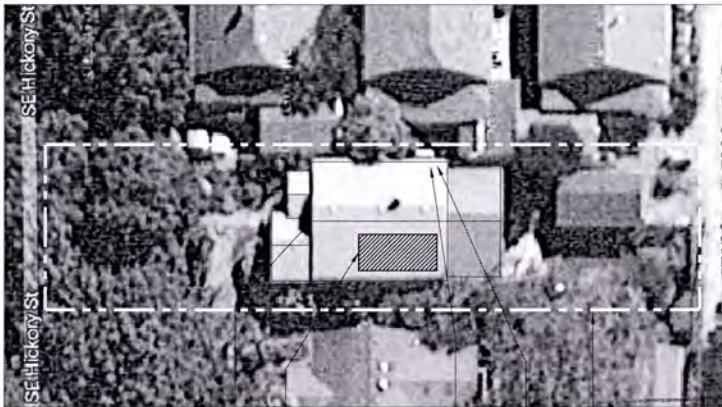
SHEET #:

PV1.0

© 2014

DRAWING LIST	SHEET #	TITLE
GENERAL SPECIFICATIONS: VICINITY & SITE PLANS	PV1.0	<input type="radio"/>
ARRAY DESIGN - LAYOUT	PV2.0	<input type="radio"/>
PHOTOVOLTAIC DETAILS & ONE LINE DIAGRAM	PV3.0	<input type="radio"/>
ROOF PHOTO - ELEVATION PLAN	PV4.0	<input type="radio"/>
ELECTRICAL SPECIFICATIONS	PV5.0	<input type="radio"/>
STRUCTURAL SPECIFICATIONS	PV6.0	<input type="radio"/>

ISSUE FOR PERMIT (06-23-14)	REVISION #1 (06-26-14)
ISSUE FOR PERMIT (06-23-14)	<input type="radio"/>



2 VICINITY MAP  
SCALE: NONE

1 SITE PLAN  
SCALE: NONE  
NOTES:  
1. NONE



Customer Name (printed):  
Customer Signature/Date:

PROJECT: 1173  
OWNER: SUNLIGHT SOLAR ENERGY  
ADDRESS: 1552 SE HICKORY ST  
PORTLAND, OR 97214  
PROPERTY: 1552 SE HICKORY ST (WALL)

\*Approved\*  
City of Portland  
Development Services

Date: 2/23/15

\* This approval applies only to the reviews requested and is subject to all conditions of approval. Additional zoning requirements may apply.

LU 14-186225 HR C-1



TITLE: ARRAY DESIGN - ROOF LAYOUT

PANEL ORIENTATION: 260°

ROOF PITCH: 29°

UTILITY CO./ INCENTIVE: PGE - ETO

PGE - ETO



www.sunlight solar.com  
541-322-1910

SUNLIGHT SOLAR ENERGY, INC.  
10000 SW 10TH AVENUE, SUITE 100  
PORTLAND, OR 97224  
COMM 198622 URTE 012

Weiss & Zylstra  
1552 SE Hickory Street  
Portland, OR 97214

REVISIONS

1. ISSUE FOR PERMIT (06/23/14)
2. REVISION #1 (06/24/14)

DATE DRAWN:

06/23/2014

D.B./C.B.:

JTD

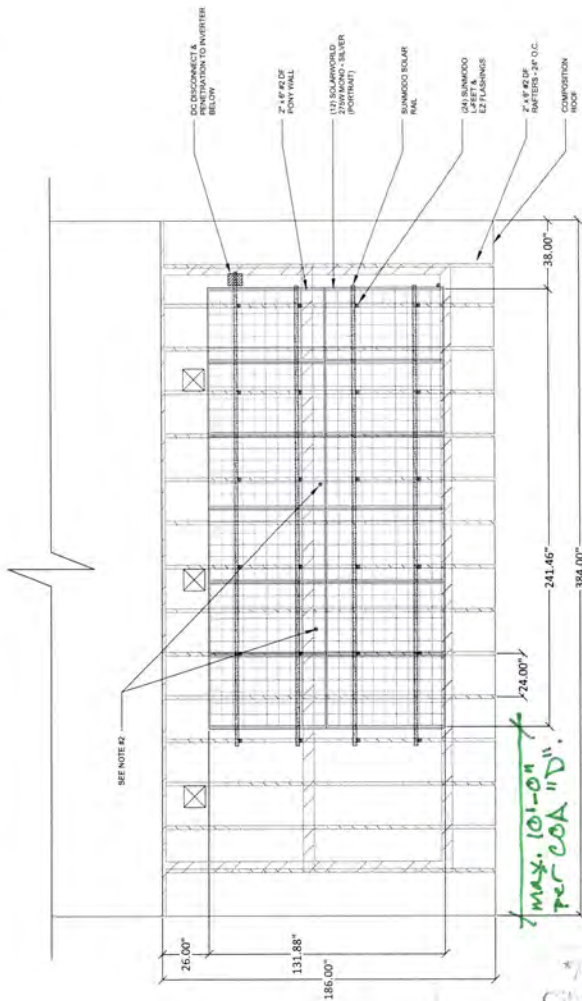
SHEET TITLE:

ARRAY DESIGN -  
ROOF LAYOUT

SHEET #:

PV2.0

© 2014



PARTIAL ROOF PLAN - ARRAY #1 DESIGN

SCALE: 1/4" = 1'-0"

NOTES

1. PV ARRAY MOUNTING ASSEMBLY DETAIL ON PDS FOR MOUNTING DETAILS.
2. PV CONTRACTOR SHALL REWORK EXISTING PLUMBING VENT TO OUTSIDE PER PDS MOUNTING ASSEMBLY.
3. PV ARRAY SHALL BE INSTALLED NO MORE THAN 12" ABOVE ROOF LEVEL. REFER TO DIMENSIONS ON PDS FOR SUGGESTED PENETRATION HEIGHT.



Customer Name (printed): \_\_\_\_\_  
Customer Signature/Date: \_\_\_\_\_

\*Approved\*  
City of Portland  
Bureau of Development Services  
Planner H. Adam  
Date 2/23/15

\* This approval applies only to the review requested and is subject to all conditions of approval.  
Additional zoning requirements may apply.

LU 14-186225 HR C-2

TITLE: PV DETAIL & ONE LINE DIAGRAM

PANEL ORIENTATION: 280°

ROOF PITCH: 29°

UTILITY CO./INCENTIVE: PGE - ETO



www.sunlightsolar.com  
541-322-1910

SUNLIGHT SOLAR ENERGY, INC.  
BENG. 09/17/12 BUILDING INC.  
CORP. 1/26/12 LTRK 072

Weiss & Zystra  
1552 SE Hickory Street  
Portland, OR 97214

REVISIONS

- 1. ISSUE FOR PERMIT (06/23/14)
- 2. INVENTION # 100-201-1-11

DATE DRAWN:

06-23-2014

D.B./C.B.:

JTD

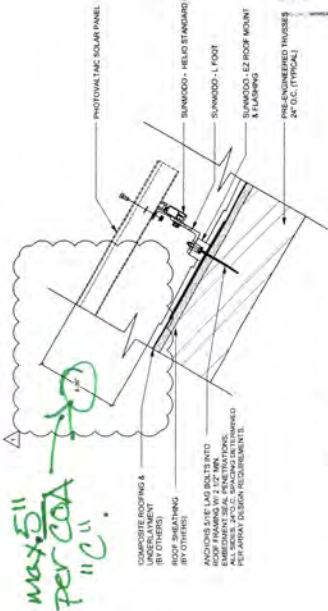
SHEET TITLE:

PV DETAILS & ONE LINE DIAGRAM

SHEET #:

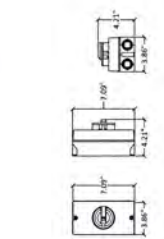
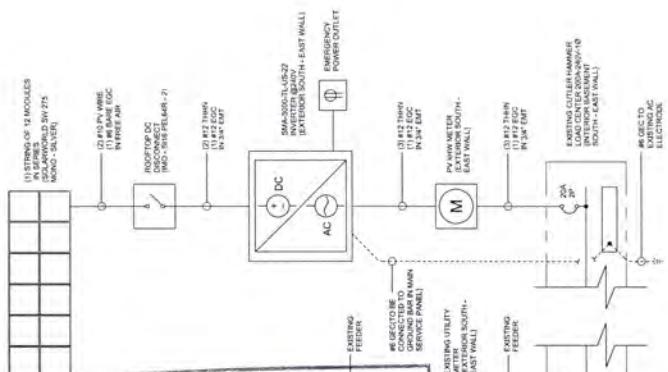
PV3.0

© 2014



*Approved*  
 City of Portland  
 Bureau of Development Services  
 Planner: *Adam*  
 Date: *2/23/15*

Services only to the... is subject to all... may apply.



DC DISCONNECT ENCLOSURE DETAIL (IMO - S116 PEL64R - 2) SCALE: NONE

PV - MODULE DETAIL SCALE: NONE

LU 14-186225 HR

*0-3*

Customer Name (printed):  
Customer Signature/Date:

TITLE: ROOF PHOTO - ELEVATION PLAN

PANEL ORIENTATION: 260°

ROOF PITCH: 29°

UTILITY CO./ INCENTIVE: PGE - ETO



1 ELEVATION - ARRAY LOCATION

SCALE: NONE



2 ELEVATION VIEW - INVERTER & METER LOCATIONS

SCALE: NONE



PV CONTRACTOR SHALL  
REMOVE PANEL FOR  
IN BOTTOM OF PANEL

3 SERVICE PANEL DETAIL

SCALE: NONE

ELECTRICAL PANEL INFORMATION	
MAKE/FACTORY	CUTLER-HAMMER LOAD CENTER
BUS AMP RATING (A)	200 A
SERVICE VOLTAGE (V)	120/240 V-1Ø
MAIN SERVICE DISCONNECT (A)	200 A
PHOTOVOLTAC DIODE AMP RATING (A)	20 A
NOTES:	
1. NONE	

4 SERVICE PANEL SPECIFICATIONS

SCALE: NONE

Customer Name (printed): \_\_\_\_\_  
Customer Signature/Date: \_\_\_\_\_



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541-322-1910

SUNLIGHT SOLAR ENERGY, INC.  
2000 S. GALE STREET  
BEND, OR 97702  
ECC# 158627 UPR# 912

Weiss & Zylstra  
1552 SE Hickory Street  
Portland, OR 97214

REVISIONS

1. ISSUE FOR PERMIT (06/23/15)
2. REVISION #1 (08/20/15)

DATE DRAWN:

06-23-2014

D.B./C.B.L.:

JTD

SHEET TITLE:

ELEVATION PLAN

SHEET #:

PV4.0

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WU 14-186225 HR c-4



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1552 SE HICKORY STREET  
 PORTLAND, OR 97214  
 CORE USER: JEFF D

Weiss & Zylstra  
 1552 SE Hickory Street  
 Portland, OR 97214

REVISIONS  
 1. REVISION FROM PERMIT (08-23-15)  
 2. REVISION #1 (01-26-15)

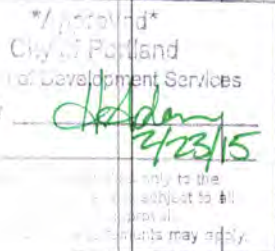
DATE DRAWN: 06-23-2014  
 D.B./C.B.: JTD  
 SHEET TITLE: ELECTRICAL SPECIFICATIONS

SHEET: PV5.0

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Customer Name (printed):  
 Customer Signature/Date:

SITE TEMPERATURE INFORMATION		RATED VOLTAGE AT AVERAGE HIGH TEMPERATURE		ARRAY DESIGN	
CITY, ST: PORTLAND, OR (SRA)RE RECORD HIGH °C: 41°C RECORD LOW °C: -4°C AVERAGE HIGH TEMP °C: 27°C	AVERAGE HIGH TEMP IN (BOND, ONE): 27°C (AVG. HIGH TEMP. @ 125°C (STC)) HIGH TEMP. °C: 27°C	# OF ARRAYS: 1 # OF PANELS PER STRING: 12	INVERTER MANUFACTURER: SMA AMERICA INVERTER MODEL: SMA 3000-TL-US-22 INVERTER RATING: 3000W MAX DC VOLTAGE (V): 246V MAX AC CURRENT (A): 15A	# OF ARRAYS: 1 # OF PANELS PER STRING: 12	SMA AMERICA SMA 3000-TL-US-22 3000W 246V 15A
SERVICE PANEL RATINGS BUS AMP RATING (A): 200A SERVICE VOLTAGE (V): 240V MAIN AMP RATING (A): 200A PV OCPD AMP RATING (A): 25A	MOUNT HEIGHT ADJUSTER ROOF MOUNT: 30°	MAX SYSTEM VOLTAGE (V) 240 (LOWEST LOCAL TEMP °C) + 17 25 + (-1.0) = [1 + (17 * TEMP. COEFF % * (Voc @ STC * # OF PANELS IN SERIES))] [1 + (17 * 0.0039) * (124 * 12)] = 518.77 V	PV MODULE RATINGS @ STC: MODULE MANUFACTURER: SOLARWORLD MODULE MODEL #: SW 275 MONO OPERATING TEMPERATURE RANGE: 9.58A SHORT-CIRCUIT CURRENT (Isc): 31.00V OPERATING VOLTAGE (Vmp): 27.60V MAXIMUM POWER (Pmp): 275.00W MAXIMUM POWER POINT VOLTAGE (Vmp): 27.60V MAXIMUM POWER POINT CURRENT (Imp): 10.00A Vmp TEMP. COEFF: -0.45%/°C Imp TEMP. COEFF: -0.35%/°C Max Fuse Rating (A): 15A	MAX SYSTEM VOLTAGE (V) 240 (LOWEST LOCAL TEMP °C) + 17 25 + (-1.0) = [1 + (17 * TEMP. COEFF % * (Voc @ STC * # OF PANELS IN SERIES))] [1 + (17 * 0.0039) * (124 * 12)] = 518.77 V	MAX CURRENT (A) 100 (3 * # OF STRINGS * (1.25)) 8.88 * 11 * 1.25 = 11.88A
DC AMPACITY & WIRE SIZING - NEC TABLE 310.15 DC AMPACITY (Module Inlet 1.56) WIRE SIZE AND TYPE: 14-8BA 9.59 x 1.56 = 15.14 A RATED AMPACITY: ADJUSTED WIRE AMPACITY (field ampacity for uncoated wire)	ADJUSTED ΔE (N) 1 (MOUNT HEIGHT ADJUSTER) 2 * 30 = 37°C	Vmp @ AVERAGE HIGH TEMPERATURE [1 - (ADJUSTED ΔE * Vmp TEMP COEFF %)] * (Vmp @ # OF PANELS PER STRING) [1 - (37 * 0.0045)] * (31.0 * 12) = 310.06 V	PHOTOVOLTAIC OUTPUT CIRCUIT (DC) - CONDUIT SIZING NUMBER OF (#12 THHN) IN CONDUIT: 2 WIRE AREA: 0.646 sq.in. (#1 #12 THHN + (1) #12 EGC) CONDUIT SELECTION: 3/4" EMT PERMITTED AREA FOR OVER 2 WIRES: 0.273 sq.in. WIRE AREA vs. PERMITTED AREA FOR OVER 2 WIRES: 0.046 < 0.273	RATED CURRENT (A) (Imp) * # OF STRINGS 8.88 * 11 = 8.88A	DISCONNECT
AC AMPACITY & WIRE SIZING - NEC TABLE 310.15 AC AMPACITY (Inverter Max AC Current) x (1.25) WIRE SIZE AND TYPE: 14-75 A 15 x 1.25 = 18.75 A RATED AMPACITY: AMPACITY COMPARISON AC AMPACITY vs. RATED WIRE AMPACITY: 18.75 < 20	VOLTAGE DROP - INVERTER TO HOUSE PANEL WIRE INFORMATION WIRE LENGTH: 12' R WIRE TYPE: #12 THHN ADJUSTED VOLTAGE DROP [(2) * (WIRE LENGTH) * (INVERTER MAX AC CURRENT) * (RATED WIRE RESISTANCE) / (AC VOLT.)] [(2) * (10 * 15) * 1.98 DMFT / 240] = 0.2% Voltage Drop	VOLTAGE DROP - ARRAY TO INVERTER WIRE INFORMATION WIRE LENGTH: 60' R WIRE TYPE: #12 THHN ADJUSTED VOLTAGE DROP [(2) * (WIRE LENGTH) * (MODULE Imp) * (RATED WIRE RESISTANCE) / (Vmp @ AVG. HIGH TEMP)] [(2) * (60 * 8.88 * 1.98 DMFT / 310.06) = 0.69% Voltage Drop	AC AMPACITY vs. PERMITTED AREA FOR OVER 2 WIRES: 0.053 < 0.273 NUMBER OF (#12 THHN) IN CONDUIT: 3 WIRE AREA: 0.953 sq.in. (#1 #12 THHN + (1) #12 EGC) CONDUIT SELECTION: 3/4" EMT PERMITTED AREA FOR OVER 2 WIRES: 0.273 sq.in. WIRE AREA vs. PERMITTED AREA FOR OVER 2 WIRES: 0.053 < 0.273	RATED VOLTAGE (V) (Vmp) * # OF PANELS PER STRING 31.0 * 12 = 372.0V	DISCONNECT





TITLE: ELECTRICAL SPECIFICATIONS

PANEL ORIENTATION: 260°

ROOF PITCH: 29°

UTILITY CO./ INCENTIVE: PGE - ETO



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## REVISIONS

1. ISSUE FOR PERMITS (2/23/15)
2. REVISION #1 (03-20-15)

## DATE DRAWN:

06-23-2014

## D.E.C.B.:

JTD

## SHEET TITLE:

ELECTRICAL  
SPECIFICATIONS

## SHEET #:

PV6.0

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EXPOSURE CATEGORY - B 50 LB/FT <sup>2</sup> WIND PRESSURE UPLIFT	PANEL HOLD DOWNS/DESIGN WIND PRESSURE SOLAR MOUNT	PANEL DATA
EXPOSURE B: URBAN OR SUBURBAN LIVING AREAS, WOODED AREAS, OR OTHER TERRAIN WITH NUMEROUS SPLIT LEVELS AND CONSTRUCTIONS HAVING THE SIZE OF A SINGLE-FAMILY DWELLING OR LARGER.	UPLIFT 18.0 FT <sup>2</sup> PER PANEL x (12) PANELS = (216) FT <sup>2</sup> ARRAY 50 LB/FT <sup>2</sup> x (216 FT <sup>2</sup> ) = (10,800) LB WIND UPLIFT POTENTIAL	12 (SW 275 MONO) 65.94" X 39.41" 18.0 FT <sup>2</sup> PER PANEL MODULE WEIGHT = 48.7 LBS.
EXPOSURE C: OPEN TERRAIN CONSTRUCTIONS HAVING HEIGHTS GENERALLY LESS THAN 30 FT. USE CATEGORY C FOR ALL CASES WHERE B AND C DON'T APPLY.	HOLD DOWN 356.9 LB IN WITHDRAW RESISTANCE (1) @ (6" / 1") - 4" LAG	DISTRIBUTED DEAD LOAD MODULE WEIGHT = 2.6 LBS./FT <sup>2</sup> MOUNT SYSTEM WEIGHT = DISTRIBUTED WEIGHT = 3.20 LBS/FT <sup>2</sup>
EXPOSURE D: FLAT, UNOBSTRUCTED AREAS AND OPEN WATER SURFACES REGIONS. THIS CATEGORY INCLUDES ALSO FLATS, SALT FLATS, AND UNBROKEN ICE. INTERNATIONAL BUILDING CODE, SECTION 1609.4.2 AND 1609.4.3 ASCE STANDARD 7-05	SCREW 356.9 LB IN * 1.25" OF CONTACT LAG = 446 LBS OF HOLD DOWN LAG	
	1 SCREWS PER L-FOOT = 446 LBS HOLD DOWN EACH 10,800 LBS WIND UPLIFT FOR THIS HOOD SYSTEM FOR THIS HOOD SYSTEM SUNLIGHT SOLAR WILL USE GREATER THAN (24) STANDS FOR THIS PACKING SYSTEM * CALCULATIONS BASED ON MANUFACTURER'S RECOMMENDATIONS CERTIFIED BY OREGON BUILDING CODE AND P.E. STAMPED ON 8/12/2006	

Approved\*  
City of Portland  
Development Services

Planned  
Date:

*Adam*  
2/23/15

to the  
Project # 91  
may reply

14-186225 HR

C-6

Customer Name (printed):  
Customer Signature/Date:



# Sunmodule<sup>®</sup> Plus SW 275 mono

Black cells on black background  
per COA "B".



TUV Power controlled:  
Lowest measuring tolerance in industry



Every component is tested to meet  
3 times IEC requirements



Designed to withstand heavy  
accumulations of snow and ice



Sunmodule Plus:  
Positive performance tolerance  
-0/+5 Wp



25-year linear performance warranty and  
10-year product warranty



## World-class quality

Fully-automated production lines and seamless monitoring of the process and material ensure the quality that the company sets as its benchmark for its sites worldwide.

## SolarWorld Plus-Sorting

Plus-Sorting guarantees highest system efficiency. SolarWorld only delivers modules that have greater than or equal to the nameplate rated power.

## 25 years linear performance guarantee and extension of product warranty to 10 years

SolarWorld guarantees a maximum performance degradation of 0.7% p.a. in the course of 25 years, a significant added value compared to the two-phase warranties common in the industry. In addition, SolarWorld is offering a product warranty, which has been extended to 10 years.\*

\*In accordance with the applicable SolarWorld Limited Warranty at purchase.  
[www.solarworld.com/warranty](http://www.solarworld.com/warranty)



MADE IN USA

[solarworld.com](http://solarworld.com)



City of Portland  
Solar and Development Services  
Planet Adam  
Date 2/23/15

Warranty only to the  
subject to all  
requirements may apply.



We turn sunlight into power.

LU 14-186225 HR

67

# Sunmodule<sup>®</sup> Plus SW 275 mono

## PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)\*

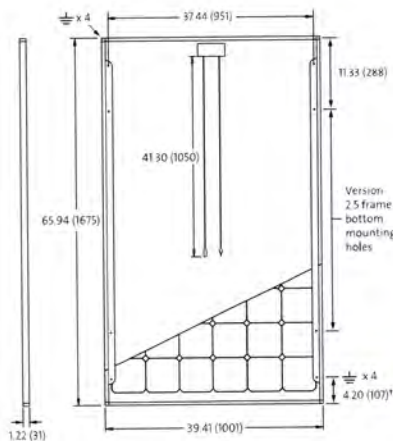
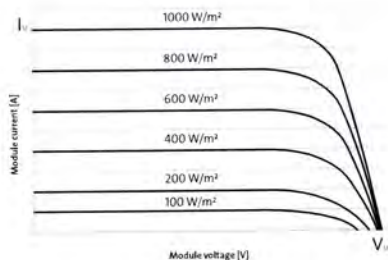
Maximum power	$P_{max}$	275 Wp
Open circuit voltage	$V_{oc}$	39.4 V
Maximum power point voltage	$V_{mp}$	31.0 V
Short circuit current	$I_{sc}$	9.58 A
Maximum power point current	$I_{mp}$	8.94 A

\*STC: 1000 W/m<sup>2</sup>, 25°C, AM 1.5

† Measuring tolerance ( $R_{max}$ ) traceable to TÜV Rheinland, ± 2% (TUV Power Controlled)

## THERMAL CHARACTERISTICS

NOCT	46 °C
TC <sub>I</sub>	0.004 %/K
TC <sub>V</sub>	-0.30 %/K
TC <sub>P</sub>	-0.45 %/K
Operating temperature	-40°C to 85°C



## PERFORMANCE AT 800 W/m<sup>2</sup>, NOCT, AM 1.5

Maximum power	$P_{max}$	205.0 Wp
Open circuit voltage	$V_{oc}$	36.1 V
Maximum power point voltage	$V_{mp}$	28.4 V
Short circuit current	$I_{sc}$	7.75 A
Maximum power point current	$I_{mp}$	7.22 A

Minor reduction in efficiency under partial load conditions at 25°C: at 200 W/m<sup>2</sup>, 100% (± 2%) of the STC efficiency (1000 W/m<sup>2</sup>) is achieved.

## COMPONENT MATERIALS

Cells per module	60
Cell type	Mono crystalline
Cell dimensions	6.14 in x 6.14 in (156 mm x 156 mm)
Front	Tempered glass (EN 12150)
Frame	Clear anodized aluminum
Weight	46.7 lbs (21.2 kg)

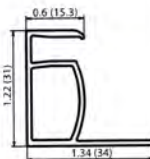
## SYSTEM INTEGRATION PARAMETERS

Maximum system voltage SC II	1000 V	
Max. system voltage USA NEC	600 V	
Maximum reverse current	16 A	
Number of bypass diodes	3	
UL Design Loads*	Two rail system	113 psf downward 64 psf upward
UL Design Loads*	Three rail system	170 psf downward 64 psf upward
IEC Design Loads*	Two rail system	113 psf downward 50 psf upward

\*Please refer to the Sunmodule installation instructions for the details associated with these load cases.

## ADDITIONAL DATA

Power sorting†	-0 Wp / +5 Wp
J-Box	IP65
Connector	MC4
Module efficiency	16.40 %
Fire rating (UL 790)	Class C



### VERSION 2.5 FRAME

- Compatible with both "Top-Down" and "Bottom" mounting methods
- Grounding Locations:
  - 4 corners of the frame
  - 4 locations along the length of the module in the extended flange†

**NEW!**

Independently created PAN files now available.  
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