DIGITALLY SIGNED

PAUL K. ZACHER
LICENSED
PROFESSIONAL
ENGINEER
EXP 06/30/2024
52544
STATE OF MINNESOTA

October 5, 2022

Sunmodo Corp
14800 NE 65th St
Vancouver, WA 98682
TEL: (360) 844-0048

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: _____
Typed or Printed Name: Paul K. Zacher
Date: 10/05/2022 License Number: 52544

Attn.: Sunmodo Corp - Engineering Department

Re: Report # 2021-02963HG.01 – Sunmodo SMR100
Subject: Engineering Certification for the State of Minnesota

PZSE, Inc. – Structural Engineers has provided engineering and span tables for the Sunmodo SMR100 Rail, as presented in PZSE Report # 2021-02963HG.01, "Sunmodo SMR100 Rail, Engineering Certification for Gable and Hip Roofs". All information, data, and analysis therein are based on, and comply with, the following building codes and typical specifications:

Building Codes:

1. ASCE/SEI 7-16, Minimum Design Loads for Buildings and other Structures, by American Society of Civil Engineers
2. 2020 Minnesota Building Code, by Minnesota Department of Labor and Industry
3. 2020 Minnesota Residntial Code, by Minnesota Department of Labor and Industry
4. 2018 International Building Code, by International Code Council, Inc.
5. 2018 International Residential Code, by International Code Council, Inc.
6. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
7. Aluminum Design Manual 2015, by The Aluminum Association, Inc.
8. ANSI/AWC NDS-2018, National Design Specification for Wood Construction, by the American Wood Council

Design Criteria:

Risk Category II
Seismic Design Category = A - E
Exposure Category = B, C & D
Basic Wind Speed (ultimate) per ASCE 7-10 & 7-16 = 90 mph to 190 mph
Ground Snow Load = 0 to 90 (psf)

Span Tables are in compliance with the above codes. Sunmodo SMR100 Rail Span Tables are in compliance with the above codes.

If you have any questions on the above, do not hesitate to call.

Prepared by:
PZSE, Inc. – Structural Engineers
Roseville, CA

September 1, 2021

SunModo Corp
14800 NE 65th St
Vancouver, WA 98682
TEL: (360) 844-0048

Attn.: Sunmodo - Engineering Department

Re: Report #2021-02963HG.01 SunModo SMR100 Rail, Engineering Certification for Gable and Hip roofs.

PZSE, Inc. - Structural Engineers have reviewed SunModo SMR100 Rail. All information, data, and analysis contained within the SunModo SMR100 Rail span tables are based on and comply with the following codes:

1. Minimum Design Loads for Buildings and Other Structures, ASCE/SEI 7-10 & ASCE/SEI 7-16
2. 2012 - 2018 International Building Codes, by the International Code Council, Inc.
3. 2012 - 2018 International Residential Code, by the International Code Council, Inc.
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012, by ICC-ES
5. Aluminum Design Manual 2010 & 2015, by The Aluminum Association, Inc.
6. ANSI/AWC NDS-2012 & 2015, National Design Specification for Wood Construction, by the American Wood Council

Following are typical specifications to meet the above code requirements:

**Design Criteria:**
Ground Snow Load = 0 - 90 (psf)
Basic Wind Speed = 90 - 190 (mph)
Roof Mean Height = 0 - 30 (ft)
Enclosed and Partially Enclosed Gable and Hip Roof Pitch = 0° - 90° (degrees)
Exposure Category = B, C & D

**Cantilever:**
Maximum cantilever length is L/3, where "L" is the span noted in the Span Tables, provided there is at least 1 module length between maximum cantilevers.

**Clearance:**
2" Minimum clear and 10" Maximum clear from the top of the roof to top of PV panel.

**Splice:** <u>Rails installed with (2) Roof Attachments (1 rail span)*:</u> SMR100 Rail Splice where required shall be installed within a distance of L/4 from either Roof Attachment, where "L" is the rail span.
<u>Rails installed with (3) or more Roof Attachments (2 or more rail spans)*:</u> SMR100 Rail Splice where required shall not be installed within a distance of L/8 from any Roof Attachment, where "L" is the rail span.
*SMR100 Rail Splice may be installed on any portion of the span in instances where the rail is continuous over two roof attachments on both sides of the splice.

**Tolerance(s):** 1.0" tolerance for any specified dimension in this report is allowed for installation.

**Installation Orientation:** Landscape (L) - PV Panel long dimension is parallel to the ridge/eave line of roof, and the PV panel is mounted on the long side.
Portrait (P) - PV Panel short dimension is parallel to the ridge/eave line of roof, and the PV panel is mounted on the short side.
Rail Spacing Tables assume maximum panel dimensions are: 82" x 42"

**Rail Materials:** The SMR100 Rail Aluminum Alloys: 6005-T5, 6005A-T61, 6061-T6

**Components and Cladding Roof Zones:**

**Roof Zones – Enclosed and Partially Enclosed Gable Roofs, θ ≤ 7°:**
The zones shall be determined using figure 30.3-2A of ASCE 7-16 (or figure30.4-2A of ASCE 7-10). See Figure 1.

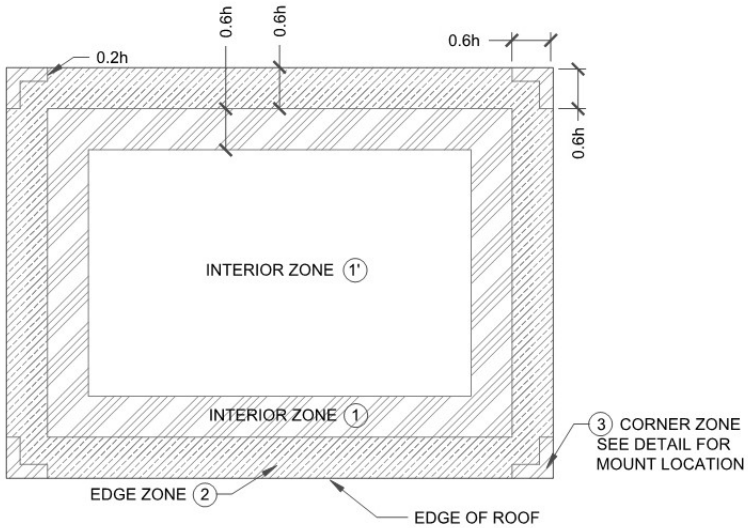


Figure 1: Roof Edge and Corner Zones, Gable Roofs, θ ≤ 7°

**Roof Zones – Enclosed and Partially Enclosed Gable and Hip Roofs, 7° < θ ≤ 90°:**
The Edge Zone, "a," shall be determined using figure 30.3-2B to figure 30.3-2D of ASCE 7-16 (or figure 30.4-2A to figure 30.4-2A of ASCE 7-10), for Gable roofs. The Edge Zone, "a," shall be determined using figure 30.3-2E to figure 30.3-2I of ASCE 7-16 (or figure 30.4-2B – figure 30.4-2C of ASCE 7-10), for Hip roofs. Roofs from 45° < θ ≤ 90° shall use the same Edge Zone, "a" determination as roofs from 27° < θ ≤ 45°.

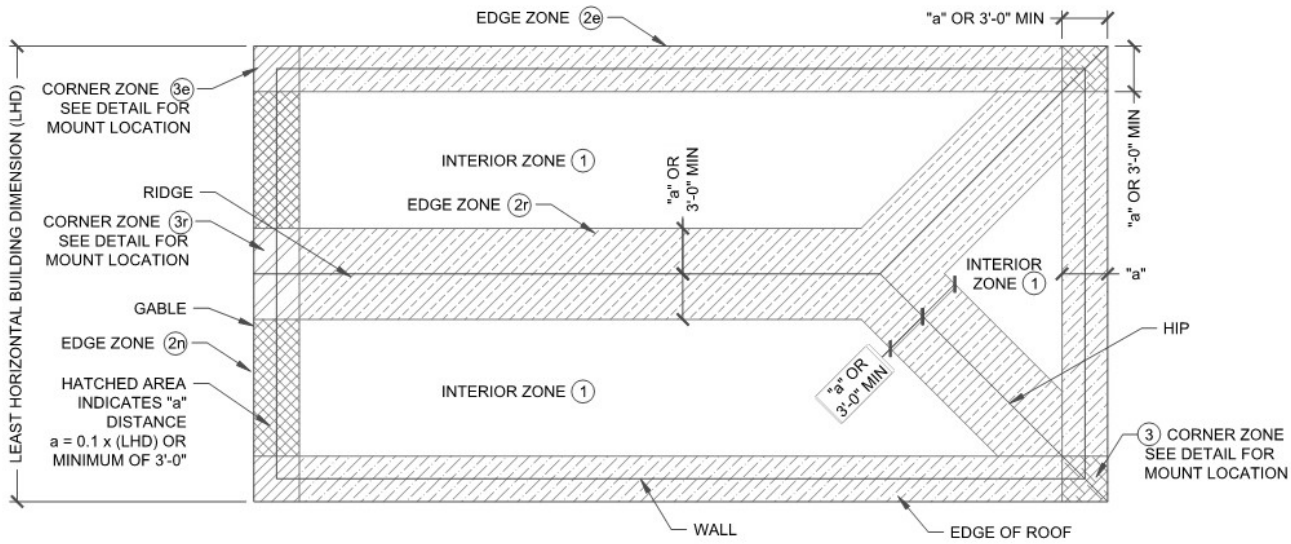


Figure 2: Roof Zones, Gable and Hip Roofs, 7° < θ ≤ 90°

**Panel with Support Mounts in Multiple Roof Zones:**
Edge and Corner Zone spacings (Zone 2 & 3, respectively) apply only to mounts located in those Zones, not to all the mounts supporting the module.

Notes:
1) Tables are determined for Rail only and do not include roof capacity check.
2) Risk Category II per ASCE 7-10 & ASCE 7-16.
3) Topographic factor, kzt is 1.0.
4) Average parapet height is 0.0 ft.
5) Wind speeds are LRFD values.
6) Attachment spacing(s) apply to a seismic design category E or less.

**Design Responsibility:**
These tables are intended to be used under the responsible charge of a registered design professional where required by the authority having jurisdiction. In all cases, these tables should be used under the direction of a design professional with sufficient structural engineering knowledge and experience to be able to:

- Evaluate whether these tables apply to the project, and
- Understand and determine the appropriate values for all input parameters of these tables.

This letter certifies that the SunModo SMR100 Rail, when installed according to the limitations of this letter and the attached span tables, complies with the above codes and loading criteria. This certification excludes evaluation of the building structure to support the loads imposed on the building by the array; including, but not limited to strength and deflection of structural framing members, fastening and/or strength of roofing materials, and/or the effects of snow accumulation on the roof. Structures will require additional knowledge of the building and are outside the scope of the certification of this racking system.

If you have any questions on the above, do not hesitate to call.

Prepared by:
PZSE, Inc. – Structural Engineers
Roseville, CA

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| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-10 -- 72-Cell (P) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground | Exposure | | Wind Speed -> | 90 mph | | | 95 mph | | | 100 mph | | | 105 mph | | | 110 mph | | | 115 mph | | | 120 mph | | | 130 mph | | | 140 mph | | | 150 mph | | | 160 mph | | | 170 mph | | | 180 mph | | | 190 mph | | |
| Snow Load | Category | Panel Angle | Roof Zone -> | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 0 psf | B | 0 to 7 | All Mounts | 93 | 93 | 93 | 93 | 93 | 91 | 93 | 93 | 88 | 93 | 93 | 85 | 93 | 93 | 82 | 93 | 93 | 79 | 93 | 93 | 76 | 90 | 90 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 71 | 71 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 90 | 93 | 93 | 86 | 93 | 93 | 83 | 93 | 93 | 81 | 93 | 93 | 78 | 93 | 93 | 71 | 88 | 88 | 66 | 84 | 84 | 61 | 80 | 80 | 57 | 75 | 75 | 54 | 71 | 71 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 92 | 92 | 91 | 89 | 89 | 88 | 85 | 85 | 83 | 82 | 82 | 79 | 78 | 78 | 73 | 75 | 75 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 95 | 95 | 91 | 93 | 93 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 93 | 93 | 84 | 93 | 93 | 81 | 93 | 93 | 77 | 93 | 93 | 73 | 90 | 90 | 69 | 87 | 87 | 66 | 84 | 84 | 63 | 79 | 79 | 58 | 73 | 73 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 93 | 93 | 85 | 93 | 93 | 82 | 93 | 93 | 79 | 93 | 93 | 75 | 93 | 93 | 71 | 90 | 90 | 68 | 87 | 87 | 65 | 82 | 82 | 60 | 77 | 77 | 55 | 72 | 72 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 95 | 95 | 95 | 93 | 93 | 93 | 90 | 90 | 89 | 88 | 88 | 86 | 85 | 85 | 83 | 83 | 83 | 81 | 81 | 81 | 78 | 77 | 77 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 94 | 94 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 93 | 93 | 79 | 93 | 93 | 74 | 91 | 91 | 70 | 87 | 87 | 66 | 85 | 85 | 63 | 82 | 82 | 60 | 79 | 79 | 58 | 72 | 72 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 93 | 93 | 80 | 93 | 93 | 76 | 93 | 93 | 72 | 91 | 91 | 68 | 88 | 88 | 65 | 85 | 85 | 62 | 82 | 82 | 59 | 76 | 76 | 55 | 71 | 71 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 91 | 91 | 91 | 88 | 88 | 87 | 86 | 86 | 84 | 83 | 83 | 81 | 81 | 81 | 78 | 79 | 79 | 74 | 77 | 77 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 5 psf | B | 0 to 7 | All Mounts | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 88 | 90 | 90 | 85 | 90 | 90 | 82 | 90 | 90 | 79 | 90 | 90 | 76 | 90 | 90 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 71 | 71 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 90 | 93 | 93 | 86 | 93 | 93 | 83 | 93 | 93 | 81 | 93 | 93 | 78 | 93 | 93 | 71 | 88 | 88 | 66 | 84 | 84 | 61 | 80 | 80 | 57 | 75 | 75 | 54 | 71 | 71 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 92 | 92 | 91 | 89 | 89 | 88 | 85 | 85 | 83 | 82 | 82 | 79 | 78 | 78 | 73 | 75 | 75 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 95 | 95 | 91 | 93 | 93 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 90 | 90 | 84 | 90 | 90 | 81 | 90 | 90 | 77 | 90 | 90 | 73 | 90 | 90 | 69 | 87 | 87 | 66 | 84 | 84 | 63 | 79 | 79 | 58 | 73 | 73 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 93 | 93 | 85 | 93 | 93 | 82 | 93 | 93 | 79 | 93 | 93 | 75 | 93 | 93 | 71 | 90 | 90 | 68 | 87 | 87 | 65 | 82 | 82 | 60 | 77 | 77 | 55 | 72 | 72 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 95 | 95 | 95 | 93 | 93 | 93 | 90 | 90 | 89 | 88 | 88 | 86 | 85 | 85 | 83 | 83 | 83 | 81 | 81 | 81 | 78 | 77 | 77 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 94 | 94 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 90 | 90 | 79 | 90 | 90 | 74 | 90 | 90 | 70 | 87 | 87 | 66 | 85 | 85 | 63 | 82 | 82 | 60 | 79 | 79 | 58 | 72 | 72 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 93 | 93 | 80 | 93 | 93 | 76 | 93 | 93 | 72 | 91 | 91 | 68 | 88 | 88 | 65 | 85 | 85 | 62 | 82 | 82 | 59 | 76 | 76 | 55 | 71 | 71 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 91 | 91 | 91 | 88 | 88 | 87 | 86 | 86 | 84 | 83 | 83 | 81 | 81 | 81 | 78 | 79 | 79 | 74 | 77 | 77 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 10 psf | B | 0 to 7 | All Mounts | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 82 | 83 | 83 | 79 | 83 | 83 | 76 | 83 | 83 | 69 | 83 | 83 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 71 | 71 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 86 | 89 | 89 | 83 | 89 | 89 | 81 | 89 | 89 | 78 | 89 | 89 | 71 | 88 | 88 | 66 | 84 | 84 | 61 | 80 | 80 | 57 | 75 | 75 | 54 | 71 | 71 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 92 | 92 | 91 | 89 | 89 | 88 | 85 | 85 | 83 | 82 | 82 | 79 | 78 | 78 | 73 | 75 | 75 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 95 | 95 | 91 | 93 | 93 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 83 | 83 | 83 | 83 | 83 | 81 | 83 | 83 | 77 | 83 | 83 | 73 | 83 | 83 | 69 | 83 | 83 | 66 | 83 | 83 | 63 | 79 | 79 | 58 | 73 | 73 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 89 | 89 | 85 | 89 | 89 | 82 | 89 | 89 | 79 | 89 | 89 | 75 | 89 | 89 | 71 | 89 | 89 | 68 | 87 | 87 | 65 | 82 | 82 | 60 | 77 | 77 | 55 | 72 | 72 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 95 | 95 | 95 | 93 | 93 | 93 | 90 | 90 | 89 | 88 | 88 | 86 | 85 | 85 | 83 | 83 | 83 | 81 | 81 | 81 | 78 | 77 | 77 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 94 | 94 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 83 | 83 | 79 | 83 | 83 | 74 | 83 | 83 | 70 | 83 | 83 | 66 | 83 | 83 | 63 | 82 | 82 | 60 | 79 | 79 | 58 | 72 | 72 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 90 | 90 | 80 | 90 | 90 | 76 | 90 | 90 | 72 | 90 | 90 | 68 | 88 | 88 | 65 | 85 | 85 | 62 | 82 | 82 | 59 | 76 | 76 | 55 | 71 | 71 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 91 | 91 | 91 | 88 | 88 | 87 | 86 | 86 | 84 | 83 | 83 | 81 | 81 | 81 | 78 | 79 | 79 | 74 | 77 | 77 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 15 psf | B | 0 to 7 | All Mounts | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 76 | 78 | 78 | 69 | 78 | 78 | 64 | 78 | 78 | 60 | 76 | 76 | 56 | 71 | 71 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 83 | 85 | 85 | 81 | 85 | 85 | 78 | 85 | 85 | 71 | 85 | 85 | 66 | 84 | 84 | 61 | 80 | 80 | 57 | 75 | 75 | 54 | 71 | 71 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 89 | 89 | 88 | 85 | 85 | 83 | 82 | 82 | 79 | 78 | 78 | 73 | 75 | 75 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 95 | 95 | 91 | 93 | 93 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 77 | 78 | 78 | 73 | 78 | 78 | 69 | 78 | 78 | 66 | 78 | 78 | 63 | 78 | 78 | 58 | 73 | 73 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 85 | 85 | 85 | 85 | 85 | 82 | 85 | 85 | 79 | 85 | 85 | 75 | 85 | 85 | 71 | 85 | 85 | 68 | 85 | 85 | 65 | 82 | 82 | 60 | 77 | 77 | 55 | 72 | 72 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 90 | 90 | 89 | 88 | 88 | 86 | 85 | 85 | 83 | 83 | 83 | 81 | 81 | 81 | 78 | 77 | 77 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 94 | 94 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 78 | 78 | 78 | 78 | 78 | 74 | 78 | 78 | 70 | 78 | 78 | 66 | 78 | 78 | 63 | 78 | 78 | 60 | 78 | 78 | 58 | 72 | 72 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 87 | 87 | 80 | 87 | 87 | 76 | 87 | 87 | 72 | 87 | 87 | 68 | 87 | 87 | 65 | 85 | 85 | 62 | 82 | 82 | 59 | 76 | 76 | 55 | 71 | 71 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 91 | 91 | 91 | 88 | 88 | 87 | 86 | 86 | 84 | 83 | 83 | 81 | 81 | 81 | 78 | 79 | 79 | 74 | 77 | 77 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 20 psf | B | 0 to 7 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 69 | 74 | 74 | 64 | 74 | 74 | 60 | 74 | 74 | 56 | 71 | 71 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 81 | 82 | 82 | 78 | 82 | 82 | 71 | 82 | 82 | 66 | 81 | 81 | 61 | 80 | 80 | 57 | 75 | 75 | 54 | 71 | 71 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 85 | 85 | 83 | 82 | 82 | 79 | 78 | 78 | 73 | 75 | 75 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 95 | 95 | 91 | 93 | 93 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 73 | 74 | 74 | 69 | 74 | 74 | 66 | 74 | 74 | 63 | 74 | 74 | 58 | 73 | 73 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 79 | 82 | 82 | 75 | 82 | 82 | 71 | 82 | 82 | 68 | 82 | 82 | 65 | 81 | 81 | 60 | 77 | 77 | 55 | 72 | 72 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 86 | 85 | 85 | 83 | 83 | 83 | 81 | 81 | 81 | 78 | 77 | 77 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 94 | 94 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 70 | 74 | 74 | 66 | 74 | 74 | 63 | 74 | 74 | 60 | 74 | 74 | 58 | 72 | 72 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 83 | 83 | 80 | 83 | 83 | 76 | 83 | 83 | 72 | 83 | 83 | 68 | 83 | 83 | 65 | 83 | 83 | 62 | 82 | 82 | 59 | 76 | 76 | 55 | 71 | 71 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 90 | 90 | 90 | 88 | 88 | 87 | 86 | 86 | 84 | 83 | 83 | 81 | 81 | 81 | 78 | 79 | 79 | 74 | 77 | 77 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |

| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-10 -- 72-Cell (P) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground | Exposure | | Wind Speed -> | 90 mph | | | 95 mph | | | 100 mph | | | 105 mph | | | 110 mph | | | 115 mph | | | 120 mph | | | 130 mph | | | 140 mph | | | 150 mph | | | 160 mph | | | 170 mph | | | 180 mph | | | 190 mph | | |
| Snow Load | Category | Panel Angle | Roof Zone -> | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 25 psf | B | 0 to 7 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 69 | 74 | 74 | 64 | 74 | 74 | 60 | 74 | 74 | 56 | 71 | 71 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 78 | 79 | 79 | 71 | 79 | 79 | 66 | 78 | 78 | 61 | 77 | 77 | 57 | 75 | 75 | 54 | 71 | 71 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 83 | 82 | 82 | 79 | 78 | 78 | 73 | 75 | 75 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 95 | 95 | 91 | 93 | 93 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 73 | 74 | 74 | 69 | 74 | 74 | 66 | 74 | 74 | 63 | 74 | 74 | 58 | 73 | 73 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 75 | 79 | 79 | 71 | 79 | 79 | 68 | 79 | 79 | 65 | 78 | 78 | 60 | 76 | 76 | 55 | 72 | 72 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 81 | 81 | 81 | 78 | 77 | 77 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 94 | 94 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 70 | 74 | 74 | 66 | 74 | 74 | 63 | 74 | 74 | 60 | 74 | 74 | 58 | 72 | 72 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 81 | 81 | 80 | 81 | 81 | 76 | 81 | 81 | 72 | 81 | 81 | 68 | 81 | 81 | 65 | 80 | 80 | 62 | 79 | 79 | 59 | 76 | 76 | 55 | 71 | 71 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 84 | 83 | 83 | 81 | 81 | 81 | 78 | 79 | 79 | 74 | 77 | 77 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 30 psf | B | 0 to 7 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 69 | 73 | 73 | 64 | 73 | 73 | 60 | 73 | 73 | 56 | 71 | 71 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 71 | 77 | 77 | 66 | 76 | 76 | 61 | 75 | 75 | 57 | 74 | 74 | 54 | 71 | 71 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 79 | 78 | 78 | 73 | 75 | 75 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 94 | 95 | 95 | 91 | 93 | 93 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 69 | 73 | 73 | 66 | 73 | 73 | 63 | 73 | 73 | 58 | 73 | 73 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 75 | 77 | 77 | 71 | 77 | 77 | 68 | 77 | 77 | 65 | 75 | 75 | 60 | 74 | 74 | 55 | 72 | 72 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 78 | 77 | 77 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 94 | 94 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 70 | 74 | 74 | 66 | 74 | 74 | 63 | 74 | 74 | 60 | 74 | 74 | 58 | 72 | 72 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 78 | 78 | 78 | 78 | 78 | 76 | 78 | 78 | 72 | 78 | 78 | 68 | 78 | 78 | 65 | 78 | 78 | 62 | 77 | 77 | 59 | 75 | 75 | 55 | 71 | 71 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 78 | 79 | 79 | 74 | 77 | 77 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 35 psf | B | 0 to 7 | All Mounts | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 69 | 71 | 71 | 64 | 71 | 71 | 60 | 71 | 71 | 56 | 71 | 71 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 71 | 73 | 73 | 66 | 73 | 73 | 61 | 73 | 73 | 57 | 72 | 72 | 54 | 71 | 71 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 73 | 75 | 75 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 91 | 93 | 93 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 69 | 71 | 71 | 66 | 71 | 71 | 63 | 71 | 71 | 58 | 71 | 71 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 71 | 73 | 73 | 68 | 73 | 73 | 65 | 73 | 73 | 60 | 72 | 72 | 55 | 71 | 71 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 76 | 76 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 94 | 94 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 70 | 73 | 73 | 66 | 73 | 73 | 63 | 73 | 73 | 60 | 73 | 73 | 58 | 72 | 72 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 72 | 76 | 76 | 68 | 76 | 76 | 65 | 76 | 76 | 62 | 75 | 75 | 59 | 73 | 73 | 55 | 71 | 71 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 74 | 77 | 77 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 40 psf | B | 0 to 7 | All Mounts | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 64 | 68 | 68 | 60 | 68 | 68 | 56 | 68 | 68 | 52 | 67 | 67 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 66 | 70 | 70 | 61 | 70 | 70 | 57 | 70 | 70 | 54 | 69 | 69 | 51 | 67 | 67 | 48 |
| | | 27 to 45 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 73 | 74 | 74 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 68 | 68 | 63 | 68 | 68 | 58 | 68 | 68 | 54 | 68 | 68 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 68 | 70 | 70 | 65 | 70 | 70 | 60 | 70 | 70 | 55 | 69 | 69 | 51 | 67 | 67 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 92 | 92 | 90 | 92 | 92 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 70 | 71 | 71 | 66 | 71 | 71 | 63 | 71 | 71 | 60 | 71 | 71 | 58 | 71 | 71 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 72 | 73 | 73 | 68 | 73 | 73 | 65 | 73 | 73 | 62 | 73 | 73 | 59 | 72 | 72 | 55 | 70 | 70 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 74 | 76 | 76 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 45 psf | B | 0 to 7 | All Mounts | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 65 | 65 | 60 | 65 | 65 | 56 | 65 | 65 | 52 | 65 | 65 | 49 | 63 | 63 | 46 |
| | | 7 to 27 | All Mounts | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 61 | 67 | 67 | 61 | 67 | 67 | 57 | 67 | 67 | 54 | 66 | 66 | 51 | 65 | 65 | 48 |
| | | 27 to 45 | All Mounts | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 68 | 71 | 71 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 88 | 90 | 90 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 63 | 65 | 65 | 58 | 65 | 65 | 54 | 65 | 65 | 50 | 63 | 63 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 65 | 67 | 67 | 60 | 67 | 67 | 55 | 67 | 67 | 51 | 65 | 65 | 48 | 63 | 63 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 71 | 72 | 72 | 66 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 90 | 90 | 90 | 90 | 90 | 87 | 89 | 89 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 68 | 68 | 63 | 68 | 68 | 60 | 68 | 68 | 58 | 68 | 68 | 53 | 67 | 67 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 68 | 70 | 70 | 65 | 70 | 70 | 62 | 70 | 70 | 59 | 70 | 70 | 55 | 69 | 69 | 50 | 66 | 66 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |

| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-10 -- 72-Cell (P) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground | Exposure | | Wind Speed -> | 90 mph | | | 95 mph | | | 100 mph | | | 105 mph | | | 110 mph | | | 115 mph | | | 120 mph | | | 130 mph | | | 140 mph | | | 150 mph | | | 160 mph | | | 170 mph | | | 180 mph | | | 190 mph | | |
| Snow Load | Category | Panel Angle | Roof Zone -> | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 50 psf | B | 0 to 7 | All Mounts | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 60 | 62 | 62 | 56 | 62 | 62 | 52 | 62 | 62 | 49 | 62 | 62 | 46 |
| | | 7 to 27 | All Mounts | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 61 | 65 | 65 | 57 | 65 | 65 | 54 | 64 | 64 | 51 | 63 | 63 | 48 |
| | | 27 to 45 | All Mounts | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 68 | 70 | 70 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 85 | 88 | 88 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 58 | 62 | 62 | 54 | 62 | 62 | 50 | 62 | 62 | 47 | 60 | 60 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 60 | 65 | 65 | 55 | 65 | 65 | 51 | 63 | 63 | 48 | 62 | 62 | 45 | 59 | 59 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 60 | 67 | 67 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 88 | 88 | 88 | 88 | 88 | 87 | 88 | 88 | 84 | 86 | 86 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 63 | 65 | 65 | 60 | 65 | 65 | 58 | 65 | 65 | 53 | 65 | 65 | 49 | 62 | 62 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 65 | 67 | 67 | 62 | 67 | 67 | 59 | 67 | 67 | 55 | 67 | 67 | 50 | 65 | 65 | 47 | 61 | 61 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 71 | 72 | 72 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 90 | 90 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 60 psf | B | 0 to 7 | All Mounts | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 57 | 57 | 52 | 57 | 57 | 49 | 57 | 57 | 46 |
| | | 7 to 27 | All Mounts | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 62 | 62 | 57 | 62 | 62 | 54 | 61 | 61 | 51 | 60 | 60 | 48 |
| | | 27 to 45 | All Mounts | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 64 | 66 | 66 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 83 | 84 | 84 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 54 | 57 | 57 | 50 | 57 | 57 | 47 | 57 | 57 | 44 | 56 | 56 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 60 | 62 | 62 | 55 | 61 | 61 | 51 | 60 | 60 | 48 | 59 | 59 | 45 | 57 | 57 | 42 | 56 | 56 | 40 |
| | | 27 to 45 | All Mounts | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 85 | 85 | 81 | 84 | 84 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 60 | 60 | 53 | 60 | 60 | 49 | 60 | 60 | 46 | 58 | 58 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 62 | 64 | 64 | 59 | 64 | 64 | 55 | 63 | 63 | 50 | 62 | 62 | 47 | 60 | 60 | 44 | 57 | 57 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 87 | 87 | 85 | 87 | 87 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 70 psf | B | 0 to 7 | All Mounts | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 53 | 53 | 49 | 53 | 53 | 46 |
| | | 7 to 27 | All Mounts | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 57 | 58 | 58 | 54 | 58 | 58 | 51 | 57 | 57 | 48 |
| | | 27 to 45 | All Mounts | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 60 | 63 | 63 | 57 |
| | | 45 to 90 | All Mounts | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 78 | 80 | 80 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 50 | 53 | 53 | 47 | 53 | 53 | 44 | 53 | 53 | 41 | 53 | 53 | 39 |
| | | 7 to 27 | All Mounts | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 55 | 58 | 58 | 51 | 57 | 57 | 48 | 56 | 56 | 45 | 55 | 55 | 42 | 54 | 54 | 40 |
| | | 27 to 45 | All Mounts | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 61 | 63 | 63 | 57 | 59 | 59 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 81 | 83 | 83 | 78 | 82 | 82 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 53 | 56 | 56 | 49 | 56 | 56 | 46 | 56 | 56 | 43 | 54 | 54 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 59 | 61 | 61 | 55 | 60 | 60 | 50 | 59 | 59 | 47 | 58 | 58 | 44 | 56 | 56 | 41 | 54 | 54 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 66 | 66 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 85 | 85 | 85 | 85 | 85 | 82 | 84 | 84 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 80 psf | B | 0 to 7 | All Mounts | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 46 |
| | | 7 to 27 | All Mounts | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 55 | 55 | 51 | 54 | 54 | 48 |
| | | 27 to 45 | All Mounts | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 61 | 61 | 57 |
| | | 45 to 90 | All Mounts | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 78 | 80 | 80 | 74 | 79 | 79 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | C | 0 to 7 | All Mounts | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 49 | 52 | 52 | 46 | 52 | 52 | 43 | 52 | 52 | 40 | 51 | 51 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 55 | 57 | 57 | 50 | 56 | 56 | 47 | 55 | 55 | 44 | 54 | 54 | 41 | 53 | 53 | 39 | 51 | 51 | 37 |
| | | 27 to 45 | All Mounts | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 60 | 62 | 62 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 79 | 82 | 82 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |
| 90 psf | B | 0 to 7 | All Mounts | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 |
| | | 7 to 27 | All Mounts | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 | 48 |
| | | 27 to 45 | All Mounts | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 57 |
| | | 45 to 90 | All Mounts | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 72 | 76 | 76 | 67 | 71 | 71 | 63 | 67 | 67 | 59 | 63 | 63 | 55 | 59 | 59 | 52 |
| | C | 0 to 7 | All Mounts | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 44 | 47 | 47 | 41 | 47 | 47 | 39 |
| | | 7 to 27 | All Mounts | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 | 48 | 51 | 51 | 45 | 51 | 51 | 42 | 50 | 50 | 40 |
| | | 27 to 45 | All Mounts | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 57 | 58 | 58 | 54 | 56 | 56 | 51 | 53 | 53 | 48 |
| | | 45 to 90 | All Mounts | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 74 | 78 | 78 | 71 | 74 | 74 | 65 | 68 | 68 | 60 | 64 | 64 | 56 | 60 | 60 | 53 | 56 | 56 | 49 | 53 | 53 | 47 | 50 | 50 | 44 |
| | D | 0 to 7 | All Mounts | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 46 | 50 | 50 | 43 | 50 | 50 | 40 | 50 | 50 | 38 | 48 | 48 | 36 |
| | | 7 to 27 | All Mounts | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 50 | 54 | 54 | 47 | 53 | 53 | 44 | 52 | 52 | 41 | 51 | 51 | 39 | 50 | 50 | 37 |
| | | 27 to 45 | All Mounts | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 61 | 61 | 56 | 58 | 58 | 52 | 54 | 54 | 49 | 51 | 51 | 46 | 48 | 48 | 44 |
| | | 45 to 90 | All Mounts | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 79 | 80 | 80 | 75 | 80 | 80 | 71 | 77 | 77 | 68 | 74 | 74 | 65 | 68 | 68 | 60 | 63 | 63 | 55 | 58 | 58 | 52 | 55 | 55 | 48 | 51 | 51 | 45 | 48 | 48 | 43 | 46 | 46 | 40 |

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 0 psf | B | 0 to 7 | Array Interior | 93 | 93 | 93 | 93 | 93 | 88 | 88 | 93 | 93 | 93 | 93 | 93 | 84 | 84 | 93 | 93 | 92 | 92 | 92 | 81 | 81 | 93 | 93 | 88 | 88 | 88 | 78 | 78 | 93 | 93 | 85 | 85 | 85 | 74 | 74 | 93 | 93 | 83 | 83 | 83 | 70 | 70 | 93 | 90 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 93 | 93 | 85 | 85 | 85 | 74 | 74 | 93 | 92 | 82 | 82 | 82 | 69 | 69 | 93 | 88 | 79 | 79 | 79 | 66 | 66 | 93 | 85 | 75 | 75 | 75 | 62 | 62 | 93 | 82 | 71 | 71 | 71 | 59 | 59 | 93 | 80 | 68 | 68 | 68 | 57 | 57 | 93 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 93 | 93 | 93 | 90 | 90 | 90 | 84 | 93 | 93 | 93 | 86 | 86 | 86 | 81 | 93 | 93 | 93 | 83 | 83 | 83 | 77 | 93 | 93 | 93 | 80 | 80 | 80 | 73 | 90 | 90 | 90 | 76 | 76 | 76 | 69 | 87 | 87 | 87 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 90 | 90 | 90 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 59 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 89 | 93 | 93 | 93 | 89 | 89 | 89 | 86 | 93 | 93 | 93 | 85 | 85 | 85 | 83 | 93 | 93 | 93 | 83 | 83 | 83 | 80 | 93 | 93 | 93 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 93 | 93 | 93 | 82 | 82 | 82 | 80 | 93 | 93 | 93 | 79 | 79 | 79 | 76 | 92 | 92 | 92 | 75 | 75 | 75 | 72 | 89 | 89 | 89 | 71 | 71 | 71 | 68 | 86 | 86 | 86 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 91 | 95 | 95 | 95 | 95 | 95 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 87 | 87 | 87 | 87 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 93 | 93 | 88 | 88 | 88 | 76 | 76 | 93 | 93 | 84 | 84 | 84 | 72 | 72 | 93 | 91 | 81 | 81 | 81 | 68 | 68 | 93 | 87 | 77 | 77 | 77 | 65 | 65 | 93 | 84 | 74 | 74 | 74 | 62 | 62 | 93 | 82 | 70 | 70 | 70 | 59 | 59 | 93 | 79 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 93 | 84 | 73 | 73 | 73 | 61 | 61 | 93 | 81 | 69 | 69 | 69 | 58 | 58 | 93 | 77 | 66 | 66 | 66 | 55 | 55 | 93 | 73 | 62 | 62 | 62 | 52 | 52 | 92 | 70 | 59 | 59 | 59 | 50 | 50 | 89 | 66 | 56 | 56 | 56 | 47 | 47 | 86 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 88 | 88 | 88 | 74 | 74 | 74 | 68 | 85 | 85 | 85 | 70 | 70 | 70 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 75 | 75 | 75 | 61 | 61 | 61 | 55 | 72 | 72 | 72 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 74 | 74 | 74 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 85 | 85 | 85 | 82 | 93 | 93 | 93 | 81 | 81 | 81 | 79 | 93 | 93 | 93 | 78 | 78 | 78 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 85 | 85 | 85 | 67 | 67 | 67 | 64 | 83 | 83 | 83 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 78 | 78 | 78 | 59 | 59 | 59 | 57 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 91 | 91 | 91 | 91 | 88 | 81 | 88 | 88 | 88 | 88 | 88 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 81 | 73 | 81 | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 79 | 79 | 79 | 79 | 75 | 66 | 75 | 76 | 76 | 76 | 76 | 71 | 63 | 71 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 78 | 69 | 78 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 93 | 92 | 82 | 82 | 82 | 70 | 70 | 93 | 88 | 79 | 79 | 79 | 66 | 66 | 93 | 85 | 74 | 74 | 74 | 62 | 62 | 93 | 82 | 71 | 71 | 71 | 59 | 59 | 93 | 79 | 67 | 67 | 67 | 56 | 56 | 93 | 75 | 64 | 64 | 64 | 54 | 54 | 93 | 72 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 93 | 79 | 67 | 67 | 67 | 56 | 56 | 93 | 74 | 63 | 63 | 63 | 53 | 53 | 93 | 70 | 60 | 60 | 60 | 50 | 50 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 86 | 64 | 54 | 54 | 54 | 46 | 46 | 84 | 61 | 52 | 52 | 52 | 44 | 44 | 81 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 79 | 79 | 79 | 76 | 92 | 92 | 92 | 75 | 75 | 75 | 72 | 89 | 89 | 89 | 71 | 71 | 71 | 68 | 86 | 86 | 86 | 67 | 67 | 67 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 80 | 80 | 80 | 61 | 61 | 61 | 59 | 77 | 77 | 77 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 5 psf | B | 0 to 7 | Array Interior | 90 | 90 | 90 | 90 | 90 | 88 | 88 | 90 | 90 | 90 | 90 | 90 | 84 | 84 | 90 | 90 | 90 | 90 | 90 | 81 | 81 | 90 | 90 | 88 | 88 | 88 | 78 | 78 | 90 | 90 | 85 | 85 | 85 | 74 | 74 | 90 | 90 | 83 | 83 | 83 | 70 | 70 | 90 | 90 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 90 | 90 | 85 | 85 | 85 | 74 | 74 | 90 | 90 | 82 | 82 | 82 | 69 | 69 | 90 | 88 | 79 | 79 | 79 | 66 | 66 | 90 | 85 | 75 | 75 | 75 | 62 | 62 | 90 | 82 | 71 | 71 | 71 | 59 | 59 | 90 | 80 | 68 | 68 | 68 | 57 | 57 | 90 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 93 | 93 | 93 | 90 | 90 | 90 | 84 | 93 | 93 | 93 | 86 | 86 | 86 | 81 | 93 | 93 | 93 | 83 | 83 | 83 | 77 | 93 | 93 | 93 | 80 | 80 | 80 | 73 | 90 | 90 | 90 | 76 | 76 | 76 | 69 | 87 | 87 | 87 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 90 | 90 | 90 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 59 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 89 | 93 | 93 | 93 | 89 | 89 | 89 | 86 | 93 | 93 | 93 | 85 | 85 | 85 | 83 | 93 | 93 | 93 | 83 | 83 | 83 | 80 | 93 | 93 | 93 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 93 | 93 | 93 | 82 | 82 | 82 | 80 | 93 | 93 | 93 | 79 | 79 | 79 | 76 | 92 | 92 | 92 | 75 | 75 | 75 | 72 | 89 | 89 | 89 | 71 | 71 | 71 | 68 | 86 | 86 | 86 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 91 | 95 | 95 | 95 | 95 | 95 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 87 | 87 | 87 | 87 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 90 | 90 | 88 | 88 | 88 | 76 | 76 | 90 | 90 | 84 | 84 | 84 | 72 | 72 | 90 | 90 | 81 | 81 | 81 | 68 | 68 | 90 | 87 | 77 | 77 | 77 | 65 | 65 | 90 | 84 | 74 | 74 | 74 | 62 | 62 | 90 | 82 | 70 | 70 | 70 | 59 | 59 | 90 | 79 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 90 | 84 | 73 | 73 | 73 | 61 | 61 | 90 | 81 | 69 | 69 | 69 | 58 | 58 | 90 | 77 | 66 | 66 | 66 | 55 | 55 | 90 | 73 | 62 | 62 | 62 | 52 | 52 | 90 | 70 | 59 | 59 | 59 | 50 | 50 | 89 | 66 | 56 | 56 | 56 | 47 | 47 | 86 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 88 | 88 | 88 | 74 | 74 | 74 | 68 | 85 | 85 | 85 | 70 | 70 | 70 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 75 | 75 | 75 | 61 | 61 | 61 | 55 | 72 | 72 | 72 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 74 | 74 | 74 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 85 | 85 | 85 | 82 | 93 | 93 | 93 | 81 | 81 | 81 | 79 | 93 | 93 | 93 | 78 | 78 | 78 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 85 | 85 | 85 | 67 | 67 | 67 | 64 | 83 | 83 | 83 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 78 | 78 | 78 | 59 | 59 | 59 | 57 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 91 | 91 | 91 | 91 | 88 | 81 | 88 | 88 | 88 | 88 | 88 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 81 | 73 | 81 | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 79 | 79 | 79 | 79 | 75 | 66 | 75 | 76 | 76 | 76 | 76 | 71 | 63 | 71 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 78 | 69 | 78 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 90 | 90 | 82 | 82 | 82 | 70 | 70 | 90 | 88 | 79 | 79 | 79 | 66 | 66 | 90 | 85 | 74 | 74 | 74 | 62 | 62 | 90 | 82 | 71 | 71 | 71 | 59 | 59 | 90 | 79 | 67 | 67 | 67 | 56 | 56 | 90 | 75 | 64 | 64 | 64 | 54 | 54 | 90 | 72 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 90 | 79 | 67 | 67 | 67 | 56 | 56 | 90 | 74 | 63 | 63 | 63 | 53 | 53 | 90 | 70 | 60 | 60 | 60 | 50 | 50 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 86 | 64 | 54 | 54 | 54 | 46 | 46 | 84 | 61 | 52 | 52 | 52 | 44 | 44 | 81 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 79 | 79 | 79 | 76 | 92 | 92 | 92 | 75 | 75 | 75 | 72 | 89 | 89 | 89 | 71 | 71 | 71 | 68 | 86 | 86 | 86 | 67 | 67 | 67 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 80 | 80 | 80 | 61 | 61 | 61 | 59 | 77 | 77 | 77 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 10 psf | B | 0 to 7 | Array Interior | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 81 | 81 | 83 | 83 | 83 | 83 | 83 | 78 | 78 | 83 | 83 | 83 | 83 | 83 | 74 | 74 | 83 | 83 | 83 | 83 | 83 | 70 | 70 | 83 | 83 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 83 | 83 | 83 | 83 | 83 | 74 | 74 | 83 | 83 | 82 | 82 | 82 | 69 | 69 | 83 | 83 | 79 | 79 | 79 | 66 | 66 | 83 | 83 | 75 | 75 | 75 | 62 | 62 | 83 | 82 | 71 | 71 | 71 | 59 | 59 | 83 | 80 | 68 | 68 | 68 | 57 | 57 | 83 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 84 | 88 | 88 | 88 | 86 | 86 | 86 | 81 | 88 | 88 | 88 | 83 | 83 | 83 | 77 | 88 | 88 | 88 | 80 | 80 | 80 | 73 | 88 | 88 | 88 | 76 | 76 | 76 | 69 | 87 | 87 | 87 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 88 | 88 | 88 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 59 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 86 | 89 | 89 | 89 | 85 | 85 | 85 | 83 | 89 | 89 | 89 | 83 | 83 | 83 | 80 | 89 | 89 | 89 | 80 | 80 | 80 | 77 | 89 | 89 | 89 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 89 | 89 | 89 | 82 | 82 | 82 | 80 | 89 | 89 | 89 | 79 | 79 | 79 | 76 | 89 | 89 | 89 | 75 | 75 | 75 | 72 | 89 | 89 | 89 | 71 | 71 | 71 | 68 | 86 | 86 | 86 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 91 | 95 | 95 | 95 | 95 | 95 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 87 | 87 | 87 | 87 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 83 | 83 | 83 | 83 | 83 | 76 | 76 | 83 | 83 | 83 | 83 | 83 | 72 | 72 | 83 | 83 | 81 | 81 | 81 | 68 | 68 | 83 | 83 | 77 | 77 | 77 | 65 | 65 | 83 | 83 | 74 | 74 | 74 | 62 | 62 | 83 | 82 | 70 | 70 | 70 | 59 | 59 | 83 | 79 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 83 | 83 | 73 | 73 | 73 | 61 | 61 | 83 | 81 | 69 | 69 | 69 | 58 | 58 | 83 | 77 | 66 | 66 | 66 | 55 | 55 | 83 | 73 | 62 | 62 | 62 | 52 | 52 | 83 | 70 | 59 | 59 | 59 | 50 | 50 | 83 | 66 | 56 | 56 | 56 | 47 | 47 | 83 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 88 | 88 | 88 | 79 | 79 | 79 | 72 | 88 | 88 | 88 | 74 | 74 | 74 | 68 | 85 | 85 | 85 | 70 | 70 | 70 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 75 | 75 | 75 | 61 | 61 | 61 | 55 | 72 | 72 | 72 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 74 | 74 | 74 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 89 | 89 | 89 | 85 | 85 | 85 | 82 | 89 | 89 | 89 | 81 | 81 | 81 | 79 | 89 | 89 | 89 | 78 | 78 | 78 | 74 | 89 | 89 | 89 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 85 | 85 | 85 | 67 | 67 | 67 | 64 | 83 | 83 | 83 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 78 | 78 | 78 | 59 | 59 | 59 | 57 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 91 | 91 | 91 | 91 | 88 | 81 | 88 | 88 | 88 | 88 | 88 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 81 | 73 | 81 | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 79 | 79 | 79 | 79 | 75 | 66 | 75 | 76 | 76 | 76 | 76 | 71 | 63 | 71 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 78 | 69 | 78 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 83 | 83 | 82 | 82 | 82 | 70 | 70 | 83 | 83 | 79 | 79 | 79 | 66 | 66 | 83 | 83 | 74 | 74 | 74 | 62 | 62 | 83 | 82 | 71 | 71 | 71 | 59 | 59 | 83 | 79 | 67 | 67 | 67 | 56 | 56 | 83 | 75 | 64 | 64 | 64 | 54 | 54 | 83 | 72 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 83 | 79 | 67 | 67 | 67 | 56 | 56 | 83 | 74 | 63 | 63 | 63 | 53 | 53 | 83 | 70 | 60 | 60 | 60 | 50 | 50 | 83 | 67 | 57 | 57 | 57 | 48 | 48 | 83 | 64 | 54 | 54 | 54 | 46 | 46 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 81 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 90 | 90 | 90 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 75 | 75 | 75 | 72 | 89 | 89 | 89 | 71 | 71 | 71 | 68 | 86 | 86 | 86 | 67 | 67 | 67 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 80 | 80 | 80 | 61 | 61 | 61 | 59 | 77 | 77 | 77 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |

## Maximum Rail Spans (Inches)

## SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P)

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 0 psf | B | 0 to 7 | Array Interior | 93 | 84 | 74 | 74 | 74 | 62 | 62 | 93 | 80 | 68 | 68 | 68 | 57 | 57 | 93 | 74 | 63 | 63 | 63 | 53 | 53 | 92 | 69 | 59 | 59 | 59 | 50 | 50 | 88 | 65 | 55 | 55 | 55 | 47 | 47 | 84 | 61 | 52 | 52 | 52 | 44 | 44 | 81 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 92 | 70 | 59 | 59 | 59 | 50 | 50 | 87 | 64 | 55 | 55 | 55 | 46 | 46 | 83 | 60 | 51 | 51 | 51 | 43 | 43 | 79 | 56 | 48 | 48 | 48 | 40 | 40 | 73 | 52 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 93 | 72 | 61 | 61 | 61 | 52 | 52 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 62 | 53 | 53 | 53 | 44 | 44 | 81 | 58 | 49 | 49 | 49 | 42 | 42 | 76 | 54 | 46 | 46 | 46 | 39 | 39 | 72 | 51 | 44 | 44 | 44 | 37 | 37 | 68 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 81 | 58 | 50 | 50 | 50 | 42 | 42 | 76 | 54 | 46 | 46 | 46 | 39 | 39 | 70 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 59 | 59 | 59 | 56 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 89 | 66 | 56 | 56 | 56 | 47 | 47 | 84 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 48 | 48 | 48 | 41 | 41 | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 70 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 75 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 5 psf | B | 0 to 7 | Array Interior | 90 | 84 | 74 | 74 | 74 | 62 | 62 | 90 | 80 | 68 | 68 | 68 | 57 | 57 | 90 | 74 | 63 | 63 | 63 | 53 | 53 | 90 | 69 | 59 | 59 | 59 | 50 | 50 | 88 | 65 | 55 | 55 | 55 | 47 | 47 | 84 | 61 | 52 | 52 | 52 | 44 | 44 | 81 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 90 | 70 | 59 | 59 | 59 | 50 | 50 | 87 | 64 | 55 | 55 | 55 | 46 | 46 | 83 | 60 | 51 | 51 | 51 | 43 | 43 | 79 | 56 | 48 | 48 | 48 | 40 | 40 | 73 | 52 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 83 | 83 | 74 | 74 | 74 | 62 | 62 | 83 | 80 | 68 | 68 | 68 | 57 | 57 | 83 | 74 | 63 | 63 | 63 | 53 | 53 | 83 | 69 | 59 | 59 | 59 | 50 | 50 | 83 | 65 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 81 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 83 | 70 | 59 | 59 | 59 | 50 | 50 | 83 | 64 | 55 | 55 | 55 | 46 | 46 | 83 | 60 | 51 | 51 | 51 | 43 | 43 | 79 | 56 | 48 | 48 | 48 | 40 | 40 | 73 | 52 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 88 | 88 | 88 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| 10 psf | C | 0 to 7 | Array Interior | 83 | 72 | 61 | 61 | 61 | 52 | 52 | 83 | 67 | 57 | 57 | 57 | 48 | 48 | 83 | 62 | 53 | 53 | 53 | 44 | 44 | 81 | 58 | 49 | 49 | 49 | 42 | 42 | 76 | 54 | 46 | 46 | 46 | 39 | 39 | 72 | 51 | 44 | 44 | 44 | 37 | 37 | 68 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 81 | 58 | 50 | 50 | 50 | 42 | 42 | 76 | 54 | 46 | 46 | 46 | 39 | 39 | 70 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 59 | 59 | 59 | 56 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 83 | 66 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 48 | 48 | 48 | 41 | 41 | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 70 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 75 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |

| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground | Exposure | | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
| Snow Load | Category | Panel Angle | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 15 psf | B | 0 to 7 | Array Interior | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 74 | 74 | 78 | 78 | 78 | 78 | 78 | 70 | 70 | 78 | 78 | 78 | 78 | 78 | 67 | 67 |
| | | | Array Edge | 78 | 78 | 78 | 78 | 78 | 74 | 74 | 78 | 78 | 78 | 78 | 78 | 69 | 69 | 78 | 78 | 78 | 78 | 78 | 66 | 66 | 78 | 78 | 75 | 75 | 75 | 62 | 62 | 78 | 78 | 71 | 71 | 71 | 59 | 59 | 78 | 78 | 68 | 68 | 68 | 57 | 57 | 78 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 81 | 84 | 84 | 84 | 83 | 83 | 83 | 77 | 84 | 84 | 84 | 80 | 80 | 80 | 73 | 84 | 84 | 84 | 76 | 76 | 76 | 69 | 84 | 84 | 84 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 84 | 84 | 84 | 76 | 76 | 76 | 69 | 84 | 84 | 84 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 59 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 83 | 85 | 85 | 85 | 83 | 83 | 83 | 80 | 85 | 85 | 85 | 80 | 80 | 80 | 77 | 85 | 85 | 85 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 85 | 85 | 85 | 82 | 82 | 82 | 80 | 85 | 85 | 85 | 79 | 79 | 79 | 76 | 85 | 85 | 85 | 75 | 75 | 75 | 72 | 85 | 85 | 85 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 92 | 92 | 92 | 92 | 88 | 92 | 92 | 92 | 92 | 92 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 87 | 87 | 87 | 87 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 78 | 78 | 78 | 78 | 78 | 76 | 76 | 78 | 78 | 78 | 78 | 78 | 72 | 72 | 78 | 78 | 78 | 78 | 78 | 68 | 68 | 78 | 78 | 77 | 77 | 77 | 65 | 65 | 78 | 78 | 74 | 74 | 74 | 62 | 62 | 78 | 78 | 70 | 70 | 70 | 59 | 59 | 78 | 78 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 78 | 78 | 73 | 73 | 73 | 61 | 61 | 78 | 78 | 69 | 69 | 69 | 58 | 58 | 78 | 77 | 66 | 66 | 66 | 55 | 55 | 78 | 73 | 62 | 62 | 62 | 52 | 52 | 78 | 70 | 59 | 59 | 59 | 50 | 50 | 78 | 66 | 56 | 56 | 56 | 47 | 47 | 78 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 79 | 79 | 79 | 72 | 84 | 84 | 84 | 74 | 74 | 74 | 68 | 84 | 84 | 84 | 70 | 70 | 70 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 75 | 75 | 75 | 61 | 61 | 61 | 55 | 72 | 72 | 72 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 74 | 74 | 74 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 85 | 85 | 85 | 85 | 85 | 85 | 82 | 85 | 85 | 85 | 81 | 81 | 81 | 79 | 85 | 85 | 85 | 78 | 78 | 78 | 74 | 85 | 85 | 85 | 74 | 74 | 74 | 71 | 85 | 85 | 85 | 70 | 70 | 70 | 67 | 85 | 85 | 85 | 67 | 67 | 67 | 64 | 83 | 83 | 83 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 85 | 85 | 85 | 70 | 70 | 70 | 67 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 78 | 78 | 78 | 59 | 59 | 59 | 57 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 92 | 92 | 92 | 92 | 91 | 84 | 91 | 91 | 91 | 91 | 91 | 88 | 81 | 88 | 88 | 88 | 88 | 88 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 81 | 73 | 81 | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 79 | 79 | 79 | 79 | 75 | 66 | 75 | 76 | 76 | 76 | 76 | 71 | 63 | 71 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 78 | 69 | 78 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 78 | 78 | 78 | 78 | 78 | 70 | 70 | 78 | 78 | 78 | 78 | 78 | 66 | 66 | 78 | 78 | 74 | 74 | 74 | 62 | 62 | 78 | 78 | 71 | 71 | 71 | 59 | 59 | 78 | 78 | 67 | 67 | 67 | 56 | 56 | 78 | 75 | 64 | 64 | 64 | 54 | 54 | 78 | 72 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 78 | 78 | 67 | 67 | 67 | 56 | 56 | 78 | 74 | 63 | 63 | 63 | 53 | 53 | 78 | 70 | 60 | 60 | 60 | 50 | 50 | 78 | 67 | 57 | 57 | 57 | 48 | 48 | 78 | 64 | 54 | 54 | 54 | 46 | 46 | 78 | 61 | 52 | 52 | 52 | 44 | 44 | 78 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 87 | 87 | 87 | 79 | 79 | 79 | 76 | 87 | 87 | 87 | 75 | 75 | 75 | 72 | 87 | 87 | 87 | 71 | 71 | 71 | 68 | 86 | 86 | 86 | 67 | 67 | 67 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 80 | 80 | 80 | 61 | 61 | 61 | 59 | 77 | 77 | 77 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 20 psf | B | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 70 | 70 | 74 | 74 | 74 | 74 | 74 | 67 | 67 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 69 | 69 | 74 | 74 | 74 | 74 | 74 | 66 | 66 | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 71 | 71 | 71 | 59 | 59 | 74 | 74 | 68 | 68 | 68 | 57 | 57 | 74 | 74 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 77 | 80 | 80 | 80 | 80 | 80 | 80 | 73 | 80 | 80 | 80 | 76 | 76 | 76 | 69 | 80 | 80 | 80 | 73 | 73 | 73 | 66 | 80 | 80 | 80 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 80 | 80 | 80 | 76 | 76 | 76 | 69 | 80 | 80 | 80 | 72 | 72 | 72 | 65 | 80 | 80 | 80 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 59 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 80 | 82 | 82 | 82 | 80 | 80 | 80 | 77 | 82 | 82 | 82 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 82 | 82 | 80 | 82 | 82 | 82 | 79 | 79 | 79 | 76 | 82 | 82 | 82 | 75 | 75 | 75 | 72 | 82 | 82 | 82 | 71 | 71 | 71 | 68 | 82 | 82 | 82 | 68 | 68 | 68 | 65 | 82 | 82 | 82 | 64 | 64 | 64 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 85 | 88 | 88 | 88 | 88 | 88 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 86 | 79 | 86 | 87 | 87 | 87 | 87 | 83 | 76 | 83 |
| | | | Array Edge | 88 | 88 | 88 | 88 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 72 | 72 | 74 | 74 | 74 | 74 | 74 | 68 | 68 | 74 | 74 | 74 | 74 | 74 | 65 | 65 | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 70 | 70 | 70 | 59 | 59 | 74 | 74 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 74 | 74 | 73 | 73 | 73 | 61 | 61 | 74 | 74 | 69 | 69 | 69 | 58 | 58 | 74 | 74 | 66 | 66 | 66 | 55 | 55 | 74 | 73 | 62 | 62 | 62 | 52 | 52 | 74 | 70 | 59 | 59 | 59 | 50 | 50 | 74 | 66 | 56 | 56 | 56 | 47 | 47 | 74 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 80 | 80 | 80 | 79 | 79 | 79 | 72 | 80 | 80 | 80 | 74 | 74 | 74 | 68 | 80 | 80 | 80 | 70 | 70 | 70 | 64 | 80 | 80 | 80 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 75 | 75 | 75 | 61 | 61 | 61 | 55 | 72 | 72 | 72 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 74 | 74 | 74 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 79 | 82 | 82 | 82 | 78 | 78 | 78 | 74 | 82 | 82 | 82 | 74 | 74 | 74 | 71 | 82 | 82 | 82 | 70 | 70 | 70 | 67 | 82 | 82 | 82 | 67 | 67 | 67 | 64 | 82 | 82 | 82 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 82 | 82 | 82 | 70 | 70 | 70 | 67 | 82 | 82 | 82 | 66 | 66 | 66 | 63 | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 78 | 78 | 78 | 59 | 59 | 59 | 57 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 88 | 88 | 88 | 88 | 88 | 84 | 88 | 88 | 88 | 88 | 88 | 88 | 81 | 88 | 88 | 88 | 88 | 88 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 81 | 73 | 81 | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 79 | 79 | 79 | 79 | 75 | 66 | 75 | 76 | 76 | 76 | 76 | 71 | 63 | 71 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 78 | 69 | 78 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 70 | 70 | 74 | 74 | 74 | 74 | 74 | 66 | 66 | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 71 | 71 | 71 | 59 | 59 | 74 | 74 | 67 | 67 | 67 | 56 | 56 | 74 | 74 | 64 | 64 | 64 | 54 | 54 | 74 | 72 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 74 | 74 | 67 | 67 | 67 | 56 | 56 | 74 | 74 | 63 | 63 | 63 | 53 | 53 | 74 | 70 | 60 | 60 | 60 | 50 | 50 | 74 | 67 | 57 | 57 | 57 | 48 | 48 | 74 | 64 | 54 | 54 | 54 | 46 | 46 | 74 | 61 | 52 | 52 | 52 | 44 | 44 | 74 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 82 | 82 | 82 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 83 | 83 | 83 | 79 | 79 | 79 | 76 | 83 | 83 | 83 | 75 | 75 | 75 | 72 | 83 | 83 | 83 | 71 | 71 | 71 | 68 | 83 | 83 | 83 | 67 | 67 | 67 | 65 | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 80 | 80 | 80 | 61 | 61 | 61 | 59 | 77 | 77 | 77 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 83 | 83 | 83 | 64 | 64 | 64 | 61 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 25 psf | B | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 70 | 70 | 74 | 74 | 74 | 74 | 74 | 67 | 67 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 69 | 69 | 74 | 74 | 74 | 74 | 74 | 66 | 66 | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 71 | 71 | 71 | 59 | 59 | 74 | 74 | 68 | 68 | 68 | 57 | 57 | 74 | 74 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 73 | 77 | 77 | 77 | 76 | 76 | 76 | 69 | 77 | 77 | 77 | 73 | 73 | 73 | 66 | 77 | 77 | 77 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 77 | 77 | 77 | 76 | 76 | 76 | 69 | 77 | 77 | 77 | 72 | 72 | 72 | 65 | 77 | 77 | 77 | 68 | 68 | 68 | 62 | 77 | 77 | 77 | 64 | 64 | 64 | 59 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 77 | 79 | 79 | 79 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 76 | 79 | 79 | 79 | 75 | 75 | 75 | 72 | 79 | 79 | 79 | 71 | 71 | 71 | 68 | 79 | 79 | 79 | 68 | 68 | 68 | 65 | 79 | 79 | 79 | 64 | 64 | 64 | 62 | 79 | 79 | 79 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 82 | 84 | 84 | 84 | 84 | 84 | 84 | 79 | 84 | 84 | 84 | 84 | 84 | 83 | 76 | 83 |
| | | | Array Edge | 84 | 84 | 84 | 84 | 84 | 82 | 84 | 84 | 84 | 84 | 84 | 84 | 78 | 84 | 84 | 84 | 84 | 84 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 72 | 72 | 74 | 74 | 74 | 74 | 74 | 68 | 68 | 74 | 74 | 74 | 74 | 74 | 65 | 65 | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 70 | 70 | 70 | 59 | 59 | 74 | 74 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 74 | 74 | 73 | 73 | 73 | 61 | 61 | 74 | 74 | 69 | 69 | 69 | 58 | 58 | 74 | 74 | 66 | 66 | 66 | 55 | 55 | 74 | 73 | 62 | 62 | 62 | 52 | 52 | 74 | 70 | 59 | 59 | 59 | 50 | 50 | 74 | 66 | 56 | 56 | 56 | 47 | 47 | 74 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 72 | 77 | 77 | 77 | 74 | 74 | 74 | 68 | 77 | 77 | 77 | 70 | 70 | 70 | 64 | 77 | 77 | 77 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 64 | 64 | 64 | 58 | 75 | 75 | 75 | 61 | 61 | 61 | 55 | 72 | 72 | 72 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 77 | 77 | 77 | 64 | 64 | 64 | 58 | 74 | 74 | 74 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 74 | 79 | 79 | 79 | 74 | 74 | 74 | 71 | 79 | 79 | 79 | 70 | 70 | 70 | 67 | 79 | 79 | 79 | 67 | 67 | 67 | 64 | 79 | 79 | 79 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 79 | 79 | 79 | 70 | 70 | 70 | 67 | 79 | 79 | 79 | 66 | 66 | 66 | 63 | 79 | 79 | 79 | 62 | 62 | 62 | 60 | 78 | 78 | 78 | 59 | 59 | 59 | 57 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 81 | 84 | 84 | 84 | 84 | 84 | 84 | 77 | 84 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 79 | 79 | 79 | 79 | 75 | 66 | 75 | 76 | 76 | 76 | 76 | 71 | 63 | 71 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 78 | 69 | 78 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 70 | 70 | 74 | 74 | 74 | 74 | 74 | 66 | 66 | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 71 | 71 | 71 | 59 | 59 | 74 | 74 | 67 | 67 | 67 | 56 | 56 | 74 | 74 | 64 | 64 | 64 | 54 | 54 | 74 | 72 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 74 | 74 | 67 | 67 | 67 | 56 | 56 | 74 | 74 | 63 | 63 | 63 | 53 | 53 | 74 | 70 | 60 | 60 | 60 | 50 | 50 | 74 | 67 | 57 | 57 | 57 | 48 | 48 | 74 | 64 | 54 | 54 | 54 | 46 | 46 | 74 | 61 | 52 | 52 | 52 | 44 | 44 | 74 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 72 | 72 | 72 | 65 | 79 | 79 | 79 | 68 | 68 | 68 | 62 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 81 | 81 | 81 | 79 | 79 | 79 | 76 | 81 | 81 | 81 | 75 | 75 | 75 | 72 | 81 | 81 | 81 | 71 | 71 | 71 | 68 | 81 | 81 | 81 | 67 | 67 | 67 | 65 | 81 | 81 | 81 | 64 | 64 | 64 | 61 | 80 | 80 | 80 | 61 | 61 | 61 | 59 | 77 | 77 | 77 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 81 | 81 | 81 | 64 | 64 | 64 | 61 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 86 | 86 | 86 | 86 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |

| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground | Exposure | | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
| Snow Load | Category | Panel Angle | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 15 psf | B | 0 to 7 | Array Interior | 78 | 78 | 74 | 74 | 74 | 62 | 62 | 78 | 78 | 68 | 68 | 68 | 57 | 57 | 78 | 74 | 63 | 63 | 63 | 53 | 53 | 78 | 69 | 59 | 59 | 59 | 50 | 50 | 78 | 65 | 55 | 55 | 55 | 47 | 47 | 78 | 61 | 52 | 52 | 52 | 44 | 44 | 78 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 78 | 70 | 59 | 59 | 59 | 50 | 50 | 78 | 64 | 55 | 55 | 55 | 46 | 46 | 78 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 40 | 40 | 73 | 52 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 85 | 85 | 85 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 78 | 72 | 61 | 61 | 61 | 52 | 52 | 78 | 67 | 57 | 57 | 57 | 48 | 48 | 78 | 62 | 53 | 53 | 53 | 44 | 44 | 78 | 58 | 49 | 49 | 49 | 42 | 42 | 76 | 54 | 46 | 46 | 46 | 39 | 39 | 72 | 51 | 44 | 44 | 44 | 37 | 37 | 68 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 78 | 58 | 50 | 50 | 50 | 42 | 42 | 76 | 54 | 46 | 46 | 46 | 39 | 39 | 70 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 59 | 59 | 59 | 56 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 78 | 66 | 56 | 56 | 56 | 47 | 47 | 78 | 61 | 52 | 52 | 52 | 44 | 44 | 78 | 57 | 48 | 48 | 48 | 41 | 41 | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 70 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 75 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 20 psf | B | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 68 | 68 | 68 | 57 | 57 | 74 | 74 | 63 | 63 | 63 | 53 | 53 | 74 | 69 | 59 | 59 | 59 | 50 | 50 | 74 | 65 | 55 | 55 | 55 | 47 | 47 | 74 | 61 | 52 | 52 | 52 | 44 | 44 | 74 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 74 | 70 | 59 | 59 | 59 | 50 | 50 | 74 | 64 | 55 | 55 | 55 | 46 | 46 | 74 | 60 | 51 | 51 | 51 | 43 | 43 | 74 | 56 | 48 | 48 | 48 | 40 | 40 | 73 | 52 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 82 | 82 | 82 | 70 | 70 | 70 | 67 | 82 | 82 | 82 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 74 | 72 | 61 | 61 | 61 | 52 | 52 | 74 | 67 | 57 | 57 | 57 | 48 | 48 | 74 | 62 | 53 | 53 | 53 | 44 | 44 | 74 | 58 | 49 | 49 | 49 | 42 | 42 | 74 | 54 | 46 | 46 | 46 | 39 | 39 | 72 | 51 | 44 | 44 | 44 | 37 | 37 | 68 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 74 | 58 | 50 | 50 | 50 | 42 | 42 | 74 | 54 | 46 | 46 | 46 | 39 | 39 | 70 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 59 | 59 | 59 | 56 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 74 | 66 | 56 | 56 | 56 | 47 | 47 | 74 | 61 | 52 | 52 | 52 | 44 | 44 | 74 | 57 | 48 | 48 | 48 | 41 | 41 | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 70 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 25 psf | B | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 68 | 68 | 68 | 57 | 57 | 74 | 74 | 63 | 63 | 63 | 53 | 53 | 74 | 69 | 59 | 59 | 59 | 50 | 50 | 74 | 65 | 55 | 55 | 55 | 47 | 47 | 74 | 61 | 52 | 52 | 52 | 44 | 44 | 74 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 74 | 70 | 59 | 59 | 59 | 50 | 50 | 74 | 64 | 55 | 55 | 55 | 46 | 46 | 74 | 60 | 51 | 51 | 51 | 43 | 43 | 74 | 56 | 48 | 48 | 48 | 40 | 40 | 73 | 52 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 77 | 77 | 77 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 79 | 79 | 79 | 70 | 70 | 70 | 67 | 79 | 79 | 79 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 74 | 72 | 61 | 61 | 61 | 52 | 52 | 74 | 67 | 57 | 57 | 57 | 48 | 48 | 74 | 62 | 53 | 53 | 53 | 44 | 44 | 74 | 58 | 49 | 49 | 49 | 42 | 42 | 74 | 54 | 46 | 46 | 46 | 39 | 39 | 72 | 51 | 44 | 44 | 44 | 37 | 37 | 68 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 74 | 58 | 50 | 50 | 50 | 42 | 42 | 74 | 54 | 46 | 46 | 46 | 39 | 39 | 70 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 59 | 59 | 59 | 56 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 74 | 66 | 56 | 56 | 56 | 47 | 47 | 74 | 61 | 52 | 52 | 52 | 44 | 44 | 74 | 57 | 48 | 48 | 48 | 41 | 41 | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 70 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |

| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground | Exposure | | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
| Snow Load | Category | Panel Angle | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 30 psf | B | 0 to 7 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 70 | 70 | 73 | 73 | 73 | 73 | 73 | 67 | 67 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 69 | 69 | 73 | 73 | 73 | 73 | 73 | 66 | 66 | 73 | 73 | 73 | 73 | 73 | 62 | 62 | 73 | 73 | 71 | 71 | 71 | 59 | 59 | 73 | 73 | 68 | 68 | 68 | 57 | 57 | 73 | 73 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 73 | 75 | 75 | 75 | 75 | 75 | 75 | 69 | 75 | 75 | 75 | 73 | 73 | 73 | 66 | 75 | 75 | 75 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 75 | 75 | 75 | 75 | 75 | 75 | 69 | 75 | 75 | 75 | 72 | 72 | 72 | 65 | 75 | 75 | 75 | 68 | 68 | 68 | 62 | 75 | 75 | 75 | 64 | 64 | 64 | 59 | 75 | 75 | 75 | 61 | 61 | 61 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 76 | 77 | 77 | 77 | 75 | 75 | 75 | 72 | 77 | 77 | 77 | 71 | 71 | 71 | 68 | 77 | 77 | 77 | 68 | 68 | 68 | 65 | 77 | 77 | 77 | 64 | 64 | 64 | 62 | 77 | 77 | 77 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 79 | 80 | 80 | 80 | 80 | 80 | 80 | 76 | 80 |
| | | | Array Edge | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 78 | 80 | 80 | 80 | 80 | 80 | 80 | 74 | 80 | 80 | 80 | 80 | 80 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 72 | 72 | 73 | 73 | 73 | 73 | 73 | 68 | 68 | 73 | 73 | 73 | 73 | 73 | 65 | 65 | 73 | 73 | 73 | 73 | 73 | 62 | 62 | 73 | 73 | 70 | 70 | 70 | 59 | 59 | 73 | 73 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 73 | 61 | 61 | 73 | 73 | 69 | 69 | 69 | 58 | 58 | 73 | 73 | 66 | 66 | 66 | 55 | 55 | 73 | 73 | 62 | 62 | 62 | 52 | 52 | 73 | 70 | 59 | 59 | 59 | 50 | 50 | 73 | 66 | 56 | 56 | 56 | 47 | 47 | 73 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 75 | 75 | 75 | 75 | 75 | 75 | 72 | 75 | 75 | 75 | 74 | 74 | 74 | 68 | 75 | 75 | 75 | 70 | 70 | 70 | 64 | 75 | 75 | 75 | 67 | 67 | 67 | 61 | 75 | 75 | 75 | 64 | 64 | 64 | 58 | 75 | 75 | 75 | 61 | 61 | 61 | 55 | 72 | 72 | 72 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 75 | 75 | 75 | 64 | 64 | 64 | 58 | 74 | 74 | 74 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 74 | 77 | 77 | 77 | 74 | 74 | 74 | 71 | 77 | 77 | 77 | 70 | 70 | 70 | 67 | 77 | 77 | 77 | 67 | 67 | 67 | 64 | 77 | 77 | 77 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 77 | 77 | 77 | 70 | 70 | 70 | 67 | 77 | 77 | 77 | 66 | 66 | 66 | 63 | 77 | 77 | 77 | 62 | 62 | 62 | 60 | 77 | 77 | 77 | 59 | 59 | 59 | 57 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 77 | 80 | 80 | 80 | 80 | 80 | 80 | 73 | 80 | 80 | 80 | 80 | 80 | 78 | 70 | 78 | 79 | 79 | 79 | 79 | 75 | 66 | 75 | 76 | 76 | 76 | 76 | 71 | 63 | 71 |
| | | | Array Edge | 80 | 80 | 80 | 80 | 78 | 69 | 78 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 74 | 74 | 74 | 74 | 74 | 70 | 70 | 74 | 74 | 74 | 74 | 74 | 66 | 66 | 74 | 74 | 74 | 74 | 74 | 62 | 62 | 74 | 74 | 71 | 71 | 71 | 59 | 59 | 74 | 74 | 67 | 67 | 67 | 56 | 56 | 74 | 74 | 64 | 64 | 64 | 54 | 54 | 74 | 72 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 74 | 74 | 67 | 67 | 67 | 56 | 56 | 74 | 74 | 63 | 63 | 63 | 53 | 53 | 74 | 70 | 60 | 60 | 60 | 50 | 50 | 74 | 67 | 57 | 57 | 57 | 48 | 48 | 74 | 64 | 54 | 54 | 54 | 46 | 46 | 74 | 61 | 52 | 52 | 52 | 44 | 44 | 74 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 76 | 76 | 76 | 72 | 72 | 72 | 65 | 76 | 76 | 76 | 68 | 68 | 68 | 62 | 76 | 76 | 76 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 78 | 78 | 78 | 78 | 78 | 78 | 76 | 78 | 78 | 78 | 75 | 75 | 75 | 72 | 78 | 78 | 78 | 71 | 71 | 71 | 68 | 78 | 78 | 78 | 67 | 67 | 67 | 65 | 78 | 78 | 78 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 61 | 61 | 61 | 59 | 77 | 77 | 77 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 78 | 78 | 78 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 58 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 82 | 79 | 82 | 82 | 82 | 82 | 82 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 35 psf | B | 0 to 7 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 67 | 67 |
| | | | Array Edge | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 69 | 69 | 71 | 71 | 71 | 71 | 71 | 66 | 66 | 71 | 71 | 71 | 71 | 71 | 62 | 62 | 71 | 71 | 71 | 71 | 71 | 59 | 59 | 71 | 71 | 68 | 68 | 68 | 57 | 57 | 71 | 71 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 69 | 73 | 73 | 73 | 73 | 73 | 73 | 66 | 73 | 73 | 73 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 73 | 73 | 69 | 73 | 73 | 73 | 72 | 72 | 72 | 65 | 73 | 73 | 73 | 68 | 68 | 68 | 62 | 73 | 73 | 73 | 64 | 64 | 64 | 59 | 73 | 73 | 73 | 61 | 61 | 61 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 72 | 73 | 73 | 73 | 71 | 71 | 71 | 68 | 73 | 73 | 73 | 68 | 68 | 68 | 65 | 73 | 73 | 73 | 64 | 64 | 64 | 62 | 73 | 73 | 73 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 76 | 77 |
| | | | Array Edge | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 74 | 77 | 77 | 77 | 77 | 77 | 77 | 70 | 77 | 77 | 77 | 77 | 77 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 68 | 68 | 71 | 71 | 71 | 71 | 71 | 65 | 65 | 71 | 71 | 71 | 71 | 71 | 62 | 62 | 71 | 71 | 70 | 70 | 70 | 59 | 59 | 71 | 71 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 71 | 71 | 71 | 71 | 71 | 61 | 61 | 71 | 71 | 69 | 69 | 69 | 58 | 58 | 71 | 71 | 66 | 66 | 66 | 55 | 55 | 71 | 71 | 62 | 62 | 62 | 52 | 52 | 71 | 70 | 59 | 59 | 59 | 50 | 50 | 71 | 66 | 56 | 56 | 56 | 47 | 47 | 71 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 72 | 73 | 73 | 73 | 73 | 73 | 73 | 68 | 73 | 73 | 73 | 70 | 70 | 70 | 64 | 73 | 73 | 73 | 67 | 67 | 67 | 61 | 73 | 73 | 73 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 61 | 61 | 61 | 55 | 72 | 72 | 72 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 73 | 73 | 73 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 71 | 73 | 73 | 73 | 70 | 70 | 70 | 67 | 73 | 73 | 73 | 67 | 67 | 67 | 64 | 73 | 73 | 73 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 73 | 73 | 73 | 70 | 70 | 70 | 67 | 73 | 73 | 73 | 66 | 66 | 66 | 63 | 73 | 73 | 73 | 62 | 62 | 62 | 60 | 73 | 73 | 73 | 59 | 59 | 59 | 57 | 73 | 73 | 73 | 57 | 57 | 57 | 54 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 73 | 77 | 77 | 77 | 77 | 77 | 77 | 70 | 77 | 77 | 77 | 77 | 77 | 75 | 66 | 75 | 76 | 76 | 76 | 76 | 71 | 63 | 71 |
| | | | Array Edge | 77 | 77 | 77 | 77 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 73 | 73 | 73 | 73 | 73 | 70 | 70 | 73 | 73 | 73 | 73 | 73 | 66 | 66 | 73 | 73 | 73 | 73 | 73 | 62 | 62 | 73 | 73 | 71 | 71 | 71 | 59 | 59 | 73 | 73 | 67 | 67 | 67 | 56 | 56 | 73 | 73 | 64 | 64 | 64 | 54 | 54 | 73 | 72 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 73 | 73 | 67 | 67 | 67 | 56 | 56 | 73 | 73 | 63 | 63 | 63 | 53 | 53 | 73 | 70 | 60 | 60 | 60 | 50 | 50 | 73 | 67 | 57 | 57 | 57 | 48 | 48 | 73 | 64 | 54 | 54 | 54 | 46 | 46 | 73 | 61 | 52 | 52 | 52 | 44 | 44 | 73 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 74 | 74 | 74 | 72 | 72 | 72 | 65 | 74 | 74 | 74 | 68 | 68 | 68 | 62 | 74 | 74 | 74 | 64 | 64 | 64 | 58 | 74 | 74 | 74 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 72 | 76 | 76 | 76 | 71 | 71 | 71 | 68 | 76 | 76 | 76 | 67 | 67 | 67 | 65 | 76 | 76 | 76 | 64 | 64 | 64 | 61 | 76 | 76 | 76 | 61 | 61 | 61 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 76 | 76 | 76 | 64 | 64 | 64 | 61 | 76 | 76 | 76 | 60 | 60 | 60 | 58 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 74 | 79 | 79 | 79 | 79 | 79 | 79 | 70 | 79 | 79 | 79 | 79 | 79 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 40 psf | B | 0 to 7 | Array Interior | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 67 | 67 |
| | | | Array Edge | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 66 | 68 | 68 | 68 | 68 | 68 | 62 | 62 | 68 | 68 | 68 | 68 | 68 | 59 | 59 | 68 | 68 | 68 | 68 | 68 | 57 | 57 | 68 | 68 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 69 | 71 | 71 | 71 | 71 | 71 | 71 | 66 | 71 | 71 | 71 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 71 | 71 | 71 | 71 | 71 | 71 | 69 | 71 | 71 | 71 | 71 | 71 | 71 | 65 | 71 | 71 | 71 | 68 | 68 | 68 | 62 | 71 | 71 | 71 | 64 | 64 | 64 | 59 | 71 | 71 | 71 | 61 | 61 | 61 | 56 | 71 | 71 | 71 | 59 | 59 | 59 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| | | | Array Edge | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 68 | 70 | 70 | 70 | 68 | 68 | 68 | 65 | 70 | 70 | 70 | 64 | 64 | 64 | 62 | 70 | 70 | 70 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 70 | 74 | 74 | 74 | 74 | 74 | 74 | 67 | 74 | 74 | 74 | 74 | 74 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 90 | 90 | 90 | 90 | 90 | 91 | 91 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 65 | 65 | 68 | 68 | 68 | 68 | 68 | 62 | 62 | 68 | 68 | 68 | 68 | 68 | 59 | 59 | 68 | 68 | 67 | 67 | 67 | 56 | 56 |
| | | | Array Edge | 68 | 68 | 68 | 68 | 68 | 61 | 61 | 68 | 68 | 68 | 68 | 68 | 58 | 58 | 68 | 68 | 66 | 66 | 66 | 55 | 55 | 68 | 68 | 62 | 62 | 62 | 52 | 52 | 68 | 68 | 59 | 59 | 59 | 50 | 50 | 68 | 66 | 56 | 56 | 56 | 47 | 47 | 68 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 68 | 71 | 71 | 71 | 70 | 70 | 70 | 64 | 71 | 71 | 71 | 67 | 67 | 67 | 61 | 71 | 71 | 71 | 64 | 64 | 64 | 58 | 71 | 71 | 71 | 61 | 61 | 61 | 55 | 71 | 71 | 71 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 71 | 71 | 71 | 64 | 64 | 64 | 58 | 71 | 71 | 71 | 60 | 60 | 60 | 54 | 70 | 70 | 70 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 67 | 70 | 70 | 70 | 67 | 67 | 67 | 64 | 70 | 70 | 70 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 70 | 70 | 70 | 70 | 70 | 70 | 67 | 70 | 70 | 70 | 66 | 66 | 66 | 63 | 70 | 70 | 70 | 62 | 62 | 62 | 60 | 70 | 70 | 70 | 59 | 59 | 59 | 57 | 70 | 70 | 70 | 57 | 57 | 57 | 54 | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 73 | 74 | 74 | 74 | 74 | 74 | 74 | 70 | 74 | 74 | 74 | 74 | 74 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 71 | 63 | 71 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 69 | 74 | 74 | 74 | 74 | 74 | 74 | 66 | 74 | 74 | 74 | 74 | 74 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 92 | 92 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 71 | 71 | 71 | 71 | 71 | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 66 | 66 | 71 | 71 | 71 | 71 | 71 | 62 | 62 | 71 | 71 | 71 | 71 | 71 | 59 | 59 | 71 | 71 | 67 | 67 | 67 | 56 | 56 | 71 | 71 | 64 | 64 | 64 | 54 | 54 | 71 | 71 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 71 | 71 | 67 | 67 | 67 | 56 | 56 | 71 | 71 | 63 | 63 | 63 | 53 | 53 | 71 | 70 | 60 | 60 | 60 | 50 | 50 | 71 | 67 | 57 | 57 | 57 | 48 | 48 | 71 | 64 | 54 | 54 | 54 | 46 | 46 | 71 | 61 | 52 | 52 | 52 | 44 | 44 | 71 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 72 | 72 | 72 | 72 | 72 | 72 | 65 | 72 | 72 | 72 | 68 | 68 | 68 | 62 | 72 | 72 | 72 | 64 | 64 | 64 | 58 | 72 | 72 | 72 | 61 | 61 | 61 | 56 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 72 | 73 | 73 | 73 | 71 | 71 | 71 | 68 | 73 | 73 | 73 | 67 | 67 | 67 | 65 | 73 | 73 | 73 | 64 | 64 | 64 | 61 | 73 | 73 | 73 | 61 | 61 | 61 | 59 | 73 | 73 | 73 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 73 | 73 | 73 | 64 | 64 | 64 | 61 | 73 | 73 | 73 | 60 | 60 | 60 | 58 | 73 | 73 | 73 | 57 | 57 | 57 | 55 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 74 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 70 | 77 | 77 | 77 | 77 | 77 | 75 | 67 | 75 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |

## Maximum Rail Spans (Inches)

## SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P)

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 30 psf | B | 0 to 7 | Array Interior | 73 | 73 | 73 | 73 | 73 | 62 | 62 | 73 | 73 | 68 | 68 | 68 | 57 | 57 | 73 | 73 | 63 | 63 | 63 | 53 | 53 | 73 | 69 | 59 | 59 | 59 | 50 | 50 | 73 | 65 | 55 | 55 | 55 | 47 | 47 | 73 | 61 | 52 | 52 | 52 | 44 | 44 | 73 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 73 | 70 | 59 | 59 | 59 | 50 | 50 | 73 | 64 | 55 | 55 | 55 | 46 | 46 | 73 | 60 | 51 | 51 | 51 | 43 | 43 | 73 | 56 | 48 | 48 | 48 | 40 | 40 | 73 | 52 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 75 | 75 | 75 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 70 | 70 | 70 | 67 | 77 | 77 | 77 | 65 | 65 | 65 | 62 | 77 | 77 | 77 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 80 | 80 | 80 | 80 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 73 | 72 | 61 | 61 | 61 | 52 | 52 | 73 | 67 | 57 | 57 | 57 | 48 | 48 | 73 | 62 | 53 | 53 | 53 | 44 | 44 | 73 | 58 | 49 | 49 | 49 | 42 | 42 | 73 | 54 | 46 | 46 | 46 | 39 | 39 | 72 | 51 | 44 | 44 | 44 | 37 | 37 | 68 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 73 | 58 | 50 | 50 | 50 | 42 | 42 | 73 | 54 | 46 | 46 | 46 | 39 | 39 | 70 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 59 | 59 | 59 | 56 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 74 | 66 | 56 | 56 | 56 | 47 | 47 | 74 | 61 | 52 | 52 | 52 | 44 | 44 | 74 | 57 | 48 | 48 | 48 | 41 | 41 | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 70 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 74 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 35 psf | B | 0 to 7 | Array Interior | 71 | 71 | 71 | 71 | 71 | 62 | 62 | 71 | 71 | 68 | 68 | 68 | 57 | 57 | 71 | 71 | 63 | 63 | 63 | 53 | 53 | 71 | 69 | 59 | 59 | 59 | 50 | 50 | 71 | 65 | 55 | 55 | 55 | 47 | 47 | 71 | 61 | 52 | 52 | 52 | 44 | 44 | 71 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 71 | 70 | 59 | 59 | 59 | 50 | 50 | 71 | 64 | 55 | 55 | 55 | 46 | 46 | 71 | 60 | 51 | 51 | 51 | 43 | 43 | 71 | 56 | 48 | 48 | 48 | 40 | 40 | 71 | 52 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 73 | 73 | 73 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 73 | 73 | 73 | 70 | 70 | 70 | 67 | 73 | 73 | 73 | 65 | 65 | 65 | 62 | 73 | 73 | 73 | 60 | 60 | 60 | 58 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 73 | 73 | 73 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 77 | 77 | 77 | 77 | 77 | 70 | 77 | 77 | 77 | 77 | 77 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 93 | 93 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 71 | 71 | 61 | 61 | 61 | 52 | 52 | 71 | 67 | 57 | 57 | 57 | 48 | 48 | 71 | 62 | 53 | 53 | 53 | 44 | 44 | 71 | 58 | 49 | 49 | 49 | 42 | 42 | 71 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 | 68 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 71 | 58 | 50 | 50 | 50 | 42 | 42 | 71 | 54 | 46 | 46 | 46 | 39 | 39 | 70 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 73 | 73 | 73 | 59 | 59 | 59 | 56 | 71 | 71 | 71 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 73 | 66 | 56 | 56 | 56 | 47 | 47 | 73 | 61 | 52 | 52 | 52 | 44 | 44 | 73 | 57 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 70 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 40 psf | B | 0 to 7 | Array Interior | 68 | 68 | 68 | 68 | 68 | 62 | 62 | 68 | 68 | 68 | 68 | 68 | 57 | 57 | 68 | 68 | 63 | 63 | 63 | 53 | 53 | 68 | 68 | 59 | 59 | 59 | 50 | 50 | 68 | 65 | 55 | 55 | 55 | 47 | 47 | 68 | 61 | 52 | 52 | 52 | 44 | 44 | 68 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 68 | 68 | 59 | 59 | 59 | 50 | 50 | 68 | 64 | 55 | 55 | 55 | 46 | 46 | 68 | 60 | 51 | 51 | 51 | 43 | 43 | 68 | 56 | 48 | 48 | 48 | 40 | 40 | 68 | 52 | 45 | 45 | 45 | 38 | 38 | 68 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 71 | 71 | 71 | 64 | 64 | 64 | 58 | 71 | 71 | 71 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 70 | 70 | 70 | 67 | 70 | 70 | 70 | 65 | 65 | 65 | 62 | 70 | 70 | 70 | 60 | 60 | 60 | 58 | 70 | 70 | 70 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 74 | 74 | 74 | 74 | 74 | 70 | 74 | 74 | 74 | 74 | 74 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 92 | 92 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 68 | 68 | 61 | 61 | 61 | 52 | 52 | 68 | 67 | 57 | 57 | 57 | 48 | 48 | 68 | 62 | 53 | 53 | 53 | 44 | 44 | 68 | 58 | 49 | 49 | 49 | 42 | 42 | 68 | 54 | 46 | 46 | 46 | 39 | 39 | 68 | 51 | 44 | 44 | 44 | 37 | 37 | 68 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 68 | 58 | 50 | 50 | 50 | 42 | 42 | 68 | 54 | 46 | 46 | 46 | 39 | 39 | 68 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 59 | 59 | 59 | 56 | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 71 | 66 | 56 | 56 | 56 | 47 | 47 | 71 | 61 | 52 | 52 | 52 | 44 | 44 | 71 | 57 | 48 | 48 | 48 | 41 | 41 | 71 | 53 | 45 | 45 | 45 | 38 | 38 | 70 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 71 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |

## Maximum Rail Spans (Inches)

## SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P)

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 45 psf | B | 0 to 7 | Array Interior | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| | | | Array Edge | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 62 | 65 | 65 | 65 | 65 | 65 | 59 | 59 | 65 | 65 | 65 | 65 | 65 | 57 | 57 | 65 | 65 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 68 | 68 | 68 | 68 | 68 | 68 | 63 |
| | | | Array Edge | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 65 | 68 | 68 | 68 | 68 | 68 | 68 | 62 | 68 | 68 | 68 | 64 | 64 | 64 | 59 | 68 | 68 | 68 | 61 | 61 | 61 | 56 | 68 | 68 | 68 | 59 | 59 | 59 | 53 | 68 | 68 | 68 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 65 | 67 | 67 | 67 | 64 | 64 | 64 | 62 | 67 | 67 | 67 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 |
| | | | Array Edge | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 70 | 72 | 72 | 72 | 72 | 72 | 72 | 67 | 72 | 72 | 72 | 72 | 72 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| | | | Array Edge | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 87 | 87 | 87 | 87 | 87 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 62 | 65 | 65 | 65 | 65 | 65 | 59 | 59 | 65 | 65 | 65 | 65 | 65 | 56 | 56 |
| | | | Array Edge | 65 | 65 | 65 | 65 | 65 | 61 | 61 | 65 | 65 | 65 | 65 | 65 | 58 | 58 | 65 | 65 | 65 | 65 | 65 | 55 | 55 | 65 | 65 | 62 | 62 | 62 | 52 | 52 | 65 | 65 | 59 | 59 | 59 | 50 | 50 | 65 | 65 | 56 | 56 | 56 | 47 | 47 | 65 | 63 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 64 | 68 | 68 | 68 | 67 | 67 | 67 | 61 | 68 | 68 | 68 | 64 | 64 | 64 | 58 | 68 | 68 | 68 | 61 | 61 | 61 | 55 | 68 | 68 | 68 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 68 | 68 | 68 | 64 | 64 | 64 | 58 | 68 | 68 | 68 | 60 | 60 | 60 | 54 | 68 | 68 | 68 | 57 | 57 | 57 | 52 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 64 | 67 | 67 | 67 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 66 | 66 | 66 | 63 | 67 | 67 | 67 | 62 | 62 | 62 | 60 | 67 | 67 | 67 | 59 | 59 | 59 | 57 | 67 | 67 | 67 | 57 | 57 | 57 | 54 | 67 | 67 | 67 | 54 | 54 | 54 | 52 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 70 | 72 | 72 | 72 | 72 | 72 | 72 | 66 | 72 | 72 | 72 | 72 | 72 | 71 | 63 | 71 |
| | | | Array Edge | 72 | 72 | 72 | 72 | 72 | 69 | 72 | 72 | 72 | 72 | 72 | 72 | 66 | 72 | 72 | 72 | 72 | 72 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 66 | 68 | 68 | 68 | 68 | 68 | 62 | 62 | 68 | 68 | 68 | 68 | 68 | 59 | 59 | 68 | 68 | 67 | 67 | 67 | 56 | 56 | 68 | 68 | 64 | 64 | 64 | 54 | 54 | 68 | 68 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 68 | 68 | 67 | 67 | 67 | 56 | 56 | 68 | 68 | 63 | 63 | 63 | 53 | 53 | 68 | 68 | 60 | 60 | 60 | 50 | 50 | 68 | 67 | 57 | 57 | 57 | 48 | 48 | 68 | 64 | 54 | 54 | 54 | 46 | 46 | 68 | 61 | 52 | 52 | 52 | 44 | 44 | 68 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 65 | 71 | 71 | 71 | 68 | 68 | 68 | 62 | 71 | 71 | 71 | 64 | 64 | 64 | 58 | 71 | 71 | 71 | 61 | 61 | 61 | 56 | 71 | 71 | 71 | 58 | 58 | 58 | 53 | 69 | 69 | 69 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 71 | 71 | 71 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 68 | 70 | 70 | 70 | 67 | 67 | 67 | 65 | 70 | 70 | 70 | 64 | 64 | 64 | 61 | 70 | 70 | 70 | 61 | 61 | 61 | 59 | 70 | 70 | 70 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 70 | 70 | 70 | 64 | 64 | 64 | 61 | 70 | 70 | 70 | 60 | 60 | 60 | 58 | 70 | 70 | 70 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 68 | 68 | 68 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 70 | 74 | 74 | 74 | 74 | 74 | 74 | 67 | 74 | 74 | 74 | 74 | 74 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 89 | 89 | 89 | 89 | 89 | 91 | 91 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 50 psf | B | 0 to 7 | Array Interior | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| | | | Array Edge | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 59 | 59 | 62 | 62 | 62 | 62 | 62 | 57 | 57 | 62 | 62 | 62 | 62 | 62 | 54 | 54 |
| | | 7 to 20 | Array Interior | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 63 |
| | | | Array Edge | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 65 | 65 | 65 | 64 | 64 | 64 | 59 | 65 | 65 | 65 | 61 | 61 | 61 | 56 | 65 | 65 | 65 | 59 | 59 | 59 | 53 | 65 | 65 | 65 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| | | | Array Edge | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 64 | 64 | 62 | 65 | 65 | 65 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| | | | Array Edge | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 67 | 70 | 70 | 70 | 70 | 70 | 70 | 64 | 70 | 70 | 70 | 70 | 70 | 69 | 61 | 69 |
| | | 45 to 90 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| | | | Array Edge | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 87 | 88 | 88 | 84 | 84 | 84 | 84 | 84 | 87 | 87 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 59 | 59 | 62 | 62 | 62 | 62 | 62 | 56 | 56 |
| | | | Array Edge | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 62 | 62 | 62 | 62 | 62 | 58 | 58 | 62 | 62 | 62 | 62 | 62 | 55 | 55 | 62 | 62 | 62 | 62 | 62 | 52 | 52 | 62 | 62 | 59 | 59 | 59 | 50 | 50 | 62 | 62 | 56 | 56 | 56 | 47 | 47 | 62 | 62 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 65 | 65 | 65 | 65 | 65 | 65 | 61 | 65 | 65 | 65 | 64 | 64 | 64 | 58 | 65 | 65 | 65 | 61 | 61 | 61 | 55 | 65 | 65 | 65 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 65 | 65 | 65 | 64 | 64 | 64 | 58 | 65 | 65 | 65 | 60 | 60 | 60 | 54 | 65 | 65 | 65 | 57 | 57 | 57 | 52 | 65 | 65 | 65 | 54 | 54 | 54 | 49 | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 65 | 65 | 65 | 64 | 64 | 64 | 61 |
| | | | Array Edge | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 63 | 65 | 65 | 65 | 62 | 62 | 62 | 60 | 65 | 65 | 65 | 59 | 59 | 59 | 57 | 65 | 65 | 65 | 57 | 57 | 57 | 54 | 65 | 65 | 65 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 66 | 70 | 70 | 70 | 70 | 70 | 70 | 63 | 70 |
| | | | Array Edge | 70 | 70 | 70 | 70 | 70 | 69 | 70 | 70 | 70 | 70 | 70 | 70 | 66 | 70 | 70 | 70 | 70 | 70 | 70 | 62 | 70 | 70 | 70 | 70 | 70 | 66 | 59 | 66 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 86 | 86 | 86 | 86 | 86 | 88 | 88 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 85 | 85 | 85 | 85 | 85 | 87 | 87 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 62 | 65 | 65 | 65 | 65 | 65 | 59 | 59 | 65 | 65 | 65 | 65 | 65 | 56 | 56 | 65 | 65 | 64 | 64 | 64 | 54 | 54 | 65 | 65 | 61 | 61 | 61 | 51 | 51 |
| | | | Array Edge | 65 | 65 | 65 | 65 | 65 | 56 | 56 | 65 | 65 | 63 | 63 | 63 | 53 | 53 | 65 | 65 | 60 | 60 | 60 | 50 | 50 | 65 | 65 | 57 | 57 | 57 | 48 | 48 | 65 | 64 | 54 | 54 | 54 | 46 | 46 | 65 | 61 | 52 | 52 | 52 | 44 | 44 | 65 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 68 | 68 | 68 | 68 | 68 | 68 | 65 | 68 | 68 | 68 | 68 | 68 | 68 | 62 | 68 | 68 | 68 | 64 | 64 | 64 | 58 | 68 | 68 | 68 | 61 | 61 | 61 | 56 | 68 | 68 | 68 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 56 | 56 | 56 | 50 | 66 | 66 | 66 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 68 | 68 | 68 | 58 | 58 | 58 | 53 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 65 | 67 | 67 | 67 | 64 | 64 | 64 | 61 | 67 | 67 | 67 | 61 | 61 | 61 | 59 | 67 | 67 | 67 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 67 | 67 | 67 | 64 | 64 | 64 | 61 | 67 | 67 | 67 | 60 | 60 | 60 | 58 | 67 | 67 | 67 | 57 | 57 | 57 | 55 | 67 | 67 | 67 | 54 | 54 | 54 | 52 | 67 | 67 | 67 | 52 | 52 | 52 | 50 | 65 | 65 | 65 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 70 | 72 | 72 | 72 | 72 | 72 | 72 | 67 | 72 | 72 | 72 | 72 | 72 | 72 | 64 | 72 | 72 | 72 | 72 | 72 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 72 | 72 | 72 | 72 | 71 | 64 | 71 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 86 | 86 | 86 | 86 | 86 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 60 psf | B | 0 to 7 | Array Interior | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 |
| | | | Array Edge | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 54 | 54 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| | | | Array Edge | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 56 | 60 | 60 | 60 | 59 | 59 | 59 | 53 | 60 | 60 | 60 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| | | | Array Edge | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| | | | Array Edge | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 64 | 66 | 66 | 66 | 66 | 66 | 66 | 61 | 66 |
| | | 45 to 90 | Array Interior | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 56 |
| | | | Array Edge | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 55 | 55 | 57 | 57 | 57 | 57 | 57 | 52 | 52 | 57 | 57 | 57 | 57 | 57 | 50 | 50 | 57 | 57 | 56 | 56 | 56 | 47 | 47 | 57 | 57 | 54 | 54 | 54 | 45 | 45 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 60 | 60 | 60 | 60 | 60 | 60 | 55 | 60 | 60 | 60 | 58 | 58 | 58 | 53 |
| | | | Array Edge | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 60 | 60 | 60 | 60 | 60 | 60 | 54 | 60 | 60 | 60 | 57 | 57 | 57 | 52 | 60 | 60 | 60 | 54 | 54 | 54 | 49 | 60 | 60 | 60 | 51 | 51 | 51 | 47 | 60 | 60 | 60 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | 20 to 27 | Array Interior | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 61 |
| | | | Array Edge | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 60 | 62 | 62 | 62 | 59 | 59 | 59 | 57 | 62 | 62 | 62 | 57 | 57 | 57 | 54 | 62 | 62 | 62 | 54 | 54 | 54 | 52 | 62 | 62 | 62 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 63 | 66 |
| | | | Array Edge | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 62 | 66 | 66 | 66 | 66 | 66 | 66 | 59 | 66 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 64 | 64 | 64 | 64 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 60 | 60 | 60 | 60 | 60 | 56 | 56 | 60 | 60 | 60 | 60 | 60 | 54 | 54 | 60 | 60 | 60 | 60 | 60 | 51 | 51 |
| | | | Array Edge | 60 | 60 | 60 | 60 | 60 | 56 | 56 | 60 | 60 | 60 | 60 | 60 | 53 | 53 | 60 | 60 | 60 | 60 | 60 | 50 | 50 | 60 | 60 | 57 | 57 | 57 | 48 | 48 | 60 | 60 | 54 | 54 | 54 | 46 | 46 | 60 | 60 | 52 | 52 | 52 | 44 | 44 | 60 | 58 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 58 | 63 | 63 | 63 | 61 | 61 | 61 | 56 | 63 | 63 | 63 | 58 | 58 | 58 | 53 | 63 | 63 | 63 | 56 | 56 | 56 | 50 | 63 | 63 | 63 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 63 | 63 | 63 | 58 | 58 | 58 | 53 | 63 | 63 | 63 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 52 | 52 | 52 | 47 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 61 | 64 | 64 | 64 | 61 | 61 | 61 | 59 | 64 | 64 | 64 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 64 | 64 | 64 | 64 | 64 | 64 | 61 | 64 | 64 | 64 | 60 | 60 | 60 | 58 | 64 | 64 | 64 | 57 | 57 | 57 | 55 | 64 | 64 | 64 | 54 | 54 | 54 | 52 | 64 | 64 | 64 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 62 | 62 | 62 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 67 | 69 | 69 | 69 | 69 | 69 | 69 | 64 | 69 | 69 | 69 | 69 | 69 | 68 | 61 | 68 | 69 | 69 | 69 | 69 | 65 | 58 | 65 |
| | | | Array Edge | 69 | 69 | 69 | 69 | 69 | 64 | 69 | 69 | 69 | 69 | 69 | 67 | 60 | 67 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 87 | 87 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 87 | 87 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |

| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground | Exposure | | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
| Snow Load | Category | Panel Angle | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 45 psf | B | 0 to 7 | Array Interior | 65 | 65 | 65 | 65 | 65 | 62 | 62 | 65 | 65 | 65 | 65 | 65 | 57 | 57 | 65 | 65 | 63 | 63 | 63 | 53 | 53 | 65 | 65 | 59 | 59 | 59 | 50 | 50 | 65 | 65 | 55 | 55 | 55 | 47 | 47 | 65 | 61 | 52 | 52 | 52 | 44 | 44 | 65 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 65 | 65 | 59 | 59 | 59 | 50 | 50 | 65 | 64 | 55 | 55 | 55 | 46 | 46 | 65 | 60 | 51 | 51 | 51 | 43 | 43 | 65 | 56 | 48 | 48 | 48 | 40 | 40 | 65 | 52 | 45 | 45 | 45 | 38 | 38 | 65 | 49 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 68 | 68 | 68 | 64 | 64 | 64 | 58 | 68 | 68 | 68 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 65 | 65 | 65 | 62 | 67 | 67 | 67 | 60 | 60 | 60 | 58 | 67 | 67 | 67 | 56 | 56 | 56 | 54 | 67 | 67 | 67 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 67 | 67 | 67 | 57 | 57 | 57 | 54 | 67 | 67 | 67 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 72 | 72 | 72 | 72 | 72 | 70 | 72 | 72 | 72 | 72 | 72 | 72 | 64 | 72 | 71 | 71 | 71 | 71 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 65 | 65 | 61 | 61 | 61 | 52 | 52 | 65 | 65 | 57 | 57 | 57 | 48 | 48 | 65 | 62 | 53 | 53 | 53 | 44 | 44 | 65 | 58 | 49 | 49 | 49 | 42 | 42 | 65 | 54 | 46 | 46 | 46 | 39 | 39 | 65 | 51 | 44 | 44 | 44 | 37 | 37 | 65 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 65 | 58 | 50 | 50 | 50 | 42 | 42 | 65 | 54 | 46 | 46 | 46 | 39 | 39 | 65 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 66 | 66 | 66 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 67 | 67 | 67 | 59 | 59 | 59 | 56 | 67 | 67 | 67 | 54 | 54 | 54 | 52 | 66 | 66 | 66 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 68 | 66 | 56 | 56 | 56 | 47 | 47 | 68 | 61 | 52 | 52 | 52 | 44 | 44 | 68 | 57 | 48 | 48 | 48 | 41 | 41 | 68 | 53 | 45 | 45 | 45 | 38 | 38 | 68 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 68 | 53 | 45 | 45 | 45 | 38 | 38 | 68 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 70 | 70 | 70 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 50 psf | B | 0 to 7 | Array Interior | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 57 | 57 | 62 | 62 | 62 | 62 | 62 | 53 | 53 | 62 | 62 | 59 | 59 | 59 | 50 | 50 | 62 | 62 | 55 | 55 | 55 | 47 | 47 | 62 | 61 | 52 | 52 | 52 | 44 | 44 | 62 | 58 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 62 | 62 | 59 | 59 | 59 | 50 | 50 | 62 | 62 | 55 | 55 | 55 | 46 | 46 | 62 | 60 | 51 | 51 | 51 | 43 | 43 | 62 | 56 | 48 | 48 | 48 | 40 | 40 | 62 | 52 | 45 | 45 | 45 | 38 | 38 | 62 | 49 | 42 | 42 | 42 | 36 | 36 | 62 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 65 | 65 | 65 | 64 | 64 | 64 | 58 | 65 | 65 | 65 | 59 | 59 | 59 | 54 | 65 | 65 | 65 | 55 | 55 | 55 | 50 | 63 | 63 | 63 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 65 | 65 | 65 | 60 | 60 | 60 | 58 | 65 | 65 | 65 | 56 | 56 | 56 | 54 | 65 | 65 | 65 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 65 | 65 | 65 | 57 | 57 | 57 | 54 | 65 | 65 | 65 | 52 | 52 | 52 | 50 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 64 | 70 | 70 | 70 | 70 | 70 | 67 | 60 | 67 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 84 | 84 | 84 | 84 | 84 | 86 | 86 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 62 | 62 | 61 | 61 | 61 | 52 | 52 | 62 | 62 | 57 | 57 | 57 | 48 | 48 | 62 | 62 | 53 | 53 | 53 | 44 | 44 | 62 | 58 | 49 | 49 | 49 | 42 | 42 | 62 | 54 | 46 | 46 | 46 | 39 | 39 | 62 | 51 | 44 | 44 | 44 | 37 | 37 | 62 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 62 | 58 | 50 | 50 | 50 | 42 | 42 | 62 | 54 | 46 | 46 | 46 | 39 | 39 | 62 | 50 | 43 | 43 | 43 | 36 | 36 | 62 | 47 | 40 | 40 | 40 | 34 | 34 | 61 | 44 | 38 | 38 | 38 | 32 | 32 | 58 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 65 | 65 | 65 | 53 | 53 | 53 | 49 | 61 | 61 | 61 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 65 | 65 | 65 | 59 | 59 | 59 | 56 | 65 | 65 | 65 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 69 | 69 | 69 | 69 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 65 | 65 | 56 | 56 | 56 | 47 | 47 | 65 | 61 | 52 | 52 | 52 | 44 | 44 | 65 | 57 | 48 | 48 | 48 | 41 | 41 | 65 | 53 | 45 | 45 | 45 | 38 | 38 | 65 | 50 | 42 | 42 | 42 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 | 62 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 65 | 53 | 45 | 45 | 45 | 38 | 38 | 65 | 49 | 42 | 42 | 42 | 35 | 35 | 64 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 67 | 67 | 67 | 54 | 54 | 54 | 52 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 60 psf | B | 0 to 7 | Array Interior | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 53 | 53 | 57 | 57 | 57 | 57 | 57 | 50 | 50 | 57 | 57 | 55 | 55 | 55 | 47 | 47 | 57 | 57 | 52 | 52 | 52 | 44 | 44 | 57 | 57 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 57 | 57 | 57 | 57 | 57 | 50 | 50 | 57 | 57 | 55 | 55 | 55 | 46 | 46 | 57 | 57 | 51 | 51 | 51 | 43 | 43 | 57 | 56 | 48 | 48 | 48 | 40 | 40 | 57 | 52 | 45 | 45 | 45 | 38 | 38 | 57 | 49 | 42 | 42 | 42 | 36 | 36 | 57 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 60 | 60 | 60 | 59 | 59 | 59 | 54 | 60 | 60 | 60 | 55 | 55 | 55 | 50 | 60 | 60 | 60 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 60 | 60 | 60 | 51 | 51 | 51 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 60 | 60 | 60 | 58 | 62 | 62 | 62 | 56 | 56 | 56 | 54 | 62 | 62 | 62 | 53 | 53 | 53 | 51 | 62 | 62 | 62 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 62 | 62 | 62 | 57 | 57 | 57 | 54 | 62 | 62 | 62 | 52 | 52 | 52 | 50 | 62 | 62 | 62 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 64 | 66 | 66 | 66 | 66 | 66 | 66 | 60 | 66 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 57 | 57 | 57 | 57 | 57 | 52 | 52 | 57 | 57 | 57 | 57 | 57 | 48 | 48 | 57 | 57 | 53 | 53 | 53 | 44 | 44 | 57 | 57 | 49 | 49 | 49 | 42 | 42 | 57 | 54 | 46 | 46 | 46 | 39 | 39 | 57 | 51 | 44 | 44 | 44 | 37 | 37 | 57 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 57 | 57 | 50 | 50 | 50 | 42 | 42 | 57 | 54 | 46 | 46 | 46 | 39 | 39 | 57 | 50 | 43 | 43 | 43 | 36 | 36 | 57 | 47 | 40 | 40 | 40 | 34 | 34 | 57 | 44 | 38 | 38 | 38 | 32 | 32 | 57 | 41 | 35 | 35 | 35 | 30 | 30 | 55 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 53 | 53 | 53 | 49 | 60 | 60 | 60 | 49 | 49 | 49 | 45 | 57 | 57 | 57 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 62 | 62 | 62 | 59 | 59 | 59 | 56 | 62 | 62 | 62 | 54 | 54 | 54 | 52 | 62 | 62 | 62 | 50 | 50 | 50 | 49 | 62 | 62 | 62 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 62 | 62 | 62 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 66 | 66 | 66 | 66 | 66 | 58 | 66 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 84 | 84 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 60 | 60 | 56 | 56 | 56 | 47 | 47 | 60 | 60 | 52 | 52 | 52 | 44 | 44 | 60 | 57 | 48 | 48 | 48 | 41 | 41 | 60 | 53 | 45 | 45 | 45 | 38 | 38 | 60 | 50 | 42 | 42 | 42 | 36 | 36 | 60 | 47 | 40 | 40 | 40 | 34 | 34 | 60 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 60 | 53 | 45 | 45 | 45 | 38 | 38 | 60 | 49 | 42 | 42 | 42 | 35 | 35 | 60 | 46 | 39 | 39 | 39 | 33 | 33 | 60 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 64 | 64 | 64 | 54 | 54 | 54 | 52 | 64 | 64 | 64 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |

## Maximum Rail Spans (Inches)

## SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P)

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 70 psf | B | 0 to 7 | Array Interior | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| | | 7 to 20 | Array Interior | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 53 | 56 | 56 | 56 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 |
| | | | Array Edge | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 61 | 63 |
| | | 45 to 90 | Array Interior | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 81 | 81 | 81 | 81 | 81 |
| | C | 0 to 7 | Array Interior | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 50 | 50 | 53 | 53 | 53 | 53 | 53 | 47 | 47 | 53 | 53 | 53 | 53 | 53 | 45 | 45 |
| | | 7 to 20 | Array Interior | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 53 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 54 | 56 | 56 | 56 | 56 | 56 | 56 | 52 | 56 | 56 | 56 | 54 | 54 | 54 | 49 | 56 | 56 | 56 | 51 | 51 | 51 | 47 | 56 | 56 | 56 | 49 | 49 | 49 | 45 | 56 | 56 | 56 | 47 | 47 | 47 | 43 |
| 70 psf | C | 20 to 27 | Array Interior | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 |
| | | | Array Edge | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 57 | 59 | 59 | 59 | 57 | 57 | 57 | 54 | 59 | 59 | 59 | 54 | 54 | 54 | 52 | 59 | 59 | 59 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 59 | 63 | 63 | 63 | 63 | 63 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 82 | 83 | 83 | 79 | 79 | 79 | 79 | 79 | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 54 | 54 | 56 | 56 | 56 | 56 | 56 | 51 | 51 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 53 | 53 | 56 | 56 | 56 | 56 | 56 | 50 | 50 | 56 | 56 | 56 | 56 | 56 | 48 | 48 | 56 | 56 | 54 | 54 | 54 | 46 | 46 | 56 | 56 | 52 | 52 | 52 | 44 | 44 | 56 | 56 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 58 | 58 | 58 | 53 | 59 | 59 | 59 | 56 | 56 | 56 | 50 | 59 | 59 | 59 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 59 | 59 | 59 | 58 | 58 | 58 | 53 | 59 | 59 | 59 | 55 | 55 | 55 | 50 | 59 | 59 | 59 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 49 | 49 | 49 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 59 | 61 | 61 | 61 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 60 | 60 | 58 | 61 | 61 | 61 | 57 | 57 | 57 | 55 | 61 | 61 | 61 | 54 | 54 | 54 | 52 | 61 | 61 | 61 | 52 | 52 | 52 | 50 | 61 | 61 | 61 | 49 | 49 | 49 | 47 | 61 | 61 | 61 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 64 | 66 | 66 | 66 | 66 | 66 | 66 | 61 | 66 | 66 | 66 | 66 | 66 | 65 | 58 | 65 |
| | | | Array Edge | 66 | 66 | 66 | 66 | 66 | 64 | 66 | 66 | 66 | 66 | 66 | 66 | 60 | 66 | 66 | 66 | 66 | 66 | 64 | 57 | 64 | 64 | 64 | 64 | 64 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 85 | 85 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 80 psf | B | 0 to 7 | Array Interior | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | | Array Edge | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | 7 to 20 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| | | | Array Edge | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 |
| | | 20 to 27 | Array Interior | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| | | | Array Edge | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| | | 27 to 45 | Array Interior | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| | | | Array Edge | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| | | 45 to 90 | Array Interior | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| | | | Array Edge | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| | C | 0 to 7 | Array Interior | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | | Array Edge | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 47 | 47 | 50 | 50 | 50 | 50 | 50 | 45 | 45 |
| | | 7 to 20 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| | | | Array Edge | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 49 | 52 | 52 | 52 | 51 | 51 | 51 | 47 | 52 | 52 | 52 | 49 | 49 | 49 | 45 | 52 | 52 | 52 | 47 | 47 | 47 | 43 |
| 80 psf | C | 20 to 27 | Array Interior | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| | | | Array Edge | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 55 | 55 | 55 | 54 | 54 | 54 | 52 | 55 | 55 | 55 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| | | | Array Edge | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 59 | 61 | 61 | 61 | 61 | 61 | 61 | 56 | 61 | 61 | 61 | 61 | 61 | 60 | 54 | 60 | 61 | 61 | 61 | 61 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| | | | Array Edge | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 79 | 79 | 80 | 80 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 |
| | | | Array Edge | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 50 | 52 | 52 | 52 | 52 | 52 | 48 | 48 | 52 | 52 | 52 | 52 | 52 | 46 | 46 | 52 | 52 | 52 | 52 | 52 | 44 | 44 | 52 | 52 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 53 | 55 | 55 | 55 | 55 | 55 | 55 | 50 | 55 | 55 | 55 | 53 | 53 | 53 | 48 |
| | | | Array Edge | 55 | 55 | 55 | 55 | 55 | 55 | 53 | 55 | 55 | 55 | 55 | 55 | 55 | 50 | 55 | 55 | 55 | 52 | 52 | 52 | 47 | 55 | 55 | 55 | 49 | 49 | 49 | 45 | 55 | 55 | 55 | 47 | 47 | 47 | 43 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 56 |
| | | | Array Edge | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 57 | 55 | 58 | 58 | 58 | 54 | 54 | 54 | 52 | 58 | 58 | 58 | 52 | 52 | 52 | 50 | 58 | 58 | 58 | 49 | 49 | 49 | 47 | 58 | 58 | 58 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 61 | 63 | 63 | 63 | 63 | 63 | 63 | 58 | 63 |
| | | | Array Edge | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 60 | 63 | 63 | 63 | 63 | 63 | 63 | 57 | 63 | 63 | 63 | 63 | 63 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 81 | 82 | 82 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |
| 90 psf | B | 0 to 7 | Array Interior | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 |
| | | | Array Edge | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 |
| | | 7 to 20 | Array Interior | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | | 20 to 27 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| | | | Array Edge | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| | | 27 to 45 | Array Interior | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 |
| | | | Array Edge | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 |
| | | 45 to 90 | Array Interior | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| | C | 0 to 7 | Array Interior | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 |
| | | | Array Edge | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 45 | 45 |
| | | 7 to 20 | Array Interior | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 47 | 49 | 49 | 49 | 49 | 49 | 49 | 45 | 49 | 49 | 49 | 47 | 47 | 47 | 43 |
| 90 psf | C | 20 to 27 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| | | | Array Edge | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 |
| | | 27 to 45 | Array Interior | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 |
| | | | Array Edge | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 59 | 59 | 59 | 54 | 59 | 59 | 59 | 59 | 59 | 58 | 51 | 58 |
| | | 45 to 90 | Array Interior | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 76 | 76 | 76 | 76 | 76 | 78 | 78 | 72 | 72 | 72 | 72 | 72 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | D | 0 to 7 | Array Interior | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | | Array Edge | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 48 | 50 | 50 | 50 | 50 | 50 | 46 | 46 | 50 | 50 | 50 | 50 | 50 | 44 | 44 | 50 | 50 | 49 | 49 | 49 | 42 | 42 |
| | | 7 to 20 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 52 | 52 | 52 | 52 | 52 | 52 | 48 |
| | | | Array Edge | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 52 | 52 | 52 | 52 | 52 | 52 | 47 | 52 | 52 | 52 | 49 | 49 | 49 | 45 | 52 | 52 | 52 | 47 | 47 | 47 | 43 | 52 | 52 | 52 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 43 | 43 | 43 | 39 |
| | | 20 to 27 | Array Interior | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| | | | Array Edge | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 52 | 55 | 55 | 55 | 52 | 52 | 52 | 50 | 55 | 55 | 55 | 49 | 49 | 49 | 47 | 55 | 55 | 55 | 47 | 47 | 47 | 45 |
| | | 27 to 45 | Array Interior | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 58 | 61 |
| | | | Array Edge | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 57 | 61 | 61 | 61 | 61 | 61 | 61 | 54 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | 45 to 90 | Array Interior | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 78 | 78 | 78 | 78 | 78 |
| | | | Array Edge | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 77 | 77 | 77 | 77 | 77 | 80 | 80 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 | 75 | 75 | 66 | 66 | 66 | 66 | 66 | 72 | 72 | 63 | 63 | 63 | 63 | 63 |

| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (P) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 70 psf | B | 0 to 7 | Array Interior | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 50 | 50 | 53 | 53 | 53 | 53 | 53 | 47 | 47 | 53 | 53 | 52 | 52 | 52 | 44 | 44 | 53 | 53 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 53 | 53 | 53 | 53 | 53 | 50 | 50 | 53 | 53 | 53 | 53 | 53 | 46 | 46 | 53 | 53 | 51 | 51 | 51 | 43 | 43 | 53 | 53 | 48 | 48 | 48 | 40 | 40 | 53 | 52 | 45 | 45 | 45 | 38 | 38 | 53 | 49 | 42 | 42 | 42 | 36 | 36 | 53 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 54 | 56 | 56 | 56 | 55 | 55 | 55 | 50 | 56 | 56 | 56 | 51 | 51 | 51 | 47 | 56 | 56 | 56 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 56 | 56 | 56 | 51 | 51 | 51 | 47 | 56 | 56 | 56 | 48 | 48 | 48 | 43 | 55 | 55 | 55 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 59 | 59 | 59 | 56 | 56 | 56 | 54 | 59 | 59 | 59 | 53 | 53 | 53 | 51 | 59 | 59 | 59 | 50 | 50 | 50 | 48 | 59 | 59 | 59 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 59 | 59 | 59 | 57 | 57 | 57 | 54 | 59 | 59 | 59 | 52 | 52 | 52 | 50 | 59 | 59 | 59 | 49 | 49 | 49 | 47 | 59 | 59 | 59 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 60 | 63 | 63 | 63 | 63 | 63 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 63 | 63 | 63 | 63 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 80 | 80 | 80 | 80 | 80 | 82 | 82 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 83 | 83 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 48 | 48 | 53 | 53 | 53 | 53 | 53 | 44 | 44 | 53 | 53 | 49 | 49 | 49 | 42 | 42 | 53 | 53 | 46 | 46 | 46 | 39 | 39 | 53 | 51 | 44 | 44 | 44 | 37 | 37 | 53 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 53 | 53 | 50 | 50 | 50 | 42 | 42 | 53 | 53 | 46 | 46 | 46 | 39 | 39 | 53 | 50 | 43 | 43 | 43 | 36 | 36 | 53 | 47 | 40 | 40 | 40 | 34 | 34 | 53 | 44 | 38 | 38 | 38 | 32 | 32 | 53 | 41 | 35 | 35 | 35 | 30 | 30 | 53 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 56 | 56 | 56 | 53 | 53 | 53 | 49 | 56 | 56 | 56 | 49 | 49 | 49 | 45 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 59 | 59 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 54 | 54 | 54 | 52 | 59 | 59 | 59 | 50 | 50 | 50 | 49 | 59 | 59 | 59 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 59 | 59 | 59 | 47 | 47 | 47 | 46 | 57 | 57 | 57 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 63 | 58 | 63 | 63 | 63 | 63 | 63 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 83 | 83 | 79 | 79 | 79 | 79 | 79 | 81 | 81 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 56 | 56 | 56 | 56 | 56 | 47 | 47 | 56 | 56 | 52 | 52 | 52 | 44 | 44 | 56 | 56 | 48 | 48 | 48 | 41 | 41 | 56 | 53 | 45 | 45 | 45 | 38 | 38 | 56 | 50 | 42 | 42 | 42 | 36 | 36 | 56 | 47 | 40 | 40 | 40 | 34 | 34 | 56 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 56 | 53 | 45 | 45 | 45 | 38 | 38 | 56 | 49 | 42 | 42 | 42 | 35 | 35 | 56 | 46 | 39 | 39 | 39 | 33 | 33 | 56 | 43 | 37 | 37 | 37 | 31 | 31 | 56 | 40 | 34 | 34 | 34 | 29 | 29 | 53 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 59 | 59 | 59 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 61 | 61 | 61 | 54 | 54 | 54 | 52 | 61 | 61 | 61 | 50 | 50 | 50 | 48 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 80 psf | B | 0 to 7 | Array Interior | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 47 | 47 | 50 | 50 | 50 | 50 | 50 | 44 | 44 | 50 | 50 | 49 | 49 | 49 | 41 | 41 |
| | | | Array Edge | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 46 | 46 | 50 | 50 | 50 | 50 | 50 | 43 | 43 | 50 | 50 | 48 | 48 | 48 | 40 | 40 | 50 | 50 | 45 | 45 | 45 | 38 | 38 | 50 | 49 | 42 | 42 | 42 | 36 | 36 | 50 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 52 | 52 | 52 | 51 | 51 | 51 | 47 | 52 | 52 | 52 | 48 | 48 | 48 | 44 | 52 | 52 | 52 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 52 | 52 | 52 | 51 | 51 | 51 | 47 | 52 | 52 | 52 | 48 | 48 | 48 | 43 | 52 | 52 | 52 | 44 | 44 | 44 | 40 | 51 | 51 | 51 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 55 | 55 | 55 | 53 | 53 | 53 | 51 | 55 | 55 | 55 | 50 | 50 | 50 | 48 | 55 | 55 | 55 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 55 | 55 | 55 | 52 | 52 | 52 | 50 | 55 | 55 | 55 | 49 | 49 | 49 | 47 | 55 | 55 | 55 | 46 | 46 | 46 | 44 | 55 | 55 | 55 | 43 | 43 | 43 | 41 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 56 | 61 | 61 | 61 | 61 | 61 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 61 | 61 | 61 | 61 | 61 | 56 | 61 | 61 | 61 | 61 | 61 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 75 | 75 | 75 | 75 | 75 | 79 | 79 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 80 | 80 | 76 | 76 | 76 | 76 | 76 | 79 | 79 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 48 | 50 | 50 | 50 | 50 | 50 | 44 | 44 | 50 | 50 | 49 | 49 | 49 | 42 | 42 | 50 | 50 | 46 | 46 | 46 | 39 | 39 | 50 | 50 | 44 | 44 | 44 | 37 | 37 | 50 | 48 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 50 | 50 | 50 | 50 | 50 | 42 | 42 | 50 | 50 | 46 | 46 | 46 | 39 | 39 | 50 | 50 | 43 | 43 | 43 | 36 | 36 | 50 | 47 | 40 | 40 | 40 | 34 | 34 | 50 | 44 | 38 | 38 | 38 | 32 | 32 | 50 | 41 | 35 | 35 | 35 | 30 | 30 | 50 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 49 | 52 | 52 | 52 | 49 | 49 | 49 | 45 | 52 | 52 | 52 | 46 | 46 | 46 | 42 | 52 | 52 | 52 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 52 | 52 | 52 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 52 | 55 | 55 | 55 | 50 | 50 | 50 | 49 | 55 | 55 | 55 | 47 | 47 | 47 | 45 | 55 | 55 | 55 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 55 | 55 | 55 | 47 | 47 | 47 | 46 | 55 | 55 | 55 | 44 | 44 | 44 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 61 | 61 | 61 | 61 | 61 | 58 | 61 | 61 | 61 | 61 | 61 | 61 | 54 | 61 | 60 | 60 | 60 | 60 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 80 | 80 | 79 | 79 | 79 | 79 | 79 | 80 | 80 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 52 | 52 | 52 | 52 | 52 | 47 | 47 | 52 | 52 | 52 | 52 | 52 | 44 | 44 | 52 | 52 | 48 | 48 | 48 | 41 | 41 | 52 | 52 | 45 | 45 | 45 | 38 | 38 | 52 | 50 | 42 | 42 | 42 | 36 | 36 | 52 | 47 | 40 | 40 | 40 | 34 | 34 | 52 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 52 | 52 | 45 | 45 | 45 | 38 | 38 | 52 | 49 | 42 | 42 | 42 | 35 | 35 | 52 | 46 | 39 | 39 | 39 | 33 | 33 | 52 | 43 | 37 | 37 | 37 | 31 | 31 | 52 | 40 | 34 | 34 | 34 | 29 | 29 | 52 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 55 | 55 | 55 | 49 | 49 | 49 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 58 | 58 | 58 | 54 | 54 | 54 | 52 | 58 | 58 | 58 | 50 | 50 | 50 | 48 | 58 | 58 | 58 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 57 | 57 | 57 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |
| 90 psf | B | 0 to 7 | Array Interior | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 44 | 44 | 47 | 47 | 47 | 47 | 47 | 41 | 41 |
| | | | Array Edge | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 43 | 43 | 47 | 47 | 47 | 47 | 47 | 40 | 40 | 47 | 47 | 45 | 45 | 45 | 38 | 38 | 47 | 47 | 42 | 42 | 42 | 36 | 36 | 47 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 47 | 49 | 49 | 49 | 48 | 48 | 48 | 44 | 49 | 49 | 49 | 45 | 45 | 45 | 41 | 49 | 49 | 49 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 49 | 49 | 49 | 49 | 49 | 49 | 47 | 49 | 49 | 49 | 48 | 48 | 48 | 43 | 49 | 49 | 49 | 44 | 44 | 44 | 40 | 49 | 49 | 49 | 41 | 41 | 41 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 35 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 | 52 | 50 | 50 | 50 | 48 | 52 | 52 | 52 | 47 | 47 | 47 | 45 |
| | | | Array Edge | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 52 | 52 | 52 | 49 | 49 | 49 | 47 | 52 | 52 | 52 | 46 | 46 | 46 | 44 | 52 | 52 | 52 | 43 | 43 | 43 | 41 | 52 | 52 | 52 | 40 | 40 | 40 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 |
| | | 27 to 45 | Array Interior | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 59 | 59 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 59 | 59 | 59 | 59 | 59 | 56 | 59 | 59 | 59 | 59 | 59 | 59 | 52 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 45 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 |
| | | 45 to 90 | Array Interior | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 75 | 75 | 75 | 75 | 75 | 78 | 78 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 |
| | | | Array Edge | 78 | 78 | 76 | 76 | 76 | 76 | 76 | 78 | 78 | 70 | 70 | 70 | 70 | 70 | 74 | 74 | 65 | 65 | 65 | 65 | 65 | 69 | 69 | 61 | 61 | 61 | 61 | 61 | 65 | 65 | 57 | 57 | 57 | 57 | 57 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 |
| | C | 0 to 7 | Array Interior | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 44 | 44 | 47 | 47 | 47 | 47 | 47 | 42 | 42 | 47 | 47 | 46 | 46 | 46 | 39 | 39 | 47 | 47 | 44 | 44 | 44 | 37 | 37 | 47 | 47 | 41 | 41 | 41 | 35 | 35 |
| | | | Array Edge | 47 | 47 | 47 | 47 | 47 | 42 | 42 | 47 | 47 | 46 | 46 | 46 | 39 | 39 | 47 | 47 | 43 | 43 | 43 | 36 | 36 | 47 | 47 | 40 | 40 | 40 | 34 | 34 | 47 | 44 | 38 | 38 | 38 | 32 | 32 | 47 | 41 | 35 | 35 | 35 | 30 | 30 | 47 | 39 | 33 | 33 | 33 | 28 | 28 |
| | | 7 to 20 | Array Interior | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 45 | 49 | 49 | 49 | 46 | 46 | 46 | 42 | 49 | 49 | 49 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 | 44 | 44 | 44 | 36 | 36 | 36 | 33 |
| | | | Array Edge | 49 | 49 | 49 | 43 | 43 | 43 | 39 | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 40 | 40 | 40 | 33 | 33 | 33 | 30 | 38 | 38 | 38 | 31 | 31 | 31 | 28 | 36 | 36 | 36 | 29 | 29 | 29 | 27 |
| | | 20 to 27 | Array Interior | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 50 | 50 | 49 | 52 | 52 | 52 | 47 | 47 | 47 | 45 | 52 | 52 | 52 | 44 | 44 | 44 | 43 | 52 | 52 | 52 | 42 | 42 | 42 | 40 | 52 | 52 | 52 | 40 | 40 | 40 | 38 |
| | | | Array Edge | 52 | 52 | 52 | 47 | 47 | 47 | 46 | 52 | 52 | 52 | 44 | 44 | 44 | 42 | 52 | 52 | 52 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 | 44 | 44 | 44 | 34 | 34 | 34 | 33 | 42 | 42 | 42 | 32 | 32 | 32 | 31 |
| | | 27 to 45 | Array Interior | 59 | 59 | 59 | 59 | 59 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 54 | 59 | 59 | 59 | 59 | 59 | 57 | 50 | 57 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 49 | 49 | 49 | 49 | 47 | 42 | 47 | 47 | 47 | 47 | 47 | 44 | 39 | 44 |
| | | | Array Edge | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 49 | 44 | 49 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 42 | 42 | 42 | 42 | 40 | 36 | 40 | 40 | 40 | 40 | 40 | 38 | 34 | 38 | 38 | 38 | 38 | 38 | 36 | 32 | 36 |
| | | 45 to 90 | Array Interior | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 73 | 73 | 73 | 73 | 73 | 77 | 77 | 68 | 68 | 68 | 68 | 68 | 72 | 72 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 63 | 63 | 56 | 56 | 56 | 56 | 56 | 60 | 60 | 53 | 53 | 53 | 53 | 53 |
| | | | Array Edge | 72 | 72 | 64 | 64 | 64 | 64 | 64 | 67 | 67 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 48 | 48 | 48 | 48 | 48 | 51 | 51 | 45 | 45 | 45 | 45 | 45 | 49 | 49 | 43 | 43 | 43 | 43 | 43 |
| | D | 0 to 7 | Array Interior | 50 | 50 | 50 | 50 | 50 | 47 | 47 | 50 | 50 | 50 | 50 | 50 | 44 | 44 | 50 | 50 | 48 | 48 | 48 | 41 | 41 | 50 | 50 | 45 | 45 | 45 | 38 | 38 | 50 | 50 | 42 | 42 | 42 | 36 | 36 | 50 | 47 | 40 | 40 | 40 | 34 | 34 | 50 | 44 | 38 | 38 | 38 | 32 | 32 |
| | | | Array Edge | 50 | 50 | 45 | 45 | 45 | 38 | 38 | 50 | 49 | 42 | 42 | 42 | 35 | 35 | 50 | 46 | 39 | 39 | 39 | 33 | 33 | 50 | 43 | 37 | 37 | 37 | 31 | 31 | 50 | 40 | 34 | 34 | 34 | 29 | 29 | 50 | 38 | 32 | 32 | 32 | 27 | 27 | 50 | 36 | 31 | 31 | 31 | 26 | 26 |
| | | 7 to 20 | Array Interior | 52 | 52 | 52 | 49 | 49 | 49 | 44 | 52 | 52 | 52 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 49 | 49 | 49 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 | 41 | 41 | 41 | 33 | 33 | 33 | 30 |
| | | | Array Edge | 49 | 49 | 49 | 40 | 40 | 40 | 36 | 45 | 45 | 45 | 37 | 37 | 37 | 33 | 42 | 42 | 42 | 34 | 34 | 34 | 31 | 39 | 39 | 39 | 32 | 32 | 32 | 29 | 37 | 37 | 37 | 30 | 30 | 30 | 27 | 35 | 35 | 35 | 28 | 28 | 28 | 26 | 33 | 33 | 33 | 27 | 27 | 27 | 24 |
| | | 20 to 27 | Array Interior | 55 | 55 | 55 | 54 | 54 | 54 | 52 | 55 | 55 | 55 | 50 | 50 | 50 | 48 | 55 | 55 | 55 | 46 | 46 | 46 | 44 | 55 | 55 | 55 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 38 | 38 | 38 | 37 | 47 | 47 | 47 | 36 | 36 | 36 | 35 |
| | | | Array Edge | 55 | 55 | 55 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 40 | 40 | 40 | 39 | 49 | 49 | 49 | 37 | 37 | 37 | 36 | 46 | 46 | 46 | 35 | 35 | 35 | 34 | 43 | 43 | 43 | 33 | 33 | 33 | 32 | 40 | 40 | 40 | 31 | 31 | 31 | 30 | 38 | 38 | 38 | 29 | 29 | 29 | 28 |
| | | 27 to 45 | Array Interior | 61 | 61 | 61 | 61 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 55 | 55 | 55 | 55 | 52 | 46 | 52 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 43 | 38 | 43 | 43 | 43 | 43 | 43 | 41 | 36 | 41 |
| | | | Array Edge | 51 | 51 | 51 | 51 | 49 | 43 | 49 | 48 | 48 | 48 | 48 | 45 | 40 | 45 | 44 | 44 | 44 | 44 | 42 | 37 | 42 | 41 | 41 | 41 | 41 | 39 | 35 | 39 | 39 | 39 | 39 | 39 | 37 | 33 | 37 | 37 | 37 | 37 | 37 | 35 | 31 | 35 | 35 | 35 | 35 | 35 | 33 | 29 | 33 |
| | | 45 to 90 | Array Interior | 80 | 80 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 54 | 54 | 54 | 54 | 54 | 58 | 58 | 51 | 51 | 51 | 51 | 51 | 55 | 55 | 49 | 49 | 49 | 49 | 49 |
| | | | Array Edge | 66 | 66 | 58 | 58 | 58 | 58 | 58 | 61 | 61 | 54 | 54 | 54 | 54 | 54 | 57 | 57 | 50 | 50 | 50 | 50 | 50 | 53 | 53 | 47 | 47 | 47 | 47 | 47 | 50 | 50 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 39 | 39 | 39 | 39 | 39 |

## Maximum Rail Spans (Inches)

## SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-10 -- 72-Cell (L)

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | 95 mph | | | 100 mph | | | 105 mph | | | 110 mph | | | 115 mph | | | 120 mph | | | 130 mph | | | 140 mph | | | 150 mph | | | 160 mph | | | 170 mph | | | 180 mph | | | 190 mph | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 0 psf | B | 0 to 7 | All Mounts | 116 | 116 | 116 | 116 | 116 | 114 | 116 | 116 | 110 | 116 | 116 | 106 | 116 | 116 | 103 | 116 | 116 | 99 | 116 | 116 | 96 | 113 | 113 | 91 | 107 | 107 | 86 | 101 | 101 | 82 | 97 | 97 | 78 | 93 | 93 | 73 | 89 | 89 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 117 | 117 | 117 | 117 | 117 | 116 | 117 | 117 | 112 | 117 | 117 | 108 | 117 | 117 | 104 | 117 | 117 | 101 | 117 | 117 | 98 | 117 | 117 | 93 | 110 | 110 | 88 | 105 | 105 | 84 | 100 | 100 | 80 | 96 | 96 | 75 | 92 | 92 | 71 | 89 | 89 | 67 |
| | | 27 to 45 | All Mounts | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 117 | 117 | 117 | 115 | 115 | 114 | 112 | 112 | 110 | 107 | 107 | 104 | 102 | 102 | 99 | 98 | 98 | 94 | 94 | 94 | 90 | 91 | 91 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 119 | 119 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 116 | 116 | 105 | 116 | 116 | 101 | 116 | 116 | 97 | 116 | 116 | 94 | 113 | 113 | 91 | 109 | 109 | 88 | 106 | 106 | 85 | 99 | 99 | 81 | 94 | 94 | 75 | 90 | 90 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 117 | 117 | 107 | 117 | 117 | 103 | 117 | 117 | 99 | 117 | 117 | 96 | 117 | 117 | 92 | 113 | 113 | 90 | 109 | 109 | 87 | 103 | 103 | 82 | 98 | 98 | 77 | 93 | 93 | 72 | 89 | 89 | 67 | 85 | 85 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 119 | 119 | 119 | 116 | 116 | 116 | 113 | 113 | 112 | 110 | 110 | 108 | 107 | 107 | 104 | 104 | 104 | 101 | 101 | 101 | 98 | 97 | 97 | 92 | 92 | 92 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 118 | 118 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 116 | 116 | 99 | 116 | 116 | 95 | 114 | 114 | 91 | 109 | 109 | 88 | 106 | 106 | 85 | 102 | 102 | 83 | 99 | 99 | 80 | 94 | 94 | 74 | 89 | 89 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 117 | 117 | 101 | 117 | 117 | 97 | 117 | 117 | 93 | 113 | 113 | 90 | 110 | 110 | 87 | 106 | 106 | 84 | 103 | 103 | 82 | 97 | 97 | 76 | 92 | 92 | 71 | 88 | 88 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 114 | 114 | 113 | 111 | 111 | 109 | 107 | 107 | 105 | 104 | 104 | 101 | 102 | 102 | 98 | 99 | 99 | 95 | 96 | 96 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 5 psf | B | 0 to 7 | All Mounts | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 110 | 112 | 112 | 106 | 112 | 112 | 103 | 112 | 112 | 99 | 112 | 112 | 96 | 112 | 112 | 91 | 107 | 107 | 86 | 101 | 101 | 82 | 97 | 97 | 78 | 93 | 93 | 73 | 89 | 89 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 117 | 117 | 117 | 117 | 117 | 116 | 117 | 117 | 112 | 117 | 117 | 108 | 117 | 117 | 104 | 117 | 117 | 101 | 117 | 117 | 98 | 117 | 117 | 93 | 110 | 110 | 88 | 105 | 105 | 84 | 100 | 100 | 80 | 96 | 96 | 75 | 92 | 92 | 71 | 89 | 89 | 67 |
| | | 27 to 45 | All Mounts | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 117 | 117 | 117 | 115 | 115 | 114 | 112 | 112 | 110 | 107 | 107 | 104 | 102 | 102 | 99 | 98 | 98 | 94 | 94 | 94 | 90 | 91 | 91 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 119 | 119 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 112 | 112 | 105 | 112 | 112 | 101 | 112 | 112 | 97 | 112 | 112 | 94 | 112 | 112 | 91 | 109 | 109 | 88 | 106 | 106 | 85 | 99 | 99 | 81 | 94 | 94 | 75 | 90 | 90 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 117 | 117 | 107 | 117 | 117 | 103 | 117 | 117 | 99 | 117 | 117 | 96 | 117 | 117 | 92 | 113 | 113 | 90 | 109 | 109 | 87 | 103 | 103 | 82 | 98 | 98 | 77 | 93 | 93 | 72 | 89 | 89 | 67 | 85 | 85 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 119 | 119 | 119 | 116 | 116 | 116 | 113 | 113 | 112 | 110 | 110 | 108 | 107 | 107 | 104 | 104 | 104 | 101 | 101 | 101 | 98 | 97 | 97 | 92 | 92 | 92 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 118 | 118 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 112 | 112 | 99 | 112 | 112 | 95 | 112 | 112 | 91 | 109 | 109 | 88 | 106 | 106 | 85 | 102 | 102 | 83 | 99 | 99 | 80 | 94 | 94 | 74 | 89 | 89 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 117 | 117 | 101 | 117 | 117 | 97 | 117 | 117 | 93 | 113 | 113 | 90 | 110 | 110 | 87 | 106 | 106 | 84 | 103 | 103 | 82 | 97 | 97 | 76 | 92 | 92 | 71 | 88 | 88 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 114 | 114 | 113 | 111 | 111 | 109 | 107 | 107 | 105 | 104 | 104 | 101 | 102 | 102 | 98 | 99 | 99 | 95 | 96 | 96 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 10 psf | B | 0 to 7 | All Mounts | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 103 | 104 | 104 | 103 | 104 | 104 | 99 | 104 | 104 | 96 | 104 | 104 | 91 | 104 | 104 | 86 | 101 | 101 | 82 | 97 | 97 | 78 | 93 | 93 | 73 | 89 | 89 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 108 | 112 | 112 | 104 | 112 | 112 | 101 | 112 | 112 | 98 | 112 | 112 | 93 | 110 | 110 | 88 | 105 | 105 | 84 | 100 | 100 | 80 | 96 | 96 | 75 | 92 | 92 | 71 | 89 | 89 | 67 |
| | | 27 to 45 | All Mounts | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 117 | 117 | 117 | 115 | 115 | 114 | 112 | 112 | 110 | 107 | 107 | 104 | 102 | 102 | 99 | 98 | 98 | 94 | 94 | 94 | 90 | 91 | 91 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 119 | 119 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 104 | 104 | 104 | 104 | 104 | 101 | 104 | 104 | 97 | 104 | 104 | 94 | 104 | 104 | 91 | 104 | 104 | 88 | 104 | 104 | 85 | 99 | 99 | 81 | 94 | 94 | 75 | 90 | 90 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 112 | 112 | 107 | 112 | 112 | 103 | 112 | 112 | 99 | 112 | 112 | 96 | 112 | 112 | 92 | 112 | 112 | 90 | 109 | 109 | 87 | 103 | 103 | 82 | 98 | 98 | 77 | 93 | 93 | 72 | 89 | 89 | 67 | 85 | 85 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 119 | 119 | 119 | 116 | 116 | 116 | 113 | 113 | 112 | 110 | 110 | 108 | 107 | 107 | 104 | 104 | 104 | 101 | 101 | 101 | 98 | 97 | 97 | 92 | 92 | 92 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 118 | 118 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 104 | 104 | 99 | 104 | 104 | 95 | 104 | 104 | 91 | 104 | 104 | 88 | 104 | 104 | 85 | 102 | 102 | 83 | 99 | 99 | 80 | 94 | 94 | 74 | 89 | 89 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 113 | 113 | 101 | 113 | 113 | 97 | 113 | 113 | 93 | 113 | 113 | 90 | 110 | 110 | 87 | 106 | 106 | 84 | 103 | 103 | 82 | 97 | 97 | 76 | 92 | 92 | 71 | 88 | 88 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 114 | 114 | 113 | 111 | 111 | 109 | 107 | 107 | 105 | 104 | 104 | 101 | 102 | 102 | 98 | 99 | 99 | 95 | 96 | 96 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 15 psf | B | 0 to 7 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 97 | 97 | 91 | 97 | 97 | 86 | 97 | 97 | 82 | 97 | 97 | 78 | 93 | 93 | 73 | 89 | 89 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 104 | 107 | 107 | 101 | 107 | 107 | 98 | 107 | 107 | 93 | 107 | 107 | 88 | 105 | 105 | 84 | 100 | 100 | 80 | 96 | 96 | 75 | 92 | 92 | 71 | 89 | 89 | 67 |
| | | 27 to 45 | All Mounts | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 114 | 112 | 112 | 110 | 107 | 107 | 104 | 102 | 102 | 99 | 98 | 98 | 94 | 94 | 94 | 90 | 91 | 91 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 119 | 119 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 94 | 97 | 97 | 91 | 97 | 97 | 88 | 97 | 97 | 85 | 97 | 97 | 81 | 94 | 94 | 75 | 90 | 90 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 107 | 107 | 107 | 107 | 107 | 103 | 107 | 107 | 99 | 107 | 107 | 96 | 107 | 107 | 92 | 107 | 107 | 90 | 107 | 107 | 87 | 103 | 103 | 82 | 98 | 98 | 77 | 93 | 93 | 72 | 89 | 89 | 67 | 85 | 85 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 115 | 115 | 115 | 115 | 115 | 115 | 113 | 113 | 112 | 110 | 110 | 108 | 107 | 107 | 104 | 104 | 104 | 101 | 101 | 101 | 98 | 97 | 97 | 92 | 92 | 92 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 118 | 118 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 97 | 97 | 97 | 97 | 97 | 95 | 97 | 97 | 91 | 97 | 97 | 88 | 97 | 97 | 85 | 97 | 97 | 83 | 97 | 97 | 80 | 94 | 94 | 74 | 89 | 89 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 108 | 108 | 101 | 108 | 108 | 97 | 108 | 108 | 93 | 108 | 108 | 90 | 108 | 108 | 87 | 106 | 106 | 84 | 103 | 103 | 82 | 97 | 97 | 76 | 92 | 92 | 71 | 88 | 88 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 114 | 114 | 113 | 111 | 111 | 109 | 107 | 107 | 105 | 104 | 104 | 101 | 102 | 102 | 98 | 99 | 99 | 95 | 96 | 96 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 20 psf | B | 0 to 7 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 86 | 92 | 92 | 82 | 92 | 92 | 78 | 92 | 92 | 73 | 89 | 89 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 101 | 103 | 103 | 98 | 103 | 103 | 93 | 103 | 103 | 88 | 102 | 102 | 84 | 100 | 100 | 80 | 96 | 96 | 75 | 92 | 92 | 71 | 89 | 89 | 67 |
| | | 27 to 45 | All Mounts | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 107 | 107 | 104 | 102 | 102 | 99 | 98 | 98 | 94 | 94 | 94 | 90 | 91 | 91 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 119 | 119 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 88 | 92 | 92 | 85 | 92 | 92 | 81 | 92 | 92 | 75 | 90 | 90 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 99 | 103 | 103 | 96 | 103 | 103 | 92 | 103 | 103 | 90 | 103 | 103 | 87 | 101 | 101 | 82 | 98 | 98 | 77 | 93 | 93 | 72 | 89 | 89 | 67 | 85 | 85 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 108 | 107 | 107 | 104 | 104 | 104 | 101 | 101 | 101 | 98 | 97 | 97 | 92 | 92 | 92 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 118 | 118 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 88 | 92 | 92 | 85 | 92 | 92 | 83 | 92 | 92 | 80 | 92 | 92 | 74 | 89 | 89 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 104 | 104 | 101 | 104 | 104 | 97 | 104 | 104 | 93 | 104 | 104 | 90 | 104 | 104 | 87 | 104 | 104 | 84 | 102 | 102 | 82 | 97 | 97 | 76 | 92 | 92 | 71 | 88 | 88 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 112 | 112 | 112 | 111 | 111 | 109 | 107 | 107 | 105 | 104 | 104 | 101 | 102 | 102 | 98 | 99 | 99 | 95 | 96 | 96 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |

## Maximum Rail Spans (Inches)

## SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-10 -- 72-Cell (L)

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | 95 mph | | | 100 mph | | | 105 mph | | | 110 mph | | | 115 mph | | | 120 mph | | | 130 mph | | | 140 mph | | | 150 mph | | | 160 mph | | | 170 mph | | | 180 mph | | | 190 mph | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 25 psf | B | 0 to 7 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 86 | 92 | 92 | 82 | 92 | 92 | 78 | 92 | 92 | 73 | 89 | 89 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 98 | 99 | 99 | 93 | 99 | 99 | 88 | 98 | 98 | 84 | 96 | 96 | 80 | 95 | 95 | 75 | 92 | 92 | 71 | 89 | 89 | 67 |
| | | 27 to 45 | All Mounts | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 104 | 102 | 102 | 99 | 98 | 98 | 94 | 94 | 94 | 90 | 91 | 91 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 119 | 119 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 88 | 92 | 92 | 85 | 92 | 92 | 81 | 92 | 92 | 75 | 90 | 90 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 96 | 99 | 99 | 92 | 99 | 99 | 90 | 99 | 99 | 87 | 97 | 97 | 82 | 96 | 96 | 77 | 93 | 93 | 72 | 89 | 89 | 67 | 85 | 85 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 104 | 104 | 104 | 101 | 101 | 101 | 98 | 97 | 97 | 92 | 92 | 92 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 118 | 118 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 88 | 92 | 92 | 85 | 92 | 92 | 83 | 92 | 92 | 80 | 92 | 92 | 74 | 89 | 89 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 101 | 101 | 101 | 101 | 101 | 97 | 101 | 101 | 93 | 101 | 101 | 90 | 101 | 101 | 87 | 100 | 100 | 84 | 99 | 99 | 82 | 97 | 97 | 76 | 92 | 92 | 71 | 88 | 88 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 108 | 108 | 108 | 108 | 108 | 108 | 107 | 107 | 105 | 104 | 104 | 101 | 102 | 102 | 98 | 99 | 99 | 95 | 96 | 96 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 30 psf | B | 0 to 7 | All Mounts | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 86 | 91 | 91 | 82 | 91 | 91 | 78 | 91 | 91 | 73 | 89 | 89 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 93 | 96 | 96 | 88 | 95 | 95 | 84 | 94 | 94 | 80 | 92 | 92 | 75 | 91 | 91 | 71 | 89 | 89 | 67 |
| | | 27 to 45 | All Mounts | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99 | 98 | 98 | 94 | 94 | 94 | 90 | 91 | 91 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 118 | 119 | 119 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 88 | 91 | 91 | 85 | 91 | 91 | 81 | 91 | 91 | 75 | 90 | 90 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 92 | 96 | 96 | 90 | 96 | 96 | 87 | 94 | 94 | 82 | 93 | 93 | 77 | 91 | 91 | 72 | 89 | 89 | 67 | 85 | 85 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 98 | 97 | 97 | 92 | 92 | 92 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 118 | 118 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 88 | 92 | 92 | 85 | 92 | 92 | 83 | 92 | 92 | 80 | 92 | 92 | 74 | 89 | 89 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 98 | 98 | 98 | 98 | 98 | 97 | 98 | 98 | 93 | 98 | 98 | 90 | 98 | 98 | 87 | 97 | 97 | 84 | 96 | 96 | 82 | 94 | 94 | 76 | 92 | 92 | 71 | 88 | 88 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 101 | 101 | 101 | 98 | 99 | 99 | 95 | 96 | 96 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 35 psf | B | 0 to 7 | All Mounts | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 86 | 89 | 89 | 82 | 89 | 89 | 78 | 89 | 89 | 73 | 89 | 89 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 88 | 92 | 92 | 84 | 91 | 91 | 80 | 90 | 90 | 75 | 88 | 88 | 71 | 87 | 87 | 67 |
| | | 27 to 45 | All Mounts | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 94 | 94 | 94 | 90 | 91 | 91 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 89 | 89 | 85 | 89 | 89 | 81 | 89 | 89 | 75 | 89 | 89 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 90 | 92 | 92 | 87 | 92 | 92 | 82 | 90 | 90 | 77 | 89 | 89 | 72 | 87 | 87 | 67 | 85 | 85 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 92 | 92 | 92 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 118 | 118 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 88 | 91 | 91 | 85 | 91 | 91 | 83 | 91 | 91 | 80 | 91 | 91 | 74 | 89 | 89 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 93 | 95 | 95 | 90 | 95 | 95 | 87 | 95 | 95 | 84 | 94 | 94 | 82 | 92 | 92 | 76 | 90 | 90 | 71 | 88 | 88 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 98 | 98 | 98 | 95 | 96 | 96 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 40 psf | B | 0 to 7 | All Mounts | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 82 | 86 | 86 | 78 | 86 | 86 | 73 | 86 | 86 | 69 | 85 | 85 | 65 |
| | | 7 to 27 | All Mounts | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 84 | 88 | 88 | 80 | 88 | 88 | 75 | 86 | 86 | 71 | 85 | 85 | 67 |
| | | 27 to 45 | All Mounts | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 90 | 90 | 90 | 86 | 88 | 88 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 114 | 116 | 116 | 110 | 113 | 113 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 86 | 86 | 81 | 86 | 86 | 75 | 86 | 86 | 70 | 86 | 86 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 88 | 88 | 82 | 88 | 88 | 77 | 87 | 87 | 72 | 85 | 85 | 67 | 84 | 84 | 63 | 82 | 82 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 91 | 91 | 88 | 89 | 89 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 116 | 116 | 113 | 114 | 114 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 85 | 88 | 88 | 83 | 88 | 88 | 80 | 88 | 88 | 74 | 88 | 88 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 91 | 91 | 87 | 91 | 91 | 84 | 91 | 91 | 82 | 90 | 90 | 76 | 88 | 88 | 71 | 87 | 87 | 66 | 84 | 84 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 92 | 92 | 92 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 45 psf | B | 0 to 7 | All Mounts | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 82 | 83 | 83 | 78 | 83 | 83 | 73 | 83 | 83 | 69 | 83 | 83 | 65 |
| | | 7 to 27 | All Mounts | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 80 | 84 | 84 | 75 | 84 | 84 | 71 | 83 | 83 | 67 |
| | | 27 to 45 | All Mounts | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 86 | 87 | 87 | 83 | 85 | 85 | 80 |
| | | 45 to 90 | All Mounts | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 110 | 112 | 112 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 81 | 83 | 83 | 75 | 83 | 83 | 70 | 83 | 83 | 65 | 82 | 82 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 82 | 84 | 84 | 77 | 84 | 84 | 72 | 83 | 83 | 67 | 82 | 82 | 63 | 81 | 81 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 88 | 88 | 88 | 84 | 85 | 85 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 112 | 112 | 112 | 112 | 112 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 86 | 86 | 83 | 86 | 86 | 80 | 86 | 86 | 74 | 86 | 86 | 69 | 85 | 85 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 88 | 88 | 84 | 88 | 88 | 82 | 88 | 88 | 76 | 86 | 86 | 71 | 85 | 85 | 66 | 83 | 83 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 91 | 91 | 87 | 88 | 88 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |

| Maximum Rail Spans (Inches) | | | | SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-10 -- 72-Cell (L) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ground | Exposure | | Wind Speed -> | 90 mph | | | 95 mph | | | 100 mph | | | 105 mph | | | 110 mph | | | 115 mph | | | 120 mph | | | 130 mph | | | 140 mph | | | 150 mph | | | 160 mph | | | 170 mph | | | 180 mph | | | 190 mph | | |
| Snow Load | Category | Panel Angle | Roof Zone -> | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 50 psf | B | 0 to 7 | All Mounts | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 78 | 81 | 81 | 73 | 81 | 81 | 69 | 81 | 81 | 65 |
| | | 7 to 27 | All Mounts | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 80 | 81 | 81 | 75 | 81 | 81 | 71 | 81 | 81 | 67 |
| | | 27 to 45 | All Mounts | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 83 | 84 | 84 | 80 |
| | | 45 to 90 | All Mounts | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 110 | 111 | 111 | 107 | 110 | 110 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 75 | 81 | 81 | 70 | 81 | 81 | 65 | 81 | 81 | 61 | 79 | 79 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 77 | 81 | 81 | 72 | 81 | 81 | 67 | 81 | 81 | 63 | 79 | 79 | 59 | 78 | 78 | 56 |
| | | 27 to 45 | All Mounts | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 84 | 84 | 84 | 80 | 82 | 82 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 111 | 111 | 111 | 111 | 111 | 109 | 111 | 111 | 105 | 108 | 108 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 83 | 84 | 84 | 80 | 84 | 84 | 74 | 84 | 84 | 69 | 84 | 84 | 64 | 81 | 81 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 82 | 84 | 84 | 76 | 84 | 84 | 71 | 83 | 83 | 66 | 82 | 82 | 62 | 80 | 80 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 87 | 87 | 87 | 83 | 84 | 84 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 112 | 112 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 60 psf | B | 0 to 7 | All Mounts | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 73 | 76 | 76 | 69 | 76 | 76 | 65 |
| | | 7 to 27 | All Mounts | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 75 | 77 | 77 | 71 | 77 | 77 | 67 |
| | | 27 to 45 | All Mounts | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 80 |
| | | 45 to 90 | All Mounts | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 104 | 105 | 105 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 75 | 76 | 76 | 70 | 76 | 76 | 65 | 76 | 76 | 61 | 76 | 76 | 58 | 74 | 74 | 55 |
| | | 7 to 27 | All Mounts | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 72 | 77 | 77 | 67 | 77 | 77 | 63 | 77 | 77 | 59 | 76 | 76 | 56 |
| | | 27 to 45 | All Mounts | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 80 | 81 | 81 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 105 | 107 | 107 | 101 | 105 | 105 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 74 | 79 | 79 | 69 | 79 | 79 | 64 | 79 | 79 | 60 | 76 | 76 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 76 | 80 | 80 | 71 | 80 | 80 | 66 | 79 | 79 | 62 | 78 | 78 | 58 | 76 | 76 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 83 | 83 | 83 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 109 | 109 | 106 | 109 | 109 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 70 psf | B | 0 to 7 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 69 | 73 | 73 | 65 |
| | | 7 to 27 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 74 | 74 | 67 |
| | | 27 to 45 | All Mounts | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| | | 45 to 90 | All Mounts | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 70 | 73 | 73 | 65 | 73 | 73 | 61 | 73 | 73 | 58 | 73 | 73 | 55 |
| | | 7 to 27 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 72 | 74 | 74 | 67 | 74 | 74 | 63 | 74 | 74 | 59 | 74 | 74 | 56 |
| | | 27 to 45 | All Mounts | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 75 | 78 | 78 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 101 | 103 | 103 | 98 | 102 | 102 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 74 | 75 | 75 | 69 | 75 | 75 | 64 | 75 | 75 | 60 | 75 | 75 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 71 | 76 | 76 | 66 | 76 | 76 | 62 | 76 | 76 | 58 | 75 | 75 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 79 | 80 | 80 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 106 | 106 | 106 | 106 | 106 | 102 | 106 | 106 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 80 psf | B | 0 to 7 | All Mounts | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 65 |
| | | 7 to 27 | All Mounts | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 67 |
| | | 27 to 45 | All Mounts | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| | | 45 to 90 | All Mounts | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 98 | 100 | 100 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 65 | 69 | 69 | 61 | 69 | 69 | 58 | 69 | 69 | 55 |
| | | 7 to 27 | All Mounts | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 67 | 71 | 71 | 63 | 71 | 71 | 59 | 71 | 71 | 56 |
| | | 27 to 45 | All Mounts | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 75 | 76 | 76 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 98 | 100 | 100 | 95 | 99 | 99 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 69 | 72 | 72 | 64 | 72 | 72 | 60 | 72 | 72 | 56 | 72 | 72 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 71 | 73 | 73 | 66 | 73 | 73 | 62 | 73 | 73 | 58 | 73 | 73 | 55 | 72 | 72 | 52 |
| | | 27 to 45 | All Mounts | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 103 | 103 | 103 | 103 | 103 | 102 | 103 | 103 | 99 | 102 | 102 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |
| 90 psf | B | 0 to 7 | All Mounts | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 |
| | | 7 to 27 | All Mounts | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 67 |
| | | 27 to 45 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | 45 to 90 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 96 | 96 | 89 | 92 | 92 | 85 | 88 | 88 | 81 | 85 | 85 | 78 | 82 | 82 | 73 |
| | C | 0 to 7 | All Mounts | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 66 | 66 | 61 | 66 | 66 | 58 | 66 | 66 | 55 |
| | | 7 to 27 | All Mounts | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 67 | 68 | 68 | 63 | 68 | 68 | 59 | 68 | 68 | 56 |
| | | 27 to 45 | All Mounts | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 74 | 74 | 67 |
| | | 45 to 90 | All Mounts | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 95 | 97 | 97 | 92 | 95 | 95 | 87 | 90 | 90 | 83 | 86 | 86 | 79 | 82 | 82 | 74 | 78 | 78 | 69 | 74 | 74 | 65 | 70 | 70 | 62 |
| | D | 0 to 7 | All Mounts | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 64 | 69 | 69 | 60 | 69 | 69 | 56 | 69 | 69 | 53 | 68 | 68 | 50 |
| | | 7 to 27 | All Mounts | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 66 | 71 | 71 | 62 | 71 | 71 | 58 | 71 | 71 | 55 | 70 | 70 | 52 |
| | | 27 to 45 | All Mounts | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 73 | 76 | 76 | 69 | 71 | 71 | 65 | 68 | 68 | 62 |
| | | 45 to 90 | All Mounts | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99 | 100 | 100 | 95 | 100 | 100 | 92 | 97 | 97 | 90 | 94 | 94 | 87 | 89 | 89 | 82 | 85 | 85 | 78 | 81 | 81 | 72 | 77 | 77 | 68 | 72 | 72 | 64 | 68 | 68 | 60 | 64 | 64 | 57 |

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 0 psf | B | 0 to 7 | Array Interior | 116 | 116 | 116 | 116 | 116 | 104 | 104 | 116 | 116 | 113 | 113 | 113 | 100 | 100 | 116 | 116 | 109 | 109 | 109 | 97 | 97 | 116 | 116 | 105 | 105 | 105 | 93 | 93 | 116 | 114 | 102 | 102 | 102 | 90 | 90 | 116 | 110 | 98 | 98 | 98 | 87 | 87 | 116 | 107 | 95 | 95 | 95 | 85 | 85 |
| | | | Array Edge | 116 | 114 | 102 | 102 | 102 | 90 | 90 | 116 | 109 | 98 | 98 | 98 | 87 | 87 | 116 | 105 | 94 | 94 | 94 | 84 | 84 | 116 | 101 | 91 | 91 | 91 | 81 | 81 | 116 | 98 | 88 | 88 | 88 | 78 | 78 | 116 | 95 | 85 | 85 | 85 | 74 | 74 | 116 | 92 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 116 | 116 | 116 | 107 | 107 | 107 | 100 | 116 | 116 | 116 | 103 | 103 | 103 | 96 | 115 | 115 | 115 | 99 | 99 | 99 | 93 | 111 | 111 | 111 | 95 | 95 | 95 | 89 | 107 | 107 | 107 | 92 | 92 | 92 | 86 | 103 | 103 | 103 | 89 | 89 | 89 | 84 | 100 | 100 | 100 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 107 | 107 | 107 | 92 | 92 | 92 | 86 | 103 | 103 | 103 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 85 | 85 | 85 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 117 | 117 | 117 | 114 | 114 | 114 | 111 | 117 | 117 | 117 | 110 | 110 | 110 | 106 | 117 | 117 | 117 | 105 | 105 | 105 | 103 | 117 | 117 | 117 | 102 | 102 | 102 | 99 | 117 | 117 | 117 | 98 | 98 | 98 | 96 | 115 | 115 | 115 | 95 | 95 | 95 | 93 | 111 | 111 | 111 | 92 | 92 | 92 | 90 |
| | | | Array Edge | 117 | 117 | 117 | 98 | 98 | 98 | 96 | 114 | 114 | 114 | 94 | 94 | 94 | 92 | 110 | 110 | 110 | 91 | 91 | 91 | 89 | 106 | 106 | 106 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 83 | 83 | 83 | 80 | 96 | 96 | 96 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 119 | 119 | 119 | 119 | 119 | 113 | 119 | 119 | 119 | 119 | 119 | 118 | 109 | 118 | 118 | 118 | 118 | 118 | 114 | 105 | 114 | 114 | 114 | 114 | 114 | 110 | 101 | 110 | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 107 | 107 | 107 | 107 | 103 | 95 | 103 | 103 | 103 | 103 | 103 | 100 | 92 | 100 |
| | | | Array Edge | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 121 | 121 | 116 | 116 | 116 | 116 | 116 | 118 | 118 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 116 | 116 | 104 | 104 | 104 | 92 | 92 | 116 | 112 | 100 | 100 | 100 | 89 | 89 | 116 | 108 | 96 | 96 | 96 | 86 | 86 | 116 | 104 | 93 | 93 | 93 | 83 | 83 | 116 | 100 | 90 | 90 | 90 | 80 | 80 | 116 | 97 | 87 | 87 | 87 | 77 | 77 | 116 | 94 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 116 | 100 | 90 | 90 | 90 | 80 | 80 | 116 | 96 | 87 | 87 | 87 | 76 | 76 | 116 | 93 | 83 | 83 | 83 | 72 | 72 | 113 | 90 | 81 | 81 | 81 | 68 | 68 | 109 | 87 | 77 | 77 | 77 | 65 | 65 | 106 | 84 | 74 | 74 | 74 | 62 | 62 | 103 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 110 | 110 | 110 | 94 | 94 | 94 | 88 | 105 | 105 | 105 | 91 | 91 | 91 | 85 | 101 | 101 | 101 | 88 | 88 | 88 | 82 | 98 | 98 | 98 | 85 | 85 | 85 | 79 | 95 | 95 | 95 | 82 | 82 | 82 | 75 | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 89 | 89 | 89 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 94 | 94 | 94 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 117 | 117 | 117 | 101 | 101 | 101 | 98 | 117 | 117 | 117 | 97 | 97 | 97 | 94 | 112 | 112 | 112 | 93 | 93 | 93 | 91 | 108 | 108 | 108 | 90 | 90 | 90 | 88 | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 85 | 85 | 85 | 82 | 98 | 98 | 98 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 84 | 84 | 84 | 82 | 97 | 97 | 97 | 81 | 81 | 81 | 78 | 94 | 94 | 94 | 77 | 77 | 77 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 68 | 85 | 85 | 85 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 113 | 113 | 113 | 113 | 109 | 100 | 109 | 108 | 108 | 108 | 108 | 104 | 96 | 104 | 104 | 104 | 104 | 104 | 101 | 93 | 101 | 101 | 101 | 101 | 101 | 97 | 90 | 97 | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 92 | 92 | 92 | 92 | 88 | 82 | 88 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 94 | 87 | 94 | 94 | 94 | 94 | 94 | 90 | 84 | 90 | 90 | 90 | 90 | 90 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 118 | 118 | 118 | 118 | 119 | 119 | 113 | 113 | 113 | 113 | 113 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 108 | 108 | 102 | 102 | 102 | 102 | 102 | 105 | 105 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 116 | 110 | 98 | 98 | 98 | 87 | 87 | 116 | 105 | 94 | 94 | 94 | 84 | 84 | 116 | 101 | 91 | 91 | 91 | 81 | 81 | 116 | 98 | 88 | 88 | 88 | 77 | 77 | 116 | 95 | 85 | 85 | 85 | 74 | 74 | 116 | 92 | 82 | 82 | 82 | 70 | 70 | 112 | 89 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 116 | 94 | 85 | 85 | 85 | 73 | 73 | 115 | 91 | 82 | 82 | 82 | 69 | 69 | 110 | 87 | 78 | 78 | 78 | 66 | 66 | 106 | 85 | 74 | 74 | 74 | 63 | 63 | 103 | 82 | 71 | 71 | 71 | 60 | 60 | 99 | 79 | 68 | 68 | 68 | 57 | 57 | 96 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 103 | 103 | 103 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 86 | 86 | 86 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 114 | 114 | 114 | 95 | 95 | 95 | 92 | 110 | 110 | 110 | 91 | 91 | 91 | 89 | 106 | 106 | 106 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 98 | 98 | 98 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 91 | 91 | 91 | 75 | 75 | 75 | 72 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 5 psf | B | 0 to 7 | Array Interior | 112 | 112 | 112 | 112 | 112 | 104 | 104 | 112 | 112 | 112 | 112 | 112 | 100 | 100 | 112 | 112 | 109 | 109 | 109 | 97 | 97 | 112 | 112 | 105 | 105 | 105 | 93 | 93 | 112 | 112 | 102 | 102 | 102 | 90 | 90 | 112 | 110 | 98 | 98 | 98 | 87 | 87 | 112 | 107 | 95 | 95 | 95 | 85 | 85 |
| | | | Array Edge | 112 | 112 | 102 | 102 | 102 | 90 | 90 | 112 | 109 | 98 | 98 | 98 | 87 | 87 | 112 | 105 | 94 | 94 | 94 | 84 | 84 | 112 | 101 | 91 | 91 | 91 | 81 | 81 | 112 | 98 | 88 | 88 | 88 | 78 | 78 | 112 | 95 | 85 | 85 | 85 | 74 | 74 | 112 | 92 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 116 | 116 | 116 | 107 | 107 | 107 | 100 | 116 | 116 | 116 | 103 | 103 | 103 | 96 | 115 | 115 | 115 | 99 | 99 | 99 | 93 | 111 | 111 | 111 | 95 | 95 | 95 | 89 | 107 | 107 | 107 | 92 | 92 | 92 | 86 | 103 | 103 | 103 | 89 | 89 | 89 | 84 | 100 | 100 | 100 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 107 | 107 | 107 | 92 | 92 | 92 | 86 | 103 | 103 | 103 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 85 | 85 | 85 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 117 | 117 | 117 | 114 | 114 | 114 | 111 | 117 | 117 | 117 | 110 | 110 | 110 | 106 | 117 | 117 | 117 | 105 | 105 | 105 | 103 | 117 | 117 | 117 | 102 | 102 | 102 | 99 | 117 | 117 | 117 | 98 | 98 | 98 | 96 | 115 | 115 | 115 | 95 | 95 | 95 | 93 | 111 | 111 | 111 | 92 | 92 | 92 | 90 |
| | | | Array Edge | 117 | 117 | 117 | 98 | 98 | 98 | 96 | 114 | 114 | 114 | 94 | 94 | 94 | 92 | 110 | 110 | 110 | 91 | 91 | 91 | 89 | 106 | 106 | 106 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 83 | 83 | 83 | 80 | 96 | 96 | 96 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 119 | 119 | 119 | 119 | 119 | 113 | 119 | 119 | 119 | 119 | 119 | 118 | 109 | 118 | 118 | 118 | 118 | 118 | 114 | 105 | 114 | 114 | 114 | 114 | 114 | 110 | 101 | 110 | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 107 | 107 | 107 | 107 | 103 | 95 | 103 | 103 | 103 | 103 | 103 | 100 | 92 | 100 |
| | | | Array Edge | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 121 | 121 | 116 | 116 | 116 | 116 | 116 | 118 | 118 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 112 | 112 | 104 | 104 | 104 | 92 | 92 | 112 | 112 | 100 | 100 | 100 | 89 | 89 | 112 | 108 | 96 | 96 | 96 | 86 | 86 | 112 | 104 | 93 | 93 | 93 | 83 | 83 | 112 | 100 | 90 | 90 | 90 | 80 | 80 | 112 | 97 | 87 | 87 | 87 | 77 | 77 | 112 | 94 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 112 | 100 | 90 | 90 | 90 | 80 | 80 | 112 | 96 | 87 | 87 | 87 | 76 | 76 | 112 | 93 | 83 | 83 | 83 | 72 | 72 | 112 | 90 | 81 | 81 | 81 | 68 | 68 | 109 | 87 | 77 | 77 | 77 | 65 | 65 | 106 | 84 | 74 | 74 | 74 | 62 | 62 | 103 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 110 | 110 | 110 | 94 | 94 | 94 | 88 | 105 | 105 | 105 | 91 | 91 | 91 | 85 | 101 | 101 | 101 | 88 | 88 | 88 | 82 | 98 | 98 | 98 | 85 | 85 | 85 | 79 | 95 | 95 | 95 | 82 | 82 | 82 | 75 | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 89 | 89 | 89 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 94 | 94 | 94 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 117 | 117 | 117 | 101 | 101 | 101 | 98 | 117 | 117 | 117 | 97 | 97 | 97 | 94 | 112 | 112 | 112 | 93 | 93 | 93 | 91 | 108 | 108 | 108 | 90 | 90 | 90 | 88 | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 85 | 85 | 85 | 82 | 98 | 98 | 98 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 84 | 84 | 84 | 82 | 97 | 97 | 97 | 81 | 81 | 81 | 78 | 94 | 94 | 94 | 77 | 77 | 77 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 68 | 85 | 85 | 85 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 113 | 113 | 113 | 113 | 109 | 100 | 109 | 108 | 108 | 108 | 108 | 104 | 96 | 104 | 104 | 104 | 104 | 104 | 101 | 93 | 101 | 101 | 101 | 101 | 101 | 97 | 90 | 97 | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 92 | 92 | 92 | 92 | 88 | 82 | 88 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 94 | 87 | 94 | 94 | 94 | 94 | 94 | 90 | 84 | 90 | 90 | 90 | 90 | 90 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 118 | 118 | 118 | 118 | 119 | 119 | 113 | 113 | 113 | 113 | 113 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 108 | 108 | 102 | 102 | 102 | 102 | 102 | 105 | 105 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 112 | 110 | 98 | 98 | 98 | 87 | 87 | 112 | 105 | 94 | 94 | 94 | 84 | 84 | 112 | 101 | 91 | 91 | 91 | 81 | 81 | 112 | 98 | 88 | 88 | 88 | 77 | 77 | 112 | 95 | 85 | 85 | 85 | 74 | 74 | 112 | 92 | 82 | 82 | 82 | 70 | 70 | 112 | 89 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 112 | 94 | 85 | 85 | 85 | 73 | 73 | 112 | 91 | 82 | 82 | 82 | 69 | 69 | 110 | 87 | 78 | 78 | 78 | 66 | 66 | 106 | 85 | 74 | 74 | 74 | 63 | 63 | 103 | 82 | 71 | 71 | 71 | 60 | 60 | 99 | 79 | 68 | 68 | 68 | 57 | 57 | 96 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 103 | 103 | 103 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 86 | 86 | 86 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 114 | 114 | 114 | 95 | 95 | 95 | 92 | 110 | 110 | 110 | 91 | 91 | 91 | 89 | 106 | 106 | 106 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 98 | 98 | 98 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 91 | 91 | 91 | 75 | 75 | 75 | 72 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 10 psf | B | 0 to 7 | Array Interior | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 100 | 100 | 104 | 104 | 104 | 104 | 104 | 97 | 97 | 104 | 104 | 104 | 104 | 104 | 93 | 93 | 104 | 104 | 102 | 102 | 102 | 90 | 90 | 104 | 104 | 98 | 98 | 98 | 87 | 87 | 104 | 104 | 95 | 95 | 95 | 85 | 85 |
| | | | Array Edge | 104 | 104 | 102 | 102 | 102 | 90 | 90 | 104 | 104 | 98 | 98 | 98 | 87 | 87 | 104 | 104 | 94 | 94 | 94 | 84 | 84 | 104 | 101 | 91 | 91 | 91 | 81 | 81 | 104 | 98 | 88 | 88 | 88 | 78 | 78 | 104 | 95 | 85 | 85 | 85 | 74 | 74 | 104 | 92 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 110 | 110 | 110 | 107 | 107 | 107 | 100 | 110 | 110 | 110 | 103 | 103 | 103 | 96 | 110 | 110 | 110 | 99 | 99 | 99 | 93 | 110 | 110 | 110 | 95 | 95 | 95 | 89 | 107 | 107 | 107 | 92 | 92 | 92 | 86 | 103 | 103 | 103 | 89 | 89 | 89 | 84 | 100 | 100 | 100 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 107 | 107 | 107 | 92 | 92 | 92 | 86 | 103 | 103 | 103 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 85 | 85 | 85 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 112 | 112 | 112 | 112 | 112 | 112 | 111 | 112 | 112 | 112 | 110 | 110 | 110 | 106 | 112 | 112 | 112 | 105 | 105 | 105 | 103 | 112 | 112 | 112 | 102 | 102 | 102 | 99 | 112 | 112 | 112 | 98 | 98 | 98 | 96 | 112 | 112 | 112 | 95 | 95 | 95 | 93 | 111 | 111 | 111 | 92 | 92 | 92 | 90 |
| | | | Array Edge | 112 | 112 | 112 | 98 | 98 | 98 | 96 | 112 | 112 | 112 | 94 | 94 | 94 | 92 | 110 | 110 | 110 | 91 | 91 | 91 | 89 | 106 | 106 | 106 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 83 | 83 | 83 | 80 | 96 | 96 | 96 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 119 | 119 | 119 | 119 | 119 | 113 | 119 | 119 | 119 | 119 | 119 | 118 | 109 | 118 | 118 | 118 | 118 | 118 | 114 | 105 | 114 | 114 | 114 | 114 | 114 | 110 | 101 | 110 | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 107 | 107 | 107 | 107 | 103 | 95 | 103 | 103 | 103 | 103 | 103 | 100 | 92 | 100 |
| | | | Array Edge | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 121 | 121 | 116 | 116 | 116 | 116 | 116 | 118 | 118 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 104 | 104 | 104 | 104 | 104 | 92 | 92 | 104 | 104 | 100 | 100 | 100 | 89 | 89 | 104 | 104 | 96 | 96 | 96 | 86 | 86 | 104 | 104 | 93 | 93 | 93 | 83 | 83 | 104 | 100 | 90 | 90 | 90 | 80 | 80 | 104 | 97 | 87 | 87 | 87 | 77 | 77 | 104 | 94 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 104 | 100 | 90 | 90 | 90 | 80 | 80 | 104 | 96 | 87 | 87 | 87 | 76 | 76 | 104 | 93 | 83 | 83 | 83 | 72 | 72 | 104 | 90 | 81 | 81 | 81 | 68 | 68 | 104 | 87 | 77 | 77 | 77 | 65 | 65 | 104 | 84 | 74 | 74 | 74 | 62 | 62 | 103 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 110 | 110 | 110 | 94 | 94 | 94 | 88 | 105 | 105 | 105 | 91 | 91 | 91 | 85 | 101 | 101 | 101 | 88 | 88 | 88 | 82 | 98 | 98 | 98 | 85 | 85 | 85 | 79 | 95 | 95 | 95 | 82 | 82 | 82 | 75 | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 89 | 89 | 89 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 94 | 94 | 94 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 112 | 112 | 112 | 101 | 101 | 101 | 98 | 112 | 112 | 112 | 97 | 97 | 97 | 94 | 112 | 112 | 112 | 93 | 93 | 93 | 91 | 108 | 108 | 108 | 90 | 90 | 90 | 88 | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 85 | 85 | 85 | 82 | 98 | 98 | 98 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 84 | 84 | 84 | 82 | 97 | 97 | 97 | 81 | 81 | 81 | 78 | 94 | 94 | 94 | 77 | 77 | 77 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 68 | 85 | 85 | 85 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 113 | 113 | 113 | 113 | 109 | 100 | 109 | 108 | 108 | 108 | 108 | 104 | 96 | 104 | 104 | 104 | 104 | 104 | 101 | 93 | 101 | 101 | 101 | 101 | 101 | 97 | 90 | 97 | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 92 | 92 | 92 | 92 | 88 | 82 | 88 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 94 | 87 | 94 | 94 | 94 | 94 | 94 | 90 | 84 | 90 | 90 | 90 | 90 | 90 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 118 | 118 | 118 | 118 | 119 | 119 | 113 | 113 | 113 | 113 | 113 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 108 | 108 | 102 | 102 | 102 | 102 | 102 | 105 | 105 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 104 | 104 | 98 | 98 | 98 | 87 | 87 | 104 | 104 | 94 | 94 | 94 | 84 | 84 | 104 | 101 | 91 | 91 | 91 | 81 | 81 | 104 | 98 | 88 | 88 | 88 | 77 | 77 | 104 | 95 | 85 | 85 | 85 | 74 | 74 | 104 | 92 | 82 | 82 | 82 | 70 | 70 | 104 | 89 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 104 | 94 | 85 | 85 | 85 | 73 | 73 | 104 | 91 | 82 | 82 | 82 | 69 | 69 | 104 | 87 | 78 | 78 | 78 | 66 | 66 | 104 | 85 | 74 | 74 | 74 | 63 | 63 | 103 | 82 | 71 | 71 | 71 | 60 | 60 | 99 | 79 | 68 | 68 | 68 | 57 | 57 | 96 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 103 | 103 | 103 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 86 | 86 | 86 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 113 | 113 | 113 | 95 | 95 | 95 | 92 | 110 | 110 | 110 | 91 | 91 | 91 | 89 | 106 | 106 | 106 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 98 | 98 | 98 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 91 | 91 | 91 | 75 | 75 | 75 | 72 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 0 psf | B | 0 to 7 | Array Interior | 116 | 101 | 90 | 90 | 90 | 80 | 80 | 116 | 95 | 86 | 86 | 86 | 74 | 74 | 115 | 91 | 81 | 81 | 81 | 69 | 69 | 109 | 87 | 77 | 77 | 77 | 65 | 65 | 104 | 83 | 72 | 72 | 72 | 61 | 61 | 100 | 80 | 68 | 68 | 68 | 57 | 57 | 96 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 110 | 87 | 77 | 77 | 77 | 65 | 65 | 104 | 82 | 72 | 72 | 72 | 60 | 60 | 99 | 78 | 67 | 67 | 67 | 56 | 56 | 94 | 73 | 62 | 62 | 62 | 53 | 53 | 90 | 68 | 59 | 59 | 59 | 49 | 49 | 86 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 95 | 95 | 95 | 82 | 82 | 82 | 76 | 90 | 90 | 90 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 99 | 99 | 99 | 83 | 83 | 83 | 81 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 112 | 89 | 80 | 80 | 80 | 67 | 67 | 106 | 84 | 74 | 74 | 74 | 62 | 62 | 101 | 80 | 69 | 69 | 69 | 58 | 58 | 96 | 76 | 65 | 65 | 65 | 54 | 54 | 92 | 71 | 61 | 61 | 61 | 51 | 51 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 97 | 76 | 65 | 65 | 65 | 55 | 55 | 92 | 70 | 60 | 60 | 60 | 51 | 51 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 77 | 77 | 77 | 74 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 84 | 76 | 84 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 106 | 84 | 73 | 73 | 73 | 62 | 62 | 100 | 80 | 68 | 68 | 68 | 57 | 57 | 95 | 74 | 63 | 63 | 63 | 53 | 53 | 91 | 69 | 59 | 59 | 59 | 50 | 50 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 91 | 70 | 59 | 59 | 59 | 50 | 50 | 86 | 64 | 55 | 55 | 55 | 46 | 46 | 82 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 87 | 87 | 87 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 5 psf | B | 0 to 7 | Array Interior | 112 | 101 | 90 | 90 | 90 | 80 | 80 | 112 | 95 | 86 | 86 | 86 | 74 | 74 | 112 | 91 | 81 | 81 | 81 | 69 | 69 | 109 | 87 | 77 | 77 | 77 | 65 | 65 | 104 | 83 | 72 | 72 | 72 | 61 | 61 | 100 | 80 | 68 | 68 | 68 | 57 | 57 | 96 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 110 | 87 | 77 | 77 | 77 | 65 | 65 | 104 | 82 | 72 | 72 | 72 | 60 | 60 | 99 | 78 | 67 | 67 | 67 | 56 | 56 | 94 | 73 | 62 | 62 | 62 | 53 | 53 | 90 | 68 | 59 | 59 | 59 | 49 | 49 | 86 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 95 | 95 | 95 | 82 | 82 | 82 | 76 | 90 | 90 | 90 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 99 | 99 | 99 | 83 | 83 | 83 | 81 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 104 | 89 | 80 | 80 | 80 | 67 | 67 | 104 | 84 | 74 | 74 | 74 | 62 | 62 | 101 | 80 | 69 | 69 | 69 | 58 | 58 | 96 | 76 | 65 | 65 | 65 | 54 | 54 | 92 | 71 | 61 | 61 | 61 | 51 | 51 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 97 | 76 | 65 | 65 | 65 | 55 | 55 | 92 | 70 | 60 | 60 | 60 | 51 | 51 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 77 | 77 | 77 | 74 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 84 | 76 | 84 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 104 | 84 | 73 | 73 | 73 | 62 | 62 | 100 | 80 | 68 | 68 | 68 | 57 | 57 | 95 | 74 | 63 | 63 | 63 | 53 | 53 | 91 | 69 | 59 | 59 | 59 | 50 | 50 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 91 | 70 | 59 | 59 | 59 | 50 | 50 | 86 | 64 | 55 | 55 | 55 | 46 | 46 | 82 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 87 | 87 | 87 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 10 psf | B | 0 to 7 | Array Interior | 104 | 101 | 90 | 90 | 90 | 80 | 80 | 104 | 95 | 86 | 86 | 86 | 74 | 74 | 104 | 91 | 81 | 81 | 81 | 69 | 69 | 104 | 87 | 77 | 77 | 77 | 65 | 65 | 104 | 83 | 72 | 72 | 72 | 61 | 61 | 100 | 80 | 68 | 68 | 68 | 57 | 57 | 96 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 104 | 87 | 77 | 77 | 77 | 65 | 65 | 104 | 82 | 72 | 72 | 72 | 60 | 60 | 99 | 78 | 67 | 67 | 67 | 56 | 56 | 94 | 73 | 62 | 62 | 62 | 53 | 53 | 90 | 68 | 59 | 59 | 59 | 49 | 49 | 86 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 95 | 95 | 95 | 82 | 82 | 82 | 76 | 90 | 90 | 90 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 99 | 99 | 99 | 83 | 83 | 83 | 81 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 104 | 89 | 80 | 80 | 80 | 67 | 67 | 104 | 84 | 74 | 74 | 74 | 62 | 62 | 101 | 80 | 69 | 69 | 69 | 58 | 58 | 96 | 76 | 65 | 65 | 65 | 54 | 54 | 92 | 71 | 61 | 61 | 61 | 51 | 51 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 97 | 76 | 65 | 65 | 65 | 55 | 55 | 92 | 70 | 60 | 60 | 60 | 51 | 51 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 15 psf | B | 0 to 7 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 93 | 97 | 97 | 97 | 97 | 97 | 90 | 90 | 97 | 97 | 97 | 97 | 97 | 87 | 87 | 97 | 97 | 95 | 95 | 95 | 85 | 85 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 97 | 90 | 90 | 97 | 97 | 97 | 97 | 97 | 87 | 87 | 97 | 97 | 94 | 94 | 94 | 84 | 84 | 97 | 97 | 91 | 91 | 91 | 81 | 81 | 97 | 97 | 88 | 88 | 88 | 78 | 78 | 97 | 95 | 85 | 85 | 85 | 74 | 74 | 97 | 92 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 105 | 105 | 105 | 105 | 105 | 105 | 100 | 105 | 105 | 105 | 103 | 103 | 103 | 96 | 105 | 105 | 105 | 99 | 99 | 99 | 93 | 105 | 105 | 105 | 95 | 95 | 95 | 89 | 105 | 105 | 105 | 92 | 92 | 92 | 86 | 103 | 103 | 103 | 89 | 89 | 89 | 84 | 100 | 100 | 100 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 105 | 105 | 105 | 92 | 92 | 92 | 86 | 103 | 103 | 103 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 85 | 85 | 85 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 106 | 107 | 107 | 107 | 105 | 105 | 105 | 103 | 107 | 107 | 107 | 102 | 102 | 102 | 99 | 107 | 107 | 107 | 98 | 98 | 98 | 96 | 107 | 107 | 107 | 95 | 95 | 95 | 93 | 107 | 107 | 107 | 92 | 92 | 92 | 90 |
| | | | Array Edge | 107 | 107 | 107 | 98 | 98 | 98 | 96 | 107 | 107 | 107 | 94 | 94 | 94 | 92 | 107 | 107 | 107 | 91 | 91 | 91 | 89 | 106 | 106 | 106 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 83 | 83 | 83 | 80 | 96 | 96 | 96 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 115 | 115 | 115 | 115 | 115 | 113 | 115 | 115 | 115 | 115 | 115 | 115 | 109 | 115 | 115 | 115 | 115 | 115 | 114 | 105 | 114 | 114 | 114 | 114 | 114 | 101 | 101 | 110 | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 107 | 107 | 107 | 107 | 103 | 95 | 103 | 103 | 103 | 103 | 103 | 100 | 92 | 100 |
| | | | Array Edge | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 121 | 121 | 116 | 116 | 116 | 116 | 116 | 118 | 118 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 97 | 97 | 97 | 97 | 97 | 92 | 92 | 97 | 97 | 97 | 97 | 97 | 89 | 89 | 97 | 97 | 96 | 96 | 96 | 86 | 86 | 97 | 97 | 93 | 93 | 93 | 83 | 83 | 97 | 97 | 90 | 90 | 90 | 80 | 80 | 97 | 97 | 87 | 87 | 87 | 77 | 77 | 97 | 94 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 97 | 97 | 90 | 90 | 90 | 80 | 80 | 97 | 96 | 87 | 87 | 87 | 76 | 76 | 97 | 93 | 83 | 83 | 83 | 72 | 72 | 97 | 90 | 81 | 81 | 81 | 68 | 68 | 97 | 87 | 77 | 77 | 77 | 65 | 65 | 97 | 84 | 74 | 74 | 74 | 62 | 62 | 97 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 105 | 105 | 105 | 94 | 94 | 94 | 88 | 105 | 105 | 105 | 91 | 91 | 91 | 85 | 101 | 101 | 101 | 88 | 88 | 88 | 82 | 98 | 98 | 98 | 85 | 85 | 85 | 79 | 95 | 95 | 95 | 82 | 82 | 82 | 75 | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 89 | 89 | 89 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 94 | 94 | 94 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 107 | 107 | 107 | 101 | 101 | 101 | 98 | 107 | 107 | 107 | 97 | 97 | 97 | 94 | 107 | 107 | 107 | 93 | 93 | 93 | 91 | 107 | 107 | 107 | 90 | 90 | 90 | 88 | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 85 | 85 | 85 | 82 | 98 | 98 | 98 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 84 | 84 | 84 | 82 | 97 | 97 | 97 | 81 | 81 | 81 | 78 | 94 | 94 | 94 | 77 | 77 | 77 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 68 | 85 | 85 | 85 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 113 | 113 | 113 | 113 | 109 | 100 | 109 | 108 | 108 | 108 | 108 | 108 | 96 | 104 | 104 | 104 | 104 | 104 | 101 | 93 | 101 | 101 | 101 | 101 | 101 | 97 | 90 | 97 | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 92 | 92 | 92 | 92 | 88 | 82 | 88 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 94 | 87 | 94 | 94 | 94 | 94 | 94 | 90 | 84 | 90 | 90 | 90 | 90 | 90 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 118 | 118 | 118 | 118 | 119 | 119 | 113 | 113 | 113 | 113 | 113 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 108 | 108 | 102 | 102 | 102 | 102 | 102 | 105 | 105 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 97 | 97 | 97 | 97 | 97 | 87 | 87 | 97 | 97 | 94 | 94 | 94 | 84 | 84 | 97 | 97 | 91 | 91 | 91 | 81 | 81 | 97 | 97 | 88 | 88 | 88 | 77 | 77 | 97 | 95 | 85 | 85 | 85 | 74 | 74 | 97 | 92 | 82 | 82 | 82 | 70 | 70 | 97 | 89 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 97 | 94 | 85 | 85 | 85 | 73 | 73 | 97 | 91 | 82 | 82 | 82 | 69 | 69 | 97 | 87 | 78 | 78 | 78 | 66 | 66 | 97 | 85 | 74 | 74 | 74 | 63 | 63 | 97 | 82 | 71 | 71 | 71 | 60 | 60 | 97 | 79 | 68 | 68 | 68 | 57 | 57 | 96 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 103 | 103 | 103 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 86 | 86 | 86 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 108 | 108 | 108 | 95 | 95 | 95 | 92 | 108 | 108 | 108 | 91 | 91 | 91 | 89 | 106 | 106 | 106 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 98 | 98 | 98 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 91 | 91 | 91 | 75 | 75 | 75 | 72 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 20 psf | B | 0 to 7 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 90 | 90 | 92 | 92 | 92 | 92 | 92 | 87 | 87 | 92 | 92 | 92 | 92 | 92 | 85 | 85 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 92 | 90 | 90 | 92 | 92 | 92 | 92 | 92 | 87 | 87 | 92 | 92 | 92 | 92 | 92 | 84 | 84 | 92 | 92 | 91 | 91 | 91 | 81 | 81 | 92 | 92 | 88 | 88 | 88 | 78 | 78 | 92 | 92 | 85 | 85 | 85 | 74 | 74 | 92 | 92 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 101 | 101 | 101 | 101 | 101 | 101 | 100 | 101 | 101 | 101 | 101 | 101 | 101 | 96 | 101 | 101 | 101 | 99 | 99 | 99 | 93 | 101 | 101 | 101 | 95 | 95 | 95 | 89 | 101 | 101 | 101 | 92 | 92 | 92 | 86 | 101 | 101 | 101 | 89 | 89 | 89 | 84 | 100 | 100 | 100 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 101 | 101 | 101 | 92 | 92 | 92 | 86 | 101 | 101 | 101 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 85 | 85 | 85 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 102 | 102 | 102 | 99 | 103 | 103 | 103 | 98 | 98 | 98 | 96 | 103 | 103 | 103 | 95 | 95 | 95 | 93 | 103 | 103 | 103 | 92 | 92 | 92 | 90 |
| | | | Array Edge | 103 | 103 | 103 | 98 | 98 | 98 | 96 | 103 | 103 | 103 | 94 | 94 | 94 | 92 | 103 | 103 | 103 | 91 | 91 | 91 | 89 | 103 | 103 | 103 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 83 | 83 | 83 | 80 | 96 | 96 | 96 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 109 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 110 | 110 | 110 | 110 | 110 | 101 | 101 | 110 | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 107 | 107 | 107 | 107 | 103 | 95 | 103 | 103 | 103 | 103 | 103 | 100 | 92 | 100 |
| | | | Array Edge | 110 | 110 | 110 | 110 | 106 | 98 | 106 | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 121 | 121 | 116 | 116 | 116 | 116 | 116 | 118 | 118 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 89 | 89 | 92 | 92 | 92 | 92 | 92 | 86 | 86 | 92 | 92 | 92 | 92 | 92 | 83 | 83 | 92 | 92 | 90 | 90 | 90 | 80 | 80 | 92 | 92 | 87 | 87 | 87 | 77 | 77 | 92 | 92 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 92 | 92 | 90 | 90 | 90 | 80 | 80 | 92 | 92 | 87 | 87 | 87 | 76 | 76 | 92 | 92 | 83 | 83 | 83 | 72 | 72 | 92 | 90 | 81 | 81 | 81 | 68 | 68 | 92 | 87 | 77 | 77 | 77 | 65 | 65 | 92 | 84 | 74 | 74 | 74 | 62 | 62 | 92 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 101 | 101 | 101 | 94 | 94 | 94 | 88 | 101 | 101 | 101 | 91 | 91 | 91 | 85 | 101 | 101 | 101 | 88 | 88 | 88 | 82 | 98 | 98 | 98 | 85 | 85 | 85 | 79 | 95 | 95 | 95 | 82 | 82 | 82 | 75 | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 89 | 89 | 89 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 94 | 94 | 94 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 103 | 103 | 103 | 101 | 101 | 101 | 98 | 103 | 103 | 103 | 97 | 97 | 97 | 94 | 103 | 103 | 103 | 93 | 93 | 93 | 91 | 103 | 103 | 103 | 90 | 90 | 90 | 88 | 103 | 103 | 103 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 85 | 85 | 85 | 82 | 98 | 98 | 98 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 103 | 103 | 103 | 87 | 87 | 87 | 85 | 101 | 101 | 101 | 84 | 84 | 84 | 82 | 97 | 97 | 97 | 81 | 81 | 81 | 78 | 94 | 94 | 94 | 77 | 77 | 77 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 68 | 85 | 85 | 85 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 110 | 110 | 110 | 110 | 109 | 100 | 109 | 108 | 108 | 108 | 108 | 104 | 96 | 104 | 104 | 104 | 104 | 104 | 101 | 93 | 101 | 101 | 101 | 101 | 101 | 97 | 90 | 97 | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 92 | 92 | 92 | 92 | 88 | 82 | 88 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 94 | 87 | 94 | 94 | 94 | 94 | 94 | 90 | 84 | 90 | 90 | 90 | 90 | 90 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 118 | 118 | 118 | 118 | 118 | 119 | 119 | 113 | 113 | 113 | 113 | 113 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 108 | 108 | 102 | 102 | 102 | 102 | 102 | 105 | 105 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 92 | 92 | 92 | 92 | 92 | 87 | 87 | 92 | 92 | 92 | 92 | 92 | 84 | 84 | 92 | 92 | 91 | 91 | 91 | 81 | 81 | 92 | 92 | 88 | 88 | 88 | 77 | 77 | 92 | 92 | 85 | 85 | 85 | 74 | 74 | 92 | 92 | 82 | 82 | 82 | 70 | 70 | 92 | 89 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 92 | 92 | 85 | 85 | 85 | 73 | 73 | 92 | 91 | 82 | 82 | 82 | 69 | 69 | 92 | 87 | 78 | 78 | 78 | 66 | 66 | 92 | 85 | 74 | 74 | 74 | 63 | 63 | 92 | 82 | 71 | 71 | 71 | 60 | 60 | 92 | 79 | 68 | 68 | 68 | 57 | 57 | 92 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 102 | 102 | 102 | 89 | 89 | 89 | 83 | 99 | 99 | 99 | 86 | 86 | 86 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 104 | 104 | 104 | 95 | 95 | 95 | 92 | 104 | 104 | 104 | 91 | 91 | 91 | 89 | 104 | 104 | 104 | 88 | 88 | 88 | 86 | 102 | 102 | 102 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 98 | 98 | 98 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 91 | 91 | 91 | 75 | 75 | 75 | 72 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 106 | 106 | 106 | 106 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 25 psf | B | 0 to 7 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 90 | 90 | 92 | 92 | 92 | 92 | 92 | 87 | 87 | 92 | 92 | 92 | 92 | 92 | 85 | 85 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 92 | 90 | 90 | 92 | 92 | 92 | 92 | 92 | 87 | 87 | 92 | 92 | 92 | 92 | 92 | 84 | 84 | 92 | 92 | 91 | 91 | 91 | 81 | 81 | 92 | 92 | 88 | 88 | 88 | 78 | 78 | 92 | 92 | 85 | 85 | 85 | 74 | 74 | 92 | 92 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 93 | 97 | 97 | 97 | 95 | 95 | 95 | 89 | 97 | 97 | 97 | 92 | 92 | 92 | 86 | 97 | 97 | 97 | 89 | 89 | 89 | 84 | 97 | 97 | 97 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 97 | 97 | 97 | 92 | 92 | 92 | 86 | 97 | 97 | 97 | 89 | 89 | 89 | 83 | 97 | 97 | 97 | 85 | 85 | 85 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 98 | 98 | 98 | 96 | 99 | 99 | 99 | 95 | 95 | 95 | 93 | 99 | 99 | 99 | 92 | 92 | 92 | 90 |
| | | | Array Edge | 99 | 99 | 99 | 98 | 98 | 98 | 96 | 99 | 99 | 99 | 94 | 94 | 94 | 92 | 99 | 99 | 99 | 91 | 91 | 91 | 89 | 99 | 99 | 99 | 88 | 88 | 88 | 86 | 99 | 99 | 99 | 85 | 85 | 85 | 83 | 99 | 99 | 99 | 83 | 83 | 83 | 80 | 96 | 96 | 96 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 103 | 95 | 103 | 103 | 103 | 103 | 103 | 100 | 92 | 100 |
| | | | Array Edge | 105 | 105 | 105 | 105 | 98 | 98 | 105 | 105 | 105 | 105 | 105 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 121 | 121 | 116 | 116 | 116 | 116 | 116 | 118 | 118 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 121 | 121 | 119 | 119 | 119 | 119 | 119 | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 89 | 89 | 92 | 92 | 92 | 92 | 92 | 86 | 86 | 92 | 92 | 92 | 92 | 92 | 83 | 83 | 92 | 92 | 90 | 90 | 90 | 80 | 80 | 92 | 92 | 87 | 87 | 87 | 77 | 77 | 92 | 92 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 92 | 92 | 90 | 90 | 90 | 80 | 80 | 92 | 92 | 87 | 87 | 87 | 76 | 76 | 92 | 92 | 83 | 83 | 83 | 72 | 72 | 92 | 90 | 81 | 81 | 81 | 68 | 68 | 92 | 87 | 77 | 77 | 77 | 65 | 65 | 92 | 84 | 74 | 74 | 74 | 62 | 62 | 92 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 97 | 97 | 97 | 94 | 94 | 94 | 88 | 97 | 97 | 97 | 91 | 91 | 91 | 85 | 97 | 97 | 97 | 88 | 88 | 88 | 82 | 97 | 97 | 97 | 85 | 85 | 85 | 79 | 95 | 95 | 95 | 82 | 82 | 82 | 75 | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 89 | 89 | 89 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 94 | 94 | 94 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 15 psf | B | 0 to 7 | Array Interior | 97 | 97 | 90 | 90 | 90 | 80 | 80 | 97 | 95 | 86 | 86 | 86 | 74 | 74 | 97 | 91 | 81 | 81 | 81 | 69 | 69 | 97 | 87 | 77 | 77 | 77 | 65 | 65 | 97 | 83 | 72 | 72 | 72 | 61 | 61 | 97 | 80 | 68 | 68 | 68 | 57 | 57 | 96 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 97 | 87 | 77 | 77 | 77 | 65 | 65 | 97 | 82 | 72 | 72 | 72 | 60 | 60 | 97 | 78 | 67 | 67 | 67 | 56 | 56 | 94 | 73 | 62 | 62 | 62 | 53 | 53 | 90 | 68 | 59 | 59 | 59 | 49 | 49 | 86 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 95 | 95 | 95 | 82 | 82 | 82 | 76 | 90 | 90 | 90 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 105 | 105 | 105 | 87 | 87 | 87 | 85 | 99 | 99 | 99 | 83 | 83 | 83 | 81 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 97 | 89 | 80 | 80 | 80 | 67 | 67 | 97 | 84 | 74 | 74 | 74 | 62 | 62 | 97 | 80 | 69 | 69 | 69 | 58 | 58 | 96 | 76 | 65 | 65 | 65 | 54 | 54 | 92 | 71 | 61 | 61 | 61 | 51 | 51 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 97 | 76 | 65 | 65 | 65 | 55 | 55 | 92 | 70 | 60 | 60 | 60 | 51 | 51 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 77 | 77 | 77 | 74 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 84 | 76 | 84 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 97 | 84 | 73 | 73 | 73 | 62 | 62 | 97 | 80 | 68 | 68 | 68 | 57 | 57 | 95 | 74 | 63 | 63 | 63 | 53 | 53 | 91 | 69 | 59 | 59 | 59 | 50 | 50 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 91 | 70 | 59 | 59 | 59 | 50 | 50 | 86 | 64 | 55 | 55 | 55 | 46 | 46 | 82 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 87 | 87 | 87 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 20 psf | B | 0 to 7 | Array Interior | 92 | 92 | 90 | 90 | 90 | 80 | 80 | 92 | 92 | 86 | 86 | 86 | 74 | 74 | 92 | 91 | 81 | 81 | 81 | 69 | 69 | 92 | 87 | 77 | 77 | 77 | 65 | 65 | 92 | 83 | 72 | 72 | 72 | 61 | 61 | 92 | 80 | 68 | 68 | 68 | 57 | 57 | 92 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 92 | 87 | 77 | 77 | 77 | 65 | 65 | 92 | 82 | 72 | 72 | 72 | 60 | 60 | 92 | 78 | 67 | 67 | 67 | 56 | 56 | 92 | 73 | 62 | 62 | 62 | 53 | 53 | 90 | 68 | 59 | 59 | 59 | 49 | 49 | 86 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 95 | 95 | 95 | 82 | 82 | 82 | 76 | 90 | 90 | 90 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 103 | 103 | 103 | 87 | 87 | 87 | 85 | 99 | 99 | 99 | 83 | 83 | 83 | 81 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 92 | 89 | 80 | 80 | 80 | 67 | 67 | 92 | 84 | 74 | 74 | 74 | 62 | 62 | 92 | 80 | 69 | 69 | 69 | 58 | 58 | 92 | 76 | 65 | 65 | 65 | 54 | 54 | 92 | 71 | 61 | 61 | 61 | 51 | 51 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 92 | 76 | 65 | 65 | 65 | 55 | 55 | 92 | 70 | 60 | 60 | 60 | 51 | 51 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 77 | 77 | 77 | 74 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 84 | 76 | 84 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 92 | 84 | 73 | 73 | 73 | 62 | 62 | 92 | 80 | 68 | 68 | 68 | 57 | 57 | 92 | 74 | 63 | 63 | 63 | 53 | 53 | 91 | 69 | 59 | 59 | 59 | 50 | 50 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 91 | 70 | 59 | 59 | 59 | 50 | 50 | 86 | 64 | 55 | 55 | 55 | 46 | 46 | 82 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 87 | 87 | 87 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 25 psf | B | 0 to 7 | Array Interior | 92 | 92 | 90 | 90 | 90 | 80 | 80 | 92 | 92 | 86 | 86 | 86 | 74 | 74 | 92 | 91 | 81 | 81 | 81 | 69 | 69 | 92 | 87 | 77 | 77 | 77 | 65 | 65 | 92 | 83 | 72 | 72 | 72 | 61 | 61 | 92 | 80 | 68 | 68 | 68 | 57 | 57 | 92 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 92 | 87 | 77 | 77 | 77 | 65 | 65 | 92 | 82 | 72 | 72 | 72 | 60 | 60 | 92 | 78 | 67 | 67 | 67 | 56 | 56 | 92 | 73 | 62 | 62 | 62 | 53 | 53 | 90 | 68 | 59 | 59 | 59 | 49 | 49 | 86 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 95 | 95 | 95 | 82 | 82 | 82 | 76 | 90 | 90 | 90 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 99 | 99 | 99 | 87 | 87 | 87 | 85 | 99 | 99 | 99 | 83 | 83 | 83 | 81 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 92 | 89 | 80 | 80 | 80 | 67 | 67 | 92 | 84 | 74 | 74 | 74 | 62 | 62 | 92 | 80 | 69 | 69 | 69 | 58 | 58 | 92 | 76 | 65 | 65 | 65 | 54 | 54 | 92 | 71 | 61 | 61 | 61 | 51 | 51 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 92 | 76 | 65 | 65 | 65 | 55 | 55 | 92 | 70 | 60 | 60 | 60 | 51 | 51 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 30 psf | B | 0 to 7 | Array Interior | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 91 | 91 | 91 | 91 | 91 | 87 | 87 | 91 | 91 | 91 | 91 | 91 | 85 | 85 |
| | | | Array Edge | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 91 | 91 | 91 | 91 | 87 | 87 | 91 | 91 | 91 | 91 | 91 | 91 | 84 | 84 | 91 | 91 | 91 | 91 | 91 | 81 | 81 | 81 | 91 | 88 | 88 | 88 | 78 | 78 | 91 | 91 | 85 | 85 | 85 | 74 | 74 | 91 | 91 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 93 | 94 | 94 | 94 | 94 | 94 | 94 | 89 | 94 | 94 | 94 | 92 | 92 | 92 | 86 | 94 | 94 | 94 | 89 | 89 | 89 | 84 | 94 | 94 | 94 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 94 | 94 | 94 | 92 | 92 | 92 | 86 | 94 | 94 | 94 | 89 | 89 | 89 | 83 | 94 | 94 | 94 | 85 | 85 | 85 | 80 | 94 | 94 | 94 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 93 | 96 | 96 | 96 | 92 | 92 | 92 | 90 |
| | | | Array Edge | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 94 | 94 | 94 | 92 | 96 | 96 | 96 | 91 | 91 | 91 | 89 | 96 | 96 | 96 | 88 | 88 | 88 | 86 | 96 | 96 | 96 | 85 | 85 | 85 | 83 | 96 | 96 | 96 | 83 | 83 | 83 | 80 | 96 | 96 | 96 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 98 | 100 | 100 | 100 | 100 | 100 | 100 | 95 | 100 | 100 | 100 | 100 | 100 | 100 | 92 | 100 |
| | | | Array Edge | 100 | 100 | 100 | 100 | 100 | 98 | 100 | 100 | 100 | 100 | 100 | 94 | 100 | 100 | 100 | 100 | 100 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 119 | 119 | 119 | 119 | 119 | 120 | 120 | 116 | 116 | 116 | 116 | 116 | 118 | 118 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 120 | 120 | 119 | 119 | 119 | 119 | 119 | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 89 | 89 | 89 | 91 | 91 | 91 | 91 | 91 | 86 | 86 | 91 | 91 | 91 | 91 | 91 | 83 | 83 | 91 | 91 | 90 | 90 | 90 | 80 | 80 | 91 | 91 | 87 | 87 | 87 | 77 | 77 | 91 | 91 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 91 | 91 | 90 | 90 | 90 | 80 | 80 | 91 | 91 | 87 | 87 | 87 | 76 | 76 | 91 | 91 | 83 | 83 | 83 | 72 | 72 | 91 | 90 | 81 | 81 | 81 | 68 | 68 | 91 | 87 | 77 | 77 | 77 | 65 | 65 | 91 | 84 | 74 | 74 | 74 | 62 | 62 | 91 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 94 | 94 | 94 | 94 | 94 | 94 | 88 | 94 | 94 | 94 | 91 | 91 | 85 | 85 | 94 | 94 | 94 | 88 | 88 | 88 | 82 | 94 | 94 | 94 | 85 | 85 | 85 | 79 | 94 | 94 | 94 | 82 | 82 | 82 | 75 | 92 | 92 | 92 | 79 | 79 | 79 | 72 | 89 | 89 | 89 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 94 | 94 | 94 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 94 | 96 | 96 | 96 | 93 | 93 | 93 | 91 | 96 | 96 | 96 | 90 | 90 | 90 | 88 | 96 | 96 | 96 | 87 | 87 | 87 | 85 | 96 | 96 | 96 | 85 | 85 | 85 | 82 | 96 | 96 | 96 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 96 | 96 | 96 | 87 | 87 | 87 | 85 | 96 | 96 | 96 | 84 | 84 | 84 | 82 | 96 | 96 | 96 | 81 | 81 | 81 | 78 | 94 | 94 | 94 | 77 | 77 | 77 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 68 | 85 | 85 | 85 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 96 | 100 | 100 | 100 | 100 | 100 | 100 | 93 | 100 | 100 | 100 | 100 | 100 | 100 | 97 | 100 | 97 | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 95 | 95 | 95 | 91 | 84 | 91 | 92 | 92 | 92 | 92 | 88 | 82 | 88 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 94 | 87 | 94 | 94 | 94 | 94 | 94 | 90 | 84 | 90 | 90 | 90 | 90 | 90 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 118 | 118 | 118 | 118 | 118 | 119 | 119 | 113 | 113 | 113 | 113 | 113 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 108 | 108 | 102 | 102 | 102 | 102 | 102 | 105 | 105 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 92 | 92 | 92 | 92 | 92 | 87 | 87 | 92 | 92 | 92 | 92 | 92 | 84 | 84 | 92 | 92 | 91 | 91 | 91 | 81 | 81 | 92 | 92 | 88 | 88 | 88 | 77 | 77 | 92 | 92 | 85 | 85 | 85 | 74 | 74 | 92 | 92 | 82 | 82 | 82 | 70 | 70 | 92 | 89 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 92 | 92 | 85 | 85 | 85 | 73 | 73 | 92 | 91 | 82 | 82 | 82 | 69 | 69 | 92 | 87 | 78 | 78 | 78 | 66 | 66 | 92 | 85 | 74 | 74 | 74 | 63 | 63 | 92 | 82 | 71 | 71 | 71 | 60 | 60 | 92 | 79 | 68 | 68 | 68 | 57 | 57 | 92 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 96 | 96 | 96 | 89 | 89 | 89 | 83 | 96 | 96 | 96 | 86 | 86 | 86 | 80 | 95 | 95 | 95 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 98 | 98 | 98 | 95 | 95 | 95 | 92 | 98 | 98 | 98 | 91 | 91 | 91 | 89 | 98 | 98 | 98 | 88 | 88 | 88 | 86 | 98 | 98 | 98 | 85 | 85 | 85 | 83 | 98 | 98 | 98 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 98 | 98 | 98 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 91 | 91 | 91 | 75 | 75 | 75 | 72 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 103 | 103 | 103 | 103 | 102 | 94 | 102 | 102 | 102 | 102 | 102 | 98 | 91 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 120 | 120 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 35 psf | B | 0 to 7 | Array Interior | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 87 | 87 | 89 | 89 | 89 | 89 | 89 | 85 | 85 |
| | | | Array Edge | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 87 | 87 | 89 | 89 | 89 | 89 | 89 | 84 | 84 | 89 | 89 | 89 | 89 | 89 | 81 | 81 | 89 | 89 | 88 | 88 | 88 | 78 | 78 | 89 | 89 | 85 | 85 | 85 | 74 | 74 | 89 | 89 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 86 | 91 | 91 | 91 | 89 | 89 | 89 | 84 | 91 | 91 | 91 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 91 | 91 | 91 | 91 | 91 | 91 | 86 | 91 | 91 | 91 | 89 | 89 | 89 | 83 | 91 | 91 | 91 | 85 | 85 | 85 | 80 | 91 | 91 | 91 | 83 | 83 | 83 | 76 | 91 | 91 | 91 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 90 | 90 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 89 | 92 | 92 | 92 | 88 | 88 | 88 | 86 | 92 | 92 | 92 | 85 | 85 | 85 | 83 | 92 | 92 | 92 | 83 | 83 | 83 | 80 | 92 | 92 | 92 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 92 | 96 |
| | | | Array Edge | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 94 | 96 | 96 | 96 | 96 | 96 | 96 | 91 | 96 | 96 | 96 | 96 | 96 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 95 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 116 | 116 | 116 | 116 | 116 | 118 | 118 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 86 | 86 | 89 | 89 | 89 | 89 | 89 | 83 | 83 | 89 | 89 | 89 | 89 | 89 | 80 | 80 | 89 | 89 | 87 | 87 | 87 | 77 | 77 | 89 | 89 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 89 | 89 | 89 | 89 | 89 | 80 | 80 | 89 | 89 | 87 | 87 | 87 | 76 | 76 | 89 | 89 | 83 | 83 | 83 | 72 | 72 | 89 | 89 | 81 | 81 | 81 | 68 | 68 | 89 | 87 | 77 | 77 | 77 | 65 | 65 | 89 | 84 | 74 | 74 | 74 | 62 | 62 | 89 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 91 | 91 | 91 | 91 | 91 | 91 | 88 | 91 | 91 | 91 | 91 | 91 | 91 | 85 | 91 | 91 | 91 | 88 | 88 | 88 | 82 | 91 | 91 | 91 | 85 | 85 | 85 | 79 | 91 | 91 | 91 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 79 | 79 | 79 | 72 | 89 | 89 | 89 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 91 | 91 | 91 | 82 | 82 | 82 | 75 | 91 | 91 | 91 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 92 | 92 | 92 | 90 | 90 | 90 | 88 | 92 | 92 | 92 | 87 | 87 | 87 | 85 | 92 | 92 | 92 | 85 | 85 | 85 | 82 | 92 | 92 | 92 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 92 | 92 | 92 | 87 | 87 | 87 | 85 | 92 | 92 | 92 | 84 | 84 | 84 | 82 | 92 | 92 | 92 | 81 | 81 | 81 | 78 | 92 | 92 | 92 | 77 | 77 | 77 | 74 | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 88 | 88 | 88 | 70 | 70 | 70 | 68 | 85 | 85 | 85 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 93 | 96 | 96 | 96 | 96 | 96 | 96 | 90 | 96 | 96 | 96 | 96 | 96 | 94 | 87 | 94 | 95 | 95 | 95 | 95 | 91 | 84 | 91 | 92 | 92 | 92 | 92 | 88 | 82 | 88 |
| | | | Array Edge | 96 | 96 | 96 | 94 | 87 | 94 | 94 | 94 | 94 | 94 | 90 | 84 | 90 | 90 | 90 | 90 | 90 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 113 | 113 | 113 | 113 | 113 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | D | 0 to 7 | Array Interior | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 86 | 86 | 89 | 89 | 89 | 89 | 89 | 83 | 83 | 89 | 89 | 89 | 89 | 89 | 80 | 80 | 89 | 89 | 87 | 87 | 87 | 77 | 77 | 89 | 89 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 89 | 89 | 89 | 89 | 89 | 80 | 80 | 89 | 89 | 87 | 87 | 87 | 76 | 76 | 89 | 89 | 83 | 83 | 83 | 72 | 72 | 89 | 89 | 81 | 81 | 81 | 68 | 68 | 89 | 87 | 77 | 77 | 77 | 65 | 65 | 89 | 84 | 74 | 74 | 74 | 62 | 62 | 89 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 93 | 93 | 93 | 89 | 89 | 89 | 83 | 93 | 93 | 93 | 86 | 86 | 86 | 80 | 93 | 93 | 93 | 83 | 83 | 83 | 76 | 92 | 92 | 92 | 80 | 80 | 80 | 73 | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 89 | 89 | 89 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 95 | 95 | 95 | 95 | 95 | 95 | 92 | 95 | 95 | 95 | 91 | 91 | 91 | 89 | 95 | 95 | 95 | 88 | 88 | 88 | 86 | 95 | 95 | 95 | 85 | 85 | 85 | 83 | 95 | 95 | 95 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 80 | 80 | 80 | 77 | 93 | 93 | 93 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 95 | 95 | 95 | 82 | 82 | 82 | 80 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 91 | 91 | 91 | 75 | 75 | 75 | 72 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 99 | 99 | 99 | 99 | 99 | 94 | 99 | 99 | 99 | 99 | 98 | 91 | 98 | 98 | 98 | 98 | 98 | 95 | 88 | 95 | 95 | 95 | 95 | 95 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 88 | 82 | 88 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 119 | 119 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 40 psf | B | 0 to 7 | Array Interior | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 85 |
| | | | Array Edge | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 84 | 84 | 86 | 86 | 86 | 86 | 86 | 81 | 81 | 86 | 86 | 86 | 86 | 86 | 78 | 78 | 86 | 86 | 85 | 85 | 85 | 74 | 74 | 86 | 86 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 86 | 88 | 88 | 88 | 88 | 88 | 88 | 84 | 88 | 88 | 88 | 87 | 87 | 87 | 81 |
| | | | Array Edge | 88 | 88 | 88 | 88 | 88 | 88 | 86 | 88 | 88 | 88 | 88 | 88 | 88 | 83 | 88 | 88 | 88 | 85 | 85 | 85 | 80 | 88 | 88 | 88 | 83 | 83 | 83 | 76 | 88 | 88 | 88 | 80 | 80 | 80 | 73 | 88 | 88 | 88 | 76 | 76 | 76 | 70 | 87 | 87 | 87 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| | | | Array Edge | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 85 | 85 | 85 | 83 | 88 | 88 | 88 | 83 | 83 | 83 | 80 | 88 | 88 | 88 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 93 |
| | | | Array Edge | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 91 | 93 | 93 | 93 | 93 | 93 | 93 | 88 | 93 | 93 | 93 | 93 | 93 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 83 | 83 | 86 | 86 | 86 | 86 | 86 | 80 | 80 | 86 | 86 | 86 | 86 | 86 | 77 | 77 | 86 | 86 | 85 | 85 | 85 | 73 | 73 |
| | | | Array Edge | 86 | 86 | 86 | 86 | 86 | 80 | 80 | 86 | 86 | 86 | 86 | 86 | 76 | 76 | 86 | 86 | 83 | 83 | 83 | 72 | 72 | 86 | 86 | 81 | 81 | 81 | 68 | 68 | 86 | 86 | 77 | 77 | 77 | 65 | 65 | 86 | 84 | 74 | 74 | 74 | 62 | 62 | 86 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 85 | 88 | 88 | 88 | 88 | 88 | 88 | 82 | 88 | 88 | 88 | 85 | 85 | 85 | 79 | 88 | 88 | 88 | 82 | 82 | 82 | 75 | 88 | 88 | 88 | 79 | 79 | 79 | 72 | 88 | 88 | 88 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 88 | 88 | 88 | 82 | 82 | 82 | 75 | 88 | 88 | 88 | 78 | 78 | 78 | 71 | 88 | 88 | 88 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 

## Maximum Rail Spans (Inches)

## SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 30 psf | B | 0 to 7 | Array Interior | 91 | 91 | 90 | 90 | 90 | 80 | 80 | 91 | 91 | 86 | 86 | 86 | 74 | 74 | 91 | 91 | 81 | 81 | 81 | 69 | 69 | 91 | 87 | 77 | 77 | 77 | 65 | 65 | 91 | 83 | 72 | 72 | 72 | 61 | 61 | 91 | 80 | 68 | 68 | 68 | 57 | 57 | 91 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 91 | 87 | 77 | 77 | 77 | 65 | 65 | 91 | 82 | 72 | 72 | 72 | 60 | 60 | 91 | 78 | 67 | 67 | 67 | 56 | 56 | 91 | 73 | 62 | 62 | 62 | 53 | 53 | 90 | 68 | 59 | 59 | 59 | 49 | 49 | 86 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 94 | 94 | 94 | 82 | 82 | 82 | 76 | 90 | 90 | 90 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 96 | 96 | 96 | 87 | 87 | 87 | 85 | 96 | 96 | 96 | 83 | 83 | 83 | 81 | 95 | 95 | 95 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 98 | 98 | 98 | 98 | 94 | 87 | 94 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 91 | 89 | 80 | 80 | 80 | 67 | 67 | 91 | 84 | 74 | 74 | 74 | 62 | 62 | 91 | 80 | 69 | 69 | 69 | 58 | 58 | 91 | 76 | 65 | 65 | 65 | 54 | 54 | 91 | 71 | 61 | 61 | 61 | 51 | 51 | 89 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 91 | 76 | 65 | 65 | 65 | 55 | 55 | 91 | 70 | 60 | 60 | 60 | 51 | 51 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 93 | 93 | 93 | 77 | 77 | 77 | 74 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 84 | 76 | 84 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 92 | 84 | 73 | 73 | 73 | 62 | 62 | 92 | 80 | 68 | 68 | 68 | 57 | 57 | 92 | 74 | 63 | 63 | 63 | 53 | 53 | 91 | 69 | 59 | 59 | 59 | 50 | 50 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 91 | 70 | 59 | 59 | 59 | 50 | 50 | 86 | 64 | 55 | 55 | 55 | 46 | 46 | 82 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 87 | 87 | 87 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 35 psf | B | 0 to 7 | Array Interior | 89 | 89 | 89 | 89 | 89 | 80 | 80 | 89 | 89 | 86 | 86 | 86 | 74 | 74 | 89 | 89 | 81 | 81 | 81 | 69 | 69 | 89 | 87 | 77 | 77 | 77 | 65 | 65 | 89 | 83 | 72 | 72 | 72 | 61 | 61 | 89 | 80 | 68 | 68 | 68 | 57 | 57 | 89 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 89 | 87 | 77 | 77 | 77 | 65 | 65 | 89 | 82 | 72 | 72 | 72 | 60 | 60 | 89 | 78 | 67 | 67 | 67 | 56 | 56 | 89 | 73 | 62 | 62 | 62 | 53 | 53 | 89 | 68 | 59 | 59 | 59 | 49 | 49 | 86 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 91 | 91 | 91 | 82 | 82 | 82 | 76 | 90 | 90 | 90 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 92 | 92 | 92 | 87 | 87 | 87 | 85 | 92 | 92 | 92 | 83 | 83 | 83 | 81 | 92 | 92 | 92 | 79 | 79 | 79 | 76 | 90 | 90 | 90 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 91 | 91 | 91 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 96 | 96 | 96 | 96 | 94 | 87 | 94 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 86 | 86 | 80 | 80 | 80 | 67 | 67 | 86 | 84 | 74 | 74 | 74 | 62 | 62 | 86 | 80 | 69 | 69 | 69 | 58 | 58 | 86 | 76 | 65 | 65 | 65 | 54 | 54 | 86 | 71 | 61 | 61 | 61 | 51 | 51 | 86 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 86 | 76 | 65 | 65 | 65 | 55 | 55 | 86 | 70 | 60 | 60 | 60 | 51 | 51 | 85 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 88 | 88 | 88 | 77 | 77 | 77 | 74 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 84 | 76 | 84 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 88 | 84 | 73 | 73 | 73 | 62 | 62 | 88 | 80 | 68 | 68 | 68 | 57 | 57 | 88 | 74 | 63 | 63 | 63 | 53 | 53 | 88 | 69 | 59 | 59 | 59 | 50 | 50 | 87 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 88 | 70 | 59 | 59 | 59 | 50 | 50 | 86 | 64 | 55 | 55 | 55 | 46 | 46 | 82 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 87 | 87 | 87 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 40 psf | B | 0 to 7 | Array Interior | 86 | 86 | 86 | 86 | 80 | 80 | 80 | 86 | 86 | 86 | 86 | 74 | 74 | 74 | 86 | 86 | 81 | 81 | 81 | 69 | 69 | 86 | 76 | 77 | 77 | 77 | 65 | 65 | 86 | 83 | 72 | 72 | 72 | 61 | 61 | 86 | 80 | 68 | 68 | 68 | 57 | 57 | 86 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 86 | 86 | 77 | 77 | 77 | 65 | 65 | 86 | 82 | 72 | 72 | 72 | 60 | 60 | 86 | 78 | 67 | 67 | 67 | 56 | 56 | 86 | 73 | 62 | 62 | 62 | 53 | 53 | 86 | 68 | 59 | 59 | 59 | 49 | 49 | 85 | 64 | 55 | 55 | 55 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 88 | 88 | 88 | 82 | 82 | 82 | 76 | 88 | 88 | 88 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 88 | 88 | 88 | 87 | 87 | 87 | 85 | 88 | 88 | 88 | 83 | 83 | 83 | 81 | 88 | 88 | 88 | 79 | 79 | 79 | 76 | 88 | 88 | 88 | 74 | 74 | 74 | 71 | 87 | 87 | 87 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 88 | 88 | 88 | 74 | 74 | 74 | 71 | 86 | 86 | 86 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 93 | 93 | 93 | 93 | 93 | 87 | 93 | 93 | 93 | 93 | 93 | 89 | 83 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 86 | 86 | 80 | 80 | 80 | 67 | 67 | 86 | 84 | 74 | 74 | 74 | 62 | 62 | 86 | 80 | 69 | 69 | 69 | 58 | 58 | 86 | 76 | 65 | 65 | 65 | 54 | 54 | 86 | 71 | 61 | 61 | 61 | 51 | 51 | 86 | 67 | 57 | 57 | 57 | 48 | 48 | 85 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 86 | 76 | 65 | 65 | 65 | 55 | 55 | 86 | 70 | 60 | 60 | 60 | 51 | 51 | 85 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 45 psf | B | 0 to 7 | Array Interior | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 81 | 81 | 83 | 83 | 83 | 83 | 83 | 78 | 83 | 83 | 83 | 83 | 83 | 74 | 74 | 83 | 83 | 83 | 83 | 83 | 71 | 71 |
| | | 7 to 20 | Array Interior | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 84 | 86 | 86 | 86 | 86 | 86 | 81 | 81 |
| | | | Array Edge | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 83 | 86 | 86 | 86 | 85 | 85 | 80 | 80 | 86 | 86 | 86 | 83 | 83 | 73 | 76 | 86 | 86 | 86 | 76 | 76 | 76 | 70 | 86 | 86 | 86 | 80 | 80 | 80 | 73 | 86 | 86 | 86 | 73 | 73 | 67 | 67 |
| | | 20 to 27 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 |
| | | | Array Edge | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 83 | 84 | 84 | 84 | 83 | 83 | 83 | 80 | 84 | 84 | 84 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| | | | Array Edge | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 88 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 85 | 90 | 90 | 90 | 90 | 90 | 82 | 89 | 90 | 90 | 90 | 90 | 86 | 80 | 86 |
| | | 45 to 90 | Array Interior | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 |
| | | | Array Edge | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 111 | 111 | 111 | 111 | 111 | 112 | 112 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 77 | 83 | 83 | 83 | 83 | 83 | 83 | 77 | 83 | 83 | 83 | 83 | 83 | 73 | 73 |
| | | | Array Edge | 83 | 83 | 83 | 83 | 83 | 80 | 80 | 83 | 83 | 83 | 83 | 83 | 76 | 76 | 83 | 83 | 83 | 83 | 83 | 72 | 72 | 83 | 83 | 81 | 81 | 81 | 68 | 68 | 83 | 83 | 77 | 77 | 77 | 65 | 65 | 83 | 83 | 74 | 74 | 74 | 62 | 62 | 83 | 82 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 86 | 86 | 86 | 86 | 86 | 86 | 82 | 86 | 86 | 86 | 85 | 85 | 85 | 79 | 86 | 86 | 86 | 82 | 82 | 82 | 75 | 86 | 86 | 86 | 79 | 79 | 79 | 72 | 86 | 86 | 86 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 86 | 86 | 86 | 82 | 82 | 82 | 75 | 86 | 86 | 86 | 78 | 78 | 71 | 71 | 86 | 86 | 86 | 74 | 74 | 74 | 67 | 85 | 85 | 85 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 80 | 84 | 84 | 84 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 82 | 82 | 84 | 84 | 84 | 81 | 81 | 81 | 78 | 84 | 84 | 84 | 77 | 77 | 77 | 74 | 84 | 84 | 84 | 74 | 74 | 74 | 71 | 84 | 84 | 84 | 70 | 70 | 70 | 68 | 84 | 84 | 84 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 88 | 90 | 90 | 90 | 90 | 90 | 82 | 88 |
| | | | Array Edge | 90 | 90 | 90 | 90 | 90 | 87 | 90 | 90 | 90 | 90 | 90 | 84 | 90 | 90 | 90 | 90 | 90 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 108 | 108 | 102 | 102 | 102 | 102 | 102 | 105 | 105 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 84 | 84 | 84 | 86 | 86 | 86 | 86 | 86 | 81 | 81 | 86 | 86 | 86 | 86 | 86 | 77 | 77 | 86 | 86 | 85 | 85 | 85 | 74 | 74 | 86 | 86 | 82 | 82 | 82 | 70 | 70 | 86 | 86 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 86 | 86 | 85 | 85 | 85 | 73 | 73 | 86 | 86 | 82 | 82 | 82 | 69 | 69 | 86 | 86 | 78 | 78 | 78 | 66 | 66 | 86 | 85 | 74 | 74 | 74 | 63 | 63 | 86 | 82 | 71 | 71 | 71 | 60 | 60 | 86 | 79 | 68 | 68 | 68 | 57 | 57 | 86 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 83 | 88 | 88 | 88 | 86 | 86 | 86 | 80 | 88 | 88 | 88 | 83 | 83 | 83 | 76 | 88 | 88 | 88 | 80 | 80 | 80 | 73 | 88 | 88 | 88 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 88 | 88 | 88 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 85 | 85 | 85 | 83 | 88 | 88 | 88 | 82 | 82 | 82 | 80 | 88 | 88 | 88 | 80 | 80 | 80 | 77 | 88 | 88 | 88 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 88 | 88 | 88 | 82 | 82 | 82 | 80 | 88 | 88 | 88 | 79 | 79 | 79 | 76 | 88 | 88 | 88 | 75 | 75 | 75 | 72 | 88 | 88 | 88 | 71 | 71 | 71 | 68 | 85 | 85 | 85 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 91 | 93 | 93 | 93 | 93 | 93 | 93 | 88 | 93 | 93 | 93 | 93 | 93 | 92 | 85 | 92 | 92 | 92 | 92 | 92 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 92 | 92 | 92 | 92 | 88 | 82 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 116 | 116 | 115 | 115 | 115 | 115 | 115 | 116 | 116 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 50 psf | B | 0 to 7 | Array Interior | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 78 | 81 | 81 | 81 | 81 | 81 | 74 | 74 | 81 | 81 | 81 | 81 | 81 | 71 | 71 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 |
| | | | Array Edge | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 83 | 84 | 84 | 84 | 84 | 84 | 84 | 80 | 84 | 84 | 84 | 84 | 83 | 83 | 76 | 84 | 84 | 84 | 80 | 80 | 80 | 73 | 84 | 84 | 84 | 76 | 76 | 76 | 70 | 84 | 84 | 84 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 80 | 81 | 81 | 81 | 80 | 80 | 80 | 77 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 |
| | | | Array Edge | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 85 | 87 | 87 | 87 | 87 | 87 | 82 | 87 | 87 | 87 | 87 | 87 | 86 | 80 | 86 | 86 |
| | | 45 to 90 | Array Interior | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 |
| | | | Array Edge | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 77 | 77 | 81 | 81 | 81 | 81 | 81 | 73 | 73 |
| | | | Array Edge | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 81 | 81 | 81 | 81 | 76 | 76 | 76 | 81 | 81 | 81 | 81 | 81 | 72 | 72 | 81 | 81 | 81 | 81 | 81 | 68 | 68 | 81 | 81 | 77 | 77 | 77 | 65 | 65 | 81 | 81 | 74 | 74 | 74 | 62 | 62 | 81 | 81 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 82 | 84 | 84 | 84 | 84 | 84 | 84 | 79 | 84 | 84 | 84 | 82 | 82 | 82 | 75 | 84 | 84 | 84 | 79 | 79 | 79 | 72 | 84 | 84 | 84 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 84 | 84 | 84 | 82 | 82 | 82 | 75 | 84 | 84 | 84 | 78 | 78 | 78 | 71 | 84 | 84 | 84 | 74 | 74 | 74 | 67 | 84 | 84 | 84 | 71 | 71 | 71 | 64 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 76 | 76 | 76 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 80 |
| | | | Array Edge | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 78 | 81 | 81 | 81 | 77 | 77 | 77 | 74 | 81 | 81 | 81 | 74 | 74 | 74 | 71 | 81 | 81 | 81 | 70 | 70 | 70 | 68 | 81 | 81 | 81 | 67 | 67 | 67 | 65 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 84 | 87 | 87 | 87 | 87 | 87 | 87 | 82 | 87 | 87 |
| | | | Array Edge | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 84 | 87 | 87 | 87 | 87 | 87 | 87 | 81 | 87 | 87 | 87 | 87 | 87 | 84 | 77 | 84 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 70 | 79 | 80 | 80 | 80 | 80 | 75 | 67 | 75 |
| | | 45 to 90 | Array Interior | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 110 | 110 | 110 | 110 | 110 | 111 | 111 | 106 | 106 | 106 | 106 | 106 | 109 | 109 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 111 | 111 | 106 | 106 | 106 | 106 | 106 | 108 | 108 | 102 | 102 | 102 | 102 | 102 | 105 | 105 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 81 | 81 | 84 | 84 | 84 | 84 | 84 | 77 | 77 | 84 | 84 | 84 | 84 | 84 | 74 | 74 | 84 | 84 | 82 | 82 | 82 | 70 | 70 | 84 | 84 | 80 | 80 | 80 | 67 | 67 |
| | | | Array Edge | 84 | 84 | 84 | 84 | 84 | 73 | 73 | 84 | 84 | 82 | 82 | 82 | 69 | 69 | 84 | 84 | 78 | 78 | 78 | 66 | 66 | 84 | 84 | 74 | 74 | 74 | 63 | 63 | 84 | 82 | 71 | 71 | 71 | 60 | 60 | 84 | 79 | 68 | 68 | 68 | 57 | 57 | 84 | 76 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 86 | 86 | 86 | 86 | 86 | 86 | 83 | 86 | 86 | 86 | 86 | 86 | 86 | 80 | 86 | 86 | 86 | 83 | 83 | 83 | 76 | 86 | 86 | 86 | 80 | 80 | 80 | 73 | 86 | 86 | 86 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 73 | 73 | 73 | 66 | 84 | 84 | 84 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 86 | 86 | 86 | 76 | 76 | 76 | 69 | 86 | 86 | 86 | 72 | 72 | 72 | 65 | 83 | 83 | 83 | 68 | 68 | 68 | 62 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 80 | 84 | 84 | 84 | 82 | 82 | 82 | 80 |
| | | | Array Edge | 84 | 84 | 84 | 82 | 82 | 82 | 80 | 84 | 84 | 84 | 79 | 79 | 79 | 76 | 84 | 84 | 84 | 75 | 75 | 75 | 72 | 84 | 84 | 84 | 71 | 71 | 71 | 68 | 84 | 84 | 84 | 68 | 68 | 68 | 65 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 88 | 90 | 90 | 90 | 90 | 90 | 85 | 90 | 90 | 90 | 90 | 90 | 89 | 82 | 89 | 89 | 89 | 89 | 89 | 86 | 79 | 86 | 86 | 86 | 86 | 86 | 83 | 76 | 83 |
| | | | Array Edge | 90 | 90 | 90 | 90 | 88 | 82 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 111 | 111 | 111 | 111 | 111 | 113 | 113 | 107 | 107 | 107 | 107 | 107 | 110 | 110 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 60 psf | B | 0 to 7 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 74 | 74 | 74 | 76 | 76 | 76 | 76 | 76 | 71 | 71 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| | | | Array Edge | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 73 | 79 | 79 | 79 | 79 | 79 | 79 | 73 | 79 | 79 | 79 | 73 | 73 | 73 | 67 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 |
| | | | Array Edge | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 |
| | | 27 to 45 | Array Interior | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| | | | Array Edge | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 80 | 83 | 83 |
| | | 45 to 90 | Array Interior | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 |
| | | | Array Edge | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 103 | 103 | 103 | 103 | 103 | 107 | 107 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 73 | 73 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 72 | 72 | 76 | 76 | 76 | 76 | 76 | 68 | 68 | 76 | 76 | 76 | 76 | 76 | 65 | 65 | 76 | 76 | 74 | 74 | 74 | 62 | 62 | 76 | 76 | 71 | 71 | 71 | 59 | 59 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 75 | 79 | 79 | 79 | 79 | 79 | 79 | 75 | 79 | 79 | 79 | 79 | 79 | 79 | 72 | 79 | 79 | 79 | 76 | 76 | 76 | 69 |
| | | | Array Edge | 79 | 79 | 79 | 79 | 79 | 79 | 75 | 79 

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 45 psf | B | 0 to 7 | Array Interior | 83 | 83 | 83 | 83 | 83 | 80 | 80 | 83 | 83 | 83 | 83 | 83 | 74 | 74 | 83 | 83 | 81 | 81 | 81 | 69 | 69 | 83 | 83 | 77 | 77 | 77 | 65 | 65 | 83 | 83 | 72 | 72 | 72 | 61 | 61 | 83 | 80 | 68 | 68 | 68 | 57 | 57 | 83 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 83 | 83 | 77 | 77 | 77 | 65 | 65 | 83 | 82 | 72 | 72 | 60 | 60 | 60 | 83 | 78 | 67 | 67 | 67 | 56 | 56 | 83 | 73 | 62 | 62 | 62 | 53 | 53 | 83 | 68 | 59 | 59 | 59 | 49 | 49 | 83 | 64 | 55 | 55 | 55 | 55 | 47 | 47 | 82 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 86 | 86 | 86 | 82 | 82 | 82 | 76 | 86 | 86 | 86 | 77 | 77 | 77 | 70 | 85 | 85 | 85 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 81 | 84 | 84 | 84 | 79 | 79 | 79 | 76 | 84 | 84 | 84 | 74 | 74 | 74 | 71 | 84 | 84 | 84 | 69 | 69 | 69 | 66 | 83 | 83 | 83 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 84 | 84 | 84 | 74 | 74 | 74 | 71 | 84 | 84 | 84 | 68 | 68 | 68 | 66 | 82 | 82 | 82 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 90 | 90 | 90 | 90 | 90 | 87 | 90 | 90 | 90 | 90 | 90 | 83 | 89 | 89 | 88 | 88 | 88 | 88 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 |
| | | 45 to 90 | Array Interior | 112 | 112 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 83 | 83 | 80 | 80 | 80 | 67 | 67 | 83 | 83 | 74 | 74 | 74 | 62 | 62 | 83 | 80 | 69 | 69 | 69 | 58 | 58 | 83 | 76 | 65 | 65 | 65 | 54 | 54 | 83 | 71 | 61 | 61 | 61 | 51 | 51 | 83 | 67 | 57 | 57 | 57 | 48 | 48 | 83 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 83 | 76 | 65 | 65 | 65 | 55 | 55 | 83 | 70 | 60 | 60 | 60 | 51 | 51 | 83 | 65 | 56 | 56 | 56 | 47 | 47 | 82 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 84 | 84 | 84 | 77 | 77 | 77 | 74 | 84 | 84 | 84 | 71 | 71 | 71 | 68 | 84 | 84 | 84 | 66 | 66 | 66 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 84 | 76 | 84 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 86 | 84 | 73 | 73 | 73 | 62 | 62 | 86 | 80 | 68 | 68 | 68 | 57 | 57 | 86 | 74 | 63 | 63 | 63 | 53 | 53 | 86 | 69 | 59 | 59 | 59 | 50 | 50 | 85 | 65 | 56 | 56 | 56 | 47 | 47 | 83 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 86 | 70 | 59 | 59 | 59 | 50 | 50 | 85 | 64 | 55 | 55 | 55 | 46 | 46 | 82 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 87 | 87 | 87 | 70 | 70 | 70 | 67 | 83 | 83 | 83 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 50 psf | B | 0 to 7 | Array Interior | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 74 | 74 | 81 | 81 | 81 | 81 | 81 | 69 | 69 | 81 | 81 | 77 | 77 | 77 | 65 | 65 | 81 | 81 | 72 | 72 | 72 | 61 | 61 | 81 | 80 | 68 | 68 | 68 | 57 | 57 | 81 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 81 | 81 | 77 | 77 | 77 | 65 | 65 | 81 | 81 | 72 | 72 | 72 | 60 | 60 | 81 | 78 | 67 | 67 | 67 | 56 | 56 | 81 | 73 | 62 | 62 | 62 | 53 | 53 | 81 | 68 | 59 | 59 | 59 | 49 | 49 | 81 | 64 | 55 | 55 | 55 | 47 | 47 | 80 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 82 | 82 | 82 | 76 | 84 | 84 | 84 | 77 | 77 | 77 | 70 | 84 | 84 | 84 | 72 | 72 | 72 | 65 | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 82 | 82 | 82 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 79 | 79 | 79 | 76 | 81 | 81 | 81 | 74 | 74 | 74 | 71 | 81 | 81 | 81 | 69 | 69 | 69 | 66 | 81 | 81 | 81 | 65 | 65 | 65 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 81 | 81 | 81 | 74 | 74 | 74 | 71 | 81 | 81 | 81 | 68 | 68 | 68 | 66 | 81 | 81 | 81 | 64 | 64 | 64 | 61 | 78 | 78 | 78 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 83 | 87 | 87 | 87 | 87 | 87 | 87 | 85 | 78 | 85 | 84 | 84 | 84 | 84 | 81 | 73 | 81 | 81 | 81 | 81 | 81 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 | 69 |
| | | | Array Edge | 85 | 85 | 85 | 85 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 |
| | | 45 to 90 | Array Interior | 111 | 111 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 81 | 81 | 80 | 80 | 80 | 67 | 67 | 81 | 81 | 74 | 74 | 74 | 62 | 62 | 81 | 80 | 69 | 69 | 69 | 58 | 58 | 81 | 76 | 65 | 65 | 65 | 54 | 54 | 81 | 71 | 61 | 61 | 61 | 51 | 51 | 81 | 67 | 57 | 57 | 57 | 48 | 48 | 81 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 81 | 76 | 65 | 65 | 65 | 55 | 55 | 81 | 70 | 60 | 60 | 60 | 51 | 51 | 81 | 65 | 56 | 56 | 56 | 47 | 47 | 80 | 61 | 52 | 52 | 52 | 44 | 44 | 80 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 84 | 84 | 84 | 70 | 70 | 70 | 63 | 80 | 80 | 80 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 81 | 81 | 81 | 77 | 77 | 77 | 74 | 81 | 81 | 81 | 71 | 71 | 71 | 68 | 81 | 81 | 81 | 66 | 66 | 66 | 63 | 80 | 80 | 80 | 62 | 62 | 62 | 59 | 76 | 76 | 76 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 81 | 81 | 81 | 62 | 62 | 62 | 60 | 75 | 75 | 75 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 87 | 87 | 87 | 87 | 84 | 76 | 84 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 79 | 79 | 73 | 73 | 73 | 62 | 62 | 79 | 79 | 68 | 68 | 68 | 57 | 57 | 79 | 74 | 63 | 63 | 63 | 53 | 53 | 79 | 69 | 59 | 59 | 59 | 50 | 50 | 79 | 65 | 56 | 56 | 56 | 47 | 47 | 79 | 61 | 52 | 52 | 52 | 44 | 44 | 79 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 79 | 70 | 59 | 59 | 59 | 50 | 50 | 79 | 64 | 55 | 55 | 55 | 46 | 46 | 79 | 60 | 51 | 51 | 51 | 43 | 43 | 78 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 80 | 80 | 80 | 70 | 70 | 70 | 67 | 80 | 80 | 80 | 65 | 65 | 65 | 62 | 79 | 79 | 79 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 60 psf | B | 0 to 7 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 74 | 74 | 74 | 76 | 76 | 76 | 76 | 76 | 69 | 69 | 76 | 76 | 76 | 76 | 76 | 65 | 65 | 76 | 76 | 72 | 72 | 72 | 61 | 61 | 76 | 76 | 68 | 68 | 68 | 57 | 57 | 76 | 75 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 76 | 65 | 65 | 76 | 76 | 72 | 72 | 72 | 60 | 60 | 76 | 76 | 67 | 67 | 67 | 56 | 56 | 76 | 73 | 62 | 62 | 62 | 53 | 53 | 76 | 68 | 59 | 59 | 59 | 49 | 49 | 76 | 64 | 55 | 55 | 55 | 47 | 47 | 76 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 76 | 79 | 79 | 79 | 77 | 77 | 77 | 70 | 79 | 79 | 79 | 72 | 72 | 72 | 65 | 79 | 79 | 79 | 67 | 67 | 67 | 61 | 78 | 78 | 78 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 79 | 79 | 79 | 67 | 67 | 67 | 61 | 77 | 77 | 77 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 77 | 77 | 77 | 77 | 77 | 77 | 74 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 76 | 77 | 77 | 77 | 74 | 74 | 74 | 71 | 77 | 77 | 77 | 69 | 69 | 69 | 66 | 77 | 77 | 77 | 65 | 65 | 65 | 63 | 77 | 77 | 77 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 77 | 77 | 77 | 74 | 74 | 74 | 71 | 77 | 77 | 77 | 68 | 68 | 68 | 66 | 77 | 77 | 77 | 64 | 64 | 64 | 61 | 77 | 77 | 77 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 78 | 83 | 83 | 83 | 83 | 83 | 81 | 73 | 81 | 81 | 81 | 81 | 77 | 69 | 77 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 | 69 |
| | | | Array Edge | 83 | 83 | 83 | 83 | 82 | 74 | 82 | 80 | 80 | 80 | 80 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 |
| | | 45 to 90 | Array Interior | 107 | 107 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 76 | 76 | 76 | 76 | 76 | 67 | 67 | 76 | 76 | 74 | 74 | 74 | 62 | 62 | 76 | 76 | 69 | 69 | 69 | 58 | 58 | 76 | 76 | 65 | 65 | 65 | 54 | 54 | 76 | 71 | 61 | 61 | 61 | 51 | 51 | 76 | 67 | 57 | 57 | 57 | 48 | 48 | 76 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 76 | 76 | 65 | 65 | 65 | 55 | 55 | 76 | 70 | 60 | 60 | 60 | 51 | 51 | 76 | 65 | 56 | 56 | 56 | 47 | 47 | 76 | 61 | 52 | 52 | 52 | 44 | 44 | 76 | 57 | 49 | 49 | 49 | 42 | 42 | 75 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 79 | 79 | 79 | 70 | 70 | 70 | 63 | 79 | 79 | 79 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 90 mph | | | | | | | 95 mph | | | | | | | 100 mph | | | | | | | 105 mph | | | | | | | 110 mph | | | | | | | 115 mph | | | | | | | 120 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 70 psf | B | 0 to 7 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 71 |
| | | 7 to 20 | Array Interior | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | | | Array Edge | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 70 | 75 | 75 | 75 | 75 | 75 | 75 | 67 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 67 |
| | | 20 to 27 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | 27 to 45 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| | | | Array Edge | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| | | 45 to 90 | Array Interior | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 |
| | | | Array Edge | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 97 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 72 | 72 | 73 | 73 | 73 | 73 | 73 | 68 | 68 | 73 | 73 | 73 | 73 | 73 | 65 | 65 | 73 | 73 | 73 | 73 | 73 | 62 | 62 | 73 | 73 | 71 | 71 | 71 | 59 | 59 | 59 |
| | | 7 to 20 | Array Interior | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 69 |
| | | | Array Edge | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 71 | 75 | 75 | 75 | 74 | 74 | 74 | 67 | 75 | 75 | 75 | 71 | 71 | 71 | 64 | 75 | 75 | 75 | 67 | 67 | 67 | 61 | 75 | 75 | 75 | 64 | 64 | 64 | 58 | 75 | 75 | 75 | 61 | 61 | 61 | 56 |
| | | 20 to 27 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 74 | 74 | 74 | 70 | 70 | 70 | 68 | 74 | 74 | 74 | 67 | 67 | 67 | 65 | 65 |
| | | 27 to 45 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| | | | Array Edge | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 77 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 74 | 79 | 79 | 79 | 79 | 79 | 70 | 79 | 79 | 79 | 79 | 79 | 75 | 67 | 75 | 75 |
| | | 45 to 90 | Array Interior | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 100 |
| | | | Array Edge | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 102 | 102 | 102 | 102 | 102 | 103 | 103 | 98 | 98 | 98 | 98 | 98 | 102 | 102 | 95 | 95 | 95 | 95 | 95 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 87 |
| | D | 0 to 7 | Array Interior | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 74 | 74 | 75 | 75 | 75 | 75 | 75 | 70 | 70 | 75 | 75 | 75 | 75 | 75 | 67 | 67 | 67 |
| | | | Array Edge | 75 | 75 | 75 | 75 | 75 | 73 | 73 | 75 | 75 | 75 | 75 | 75 | 69 | 69 | 75 | 75 | 75 | 75 | 75 | 75 | 66 | 66 | 75 | 75 | 71 | 71 | 71 | 60 | 60 | 75 | 75 | 68 | 68 | 68 | 57 | 57 | 75 | 75 | 65 | 65 | 65 | 54 | 54 | 75 | 75 | 65 | 65 | 65 | 54 | 54 |
| | | 7 to 20 | Array Interior | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 76 | 76 | 78 | 78 | 78 | 78 | 78 | 73 | 73 | 78 | 78 | 78 | 76 | 76 | 76 | 69 | 78 | 78 | 78 | 73 | 73 | 73 | 66 | 78 | 78 | 78 | 69 | 69 | 69 | 63 |
| | | | Array Edge | 78 | 78 | 78 | 76 | 76 | 76 | 76 | 69 | 78 | 78 | 78 | 72 | 72 | 65 | 78 | 78 | 78 | 68 | 68 | 68 | 62 | 62 | 78 | 78 | 65 | 65 | 65 | 59 | 59 | 76 | 76 | 76 | 62 | 62 | 62 | 56 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | 20 to 27 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 73 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 72 | 76 | 76 | 76 | 71 | 71 | 71 | 68 | 76 | 76 | 76 | 68 | 68 | 68 | 65 | 76 | 76 | 76 | 65 | 65 | 65 | 62 | 76 | 76 | 76 | 62 | 62 | 62 | 59 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 79 | 82 | 82 | 82 | 82 | 82 | 82 | 76 | 82 | 82 |
| | | | Array Edge | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 78 | 78 | 82 | 82 | 82 | 82 | 82 | 82 | 74 | 74 | 82 | 82 | 82 | 82 | 79 | 71 | 79 | 79 | 80 | 80 | 80 | 80 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 103 | 103 | 103 | 103 | 103 | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 104 | 104 | 97 | 97 | 97 | 97 | 97 | 101 | 101 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 106 | 106 | 100 | 100 | 100 | 100 | 100 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 |
| 80 psf | B | 0 to 7 | Array Interior | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 |
| | | 7 to 20 | Array Interior | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 |
| | | | Array Edge | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 70 | 72 | 72 | 72 | 72 | 72 | 72 | 70 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 67 |
| | | 20 to 27 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 |
| | | | Array Edge | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 |
| | | 27 to 45 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| | | 45 to 90 | Array Interior | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | | Array Edge | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 97 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 68 | 69 | 69 | 69 | 69 | 69 | 69 | 60 | 69 | 69 | 68 | 68 | 68 | 57 | 57 | 69 | 69 | 65 | 65 | 65 | 54 | 54 | 54 |
| | | 7 to 20 | Array Interior | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 69 | 72 | 72 | 72 | 72 | 72 | 72 | 66 | 72 | 72 | 72 | 69 | 69 | 69 | 63 | 63 |
| | | | Array Edge | 72 | 72 | 72 | 72 | 72 | 72 | 69 | 72 | 72 | 72 | 72 | 72 | 72 | 65 | 72 | 72 | 72 | 68 | 68 | 68 | 62 | 62 | 72 | 72 | 65 | 65 | 65 | 59 | 59 | 72 | 72 | 62 | 62 | 62 | 56 | 72 | 72 | 72 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 51 |
| | | 20 to 27 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 |
| | | | Array Edge | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 68 | 71 | 71 | 71 | 68 | 68 | 68 | 65 | 71 | 71 | 71 | 65 | 65 | 65 | 62 | 71 | 71 | 71 | 62 | 62 | 62 | 59 | 59 |
| | | 27 to 45 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 74 | 74 | 76 | 76 | 76 | 76 | 76 | 76 | 71 | 76 | 76 | 76 | 76 | 76 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 97 | 97 | 97 | 97 | 97 | 100 | 100 | 94 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 82 |
| | D | 0 to 7 | Array Interior | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 66 | 66 | 69 | 69 | 69 | 69 | 69 | 63 | 63 | 69 | 69 | 69 | 69 | 69 | 60 | 69 | 69 | 68 | 68 | 68 | 57 | 57 | 69 | 69 | 65 | 65 | 65 | 54 | 54 | 54 |
| | | 7 to 20 | Array Interior | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 69 | 72 | 72 | 72 | 72 | 72 | 72 | 66 | 72 | 72 | 72 | 69 | 69 | 69 | 63 | 63 |
| | | | Array Edge | 72 | 72 | 72 | 72 | 72 | 72 | 69 | 72 | 72 | 72 | 72 | 72 | 72 | 65 | 72 | 72 | 72 | 68 | 68 | 68 | 62 | 62 | 72 | 72 | 65 | 65 | 65 | 59 | 59 | 72 | 72 | 62 | 62 | 62 | 56 | 72 | 72 | 72 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 51 |
| | | 20 to 27 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 |
| | | | Array Edge | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 68 | 68 | 71 | 71 | 71 | 68 | 68 | 65 | 71 | 71 | 71 | 65 | 65 | 65 | 62 | 71 | 71 | 71 | 62 | 62 | 62 | 59 | 59 |
| | | 27 to 45 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 74 | 74 | 76 | 76 | 76 | 76 | 76 | 76 | 71 | 76 | 76 | 76 | 76 | 76 | 76 | 67 | 76 | 76 | 76 | 76 | 76 | 72 | 64 | 72 | 73 | 73 | 73 | 73 | 69 | 62 | 69 |
| | | 45 to 90 | Array Interior | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 97 | 97 | 97 | 97 | 97 | 100 | 100 | 94 | 94 | 94 | 94 | 94 | 94 |
| | | | Array Edge | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 96 | 96 | 96 | 96 | 96 | 100 | 100 | 93 | 93 | 93 | 93 | 93 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 84 | 84 | 84 | 84 | 84 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 82 |
| 90 psf | B | 0 to 7 | Array Interior | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| | | | Array Edge | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| | | 7 to 20 | Array Interior | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 67 |
| | | 20 to 27 | Array Interior | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| | | | Array Edge | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| | | 27 to 45 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| | | | Array Edge | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| | C | 0 to 7 | Array Interior | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| | | | Array Edge | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 62 | 62 | 66 | 66 | 66 | 66 | 66 | 62 | 62 | 66 | 66 | 66 | 66 | 66 | 59 | 59 |
| | | 7 to 20 | Array Interior | 69 | 69 | 69

**Maximum Rail Spans (Inches)**

**SMR100 Rail Flush-Mount on 0 to 30 Foot Roof -- ASCE 7-16 -- 72-Cell (L)**

| Ground Snow Load | Exposure Category | Panel Angle | Wind Speed -> | 130 mph | | | | | | | 140 mph | | | | | | | 150 mph | | | | | | | 160 mph | | | | | | | 170 mph | | | | | | | 180 mph | | | | | | | 190 mph | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Zone -> | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r | 1' | 1 | 2e | 2r | 2n | 3e | 3r |
| 70 psf | B | 0 to 7 | Array Interior | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 69 | 69 | 73 | 73 | 73 | 73 | 73 | 65 | 65 | 73 | 73 | 72 | 72 | 72 | 61 | 61 | 73 | 73 | 68 | 68 | 68 | 57 | 57 | 73 | 73 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 73 | 65 | 65 | 73 | 73 | 72 | 72 | 72 | 60 | 60 | 73 | 73 | 67 | 67 | 67 | 56 | 56 | 73 | 73 | 62 | 62 | 62 | 53 | 53 | 73 | 68 | 59 | 59 | 59 | 49 | 49 | 73 | 64 | 55 | 55 | 55 | 47 | 47 | 73 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 70 | 75 | 75 | 75 | 72 | 72 | 72 | 65 | 75 | 75 | 75 | 67 | 67 | 67 | 61 | 75 | 75 | 75 | 63 | 63 | 63 | 57 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 75 | 75 | 75 | 67 | 67 | 67 | 61 | 75 | 75 | 75 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 74 | 74 | 74 | 69 | 69 | 69 | 66 | 74 | 74 | 74 | 65 | 65 | 65 | 63 | 74 | 74 | 74 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 74 | 74 | 74 | 68 | 68 | 68 | 66 | 74 | 74 | 74 | 64 | 64 | 64 | 61 | 74 | 74 | 74 | 60 | 60 | 60 | 57 | 73 | 73 | 73 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 78 | 79 | 79 | 79 | 79 | 79 | 79 | 73 | 79 | 79 | 79 | 79 | 79 | 77 | 69 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 79 | 79 | 79 | 79 | 79 | 74 | 79 | 79 | 79 | 79 | 79 | 77 | 68 | 77 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 101 | 101 | 101 | 101 | 101 | 103 | 103 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 73 | 73 | 73 | 73 | 73 | 67 | 67 | 73 | 73 | 73 | 73 | 73 | 62 | 62 | 73 | 73 | 69 | 69 | 69 | 58 | 58 | 73 | 73 | 65 | 65 | 65 | 54 | 54 | 73 | 71 | 61 | 61 | 61 | 51 | 51 | 73 | 67 | 57 | 57 | 57 | 48 | 48 | 73 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 73 | 73 | 65 | 65 | 65 | 55 | 55 | 73 | 70 | 60 | 60 | 60 | 51 | 51 | 73 | 65 | 56 | 56 | 56 | 47 | 47 | 73 | 61 | 52 | 52 | 52 | 44 | 44 | 73 | 57 | 49 | 49 | 49 | 42 | 42 | 73 | 54 | 46 | 46 | 46 | 39 | 39 | 71 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 75 | 75 | 75 | 70 | 70 | 70 | 63 | 75 | 75 | 75 | 65 | 65 | 65 | 59 | 74 | 74 | 74 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 71 | 71 | 68 | 74 | 74 | 74 | 66 | 66 | 66 | 63 | 74 | 74 | 74 | 62 | 62 | 62 | 59 | 74 | 74 | 74 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 74 | 74 | 74 | 62 | 62 | 62 | 60 | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 79 | 79 | 79 | 79 | 79 | 76 | 79 | 79 | 79 | 79 | 79 | 79 | 71 | 79 | 78 | 78 | 78 | 78 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 |
| | | 45 to 90 | Array Interior | 101 | 101 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 75 | 75 | 73 | 73 | 73 | 62 | 62 | 75 | 75 | 68 | 68 | 68 | 57 | 57 | 75 | 74 | 63 | 63 | 63 | 53 | 53 | 75 | 69 | 59 | 59 | 59 | 50 | 50 | 75 | 65 | 56 | 56 | 56 | 47 | 47 | 75 | 61 | 52 | 52 | 52 | 44 | 44 | 75 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 75 | 70 | 59 | 59 | 59 | 50 | 50 | 75 | 64 | 55 | 55 | 55 | 46 | 46 | 75 | 60 | 51 | 51 | 51 | 43 | 43 | 75 | 56 | 48 | 48 | 48 | 41 | 41 | 73 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 78 | 78 | 78 | 64 | 64 | 64 | 58 | 73 | 73 | 73 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 76 | 76 | 76 | 70 | 70 | 70 | 67 | 76 | 76 | 76 | 65 | 65 | 65 | 62 | 76 | 76 | 76 | 60 | 60 | 60 | 58 | 74 | 74 | 74 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 74 | 74 | 74 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 82 | 82 | 82 | 82 | 78 | 70 | 78 | 77 | 77 | 77 | 77 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 80 psf | B | 0 to 7 | Array Interior | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 65 | 65 | 69 | 69 | 69 | 69 | 69 | 61 | 61 | 69 | 69 | 68 | 68 | 68 | 57 | 57 | 69 | 69 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 69 | 69 | 69 | 69 | 69 | 65 | 65 | 69 | 69 | 69 | 69 | 69 | 60 | 60 | 69 | 69 | 67 | 67 | 67 | 56 | 56 | 69 | 69 | 62 | 62 | 62 | 53 | 53 | 69 | 68 | 59 | 59 | 59 | 49 | 49 | 69 | 64 | 55 | 55 | 55 | 47 | 47 | 69 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 70 | 72 | 72 | 72 | 72 | 72 | 72 | 65 | 72 | 72 | 72 | 67 | 67 | 67 | 61 | 72 | 72 | 72 | 63 | 63 | 63 | 57 | 72 | 72 | 72 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 72 | 72 | 72 | 67 | 67 | 67 | 61 | 72 | 72 | 72 | 62 | 62 | 62 | 57 | 72 | 72 | 72 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 69 | 69 | 66 | 71 | 71 | 71 | 69 | 69 | 69 | 66 | 71 | 71 | 71 | 65 | 65 | 65 | 63 | 71 | 71 | 71 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 68 | 68 | 68 | 66 | 71 | 71 | 71 | 64 | 64 | 64 | 61 | 71 | 71 | 71 | 60 | 60 | 60 | 57 | 71 | 71 | 71 | 56 | 56 | 56 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 73 | 76 | 76 | 76 | 76 | 76 | 76 | 69 | 76 | 76 | 76 | 76 | 76 | 73 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 76 | 76 | 76 | 76 | 76 | 74 | 76 | 76 | 76 | 76 | 76 | 68 | 76 | 75 | 75 | 75 | 75 | 75 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 96 | 96 | 96 | 96 | 96 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 69 | 69 | 69 | 69 | 69 | 67 | 67 | 69 | 69 | 69 | 69 | 69 | 62 | 62 | 69 | 69 | 69 | 69 | 69 | 58 | 58 | 69 | 69 | 65 | 65 | 65 | 54 | 54 | 69 | 69 | 61 | 61 | 61 | 51 | 51 | 69 | 67 | 57 | 57 | 57 | 48 | 48 | 69 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 69 | 69 | 65 | 65 | 65 | 55 | 55 | 69 | 69 | 60 | 60 | 60 | 51 | 51 | 69 | 65 | 56 | 56 | 56 | 47 | 47 | 69 | 61 | 52 | 52 | 52 | 44 | 44 | 69 | 57 | 49 | 49 | 49 | 42 | 42 | 69 | 54 | 46 | 46 | 46 | 39 | 39 | 69 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 72 | 72 | 72 | 70 | 70 | 70 | 63 | 72 | 72 | 72 | 65 | 65 | 65 | 59 | 72 | 72 | 72 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 70 | 70 | 70 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 | 50 | 50 | 50 | 40 | 40 | 40 | 37 | 47 | 47 | 47 | 38 | 38 | 38 | 35 |
| | | 20 to 27 | Array Interior | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 68 | 71 | 71 | 71 | 66 | 66 | 66 | 63 | 71 | 71 | 71 | 62 | 62 | 62 | 59 | 71 | 71 | 71 | 58 | 58 | 58 | 56 | 71 | 71 | 71 | 55 | 55 | 55 | 53 | 67 | 67 | 67 | 52 | 52 | 52 | 50 |
| | | | Array Edge | 71 | 71 | 71 | 62 | 62 | 62 | 60 | 71 | 71 | 71 | 57 | 57 | 57 | 55 | 70 | 70 | 70 | 54 | 54 | 54 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 61 | 61 | 61 | 47 | 47 | 47 | 45 | 58 | 58 | 58 | 44 | 44 | 44 | 43 | 55 | 55 | 55 | 42 | 42 | 42 | 40 |
| | | 27 to 45 | Array Interior | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 71 | 76 | 76 | 76 | 76 | 76 | 74 | 66 | 74 | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 69 | 69 | 69 | 69 | 69 | 65 | 58 | 65 | 65 | 65 | 65 | 61 | 55 | 61 | 61 | 61 | 61 | 61 | 58 | 52 | 58 |
| | | | Array Edge | 73 | 73 | 73 | 73 | 69 | 62 | 69 | 68 | 68 | 68 | 68 | 64 | 57 | 64 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 | 52 | 52 | 52 | 52 | 50 | 44 | 50 | 50 | 50 | 50 | 50 | 47 | 42 | 47 |
| | | 45 to 90 | Array Interior | 97 | 97 | 94 | 94 | 94 | 94 | 94 | 97 | 97 | 90 | 90 | 90 | 90 | 90 | 93 | 93 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 78 | 78 | 78 | 78 | 78 | 82 | 82 | 73 | 73 | 73 | 73 | 73 | 78 | 78 | 69 | 69 | 69 | 69 | 69 |
| | | | Array Edge | 89 | 89 | 82 | 82 | 82 | 82 | 82 | 85 | 85 | 77 | 77 | 77 | 77 | 77 | 81 | 81 | 72 | 72 | 72 | 72 | 72 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 71 | 71 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 60 | 60 | 60 | 60 | 60 | 64 | 64 | 56 | 56 | 56 | 56 | 56 |
| | D | 0 to 7 | Array Interior | 69 | 69 | 69 | 69 | 69 | 62 | 62 | 69 | 69 | 68 | 68 | 68 | 57 | 57 | 69 | 69 | 63 | 63 | 63 | 53 | 53 | 69 | 69 | 59 | 59 | 59 | 50 | 50 | 69 | 65 | 56 | 56 | 56 | 47 | 47 | 69 | 61 | 52 | 52 | 52 | 44 | 44 | 69 | 58 | 50 | 50 | 50 | 42 | 42 |
| | | | Array Edge | 69 | 69 | 59 | 59 | 59 | 50 | 50 | 69 | 64 | 55 | 55 | 55 | 46 | 46 | 69 | 60 | 51 | 51 | 51 | 43 | 43 | 69 | 56 | 48 | 48 | 48 | 41 | 41 | 69 | 53 | 45 | 45 | 45 | 38 | 38 | 69 | 50 | 43 | 43 | 43 | 36 | 36 | 65 | 47 | 40 | 40 | 40 | 34 | 34 |
| | | 7 to 20 | Array Interior | 72 | 72 | 72 | 64 | 64 | 64 | 58 | 72 | 72 | 72 | 59 | 59 | 59 | 54 | 68 | 68 | 68 | 55 | 55 | 55 | 50 | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 60 | 60 | 60 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 46 | 46 | 46 | 42 | 53 | 53 | 53 | 43 | 43 | 43 | 39 |
| | | | Array Edge | 64 | 64 | 64 | 52 | 52 | 52 | 47 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 55 | 55 | 55 | 45 | 45 | 45 | 41 | 52 | 52 | 52 | 42 | 42 | 42 | 38 | 48 | 48 | 48 | 39 | 39 | 39 | 36 | 46 | 46 | 46 | 37 | 37 | 37 | 34 | 43 | 43 | 43 | 35 | 35 | 35 | 32 |
| | | 20 to 27 | Array Interior | 71 | 71 | 71 | 70 | 70 | 70 | 67 | 71 | 71 | 71 | 65 | 65 | 65 | 62 | 71 | 71 | 71 | 60 | 60 | 60 | 58 | 71 | 71 | 71 | 57 | 57 | 57 | 54 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 | 62 | 62 | 62 | 47 | 47 | 47 | 46 |
| | | | Array Edge | 71 | 71 | 71 | 57 | 57 | 57 | 55 | 69 | 69 | 69 | 53 | 53 | 53 | 51 | 64 | 64 | 64 | 49 | 49 | 49 | 47 | 60 | 60 | 60 | 46 | 46 | 46 | 44 | 56 | 56 | 56 | 43 | 43 | 43 | 42 | 53 | 53 | 53 | 41 | 41 | 41 | 39 | 50 | 50 | 50 | 39 | 39 | 39 | 37 |
| | | 27 to 45 | Array Interior | 76 | 76 | 76 | 76 | 76 | 70 | 76 | 76 | 76 | 76 | 76 | 73 | 65 | 73 | 71 | 71 | 71 | 71 | 68 | 60 | 68 | 67 | 67 | 67 | 67 | 63 | 56 | 63 | 63 | 63 | 63 | 63 | 60 | 53 | 60 | 59 | 59 | 59 | 59 | 56 | 50 | 56 | 56 | 56 | 56 | 56 | 53 | 47 | 53 |
| | | | Array Edge | 67 | 67 | 67 | 67 | 64 | 57 | 64 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 58 | 58 | 58 | 58 | 55 | 49 | 55 | 54 | 54 | 54 | 54 | 51 | 46 | 51 | 51 | 51 | 51 | 51 | 48 | 43 | 48 | 48 | 48 | 48 | 48 | 46 | 41 | 46 | 46 | 46 | 46 | 46 | 43 | 39 | 43 |
| | | 45 to 90 | Array Interior | 96 | 96 | 89 | 89 | 89 | 89 | 89 | 92 | 92 | 84 | 84 | 84 | 84 | 84 | 88 | 88 | 81 | 81 | 81 | 81 | 81 | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 | 72 | 72 | 64 | 64 | 64 | 64 | 64 |
| | | | Array Edge | 84 | 84 | 76 | 76 | 76 | 76 | 76 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 74 | 74 | 66 | 66 | 66 | 66 | 66 | 70 | 70 | 62 | 62 | 62 | 62 | 62 | 65 | 65 | 58 | 58 | 58 | 58 | 58 | 62 | 62 | 55 | 55 | 55 | 55 | 55 | 58 | 58 | 52 | 52 | 52 | 52 | 52 |
| 90 psf | B | 0 to 7 | Array Interior | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 66 | 66 | 66 | 66 | 66 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 61 | 61 | 66 | 66 | 66 | 66 | 66 | 57 | 57 | 66 | 66 | 64 | 64 | 64 | 54 | 54 |
| | | | Array Edge | 66 | 66 | 66 | 66 | 66 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 60 | 60 | 66 | 66 | 66 | 66 | 66 | 56 | 56 | 66 | 66 | 62 | 62 | 62 | 53 | 53 | 66 | 66 | 59 | 59 | 59 | 49 | 49 | 66 | 64 | 55 | 55 | 55 | 47 | 47 | 66 | 61 | 52 | 52 | 52 | 44 | 44 |
| | | 7 to 20 | Array Interior | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 65 | 69 | 69 | 69 | 67 | 67 | 67 | 61 | 69 | 69 | 69 | 63 | 63 | 63 | 57 | 69 | 69 | 69 | 59 | 59 | 59 | 54 | 69 | 69 | 69 | 56 | 56 | 56 | 51 |
| | | | Array Edge | 69 | 69 | 69 | 67 | 67 | 67 | 61 | 69 | 69 | 69 | 62 | 62 | 62 | 57 | 69 | 69 | 69 | 58 | 58 | 58 | 53 | 67 | 67 | 67 | 54 | 54 | 54 | 49 | 63 | 63 | 63 | 51 | 51 | 51 | 46 | 59 | 59 | 59 | 48 | 48 | 48 | 44 | 56 | 56 | 56 | 45 | 45 | 45 | 41 |
| | | 20 to 27 | Array Interior | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 65 | 65 | 65 | 63 | 68 | 68 | 68 | 62 | 62 | 62 | 59 |
| | | | Array Edge | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 68 | 68 | 68 | 64 | 64 | 64 | 61 | 68 | 68 | 68 | 60 | 60 | 60 | 57 | 68 | 68 | 68 | 56 | 56 | 56 | 54 | 68 | 68 | 68 | 53 | 53 | 53 | 51 | 65 | 65 | 65 | 50 | 50 | 50 | 48 |
| | | 27 to 45 | Array Interior | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 73 | 74 | 74 | 74 | 74 | 74 | 74 | 69 | 74 | 74 | 74 | 74 | 74 | 65 | 73 | 73 | 73 | 73 | 73 | 69 | 61 | 69 |
| | | | Array Edge | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 68 | 74 | 74 | 74 | 74 | 74 | 74 | 71 | 64 | 71 | 70 | 70 | 70 | 70 | 67 | 59 | 67 | 66 | 66 | 66 | 66 | 63 | 56 | 63 | 62 | 62 | 62 | 62 | 59 | 53 | 59 | 59 | 59 | 59 | 59 | 56 | 50 | 56 |
| | | 45 to 90 | Array Interior | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 88 | 88 | 88 | 88 | 88 | 92 | 92 | 85 | 85 | 85 | 85 | 85 | 89 | 89 | 81 | 81 | 81 | 81 | 81 |
| | | | Array Edge | 97 | 97 | 92 | 92 | 92 | 92 | 92 | 95 | 95 | 87 | 87 | 87 | 87 | 87 | 91 | 91 | 83 | 83 | 83 | 83 | 83 | 87 | 87 | 80 | 80 | 80 | 80 | 80 | 83 | 83 | 75 | 75 | 75 | 75 | 75 | 80 | 80 | 71 | 71 | 71 | 71 | 71 | 76 | 76 | 67 | 67 | 67 | 67 | 67 |
| | C | 0 to 7 | Array Interior | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 62 | 62 | 66 | 66 | 66 | 66 | 66 | 58 | 58 | 66 | 66 | 65 | 65 | 65 | 54 | 54 | 66 | 66 | 61 | 61 | 61 | 51 | 51 | 66 | 66 | 57 | 57 | 57 | 48 | 48 | 66 | 63 | 54 | 54 | 54 | 46 | 46 |
| | | | Array Edge | 66 | 66 | 65 | 65 | 65 | 55 | 55 | 66 | 66 | 60 | 60 | 60 | 51 | 51 | 66 | 65 | 56 | 56 | 56 | 47 | 47 | 66 | 61 | 52 | 52 | 52 | 44 | 44 | 66 | 57 | 49 | 49 | 49 | 42 | 42 | 66 | 54 | 46 | 46 | 46 | 39 | 39 | 66 | 51 | 44 | 44 | 44 | 37 | 37 |
| | | 7 to 20 | Array Interior | 69 | 69 | 69 | 69 | 69 | 69 | 63 | 69 | 69 | 69 | 65 | 65 | 65 | 59 | 69 | 69 | 69 | 60 | 60 | 60 | 55 | 69 | 69 | 69 | 56 | 56 | 56 | 51 | 65 | 65 | 65 | 53 | 53 | 53 | 48 | 61 | 61 | 61 | 50 | 50 | 50 | 45 | 58 | 58 | 58 | 47 | 47 | 47 | 43 |
| | | | Array Edge | 69 | 69 | 69 | 57 | 57 | 57 | 51 | 65 | 65 | 65 | 52 | 52 | 52 | 48 | 60 | 60 | 60 | 49 | 49 | 49 | 44 | 56 | 56 