Design Criteria for Span Tables:

Values in the maximum allowable rail span tables provided herein are subject to the following general criteria and additional criteria shown on individual span tables sheets. Values in span tables are based on the same engineering methodology and calculation algorithms used for U-Builder and are provided here for reference.

Building Assumptions

- Building Risk Category: II
- Mean Roof Height: 30 ft
- Roof Pitch: 0°-45°
- Site Elevation: 0 ft

Wind Design Assumptions

- Wind loads used are based on ASCE 7-16 Sec 29.4.4 with Provisions from SEAOC PV2-2017
- Exposure Category B, C, or D
- Basic Wind Speed = 90 – 180 mph
- Level terrain. Topographic factor, kzt = 1.0
- γE = 1.0 for 'Interior' spans, γE = 1.5 for 'Exposed' spans (ASCE 7-16, Fig. 29.4-7)

Snow Design Assumptions

- Ground Snow Load = 0-100 psf
- Exposure Factor coefficients of Partially Exposed condition
- Thermal Factor = 1.0
- Results based on uniform snow load

Seismic Design Assumptions

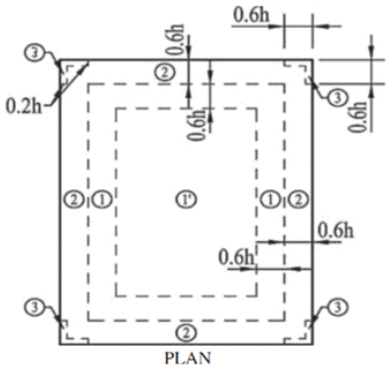
- 0.2-s Spectral Response Acceleration, SS ≤ 3
- S_S = 1.25 and 3 per criteria shown on individual span tables sheets.
- S_1 = 0.5
- Seismic site class D

Array Assumptions

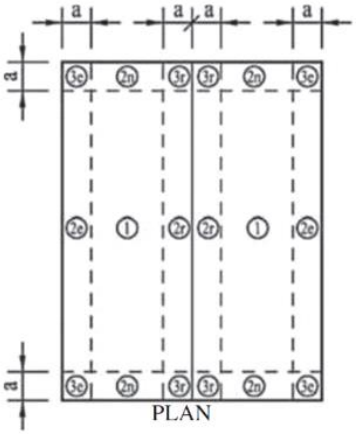
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at least twice the module height above roof surface.
- Modules are parallel to roof surface and maximum height above roof surface is 5" to 10" depending on attachment type.
- Gaps between module rows and columns is 0.25" in to 1" depending on clamp type.
- The most restrictive of all roof zone spans shall be used when any part of the module is attributed to that span.
- 'Exposed' spans as defined in ASCE 7-16 sec. 29.4.4 shall be used when any part of an exposed module or panel as is attributed to that span.

Span Tables

Zone should be considered as per ASCE 7-16, Fig. 30.3-2A to 30.3-2D



Gable Roofs θ ≤ 7°

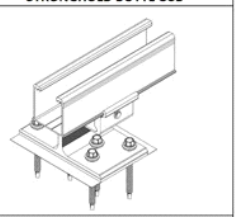
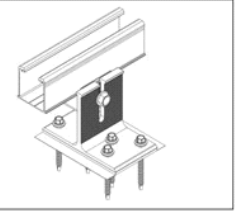


Gable Roofs 7°< θ ≤ 45°

Grouping of ASCE 7-16 Roof Zones (Gable and Flat)

- **Roof Tilt 0°-7°**
  - Roof Zone 1 = 1
  - Roof Zone 2 = 2
  - Roof Zone 3 = 3
- **Roof Tilt 7°-27°**
  - Roof Zone 1 = 1, 2e
  - Roof Zone 2 = 2n, 2r, 3e
  - Roof Zone 3 = 3r
- **Roof Tilt 27°-45°**
  - Roof Zone 1 = 1, 2e, 2r
  - Roof Zone 2 = 2n, 3r
  - Roof Zone 3 = 3e

Rails can be installed in these possible orientations.

	*STRONGHOLD BUTYL OSB
Y+	
Y-	

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph) 90			95			100			105			110			115			120			130			140			150			160			170			180		
			Roof Wind 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
0	B	0-7	Interior	34	34	32	34	34	28	34	34	25	34	33	23	34	30	21	34	27	19	34	24	17	29	20	14	24	17	12	21	15	10	18	13	9	16	11	8	14	10	7
			Exposed	34	30	20	34	26	18	33	23	16	29	21	15	26	19	13	24	17	12	22	16	11	18	13	9	16	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	34	34	28	34	30	25	34	27	22	34	24	20	34	22	18	31	20	16	28	18	15	24	15	13	20	13	11	17	11	9	15	10	8	13	9	7	12	8	6
			Exposed	34	22	18	30	19	16	27	17	14	24	16	13	22	14	12	20	13	11	18	12	10	15	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	35	35	33	35	35	28	35	33	24	35	30	21	35	27	18	35	24	16	35	22	15	33	19	13	28	16	11	24	14	9	21	12	8	18	10	7	16	9	6
			Exposed	35	27	18	35	24	16	35	21	14	33	19	13	30	17	12	27	16	11	25	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	35	35	35	35	35	35	35	35	31	35	35	27	35	34	24	34	30	21	31	28	19	26	23	15	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7
			Exposed	35	33	24	33	30	21	30	27	18	27	24	16	24	22	14	22	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	34	32	22	34	28	20	34	25	18	32	23	16	29	20	14	26	19	13	24	17	12	20	14	10	17	12	8	14	10	7	13	9	6	11	8	5	10	7	5
			Exposed	28	20	14	25	18	13	22	16	11	20	14	10	18	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	34	24	19	33	21	17	29	19	15	26	17	14	24	15	12	21	14	11	20	13	10	16	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	24	15	12	21	13	11	19	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	~~4~~
		20-27	Interior	35	29	20	35	25	17	35	23	15	35	20	14	32	18	12	29	17	11	27	15	10	22	13	9	19	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	32	18	12	29	16	11	26	15	10	23	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	~~4~~
		27-45	Interior	35	35	26	35	32	22	32	29	20	29	26	17	26	23	15	24	21	14	22	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	26	23	15	23	21	13	21	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	34	26	18	33	23	16	29	21	15	26	19	13	24	17	12	21	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	24	17	12	21	15	10	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	~~5~~	5	6	~~4~~
		7-20	Interior	31	20	16	27	17	14	24	16	13	22	14	12	20	13	10	18	12	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	~~5~~	5	5	~~4~~	7	~~4~~	~~3~~
		20-27	Interior	35	24	16	35	21	14	33	19	13	30	17	11	27	15	10	24	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	27	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	~~4~~	6	5	~~3~~
		27-45	Interior	34	30	21	30	27	18	27	24	16	24	21	14	22	19	12	20	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	22	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
10	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	19	24	24	17	24	20	14	24	17	12	21	15	10	18	13	9	16	11	8	14	10	7
			Exposed	24	24	20	24	24	18	24	23	16	24	21	15	24	19	13	24	17	12	22	16	11	18	13	9	16	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	24	24	24	24	24	24	24	24	22	24	24	20	24	22	18	24	20	16	24	18	15	24	15	13	20	13	11	17	11	9	15	10	8	13	9	7	12	8	6
			Exposed	24	22	18	24	19	16	24	17	14	24	16	13	22	14	12	20	13	11	18	12	10	15	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	32	32	32	32	32	28	32	32	24	32	30	21	32	27	18	32	24	16	32	22	15	32	19	13	28	16	11	24	14	9	21	12	8	18	10	7	16	9	6
			Exposed	32	27	18	32	24	16	32	21	14	32	19	13	30	17	12	27	16	11	25	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	34	34	34	34	34	34	34	34	31	34	34	27	34	34	24	34	30	21	31	28	19	26	23	15	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7
			Exposed	34	33	24	33	30	21	30	27	18	27	24	16	24	22	14	22	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	24	24	22	24	24	20	24	24	18	24	23	16	24	20	14	24	19	13	24	17	12	20	14	10	17	12	8	14	10	7	13	9	6	11	8	5	10	7	5
			Exposed	24	20	14	24	18	13	22	16	11	20	14	10	18	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	24	24	19	24	21	17	24	19	15	24	17	14	24	15	12	21	14	11	20	13	10	16	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	24	15	12	21	13	11	19	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	~~4~~
		20-27	Interior	32	29	20	32	25	17	32	23	15	32	20	14	32	18	12	29	17	11	27	15	10	22	13	9	19	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	32	18	12	29	16	11	26	15	10	23	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	~~4~~
		27-45	Interior	34	34	26	34	32	22	32	29	20	29	26	17	26	23	15	24	21	14	22	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	26	23	15	23	21	13	21	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	24	24	18	24	23	16	24	21	15	24	19	13	24	17	12	21	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	24	17	12	21	15	10	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	~~5~~	5	6	~~4~~
		7-20	Interior	24	20	16	24	17	14	24	16	13	22	14	12	20	13	10	18	12	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	~~5~~	5	5	~~4~~	7	~~4~~	~~3~~
		20-27	Interior	33	24	16	33	21	14	33	19	13	30	17	11	27	15	10	24	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	27	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	~~4~~	6	5	~~3~~
		27-45	Interior	34	30	21	30	27	18	27	24	16	24	21	14	22	19	12	20	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	22	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
20	B	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	12	17	15	10	17	13	9	16	11	8	14	10	7
			Exposed	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	17	12	17	16	11	17	13	9	16	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	15	13	17	13	11	17	11	9	15	10	8	13	9	7	12	8	6
			Exposed	17	17	17	17	17	16	17	17	14	17	16	13	17	14	12	17	13	11	17	12	10	15	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	25	25	25	25	25	25	25	25	24	25	25	21	25	25	18	25	24	16	25	22	15	25	19	13	25	16	11	24	14	9	21	12	8	18	10	7	16	9	6
			Exposed	25	25	18	25	24	16	25	21	14	25	19	13	25	17	12	25	16	11	25	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	27	28	28	24	28	28	21	28	28	19	26	23	15	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7
			Exposed	28	28	24	28	28	21	28	27	18	27	24	16	24	22	14	22	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	13	17	17	12	17	14	10	17	12	8	14	10	7	13	9	6	11	8	5	10	7	5
			Exposed	17	17	14	17	17	13	17	16	11	17	14	10	17	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	17	17	17	17	17	17	17	17	15	17	17	14	17	15	12	17	14	11	17	13	10	16	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	17	15	12	17	13	11	17	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	~~4~~
		20-27	Interior	25	25	20	25	25	17	25	23	15	25	20	14	25	18	12	25	17	11	25	15	10	22	13	9	19	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	25	18	12	25	16	11	25	15	10	23	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	~~4~~
		27-45	Interior	28	28	26	28	28	22	28	28	20	28	26	17	26	23	15	24	21	14	22	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	26	23	15	23	21	13	21	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	17	17	17	17	17	16	17	17	15	17	17	13	17	17	12	17	15	11	17	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	17	17	12	17	15	10	17	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	~~5~~	5	6	~~4~~
		7-20	Interior	17	17	16	17	17	14	17	16	13	17	14	12	17	13	10	17	12	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	17	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	~~5~~	5	5	~~4~~	7	~~4~~	~~3~~
		20-27	Interior	26	24	16	26	21	14	26	19	13	26	17	11	26	15	10	24	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	26	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	~~4~~	6	5	~~3~~
		27-45	Interior	29	29	21	29	27	18	27	24	16	24	21	14	22	19	12	20	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	22	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
30	B	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	12	16	15	10	16	13	9	16	11	8	14	10	7
			Exposed	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	16	12	16	16	11	16	13	9	16	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	15	13	17	13	11	17	11	9	15	10	8	13	9	7	12	8	6
			Exposed	17	17	17	17	17	16	17	17	14	17	16	13	17	14	12	17	13	11	17	12	10	15	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	18	21	21	16	21	21	15	21	19	13	21	16	11	21	14	9	21	12	8	18	10	7	16	9	6
			Exposed	21	21	18	21	21	16	21	21	14	21	19	13	21	17	12	21	16	11	21	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	15	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7
			Exposed	23	23	23	23	23	21	23	23	18	23	23	16	23	22	14	22	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	13	16	16	12	16	14	10	16	12	8	14	10	7	13	9	6	11	8	5	10	7	5
			Exposed	16	16	14	16	16	13	16	16	11	16	14	10	16	13	9	16	12	8	15	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	17	17	17	17	17	17	17	17	15	17	17	14	17	15	12	17	14	11	17	13	10	16	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	17	15	12	17	13	11	17	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	21	21	20	21	21	17	21	21	15	21	20	14	21	18	12	21	17	11	21	15	10	21	13	9	19	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	21	18	12	21	16	11	21	15	10	21	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	23	23	23	23	23	22	23	23	20	23	23	17	23	23	15	23	21	14	22	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	23	23	15	23	21	13	21	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	17	17	17	17	17	16	17	17	15	17	17	13	17	17	12	17	15	11	17	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	17	17	12	17	15	10	17	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	17	17	16	17	17	14	17	16	13	17	14	12	17	13	10	17	12	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	17	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	22	22	16	22	21	14	22	19	13	22	17	11	22	15	10	22	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	22	15	10	22	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	25	25	21	25	25	18	25	24	16	24	21	14	22	19	12	20	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	22	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
40	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	11	8	13	10	7	13	10	7
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	9	13	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	13	11	14	11	9	14	10	8	13	9	7	12	8	6
			Exposed	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	13	11	14	12	10	14	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	16	11	17	14	9	17	12	8	17	10	7	16	9	6
			Exposed	17	17	17	17	17	16	17	17	14	17	17	13	17	17	12	17	16	11	17	14	10	17	12	8	17	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	15	19	19	13	18	17	11	17	15	9	15	13	8	13	12	7
			Exposed	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	20	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	12	8	13	10	7	13	9	6	11	8	5	10	7	5
			Exposed	13	13	13	13	13	13	13	13	11	13	13	10	13	13	9	13	12	8	13	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	11	14	13	10	14	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	17	17	17	17	17	17	17	17	15	17	17	14	17	17	12	17	17	11	17	15	10	17	13	9	17	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	17	17	12	17	16	11	17	15	10	17	13	9	17	12	8	17	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	17	20	20	15	20	20	14	19	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	20	20	15	20	20	13	20	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	14	10	14	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	14	14	12	14	14	10	14	13	9	14	12	8	14	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	15	15	15	15	15	14	15	15	13	15	14	12	15	13	10	15	12	9	15	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	15	13	10	15	11	9	15	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	19	19	16	19	19	14	19	19	13	19	17	11	19	15	10	19	14	9	19	13	9	18	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	19	15	10	19	14	9	19	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	21	21	21	21	21	18	21	21	16	21	21	14	20	19	12	19	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	21	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
50	B	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	10	7
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	8	11	10	7	11	8	6	10	7	5	9	6	7
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	9	12	10	8	11	9	7	11	8	6
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	10	8	12	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	11	15	14	9	15	12	8	14	10	7	14	9	6
			Exposed	15	15	15	15	15	15	15	15	14	15	15	13	15	15	12	15	15	11	15	14	10	15	12	8	15	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	17	17	13	16	16	11	15	15	9	15	13	8	13	12	7
			Exposed	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	13	18	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	8	11	10	7	11	9	6	11	8	5	10	7	5
			Exposed	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	8	11	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	9	7	11	8	6	10	7	5	9	6	5	8	5	7
			Exposed	12	12	12	12	12	11	12	12	10	12	11	9	12	10	8	12	9	7	12	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	15	10	15	13	9	15	11	7	14	9	6	13	8	5	13	7	5	11	6	4
			Exposed	15	15	12	15	15	11	15	15	10	15	13	9	15	12	8	15	11	7	15	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	17	17	14	17	17	12	16	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	18	18	15	18	18	13	18	18	12	18	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	8	12	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	12	12	12	12	12	10	12	12	9	12	12	8	12	11	8	12	10	7	12	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	12	9	13	10	9	12	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	13	13	10	13	11	9	13	10	8	13	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	16	16	16	16	16	14	16	16	13	16	16	11	16	15	10	16	14	9	16	13	9	16	11	7	15	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	16	15	10	16	14	9	16	12	8	16	11	7	16	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	19	19	19	19	19	18	19	19	16	19	19	14	18	18	12	17	17	11	17	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	19	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
60	B	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	8	6	9	7	5	9	6	7
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	9	7	10	8	6
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	8	7	10	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	9	13	12	8	13	10	7	12	9	6
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	12	8	13	10	7	13	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	15	15	13	15	15	11	14	14	9	13	13	8	13	12	7
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	13	16	16	11	16	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	7	5
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	8	9	9	6	9	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	9	7	10	8	6	9	7	5	9	6	5	8	5	7
			Exposed	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	9	7	10	8	7	10	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	13	9	13	11	7	12	9	6	12	8	5	11	7	5	11	6	4
			Exposed	13	13	12	13	13	11	13	13	10	13	13	9	13	12	8	13	11	7	13	10	7	13	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	14	15	15	12	14	14	10	14	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	16	16	15	16	16	13	16	16	12	16	16	10	16	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	10	7	10	9	6	10	7	5	9	7	7	8	6	6
			Exposed	10	10	10	10	10	10	10	10	9	10	10	8	10	10	8	10	10	7	10	9	6	10	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	10	9	11	9	7	10	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	11	11	10	11	11	9	11	10	8	11	9	7	11	8	7	11	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	14	14	14	14	14	14	14	14	13	14	14	11	14	14	10	14	14	9	14	13	9	14	11	7	13	9	6	12	8	5	12	7	5	10	6	4	9	5	5
			Exposed	14	14	10	14	14	9	14	12	8	14	11	7	14	10	7	14	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	17	17	17	17	17	17	17	17	16	17	17	14	16	16	12	16	16	11	15	15	10	14	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	17	17	12	17	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
70	B	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	7	5	8	6	7
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	8	5	7	8	5	6
		20-27	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	9	12	12	8	11	10	7	11	9	6
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	12	10	12	12	8	12	10	7	12	9	6	12	8	5	11	7	4	10	6	4
		27-45	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	13	13	11	13	13	9	12	12	8	12	12	7
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	14	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	7	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	5	8	8	5	8	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	7	5	8	6	5	8	5	7
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	7	6	8	6	5	8	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	9	11	11	7	11	9	6	11	8	5	10	7	5	10	6	4
			Exposed	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	11	7	12	10	7	12	8	6	11	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	14	14	14	14	14	14	14	14	12	14	14	14	14	14	14	14	14	14	13	13	10	12	12	8	12	12	7	11	10	6	10	9	6	10	9	5	9	8	5
			Exposed	14	14	14	14	14	13	14	14	10	14	14	9	14	14	8	14	12	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	7	5	9	7	7	8	6	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	8	9	9	8	9	9	7	9	9	6	9	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	9	7	6	9	6	5	9	6	7	8	5	6	7	7	5
			Exposed	9	9	9	9	9	9	9	9	8	9	9	7	9	8	7	9	7	6	9	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	11	13	13	10	13	13	9	13	13	9	12	11	7	12	9	6	11	8	5	11	7	5	10	6	4	9	5	5
			Exposed	13	13	10	13	13	9	13	12	8	13	11	7	13	10	7	13	9	6	13	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	14	14	11	14	14	10	13	13	8	12	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	15	15	12	15	15	11	15	15	9	15	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
80	B	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	7
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	5	6
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	9	6
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	10	7	10	9	6	10	8	5	10	7	4	10	6	4
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	12	11	12	12	9	11	11	8	11	11	7
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	9	13	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5	7	7	7	7	6	6	7	5	5	6	7	5
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	5	7	5	7
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	7	10	9	6	10	8	5	9	7	5	9	6	4
			Exposed	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	7	10	8	6	10	7	5	10	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	12	12	12	12	10	11	11	8	11	11	7	10	10	6	10	9	5	9	8	5
			Exposed	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	13	8	12	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	7	5	8	7	7	8	6	6
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	8	6	8	8	5	8	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	8	6	7	8	5	6	7	7	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	7	6	8	7	6	8	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	9	11	11	7	11	9	6	10	8	5	10	7	5	9	6	4	9	5	5
			Exposed	11	11	10	11	11	9	11	11	8	11	11	7	11	10	7	11	9	6	11	8	6	11	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	14	14	14	14	14	14	14	14	14	14	14	14	13	13	12	13	13	11	13	13	10	12	12	8	11	11	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	14	14	12	14	14	11	14	14	9	14	14	8	13	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
90	B	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	5	6
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	7	4	9	6	4
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	10	10	8	10	10	7
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	8	11	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	6	6	6	5	5	6	7	5
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	5	7	5	7
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	9	9	6	9	8	5	9	7	5	8	6	4
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	7	9	8	6	9	7	5	9	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	8	10	10	7	10	10	6	9	9	5	9	8	5
			Exposed	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	7	11	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	7	7	6	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	7	7	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	6	7	7	5	6	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	9	10	10	7	10	9	6	9	8	5	9	7	5	9	6	4	8	5	5
			Exposed	10	10	10	10	10	9	10	10	8	10	10	7	10	10	7	10	9	6	10	8	6	10	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	12	12	12	12	12	11	12	12	10	11	11	8	11	11	7	10	10	6	10	9	5	9	8	5	8	7	4
			Exposed	13	13	12	13	13	11	13	13	9	13	13	8	12	12	8	12	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
100	B	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7
		7-20	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	7	6	5	6
		20-27	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	7	4	8	6	4
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	9	9	7
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	9	8	5	8	7	4
	C	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	5	5	5	7	5
		7-20	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5	6	5	7
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	6	6	7	5	6	6	5	5	5	4
		20-27	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	7	5	7	6	4
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	8	6	8	7	5	8	6	4	8	5	5	8	7	5	7	6	4
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	9	9	7	9	9	6	9	9	5	8	8	5
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	6	6	6	5	5	6	7	5	5	6	4
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	6	7	6	5	6	6	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	9	9	6	9	8	5	8	7	5	8	6	4	8	5	5
			Exposed	9	9	9	9	9	9	9	9	8	9	9	7	9	9	7	9	9	6	9	8	6	9	7	5	9	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	8	10	10	7	9	9	6	9	9	5	9	8	5	8	7	4
			Exposed	11	11	11	11	11	11	11	11	9	11	11	8	11	11	8	11	11	7	11	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4

*	Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.
10	Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.
~~10~~	Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
0	B	0-7	Interior	57	57	54	57	57	48	57	57	43	57	56	39	57	50	35	57	45	32	57	41	29	48	35	24	41	29	21	35	25	18	31	22	16	27	19	14	24	17	12
			Exposed	57	50	35	57	44	31	55	39	28	50	35	25	45	32	22	40	29	20	37	27	19	31	22	16	26	19	13	23	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	57	57	47	57	51	42	57	46	38	57	41	34	57	37	31	53	34	28	48	31	25	40	26	21	34	22	18	29	19	16	26	17	14	23	15	12	20	13	11
			Exposed	57	37	30	51	33	27	46	29	24	41	27	22	37	24	20	34	22	18	31	20	16	26	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	58	58	55	58	58	47	58	56	40	58	50	35	58	45	31	58	41	28	58	37	25	55	31	21	47	27	18	40	23	16	35	20	14	31	18	12	27	16	11
			Exposed	58	45	31	58	40	27	58	36	24	56	32	22	51	29	20	46	26	18	42	24	16	35	20	14	30	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	59	59	59	59	59	59	59	59	52	59	59	45	59	57	40	58	51	36	52	47	32	44	39	26	38	34	22	32	29	18	28	25	16	25	22	14	22	20	12
			Exposed	59	56	40	56	50	35	50	45	30	45	40	27	41	36	24	37	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	57	54	37	57	48	33	57	43	30	53	38	27	48	35	24	44	31	22	40	29	20	33	24	17	28	21	14	24	18	12	21	15	11	19	14	10	17	12	8
			Exposed	48	34	24	43	31	21	38	27	19	34	25	17	31	22	16	28	20	14	26	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	57	40	33	55	35	29	49	32	26	44	29	23	40	26	21	36	23	19	33	21	18	28	18	15	24	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	40	26	21	35	23	19	32	20	17	29	18	15	26	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	~~7~~
		20-27	Interior	58	48	34	58	43	29	58	38	26	58	35	23	55	31	21	50	28	19	45	26	18	38	22	15	32	19	13	28	16	11	24	14	10	21	12	8	19	11	7
			Exposed	55	31	21	48	28	19	43	25	17	39	22	15	35	20	14	32	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	59	59	44	59	54	38	54	48	33	49	43	29	44	39	26	40	36	23	36	33	21	31	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	44	39	26	39	35	23	35	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	57	45	31	55	40	28	49	35	25	44	32	22	40	29	20	36	26	18	33	24	17	28	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	40	29	20	35	25	18	32	23	16	28	21	14	26	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	~~8~~	9	10	~~7~~
		7-20	Interior	52	33	27	46	30	24	41	26	22	37	24	20	33	22	18	30	20	16	28	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	33	21	18	30	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	~~8~~	8	8	~~7~~	12	~~7~~	~~6~~
		20-27	Interior	58	40	27	58	36	24	56	32	22	50	29	20	45	26	18	41	24	16	38	22	15	32	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	45	26	18	40	23	16	36	21	14	32	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	~~6~~
		27-45	Interior	57	50	35	50	45	31	45	40	27	41	36	24	37	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
10	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	39	40	40	35	40	40	32	40	40	29	40	35	24	40	29	21	35	25	18	31	22	16	27	19	14	24	17	12
			Exposed	40	40	35	40	40	31	40	39	28	40	35	25	40	32	22	40	29	20	37	27	19	31	22	16	26	19	13	23	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	41	41	41	41	41	41	41	41	38	41	41	34	41	37	31	41	34	28	41	31	25	40	26	21	34	22	18	29	19	16	26	17	14	23	15	12	20	13	11
			Exposed	41	37	30	41	33	27	41	29	24	41	27	22	37	24	20	34	22	18	31	20	16	26	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	53	53	53	53	53	47	53	53	40	53	50	35	53	45	31	53	41	28	53	37	25	53	31	21	47	27	18	40	23	16	35	20	14	31	18	12	27	16	11
			Exposed	53	45	31	53	40	27	53	36	24	53	32	22	51	29	20	46	26	18	42	24	16	35	20	14	30	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	57	57	57	57	57	57	57	57	52	57	57	45	57	57	40	57	51	36	52	47	32	44	39	26	38	34	22	32	29	18	28	25	16	25	22	14	22	20	12
			Exposed	57	56	40	56	50	35	50	45	30	45	40	27	41	36	24	37	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	40	40	37	40	40	33	40	40	30	40	38	27	40	35	24	40	31	22	40	29	20	33	24	17	28	21	14	24	18	12	21	15	11	19	14	10	17	12	8
			Exposed	40	34	24	40	31	21	38	27	19	34	25	17	31	22	16	28	20	14	26	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	41	40	33	41	35	29	41	32	26	41	29	23	40	26	21	36	23	19	33	21	18	28	18	15	24	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	40	26	21	35	23	19	32	20	17	29	18	15	26	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	~~7~~
		20-27	Interior	53	48	34	53	43	29	53	38	26	53	35	23	53	31	21	50	28	19	45	26	18	38	22	15	32	19	13	28	16	11	24	14	10	21	12	8	19	11	7
			Exposed	53	31	21	48	28	19	43	25	17	39	22	15	35	20	14	32	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	57	57	44	57	54	38	54	48	33	49	43	29	44	39	26	40	36	23	36	33	21	31	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	44	39	26	39	35	23	35	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	40	40	31	40	40	28	40	35	25	40	32	22	40	29	20	36	26	18	33	24	17	28	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	40	29	20	35	25	18	32	23	16	28	21	14	26	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	~~8~~	9	10	~~7~~
		7-20	Interior	41	33	27	41	30	24	41	26	22	37	24	20	33	22	18	30	20	16	28	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	33	21	18	30	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	~~8~~	8	8	~~7~~	12	~~7~~	~~6~~
		20-27	Interior	54	40	27	54	36	24	54	32	22	50	29	20	45	26	18	41	24	16	38	22	15	32	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	45	26	18	40	23	16	36	21	14	32	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	~~6~~
		27-45	Interior	57	50	35	50	45	31	45	40	27	41	36	24	37	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
20	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	21	28	25	18	28	22	16	27	19	14	24	17	12
			Exposed	28	28	28	28	28	28	28	28	28	28	28	25	28	28	22	28	28	20	28	27	19	28	22	16	26	19	13	23	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	26	21	28	22	18	28	19	16	26	17	14	23	15	12	20	13	11
			Exposed	28	28	28	28	28	27	28	28	24	28	27	22	28	24	20	28	22	18	28	20	16	26	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	42	42	42	42	42	42	42	42	40	42	42	35	42	42	31	42	41	28	42	37	25	42	31	21	42	27	18	40	23	16	35	20	14	31	18	12	27	16	11
			Exposed	42	42	31	42	40	27	42	36	24	42	32	22	42	29	20	42	26	18	42	24	16	35	20	14	30	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	45	46	46	40	46	46	36	46	46	32	44	39	26	38	34	22	32	29	18	28	25	16	25	22	14	22	20	12
			Exposed	46	46	40	46	46	35	46	45	30	45	40	27	41	36	24	37	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	27	28	28	24	28	28	22	28	28	20	28	24	17	28	21	14	24	18	12	21	15	11	19	14	10	17	12	8
			Exposed	28	28	24	28	28	21	28	27	19	28	25	17	28	22	16	28	20	14	26	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	28	28	28	28	28	28	28	28	26	28	28	23	28	26	21	28	23	19	28	21	18	28	18	15	24	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	28	26	21	28	23	19	28	20	17	28	18	15	26	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	~~7~~
		20-27	Interior	42	42	34	42	42	29	42	38	26	42	35	23	42	31	21	42	28	19	42	26	18	38	22	15	32	19	13	28	16	11	24	14	10	21	12	8	19	11	7
			Exposed	42	31	21	42	28	19	42	25	17	39	22	15	35	20	14	32	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	46	46	44	46	46	38	46	46	33	46	43	29	44	39	26	40	36	23	36	33	21	31	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	44	39	26	39	35	23	35	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	28	28	28	28	28	28	28	28	25	28	28	22	28	28	20	28	26	18	28	24	17	28	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	28	28	20	28	25	18	28	23	16	28	21	14	26	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	~~8~~	9	10	~~7~~
		7-20	Interior	28	28	27	28	28	24	28	26	22	28	24	20	28	22	18	28	20	16	28	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	28	21	18	28	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	~~8~~	8	8	~~7~~	12	~~7~~	~~6~~
		20-27	Interior	44	40	27	44	36	24	44	32	22	44	29	20	44	26	18	41	24	16	38	22	15	32	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	44	26	18	40	23	16	36	21	14	32	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	~~6~~
		27-45	Interior	48	48	35	48	45	31	45	40	27	41	36	24	37	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7

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10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
30	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	21	27	25	18	27	22	16	27	19	14	24	17	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	25	27	27	22	27	27	20	27	27	19	27	22	16	26	19	13	23	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	26	21	28	22	18	28	19	16	26	17	14	23	15	12	20	13	11
			Exposed	28	28	28	28	28	27	28	28	24	28	27	22	28	24	20	28	22	18	28	20	16	26	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	28	34	34	25	34	31	21	34	27	18	34	23	16	34	20	14	31	18	12	27	16	11
			Exposed	34	34	31	34	34	27	34	34	24	34	32	22	34	29	20	34	26	18	34	24	16	34	20	14	30	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	32	39	39	26	37	34	22	32	29	18	28	25	16	25	22	14	22	20	12
			Exposed	39	39	39	39	39	35	39	39	30	39	39	27	39	36	24	37	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	24	17	27	21	14	24	18	12	21	15	11	19	14	10	17	12	8
			Exposed	27	27	24	27	27	21	27	27	19	27	25	17	27	22	16	27	20	14	26	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	28	28	28	28	28	28	28	28	26	28	28	23	28	26	21	28	23	19	28	21	18	28	18	15	24	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	28	26	21	28	23	19	28	20	17	28	18	15	26	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	34	34	34	34	34	29	34	34	26	34	34	23	34	31	21	34	28	19	34	26	18	34	22	15	32	19	13	28	16	11	24	14	10	21	12	8	19	11	7
			Exposed	34	31	21	34	28	19	34	25	17	34	22	15	34	20	14	32	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	39	39	39	39	39	38	39	39	33	39	39	29	39	39	26	38	36	23	36	33	21	31	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	39	39	26	39	35	23	35	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	28	28	28	28	28	28	28	28	25	28	28	22	28	28	20	28	26	18	28	24	17	28	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	28	28	20	28	25	18	28	23	16	28	21	14	26	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	28	28	27	28	28	24	28	26	22	28	24	20	28	22	18	28	20	16	28	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	28	21	18	28	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	36	36	27	36	36	24	36	32	22	36	29	20	36	26	18	36	24	16	36	22	15	32	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	36	26	18	36	23	16	36	21	14	32	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	41	41	35	41	41	31	41	40	27	40	36	24	37	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
40	B	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	22	16	22	19	14	22	17	12	22	17	12
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	19	22	22	16	22	19	13	22	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	22	18	24	19	16	24	17	14	23	15	12	20	13	11
			Exposed	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	22	18	24	20	16	24	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	29	21	29	27	18	29	23	16	29	20	14	28	18	12	27	16	11
			Exposed	29	29	29	29	29	27	29	29	24	29	29	22	29	29	20	29	26	18	29	24	16	29	20	14	29	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	26	32	32	22	31	29	18	28	25	16	25	22	14	22	20	12
			Exposed	34	34	34	34	34	34	34	34	30	34	34	27	34	34	24	34	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	17	22	21	14	22	18	12	21	15	11	19	14	10	17	12	8
			Exposed	22	22	22	22	22	21	22	22	19	22	22	17	22	22	16	22	20	14	22	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	23	19	24	21	18	24	18	15	23	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	24	24	21	24	23	19	24	20	17	24	18	15	24	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	29	29	29	29	29	29	29	29	26	29	29	23	29	29	21	29	28	19	29	26	18	29	22	15	28	19	13	27	16	11	24	14	10	21	12	8	19	11	7
			Exposed	29	29	21	29	28	19	29	25	17	29	22	15	29	20	14	29	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	34	34	34	34	34	34	34	34	33	34	34	29	34	34	26	33	33	23	32	32	21	30	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	34	34	26	34	34	23	34	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	24	17	24	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	24	24	20	24	24	18	24	23	16	24	21	14	24	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	26	26	26	26	26	24	26	26	22	26	24	20	26	22	18	26	20	16	26	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	26	21	18	26	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	31	31	27	31	31	24	31	31	22	31	29	20	31	26	18	31	24	16	31	22	15	30	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	31	26	18	31	23	16	31	21	14	31	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	36	36	35	36	36	31	36	36	27	35	35	24	34	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
50	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	13	18	16	12	18	14	10	17	13	9	15	11	12
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	19	16	20	17	14	19	15	12	19	13	11
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	17	14	20	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	25	18	25	23	16	25	20	14	24	18	12	23	16	11
			Exposed	25	25	25	25	25	25	25	25	24	25	25	22	25	25	20	25	25	18	25	24	16	25	20	14	25	17	12	25	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	29	29	22	27	27	18	26	25	16	25	22	14	22	20	12
			Exposed	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	30	21	30	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	18	12	18	15	11	18	14	10	17	12	8
			Exposed	18	18	18	18	18	18	18	18	18	18	18	17	18	18	16	18	18	14	18	18	13	18	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	18	15	20	15	13	19	13	11	18	12	10	16	10	8	14	9	11
			Exposed	20	20	20	20	20	19	20	20	17	20	18	15	20	17	14	20	15	13	20	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	23	25	25	21	25	25	19	25	25	18	25	22	15	25	19	13	24	16	11	23	14	10	21	12	8	19	11	7
			Exposed	25	25	21	25	25	19	25	25	17	25	22	15	25	20	14	25	18	13	25	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	29	29	23	28	28	21	27	27	17	25	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	30	30	26	30	30	23	30	30	20	30	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	17	20	20	14	20	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	20	20	20	20	20	18	20	20	16	20	20	14	20	19	13	20	17	12	20	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	20	16	22	18	15	21	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	22	21	18	22	19	16	22	17	14	22	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	24	16	27	22	15	26	18	12	25	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	27	26	18	27	23	16	27	21	14	27	19	13	27	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	32	32	32	32	32	31	32	32	27	31	31	24	30	30	21	29	29	19	28	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	32	32	21	32	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7

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ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

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				Roof Wind 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
60	B	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	14	10	15	13	9	15	11	12
		7-20	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	15	12	17	13	11
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	14	12	17	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	22	16	22	20	14	21	18	12	21	16	11
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	20	14	22	17	12	22	15	10	22	13	9	20	11	8	18	10	7
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	22	25	25	18	24	24	16	22	22	14	21	20	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	21	27	27	19	27	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	14	10	15	12	8
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	11	15	13	9	15	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	15	13	17	13	11	16	12	10	16	10	8	14	9	11
			Exposed	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	15	13	17	14	11	17	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	18	22	22	15	22	19	13	21	16	11	20	14	10	19	12	8	18	11	7
			Exposed	22	22	21	22	22	19	22	22	17	22	22	15	22	20	14	22	18	13	22	17	11	22	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	23	26	26	21	24	24	17	23	23	14	22	20	12	20	18	11	17	16	9	15	14	8
			Exposed	27	27	26	27	27	23	27	27	20	27	27	18	27	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	12	17	15	10	17	13	9	16	11	12	14	10	11
			Exposed	17	17	17	17	17	17	17	17	16	17	17	14	17	17	13	17	17	12	17	15	11	17	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	18	15	19	15	12	18	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	19	19	18	19	19	16	19	17	14	19	15	13	19	14	12	19	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	24	16	24	22	15	23	18	12	22	16	11	21	13	9	20	12	8	18	10	7	16	9	9
			Exposed	24	24	18	24	23	16	24	21	14	24	19	13	24	17	11	24	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	28	28	28	28	28	28	28	28	27	28	28	24	27	27	21	26	26	19	26	26	17	24	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	28	28	21	28	28	18	28	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
70	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	11	12
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	12	10	14	11	9	14	9	12	13	8	11
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	19	18	12	19	16	11
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	20	17	12	20	15	10	20	13	9	19	11	8	18	10	7
		27-45	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	22	22	22	18	21	21	16	21	21	14	20	20	12
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	24	16	23	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	12	8
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	9	13	11	8	13	10	11	12	9	9	11	12	8
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	13	11	14	12	10	14	10	8	13	9	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	12	10	14	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	20	15	19	19	13	19	16	11	18	14	10	17	12	8	17	11	7
			Exposed	20	20	20	20	20	19	20	20	17	20	20	15	20	20	14	20	18	13	20	17	11	20	14	10	19	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	21	22	22	17	21	21	14	20	20	12	19	18	11	17	16	9	15	14	8
			Exposed	24	24	24	24	24	23	24	24	20	24	24	18	24	24	16	24	23	14	23	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	10	15	13	9	15	11	12	14	10	11
			Exposed	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	12	15	15	11	15	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	15	12	16	13	11	15	11	9	15	10	12	13	8	11	12	12	9
			Exposed	16	16	16	16	16	16	16	16	14	16	15	13	16	14	12	16	13	10	16	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	22	15	21	18	12	20	16	11	19	13	9	18	12	8	17	10	7	16	9	9
			Exposed	22	22	18	22	22	16	22	21	14	22	19	13	22	17	11	22	15	10	22	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	26	26	26	26	26	26	26	26	26	25	25	24	25	25	21	24	24	19	23	23	17	22	22	14	21	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	26	26	21	26	26	18	26	26	16	25	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
80	B	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	9	12	11	12
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	12	10	13	11	9	13	9	12	13	8	11
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	12	17	16	11
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	12	17	15	10	17	13	9	17	11	8	17	10	7
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	21	21	21	21	18	20	20	16	19	19	14	18	18	12
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	16	21	21	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	8
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	9	12	11	8	12	10	11	12	9	9	11	12	8
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	12	10	13	10	8	12	9	11
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	12	10	13	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	16	11	16	14	10	16	12	8	15	11	7
			Exposed	17	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	17	13	17	17	11	17	14	10	17	12	8	17	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	21	21	20	20	17	19	19	14	18	18	12	18	18	11	17	16	9	15	14	8
			Exposed	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	22	14	21	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	10	13	13	9	13	11	12	13	10	11
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	9	13	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	11	14	11	9	13	10	12	13	8	11	12	12	9
			Exposed	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	13	10	14	12	10	14	10	8	13	8	11	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	15	19	18	12	18	16	11	17	13	9	17	12	8	16	10	7	15	9	9
			Exposed	19	19	18	19	19	16	19	19	14	19	19	13	19	17	11	19	15	10	19	14	10	19	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	24	24	24	24	24	24	24	24	24	23	23	23	23	23	21	22	22	19	22	22	17	20	20	14	19	19	12	18	17	10	17	15	9	15	13	8	13	12	7
			Exposed	24	24	21	24	24	18	24	24	16	23	23	14	23	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
90	B	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	9	12	11	8	11
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	10	15	13	9	15	11	8	15	10	7
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	18	16	18	18	14	17	17	12
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	16	19	19	13	19	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	11	10	9	9	10	12	8
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	10	8	11	9	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	10	8	11	9	11	11	11	9	10	10	8	9	9	~~7~~
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	11	15	14	10	15	12	8	14	11	7
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	11	15	14	10	15	12	8	15	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	18	18	14	17	17	12	16	16	11	16	16	9	15	14	8
			Exposed	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	14	19	19	13	19	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	12	11	10	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	12	11	10	10	11	8	9	10	11	~~8~~	9	10	~~7~~
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	9	12	10	12	12	8	11	12	12	9
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	10	12	10	8	12	8	11	11	11	9	10	10	~~8~~	8	8	~~7~~	12	~~7~~	~~6~~
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	17	12	17	16	11	16	13	9	15	12	8	15	10	7	14	9	9
			Exposed	17	17	17	17	17	16	17	17	14	17	17	13	17	17	11	17	15	10	17	14	10	17	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	~~6~~
		27-45	Interior	22	22	22	22	22	22	22	22	22	21	21	21	21	21	21	20	20	19	20	20	17	19	19	14	18	18	12	17	17	10	16	15	9	15	13	8	13	12	7
			Exposed	22	22	21	22	22	18	22	22	16	21	21	14	21	21	13	20	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
100	B	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	12
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	9	12	10	8	11
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	10	14	13	9	14	11	8	14	10	7
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	17	16	16	16	14	16	16	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	13	18	18	11	17	16	10	16	14	9	14	13	8
	C	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	11	9	9	9	9	12	8
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	9	11
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	9	11	10	11	9	10	10	8	9	9	~~7~~
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	14	10	13	12	8	13	11	7
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	14	10	14	12	8	14	10	7	14	9	9	13	12	8	12	11	7
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	17	17	17	17	14	16	16	12	15	15	11	15	15	9	14	14	8
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	13	17	17	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	10	11
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	10	10	10	8	9	10	11	~~8~~	9	10	~~7~~
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	10	12	11	8	11	11	12	9
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	10	11	10	8	11	8	11	11	11	9	10	10	~~8~~	8	8	~~7~~	12	~~7~~	~~6~~
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	12	15	15	11	15	13	9	14	12	8	14	10	7	13	9	9
			Exposed	15	15	15	15	15	15	15	15	14	15	15	13	15	15	11	15	15	10	15	14	10	15	12	8	15	10	7	15	9	9	13	12	8	12	10	7	10	9	~~6~~
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	18	18	14	17	17	12	16	16	10	15	15	9	15	13	8	13	12	7
			Exposed	19	19	19	19	19	18	19	19	16	19	19	14	19	19	13	19	19	12	19	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
0	B	0-7	Interior	29	29	27	29	29	24	29	29	21	29	28	19	29	25	17	29	22	16	29	20	14	24	17	12	20	15	10	17	12	9	15	11	8	13	9	7	12	8	6
			Exposed	29	25	17	29	22	15	27	19	14	24	17	12	22	16	11	20	14	10	18	13	9	15	11	8	13	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	29	29	23	29	25	21	29	23	19	29	20	17	29	18	15	26	17	14	24	15	12	20	13	10	17	11	9	14	9	8	13	8	7	11	7	6	10	6	5
			Exposed	29	18	15	25	16	13	23	14	12	20	13	11	18	12	10	17	11	9	15	10	8	13	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	29	29	27	29	29	23	29	28	20	29	25	17	29	22	15	29	20	14	29	18	12	27	15	10	23	13	9	20	11	8	17	10	7	15	9	6	13	8	5
			Exposed	29	22	15	29	20	13	29	18	12	28	16	11	25	14	10	23	13	9	21	12	8	17	10	7	15	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	29	29	29	29	29	29	29	29	26	29	29	22	29	28	20	29	25	18	26	23	16	22	19	13	19	17	11	16	14	9	14	12	8	12	11	7	11	10	6
			Exposed	29	28	20	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	29	27	18	29	24	16	29	21	15	26	19	13	24	17	12	22	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	24	17	12	21	15	10	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	29	20	16	27	17	14	24	16	13	22	14	11	20	13	10	18	11	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	29	24	17	29	21	14	29	19	13	29	17	11	27	15	10	25	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	27	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	29	29	22	29	27	19	27	24	16	24	21	14	22	19	13	20	18	11	18	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	22	19	13	19	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	29	22	15	27	20	14	24	17	12	22	16	11	20	14	10	18	13	9	16	12	8	14	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	20	14	10	17	12	9	16	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	26	16	13	23	15	12	20	13	11	18	12	10	16	11	9	15	10	8	14	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	16	10	9	15	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	29	20	13	29	18	12	28	16	11	25	14	10	22	13	9	20	12	8	19	11	7	16	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	22	13	9	20	11	8	18	10	7	16	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
10	B	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	20	16	20	20	14	20	17	12	20	15	10	17	12	9	15	11	8	13	9	7	12	8	6
			Exposed	20	20	17	20	20	15	20	19	14	20	17	12	20	16	11	20	14	10	18	13	9	15	11	8	13	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	20	20	20	20	20	20	20	20	19	20	20	17	20	18	15	20	17	14	20	15	12	20	13	10	17	11	9	14	9	8	13	8	7	11	7	6	10	6	5
			Exposed	20	18	15	20	16	13	20	14	12	20	13	11	18	12	10	17	11	9	15	10	8	13	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	26	26	26	26	26	23	26	26	20	26	25	17	26	22	15	26	20	14	26	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	6	13	8	5
			Exposed	26	22	15	26	20	13	26	18	12	26	16	11	25	14	10	23	13	9	21	12	8	17	10	7	15	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	29	29	29	29	29	29	29	29	26	29	29	22	29	28	20	29	25	18	26	23	16	22	19	13	19	17	11	16	14	9	14	12	8	12	11	7	11	10	6
			Exposed	29	28	20	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	20	20	18	20	20	16	20	20	15	20	19	13	20	17	12	20	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	20	17	12	20	15	10	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	20	20	16	20	17	14	20	16	13	20	14	11	20	13	10	18	11	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	26	24	17	26	21	14	26	19	13	26	17	11	26	15	10	25	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	26	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	29	29	22	29	27	19	27	24	16	24	21	14	22	19	13	20	18	11	18	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	22	19	13	19	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	20	20	15	20	20	14	20	17	12	20	16	11	20	14	10	18	13	9	16	12	8	14	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	20	14	10	17	12	9	16	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	20	16	13	20	15	12	20	13	11	18	12	10	16	11	9	15	10	8	14	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	16	10	9	15	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	27	20	13	27	18	12	27	16	11	25	14	10	22	13	9	20	12	8	19	11	7	16	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	22	13	9	20	11	8	18	10	7	16	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
20	B	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	10	14	12	9	14	11	8	13	9	7	12	8	6
			Exposed	14	14	14	14	14	14	14	14	14	14	14	12	14	14	11	14	14	10	14	13	9	14	11	8	13	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	10	14	11	9	14	9	8	13	8	7	11	7	6	10	6	5
			Exposed	14	14	14	14	14	13	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	13	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15	21	20	14	21	18	12	21	15	10	21	13	9	20	11	8	17	10	7	15	9	6	13	8	5
			Exposed	21	21	15	21	20	13	21	18	12	21	16	11	21	14	10	21	13	9	21	12	8	17	10	7	15	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	22	23	23	20	23	23	18	23	23	16	22	19	13	19	17	11	16	14	9	14	12	8	12	11	7	11	10	6
			Exposed	23	23	20	23	23	17	23	22	15	22	20	13	20	18	12	18	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	14	10	14	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	14	14	12	14	14	10	14	13	9	14	12	8	14	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	14	14	14	14	14	14	14	14	13	14	14	11	14	13	10	14	11	9	14	10	9	14	9	7	12	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	14	13	10	14	11	9	14	10	8	14	9	7	13	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	21	21	17	21	21	14	21	19	13	21	17	11	21	15	10	21	14	9	21	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	21	15	10	21	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	23	23	22	23	23	19	23	23	16	23	21	14	22	19	13	20	18	11	18	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	22	19	13	19	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	14	14	14	14	14	14	14	14	12	14	14	11	14	14	10	14	13	9	14	12	8	14	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	14	14	10	14	12	9	14	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	14	14	13	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	14	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	14	10	9	14	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	22	20	13	22	18	12	22	16	11	22	14	10	22	13	9	20	12	8	19	11	7	16	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	22	13	9	20	11	8	18	10	7	16	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	24	24	17	24	22	15	22	20	13	20	18	12	18	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
30	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	12	9	13	11	8	13	9	7	12	8	6
			Exposed	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	13	9	13	11	8	13	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	10	14	11	9	14	9	8	13	8	7	11	7	6	10	6	5
			Exposed	14	14	14	14	14	13	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	13	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	17	12	17	15	10	17	13	9	17	11	8	17	10	7	15	9	6	13	8	5
			Exposed	17	17	15	17	17	13	17	17	12	17	16	11	17	14	10	17	13	9	17	12	8	17	10	7	15	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	13	19	17	11	16	14	9	14	12	8	12	11	7	11	10	6
			Exposed	19	19	19	19	19	17	19	19	15	19	19	13	19	18	12	18	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	12	8	13	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	13	13	12	13	13	10	13	13	9	13	12	8	13	11	8	13	10	7	13	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	14	14	14	14	14	14	14	14	13	14	14	11	14	13	10	14	11	9	14	10	9	14	9	7	12	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	14	13	10	14	11	9	14	10	8	14	9	7	13	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	17	17	17	17	17	14	17	17	13	17	17	11	17	15	10	17	14	9	17	13	9	17	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	17	15	10	17	14	9	17	12	8	17	11	7	17	10	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	19	19	19	19	19	19	19	19	16	19	19	14	19	19	13	19	18	11	18	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	19	19	13	19	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	14	14	14	14	14	14	14	14	12	14	14	11	14	14	10	14	13	9	14	12	8	14	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	14	14	10	14	12	9	14	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	14	14	13	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	14	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	14	10	9	14	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	18	18	13	18	18	12	18	16	11	18	14	10	18	13	9	18	12	8	18	11	7	16	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	18	13	9	18	11	8	18	10	7	16	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	20	20	17	20	20	15	20	20	13	20	18	12	18	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
40	B	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	8	11	9	7	11	8	6
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	11	9	12	9	8	12	8	7	11	7	6	10	6	5
			Exposed	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	10	8	12	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	10	14	13	9	14	11	8	14	10	7	14	9	6	13	8	5
			Exposed	14	14	14	14	14	13	14	14	12	14	14	11	14	14	10	14	13	9	14	12	8	14	10	7	14	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	13	16	16	11	15	14	9	14	12	8	12	11	7	11	10	6
			Exposed	17	17	17	17	17	17	17	17	15	17	17	13	17	17	12	17	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	8	11	10	7	11	9	6	10	7	5	9	7	7	8	6	6
			Exposed	11	11	11	11	11	10	11	11	9	11	11	8	11	11	8	11	10	7	11	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	10	9	12	9	7	11	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	12	12	10	12	11	9	12	10	8	12	9	7	12	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	14	14	14	14	14	14	14	14	13	14	14	11	14	14	10	14	14	9	14	13	9	14	11	7	14	9	6	13	8	5	12	7	5	10	6	4	9	5	5
			Exposed	14	14	10	14	14	9	14	12	8	14	11	7	14	10	7	14	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	17	17	17	17	17	17	17	17	16	17	17	14	17	17	13	16	16	11	16	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	17	17	13	17	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	12	12	10	12	12	9	12	11	8	12	10	7	12	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	13	13	13	13	13	12	13	13	11	13	12	10	13	11	9	13	10	8	13	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	13	10	9	13	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	15	15	13	15	15	12	15	15	11	15	14	10	15	13	9	15	12	8	15	11	7	15	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	15	13	9	15	11	8	15	10	7	15	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	18	18	17	18	18	15	18	18	13	17	17	12	17	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
50	B	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	8	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	6	9	8	6	9	7	5	8	6	7	7	5	6
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	9	8	10	8	7	10	7	6	9	6	5
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	8	7	10	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	11	8	12	10	7	12	9	6	11	8	5
			Exposed	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	13	9	13	12	8	13	10	7	13	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	14	14	11	14	14	9	13	12	8	12	11	7	11	10	6
			Exposed	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	15	10	15	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	7	5	9	7	7	8	6	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	8	9	9	8	9	9	7	9	9	6	9	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	9	10	9	7	10	7	6	9	6	5	9	6	5	8	5	6	7	7	5
			Exposed	10	10	10	10	10	9	10	10	8	10	9	7	10	8	7	10	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	11	13	13	10	13	13	9	13	13	9	13	11	7	12	9	6	12	8	5	11	7	5	10	6	4	9	5	5
			Exposed	13	13	10	13	13	9	13	12	8	13	11	7	13	10	7	13	9	6	13	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	14	14	11	14	14	10	13	13	8	12	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	15	15	13	15	15	11	15	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	10	10	10	10	10	9	10	10	8	10	10	7	10	9	6	10	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	10	8	11	9	7	10	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	11	10	9	11	9	8	11	8	7	11	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	13	13	13	13	13	12	13	13	11	13	13	10	13	13	9	13	12	8	13	11	7	13	9	6	12	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	13	13	9	13	11	8	13	10	7	13	9	6	13	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	16	16	16	16	16	15	16	16	13	15	15	12	15	15	10	14	14	9	14	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	16	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
60	B	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	7	5	7	6	7	7	5	6
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	10	7	11	9	6	10	8	5
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	10	7	11	8	6	11	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	12	12	9	12	12	8	11	11	7	11	10	6
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	7	7	6	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	7	7	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	8	6	5	8	5	6	7	7	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	7	6	8	7	5	8	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	9	11	11	7	11	9	6	10	8	5	10	7	5	9	6	4	9	5	5
			Exposed	11	11	10	11	11	9	11	11	8	11	11	7	11	10	7	11	9	6	11	8	5	11	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	10	12	12	8	11	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	13	13	13	13	13	11	13	13	10	13	13	9	13	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	7	5	8	6	7	8	5	6	7	5	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	6	8	7	5	8	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	7	6	9	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	9	9	9	9	9	8	9	8	7	9	7	6	9	7	6	9	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	12	12	12	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	11	7	11	9	6	11	8	5	10	6	4	10	6	4	9	5	5	8	7	4
			Exposed	12	12	9	12	11	8	12	10	7	12	9	6	12	8	6	12	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	14	14	14	14	14	14	14	14	13	14	14	12	13	13	10	13	13	9	13	13	8	12	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	14	14	10	14	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
70	B	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	7	6	6	6	5
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	9	9	6	9	8	5
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	8	6	10	7	5	10	6	4	9	6	4	9	5	5
		27-45	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	11	11	11	11	9	11	11	8	10	10	7	10	10	6
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	9	12	12	8	11	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	6	5	6	6	5	5	6	6	4	5	6	4
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	6	5	7	5	6	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	9	10	10	7	10	9	6	9	8	5	9	7	5	8	6	4	8	5	5
			Exposed	10	10	10	10	10	9	10	10	8	10	10	7	10	10	7	10	9	6	10	8	5	10	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	11	11	10	11	11	8	10	10	7	10	10	6	9	9	5	8	8	4	7	7	4
			Exposed	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	11	7	11	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	7	7	5	6	7	5	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	7	5	7	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	7	5	7	7	5	6	6	6	5	6	6	4
			Exposed	8	8	8	8	8	8	8	8	7	8	8	7	8	7	6	8	6	5	8	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	7	10	9	6	10	8	5	9	6	4	9	6	4	9	5	5	8	7	4	7	7	4
			Exposed	11	11	9	11	11	8	11	10	7	11	9	6	11	8	6	11	7	5	11	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	12	12	12	10	12	12	9	12	12	8	11	11	7	10	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	13	13	10	13	13	9	13	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
80	B	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6
		7-20	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5	6	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	7	5	8	6	4	7	5	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	8	6	8	8	5	8	7	5	8	6	4	8	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	10	10	8	9	9	7	9	9	6	9	9	5	8	8	4	7	7	4
			Exposed	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	7	10	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	C	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5	6	5	7	6	5	6	6	5	4	5	5	4	7	5	3
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	5	6	6	6	5	6	6	4
			Exposed	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	6	5	7	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	6	4	8	6	4	8	5	5	7	7	4
			Exposed	9	9	9	9	9	8	9	9	7	9	9	6	9	8	6	9	7	5	9	7	5	9	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	12	12	12	12	12	12	12	12	12	11	11	11	11	11	10	11	11	9	11	11	8	10	10	7	10	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	12	12	10	12	12	9	12	12	8	11	11	7	11	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
	D	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	5	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	5	6	6	6	5	6	6	4
			Exposed	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	6	5	7	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	6	4	8	6	4	8	5	5	7	7	4
			Exposed	9	9	9	9	9	8	9	9	7	9	9	6	9	8	6	9	7	5	9	7	5	9	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	12	12	12	12	12	12	12	12	12	11	11	11	11	11	10	11	11	9	11	11	8	10	10	7	10	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	12	12	10	12	12	9	12	12	8	11	11	7	11	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
90	B	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	7	6	5	6	5
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	4	7	6	4	7	5	5
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	9	9	8	9	9	7	8	8	6
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	6	9	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	5	5	5	5	5	5	6	4	5	6	4
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	7	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	5	5	6	4	5	5	4	7	4	3
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5	7	6	4	7	5	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5	7	6	4	7	5	5	7	7	4	7	6	4	6	5	3
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	8	9	9	7	8	8	6	8	8	5	8	8	4	7	7	4
			Exposed	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	9	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4		
	D	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	5	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	7	6	5	6	6	6	5	6	6	4
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5	6	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	6	4	8	6	4	7	5	5	7	7	4
			Exposed	8	8	8	8	8	8	8	8	7	8	8	6	8	8	6	8	7	5	8	7	5	8	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	10	9	10	10	8	9	9	7	9	9	6	8	8	5	8	7	4	7	6	4	6	6	5
			Exposed	11	11	10	11	11	9	11	11	8	11	11	7	10	10	6	10	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
100	B	0-7	Interior	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
			Exposed	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	4	4	6
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	7	6	5	6	5
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	4	7	6	4	7	5	5
		27-45	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	8	8	8	7	8	8	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	6	9	9	5	8	8	5	8	7	4	7	6	4	7	6	4
	C	0-7	Interior	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	4	4	6
			Exposed	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	4	4	6	4	4	5	4	6	4	4	6	4	4	6	4
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	7	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	5	5	6	4	5	5	4	7	4	3			
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5	7	6	4	6	5	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5	7	6	4	7	5	5	7	7	4	7	6	4	6	5	3
		27-45	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	8	8	8	7	8	8	6	7	7	5	7	7	4	7	7	4
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	8	8	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4		
	D	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	7	5	6	5	5	4	7	5	3			
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	6	5	5	6	4
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	5	4	7	5	7	5	6	4	6	4	3	6	3	3	
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	4	7	6	4	7	5	5	6	7	4
			Exposed	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	7	5	7	7	5	7	6	5	7	6	4	6	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	9	9	8	9	9	7	8	8	6	8	8	5	7	7	4	7	6	4	6	6	5
			Exposed	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	9	9	6	9	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
0	B	0-7	Interior	56	56	53	56	56	47	56	56	42	56	54	38	56	49	34	56	44	31	56	40	28	47	34	24	40	29	20	34	25	17	30	22	15	26	19	13	23	17	12
			Exposed	56	49	34	56	43	30	54	39	27	48	35	24	44	31	22	40	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	56	56	46	56	50	41	56	45	37	56	40	33	56	36	30	52	33	27	47	30	25	39	25	21	33	22	18	29	19	15	25	16	13	22	14	12	19	13	10
			Exposed	56	36	30	50	32	26	45	29	24	40	26	21	36	23	19	33	21	18	30	19	16	25	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	57	57	54	57	57	46	57	55	40	57	49	35	57	44	30	57	40	27	57	37	25	54	31	21	46	26	18	39	23	15	34	20	13	30	17	12	26	15	10
			Exposed	57	44	30	57	39	26	57	35	24	55	31	21	50	28	19	45	26	18	41	24	16	34	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	57	57	57	57	57	57	57	57	50	57	57	44	57	55	39	56	50	35	51	46	31	43	39	26	37	33	21	32	28	18	28	25	15	24	22	13	22	19	12
			Exposed	57	55	39	55	49	34	49	44	30	44	39	26	40	36	23	36	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	56	53	36	56	47	32	56	42	29	52	37	26	47	34	24	43	31	21	39	28	20	33	24	17	28	20	14	24	17	12	21	15	11	18	13	9	16	12	13
			Exposed	47	34	24	42	30	21	37	27	19	33	24	17	30	22	15	27	20	14	25	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	56	39	32	54	35	28	48	31	25	43	28	23	39	25	21	36	23	19	32	21	17	27	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	39	25	21	35	22	18	31	20	16	28	18	15	25	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	57	47	33	57	42	29	57	38	25	57	34	23	54	31	21	49	28	19	44	25	17	37	21	14	32	18	12	27	16	11	24	14	9	21	12	8	18	11	7
			Exposed	53	30	21	47	27	18	42	24	16	38	22	15	34	20	13	31	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	57	57	43	57	53	37	53	47	32	48	42	29	43	38	26	39	35	23	36	32	21	30	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	43	38	25	38	34	22	34	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	56	44	30	54	39	27	48	35	24	43	31	22	39	28	20	35	26	18	32	23	16	27	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	39	28	20	35	25	17	31	22	16	28	20	14	25	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	51	32	27	45	29	24	40	26	21	36	23	19	33	21	17	30	19	16	27	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	32	21	17	29	19	15	26	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	57	39	27	57	35	24	55	31	21	49	28	19	44	26	17	40	23	16	37	21	14	31	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	44	25	17	39	23	15	35	20	14	32	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	55	49	34	49	44	30	44	39	26	40	35	23	36	32	21	33	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	36	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
10	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34	39	39	31	39	39	28	39	34	24	39	29	20	34	25	17	30	22	15	26	19	13	23	17	12
			Exposed	39	39	34	39	39	30	39	39	27	39	35	24	39	31	22	39	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	40	40	40	40	40	40	40	40	37	40	40	33	40	36	30	40	33	27	40	30	25	39	25	21	33	22	18	29	19	15	25	16	13	22	14	12	19	13	10
			Exposed	40	36	30	40	32	26	40	29	24	40	26	21	36	23	19	33	21	18	30	19	16	25	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	52	52	52	52	52	46	52	52	40	52	49	35	52	44	30	52	40	27	52	37	25	52	31	21	46	26	18	39	23	15	34	20	13	30	17	12	26	15	10
			Exposed	52	44	30	52	39	26	52	35	24	52	31	21	50	28	19	45	26	18	41	24	16	34	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	56	56	56	56	56	56	56	56	50	56	56	44	56	55	39	56	50	35	51	46	31	43	39	26	37	33	21	32	28	18	28	25	15	24	22	13	22	19	12
			Exposed	56	55	39	55	49	34	49	44	30	44	39	26	40	36	23	36	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	39	39	36	39	39	32	39	39	29	39	37	26	39	34	24	39	31	21	39	28	20	33	24	17	28	20	14	24	17	12	21	15	11	18	13	9	16	12	13
			Exposed	39	34	24	39	30	21	37	27	19	33	24	17	30	22	15	27	20	14	25	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	40	39	32	40	35	28	40	31	25	40	28	23	39	25	21	36	23	19	32	21	17	27	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	39	25	21	35	22	18	31	20	16	28	18	15	25	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	52	47	33	52	42	29	52	38	25	52	34	23	52	31	21	49	28	19	44	25	17	37	21	14	32	18	12	27	16	11	24	14	9	21	12	8	18	11	7
			Exposed	52	30	21	47	27	18	42	24	16	38	22	15	34	20	13	31	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	56	56	43	56	53	37	53	47	32	48	42	29	43	38	26	39	35	23	36	32	21	30	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	43	38	25	38	34	22	34	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	56	44	30	54	39	27	48	35	24	43	31	22	39	28	20	35	26	18	32	23	16	27	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	39	28	20	35	25	17	31	22	16	28	20	14	25	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	51	32	27	45	29	24	40	26	21	36	23	19	33	21	17	30	19	16	27	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	32	21	17	29	19	15	26	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	57	39	27	57	35	24	55	31	21	49	28	19	44	26	17	40	23	16	37	21	14	31	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	44	25	17	39	23	15	35	20	14	32	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	55	49	34	49	44	30	44	39	26	40	35	23	36	32	21	33	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	36	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
20	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	20	27	25	17	27	22	15	26	19	13	23	17	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	22	15	26	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	25	28	25	21	28	22	18	28	19	15	25	16	13	22	14	12	19	13	10
			Exposed	28	28	28	28	28	26	28	28	24	28	26	21	28	23	19	28	21	18	28	19	16	25	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	41	41	41	41	41	41	41	41	40	41	41	35	41	41	30	41	40	27	41	37	25	41	31	21	41	26	18	39	23	15	34	20	13	30	17	12	26	15	10
			Exposed	41	41	30	41	39	26	41	35	24	41	31	21	41	28	19	41	26	18	41	24	16	34	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	44	45	45	39	45	45	35	45	45	31	43	39	26	37	33	21	32	28	18	28	25	15	24	22	13	22	19	12
			Exposed	45	45	39	45	45	34	45	44	30	44	39	26	40	36	23	36	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	26	27	27	24	27	27	21	27	27	20	27	24	17	27	20	14	24	17	12	21	15	11	18	13	9	16	12	13
			Exposed	27	27	24	27	27	21	27	27	19	27	24	17	27	22	15	27	20	14	25	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	28	28	28	28	28	28	28	28	25	28	28	23	28	25	21	28	23	19	28	21	17	27	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	28	25	21	28	22	18	28	20	16	28	18	15	25	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	41	41	33	41	41	29	41	38	25	41	34	23	41	31	21	41	28	19	41	25	17	37	21	14	32	18	12	27	16	11	24	14	9	21	12	8	18	11	7
			Exposed	41	30	21	41	27	18	41	24	16	38	22	15	34	20	13	31	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	45	45	43	45	45	37	45	45	32	45	42	29	43	38	26	39	35	23	36	32	21	30	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	43	38	25	38	34	22	34	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	23	16	27	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	27	27	20	27	25	17	27	22	16	27	20	14	25	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	28	28	27	28	28	24	28	26	21	28	23	19	28	21	17	28	19	16	27	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	28	21	17	28	19	15	26	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	43	39	27	43	35	24	43	31	21	43	28	19	43	26	17	40	23	16	37	21	14	31	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	43	25	17	39	23	15	35	20	14	32	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	47	47	34	47	44	30	44	39	26	40	35	23	36	32	21	33	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	36	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7

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10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
30	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	20	27	25	17	27	22	15	26	19	13	23	17	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	22	15	26	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	25	28	25	21	28	22	18	28	19	15	25	16	13	22	14	12	19	13	10
			Exposed	28	28	28	28	28	26	28	28	24	28	26	21	28	23	19	28	21	18	28	19	16	25	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	30	34	34	27	34	34	25	34	31	21	34	26	18	34	23	15	34	20	13	30	17	12	26	15	10
			Exposed	34	34	30	34	34	26	34	34	24	34	31	21	34	28	19	34	26	18	34	24	16	34	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	31	38	38	26	36	33	21	32	28	18	28	25	15	24	22	13	22	19	12
			Exposed	38	38	38	38	38	34	38	38	30	38	38	26	38	36	23	36	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	26	27	27	24	27	27	21	27	27	20	27	24	17	27	20	14	24	17	12	21	15	11	18	13	9	16	12	13
			Exposed	27	27	24	27	27	21	27	27	19	27	24	17	27	22	15	27	20	14	25	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	28	28	28	28	28	28	28	28	25	28	28	23	28	25	21	28	23	19	28	21	17	27	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	28	25	21	28	22	18	28	20	16	28	18	15	25	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	34	34	33	34	34	29	34	34	25	34	34	23	34	31	21	34	28	19	34	25	17	34	21	14	32	18	12	27	16	11	24	14	9	21	12	8	18	11	7
			Exposed	34	30	21	34	27	18	34	24	16	34	22	15	34	20	13	31	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	38	38	38	38	38	37	38	38	32	38	38	29	38	38	26	37	35	23	36	32	21	30	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	38	38	25	38	34	22	34	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	23	16	27	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	27	27	20	27	25	17	27	22	16	27	20	14	25	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	28	28	27	28	28	24	28	26	21	28	23	19	28	21	17	28	19	16	27	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	28	21	17	28	19	15	26	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	36	36	27	36	35	24	36	31	21	36	28	19	36	26	17	36	23	16	36	21	14	31	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	36	25	17	36	23	15	35	20	14	32	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	40	40	34	40	40	30	40	39	26	39	35	23	36	32	21	33	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	36	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
40	B	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	17	22	22	15	22	19	13	22	17	12
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	22	15	22	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	22	18	23	19	15	23	16	13	22	14	12	19	13	10
			Exposed	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	21	18	23	19	16	23	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	25	29	29	21	29	26	18	29	23	15	28	20	13	27	17	12	26	15	10
			Exposed	29	29	29	29	29	26	29	29	24	29	29	21	29	28	19	29	26	18	29	24	16	29	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	26	32	32	21	30	28	18	28	25	15	24	22	13	22	19	12
			Exposed	33	33	33	33	33	33	33	33	30	33	33	26	33	33	23	33	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	20	22	22	17	22	20	14	22	17	12	21	15	11	18	13	9	16	12	13
			Exposed	22	22	22	22	22	21	22	22	19	22	22	17	22	22	15	22	20	14	22	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	21	17	23	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	23	23	21	23	22	18	23	20	16	23	18	15	23	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	29	29	29	29	29	29	29	29	25	29	29	23	29	29	21	29	28	19	29	25	17	29	21	14	28	18	12	26	16	11	24	14	9	21	12	8	18	11	7
			Exposed	29	29	21	29	27	18	29	24	16	29	22	15	29	20	13	29	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	33	33	33	33	33	33	33	33	32	33	33	29	33	33	26	32	32	23	31	31	21	29	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	33	33	25	33	33	22	33	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	23	16	24	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	24	24	20	24	24	17	24	22	16	24	20	14	24	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	25	25	25	25	25	24	25	25	21	25	23	19	25	21	17	25	19	16	25	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	25	21	17	25	19	15	25	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	30	30	27	30	30	24	30	30	21	30	28	19	30	26	17	30	23	16	30	21	14	29	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	30	25	17	30	23	15	30	20	14	30	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	35	35	34	35	35	30	35	35	26	34	34	23	33	32	21	32	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	35	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
50	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	18	12	18	13	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	13	18	16	11	18	14	10	17	12	9	15	11	12
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	15	19	16	13	19	14	12	18	13	10
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	16	14	19	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	25	18	25	23	15	25	20	13	24	17	12	23	15	10
			Exposed	25	25	25	25	25	25	25	25	24	25	25	21	25	25	19	25	25	18	25	24	16	25	20	13	25	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	28	28	21	27	27	18	25	25	15	24	22	13	22	19	12
			Exposed	29	29	29	29	29	29	29	29	29	29	29	26	29	29	23	29	29	21	29	29	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	17	12	18	15	11	18	13	9	16	12	13
			Exposed	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	18	14	18	18	13	18	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	15	12	19	13	11	17	11	9	15	10	13	14	9	11
			Exposed	19	19	19	19	19	18	19	19	16	19	18	15	19	16	13	19	15	12	19	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	23	25	25	21	25	25	19	25	25	17	25	21	14	24	18	12	23	16	11	22	14	9	21	12	8	18	11	7
			Exposed	25	25	21	25	25	18	25	24	16	25	22	15	25	20	13	25	18	12	25	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	23	28	28	21	26	26	17	25	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	29	29	25	29	29	22	29	29	20	29	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	20	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	20	20	20	20	20	17	20	20	16	20	20	14	20	18	13	20	17	12	20	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	21	21	21	21	21	21	21	21	21	21	21	19	21	21	17	21	19	16	21	17	14	21	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	21	21	17	21	19	15	21	17	14	21	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	27	27	27	27	27	24	27	27	21	27	27	19	27	26	17	27	23	16	27	21	14	26	18	12	24	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	27	25	17	27	23	15	27	20	14	27	18	12	27	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	31	31	31	31	31	30	31	31	26	31	31	23	30	30	21	29	29	19	28	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	31	31	21	31	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7

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~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

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ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

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Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
60	B	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	11	15	14	10	15	12	9	15	11	12
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	14	12	16	13	10
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	14	12	16	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	22	15	22	20	13	21	17	12	20	15	10
			Exposed	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	18	22	22	16	22	20	13	22	17	12	22	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	25	21	24	24	18	23	23	15	22	22	13	21	19	12
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	26	21	26	26	19	26	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	13	9	15	12	13
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	11	15	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	15	12	16	13	11	16	11	9	15	10	13	14	9	11
			Exposed	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	15	12	16	14	11	16	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	17	22	21	14	21	18	12	20	16	11	20	14	9	19	12	8	18	11	7
			Exposed	22	22	21	22	22	18	22	22	16	22	22	15	22	20	13	22	18	12	22	16	11	22	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	25	25	21	24	24	17	22	22	14	21	20	12	19	17	11	17	15	9	14	13	8
			Exposed	26	26	25	26	26	22	26	26	20	26	26	17	26	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	12	17	14	10	17	13	9	15	11	12	14	10	11
			Exposed	17	17	17	17	17	17	17	17	16	17	17	14	17	17	13	17	17	12	17	15	11	17	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	16	18	17	14	18	15	12	17	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	18	18	17	18	18	15	18	17	14	18	15	12	18	14	11	18	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	24	24	24	24	24	24	24	24	21	24	24	19	24	24	17	24	23	16	24	21	14	23	18	12	22	15	10	21	13	9	20	11	8	17	10	7	15	9	9
			Exposed	24	24	17	24	23	15	24	20	14	24	18	12	24	17	11	24	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	28	28	28	28	28	28	28	28	26	27	27	23	27	27	21	26	26	19	25	25	17	24	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	28	28	21	28	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
70	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	10	13	12	9	13	11	12
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	13	10
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	12	10	14	11	9	14	9	12	13	13	10
		20-27	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	15	19	19	13	19	17	12	18	15	10
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	13	19	17	12	19	15	10	19	13	9	19	11	8	17	10	7
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	22	22	18	21	21	15	20	20	13	19	19	12
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	15	23	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	9	13	12	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	9	13	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	11	14	11	9	14	10	13	13	9	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	11	9	14	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	14	19	18	12	18	16	11	18	14	9	17	12	8	16	11	7
			Exposed	19	19	19	19	19	18	19	19	16	19	19	15	19	19	13	19	18	12	19	16	11	19	14	9	19	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	22	22	17	21	21	14	19	19	12	19	17	11	17	15	9	14	13	8
			Exposed	23	23	23	23	23	22	23	23	20	23	23	17	23	23	15	23	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	10	14	13	9	14	11	12	14	10	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	13	9	14	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	12	16	13	10	15	11	9	14	9	12	13	13	10	11	11	9
			Exposed	16	16	16	16	16	15	16	16	14	16	15	12	16	14	11	16	12	10	16	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	19	21	21	17	21	21	16	21	21	14	20	18	12	20	15	10	19	13	9	18	11	8	17	10	7	15	9	9
			Exposed	21	21	17	21	21	15	21	20	14	21	18	12	21	17	11	21	15	10	21	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	23	24	24	21	24	24	19	23	23	17	22	22	14	20	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	25	25	21	25	25	18	25	25	16	25	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
80	B	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	12
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	11	9	12	9	12	12	13	10
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	17	12	17	15	10
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	13	17	17	12	17	15	10	17	13	9	17	11	8	17	10	7
		27-45	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	20	18	19	19	15	19	19	13	18	18	12
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	15	21	21	13	20	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	13
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	12	11	10	10	11	13	9	10	12	8	10	12	8
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	9	12	10	13	12	9	11
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	9	12	10	12	12	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	12	17	16	11	16	14	9	15	12	8	15	11	7
			Exposed	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	17	12	17	16	11	17	14	9	17	12	8	17	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	20	17	19	19	14	18	18	12	17	17	11	16	15	9	14	13	8
			Exposed	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15	21	21	14	21	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	11	12	13	10	11
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	9	13	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	10	14	11	9	13	9	12	13	13	10	11	11	9
			Exposed	14	14	14	14	14	14	14	14	14	14	14	11	14	14	11	14	12	10	14	11	9	14	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	16	19	19	14	19	18	12	18	15	10	17	13	9	16	11	8	16	10	7	15	9	9
			Exposed	19	19	17	19	19	15	19	19	14	19	18	12	19	17	11	19	15	10	19	14	9	19	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	22	22	21	22	22	19	21	21	17	20	20	14	19	19	12	18	17	10	16	14	9	14	13	8	13	11	7
			Exposed	23	23	21	23	23	18	23	23	16	23	23	14	22	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
90	B	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	9	12	11	13	10
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	15	10
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	15	10	15	13	9	15	11	8	15	10	7
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	18	15	17	17	13	17	17	12
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	15	19	19	13	19	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	13
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	10	10	10	10	10	10	13	9	10	12	8
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	10	13	11	9	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	10	12	11	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	14	9	14	12	8	14	11	7
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	15	11	15	14	9	15	12	8	15	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	17	17	17	14	17	17	12	16	16	11	15	15	9	15	13	8
			Exposed	19	19	19	19	19	19	19	19	19	19	19	17	19	19	15	19	19	14	19	19	13	18	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	12	11	10	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	12	11	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	11	9	12	9	12	12	13	10	11	11	9
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	10	12	12	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	12	16	15	10	16	13	9	15	11	8	15	10	7	14	9	9
			Exposed	17	17	17	17	17	15	17	17	14	17	17	12	17	17	11	17	15	10	17	14	9	17	12	8	16	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	20	19	20	20	17	19	19	14	18	18	12	17	17	10	16	14	9	14	13	8	13	11	7
			Exposed	21	21	21	21	21	18	21	21	16	21	21	14	21	21	13	20	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
100	B	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	12
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	9	12	10	13	10
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	10
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	10	14	13	9	14	11	8	14	10	7
		27-45	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	16	16	13	16	16	12
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	17	11	17	16	10	16	14	9	14	13	8
	C	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	13
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	12	9	9	10	9	13	9	9	12	8
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	13	10	9	11
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	8	11	10	11	9	10	10	8	13	9	7
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	11	14	14	9	13	12	8	13	11	7
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	14	9	14	12	8	14	10	7	14	9	9	13	12	8	12	11	7
		27-45	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	16	14	14	13	9
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	17	13	17	17	11	16	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	10	11
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	9	10	10	12	9	10	11	8	9	10	7
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	9	12	11	13	10	10	11	9
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	10	11	10	12	11	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	10	15	13	9	14	11	8	14	10	7	13	9	9
			Exposed	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	15	10	15	14	9	15	12	8	15	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	17	17	17	14	17	17	12	16	16	10	15	14	9	14	13	8	13	11	7
			Exposed	19	19	19	19	19	18	19	19	16	19	19	14	19	19	13	19	19	12	18	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph) 90			95			100			105			110			115			120			130			140			150			160			170			180		
			Roof Wind 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
0	B	0-7	Interior	34	34	32	34	34	28	34	34	25	34	33	23	34	30	21	34	27	19	34	24	17	29	20	14	24	17	12	21	15	10	18	13	9	16	11	8	14	10	7
			Exposed	34	30	20	34	26	18	33	23	16	29	21	15	26	19	13	24	17	12	22	16	11	18	13	9	16	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	34	34	28	34	30	25	34	27	22	34	24	20	34	22	18	31	20	16	28	18	15	24	15	13	20	13	11	17	11	9	15	10	8	13	9	7	12	8	6
			Exposed	34	22	18	30	19	16	27	17	14	24	16	13	22	14	12	20	13	11	18	12	10	15	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	35	35	33	35	35	28	35	33	24	35	30	21	35	27	18	35	24	16	35	22	15	33	19	13	28	16	11	24	14	9	21	12	8	18	10	7	16	9	6
			Exposed	35	27	18	35	24	16	35	21	14	33	19	13	30	17	12	27	16	11	25	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	35	35	35	35	35	35	35	35	31	35	35	27	35	34	24	34	30	21	31	28	19	26	23	15	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7
			Exposed	35	33	24	33	30	21	30	27	18	27	24	16	24	22	14	22	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	34	32	22	34	28	20	34	25	18	32	23	16	29	20	14	26	19	13	24	17	12	20	14	10	17	12	8	14	10	7	13	9	6	11	8	5	10	7	5
			Exposed	28	20	14	25	18	13	22	16	11	20	14	10	18	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	34	24	19	33	21	17	29	19	15	26	17	14	24	15	12	21	14	11	20	13	10	16	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	24	15	12	21	13	11	19	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	~~4~~
		20-27	Interior	35	29	20	35	25	17	35	23	15	35	20	14	32	18	12	29	17	11	27	15	10	22	13	9	19	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	32	18	12	29	16	11	26	15	10	23	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	~~4~~
		27-45	Interior	35	35	26	35	32	22	32	29	20	29	26	17	26	23	15	24	21	14	22	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	26	23	15	23	21	13	21	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	34	26	18	33	23	16	29	21	15	26	19	13	24	17	12	21	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	24	17	12	21	15	10	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	~~5~~	5	6	~~4~~
		7-20	Interior	31	20	16	27	17	14	24	16	13	22	14	12	20	13	10	18	12	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	~~5~~	5	5	~~4~~	7	~~4~~	~~3~~
		20-27	Interior	35	24	16	35	21	14	33	19	13	30	17	11	27	15	10	24	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	27	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	~~4~~	6	5	~~3~~
		27-45	Interior	34	30	21	30	27	18	27	24	16	24	21	14	22	19	12	20	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	22	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
10	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	19	24	24	17	24	20	14	24	17	12	21	15	10	18	13	9	16	11	8	14	10	7
			Exposed	24	24	20	24	24	18	24	23	16	24	21	15	24	19	13	24	17	12	22	16	11	18	13	9	16	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	24	24	24	24	24	24	24	24	22	24	24	20	24	22	18	24	20	16	24	18	15	24	15	13	20	13	11	17	11	9	15	10	8	13	9	7	12	8	6
			Exposed	24	22	18	24	19	16	24	17	14	24	16	13	22	14	12	20	13	11	18	12	10	15	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	32	32	32	32	32	28	32	32	24	32	30	21	32	27	18	32	24	16	32	22	15	32	19	13	28	16	11	24	14	9	21	12	8	18	10	7	16	9	6
			Exposed	32	27	18	32	24	16	32	21	14	32	19	13	30	17	12	27	16	11	25	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	34	34	34	34	34	34	34	34	31	34	34	27	34	34	24	34	30	21	31	28	19	26	23	15	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7
			Exposed	34	33	24	33	30	21	30	27	18	27	24	16	24	22	14	22	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	24	24	22	24	24	20	24	24	18	24	23	16	24	20	14	24	19	13	24	17	12	20	14	10	17	12	8	14	10	7	13	9	6	11	8	5	10	7	5
			Exposed	24	20	14	24	18	13	22	16	11	20	14	10	18	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	24	24	19	24	21	17	24	19	15	24	17	14	24	15	12	21	14	11	20	13	10	16	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	24	15	12	21	13	11	19	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	~~4~~
		20-27	Interior	32	29	20	32	25	17	32	23	15	32	20	14	32	18	12	29	17	11	27	15	10	22	13	9	19	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	32	18	12	29	16	11	26	15	10	23	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	~~4~~
		27-45	Interior	34	34	26	34	32	22	32	29	20	29	26	17	26	23	15	24	21	14	22	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	26	23	15	23	21	13	21	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	24	24	18	24	23	16	24	21	15	24	19	13	24	17	12	21	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	24	17	12	21	15	10	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	~~5~~	5	6	~~4~~
		7-20	Interior	24	20	16	24	17	14	24	16	13	22	14	12	20	13	10	18	12	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	~~5~~	5	5	~~4~~	7	~~4~~	~~3~~
		20-27	Interior	33	24	16	33	21	14	33	19	13	30	17	11	27	15	10	24	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	27	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	~~4~~	6	5	~~3~~
		27-45	Interior	34	30	21	30	27	18	27	24	16	24	21	14	22	19	12	20	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	22	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
20	B	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	12	17	15	10	17	13	9	16	11	8	14	10	7
			Exposed	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	17	12	17	16	11	17	13	9	16	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	15	13	17	13	11	17	11	9	15	10	8	13	9	7	12	8	6
			Exposed	17	17	17	17	17	16	17	17	14	17	16	13	17	14	12	17	13	11	17	12	10	15	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	25	25	25	25	25	25	25	25	24	25	25	21	25	25	18	25	24	16	25	22	15	25	19	13	25	16	11	24	14	9	21	12	8	18	10	7	16	9	6
			Exposed	25	25	18	25	24	16	25	21	14	25	19	13	25	17	12	25	16	11	25	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	27	28	28	24	28	28	21	28	28	19	26	23	15	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7
			Exposed	28	28	24	28	28	21	28	27	18	27	24	16	24	22	14	22	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	13	17	17	12	17	14	10	17	12	8	14	10	7	13	9	6	11	8	5	10	7	5
			Exposed	17	17	14	17	17	13	17	16	11	17	14	10	17	13	9	17	12	8	15	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	17	17	17	17	17	17	17	17	15	17	17	14	17	15	12	17	14	11	17	13	10	16	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	17	15	12	17	13	11	17	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	~~4~~
		20-27	Interior	25	25	20	25	25	17	25	23	15	25	20	14	25	18	12	25	17	11	25	15	10	22	13	9	19	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	25	18	12	25	16	11	25	15	10	23	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	~~4~~
		27-45	Interior	28	28	26	28	28	22	28	28	20	28	26	17	26	23	15	24	21	14	22	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	26	23	15	23	21	13	21	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	17	17	17	17	17	16	17	17	15	17	17	13	17	17	12	17	15	11	17	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	17	17	12	17	15	10	17	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	~~5~~	5	6	~~4~~
		7-20	Interior	17	17	16	17	17	14	17	16	13	17	14	12	17	13	10	17	12	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	17	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	~~5~~	5	5	~~4~~	7	~~4~~	~~3~~
		20-27	Interior	26	24	16	26	21	14	26	19	13	26	17	11	26	15	10	24	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	26	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	~~4~~	6	5	~~3~~
		27-45	Interior	29	29	21	29	27	18	27	24	16	24	21	14	22	19	12	20	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	22	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4

*	Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.
10	Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.
~~10~~	Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																										
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
30	B	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	12	16	15	10	16	13	9	16	11	8	14	10	7
			Exposed	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	16	12	16	16	11	16	13	9	16	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	15	13	17	13	11	17	11	9	15	10	8	13	9	7	12	8	6
			Exposed	17	17	17	17	17	16	17	17	14	17	16	13	17	14	12	17	13	11	17	12	10	15	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	18	21	21	16	21	21	15	21	19	13	21	16	11	21	14	9	21	12	8	18	10	7	16	9	6
			Exposed	21	21	18	21	21	16	21	21	14	21	19	13	21	17	12	21	16	11	21	14	10	21	12	8	18	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	15	22	20	13	19	17	11	17	15	9	15	13	8	13	12	7
			Exposed	23	23	23	23	23	21	23	23	18	23	23	16	23	22	14	22	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	13	16	16	12	16	14	10	16	12	8	14	10	7	13	9	6	11	8	5	10	7	5
			Exposed	16	16	14	16	16	13	16	16	11	16	14	10	16	13	9	16	12	8	15	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	17	17	17	17	17	17	17	17	15	17	17	14	17	15	12	17	14	11	17	13	10	16	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	17	15	12	17	13	11	17	12	10	17	11	9	15	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	21	21	20	21	21	17	21	21	15	21	20	14	21	18	12	21	17	11	21	15	10	21	13	9	19	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	21	18	12	21	16	11	21	15	10	21	13	9	21	12	8	19	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	23	23	23	23	23	22	23	23	20	23	23	17	23	23	15	23	21	14	22	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	23	23	15	23	21	13	21	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	17	17	17	17	17	16	17	17	15	17	17	13	17	17	12	17	15	11	17	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	17	17	12	17	15	10	17	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	17	17	16	17	17	14	17	16	13	17	14	12	17	13	10	17	12	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	17	13	10	17	11	9	16	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	22	22	16	22	21	14	22	19	13	22	17	11	22	15	10	22	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	22	15	10	22	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	25	25	21	25	25	18	25	24	16	24	21	14	22	19	12	20	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	22	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
40	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	10	13	13	9	13	11	8	13	10	7
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	9	13	11	8	13	10	7	12	8	6	10	7	5	9	6	7
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	13	11	14	11	9	14	10	8	13	9	7	12	8	6
			Exposed	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	13	11	14	12	10	14	10	8	13	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	16	11	17	14	9	17	12	8	17	10	7	16	9	6
			Exposed	17	17	17	17	17	16	17	17	14	17	17	13	17	17	12	17	16	11	17	14	10	17	12	8	17	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	15	19	19	13	18	17	11	17	15	9	15	13	8	13	12	7
			Exposed	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	20	20	13	20	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	12	8	13	10	7	13	9	6	11	8	5	10	7	5
			Exposed	13	13	13	13	13	13	13	13	11	13	13	10	13	13	9	13	12	8	13	11	8	13	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	11	14	13	10	14	11	9	14	9	7	12	8	6	10	7	5	9	6	5	8	5	7
			Exposed	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	14	9	7	13	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	17	17	17	17	17	17	17	17	15	17	17	14	17	17	12	17	17	11	17	15	10	17	13	9	17	11	7	16	9	6	14	8	5	13	7	5	11	6	4
			Exposed	17	17	12	17	16	11	17	15	10	17	13	9	17	12	8	17	11	7	17	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	20	20	20	20	20	20	20	20	20	20	20	17	20	20	15	20	20	14	19	19	12	18	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	20	20	15	20	20	13	20	18	12	19	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	14	10	14	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	14	14	12	14	14	10	14	13	9	14	12	8	14	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	15	15	15	15	15	14	15	15	13	15	14	12	15	13	10	15	12	9	15	10	9	14	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	15	13	10	15	11	9	15	10	8	14	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	19	19	16	19	19	14	19	19	13	19	17	11	19	15	10	19	14	9	19	13	9	18	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	19	15	10	19	14	9	19	12	8	19	11	7	17	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	21	21	21	21	21	18	21	21	16	21	21	14	20	19	12	19	18	11	18	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	21	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
50	B	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	10	7
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	8	11	10	7	11	8	6	10	7	5	9	6	7
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	9	12	10	8	11	9	7	11	8	6
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	10	8	12	8	7	11	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	11	15	14	9	15	12	8	14	10	7	14	9	6
			Exposed	15	15	15	15	15	15	15	15	14	15	15	13	15	15	12	15	15	11	15	14	10	15	12	8	15	10	7	15	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	17	17	13	16	16	11	15	15	9	15	13	8	13	12	7
			Exposed	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	13	18	18	11	17	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	8	11	10	7	11	9	6	11	8	5	10	7	5
			Exposed	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	8	11	9	6	11	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	9	7	11	8	6	10	7	5	9	6	5	8	5	7
			Exposed	12	12	12	12	12	11	12	12	10	12	11	9	12	10	8	12	9	7	12	8	7	11	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	15	10	15	13	9	15	11	7	14	9	6	13	8	5	13	7	5	11	6	4
			Exposed	15	15	12	15	15	11	15	15	10	15	13	9	15	12	8	15	11	7	15	10	7	14	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	17	17	14	17	17	12	16	16	10	15	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	18	18	15	18	18	13	18	18	12	18	17	10	17	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	8	12	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	12	12	12	12	12	10	12	12	9	12	12	8	12	11	8	12	10	7	12	9	6	11	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	12	9	13	10	9	12	9	7	12	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	13	13	10	13	11	9	13	10	8	13	9	7	13	8	7	12	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	16	16	16	16	16	14	16	16	13	16	16	11	16	15	10	16	14	9	16	13	9	16	11	7	15	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	16	15	10	16	14	9	16	12	8	16	11	7	16	10	7	16	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	19	19	19	19	19	18	19	19	16	19	19	14	18	18	12	17	17	11	17	16	10	15	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	19	19	12	19	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

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ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
60	B	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	8	6	9	7	5	9	6	7
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	9	7	10	8	6
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	8	7	10	7	6	10	6	5	9	5	7	8	5	6
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	9	13	12	8	13	10	7	12	9	6
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	12	8	13	10	7	13	9	6	13	8	5	12	7	4	10	6	4
		27-45	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	15	15	13	15	15	11	14	14	9	13	13	8	13	12	7
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	13	16	16	11	16	15	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	7	5
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	8	9	9	6	9	8	5	9	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	9	7	10	8	6	9	7	5	9	6	5	8	5	7
			Exposed	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	9	7	10	8	7	10	7	6	9	6	5	8	5	6	7	7	5	6	6	5	5	5	5	4
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	13	9	13	11	7	12	9	6	12	8	5	11	7	5	11	6	4
			Exposed	13	13	12	13	13	11	13	13	10	13	13	9	13	12	8	13	11	7	13	10	7	13	8	6	12	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	14	15	15	12	14	14	10	14	14	8	13	12	7	12	10	6	10	9	5	9	8	5
			Exposed	16	16	15	16	16	13	16	16	12	16	16	10	16	15	9	15	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	10	7	10	9	6	10	7	5	9	7	7	8	6	6
			Exposed	10	10	10	10	10	10	10	10	9	10	10	8	10	10	8	10	10	7	10	9	6	10	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	10	9	11	9	7	10	7	6	10	6	5	9	6	7	8	5	6	7	7	5
			Exposed	11	11	10	11	11	9	11	10	8	11	9	7	11	8	7	11	7	6	10	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	14	14	14	14	14	14	14	14	13	14	14	11	14	14	10	14	14	9	14	13	9	14	11	7	13	9	6	12	8	5	12	7	5	10	6	4	9	5	5
			Exposed	14	14	10	14	14	9	14	12	8	14	11	7	14	10	7	14	9	6	14	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	17	17	17	17	17	17	17	17	16	17	17	14	16	16	12	16	16	11	15	15	10	14	14	8	13	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	17	17	12	17	17	11	17	15	9	16	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
70	B	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	7	5	8	6	7
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	8	5	7	8	5	6
		20-27	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	9	12	12	8	11	10	7	11	9	6
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	12	10	12	12	8	12	10	7	12	9	6	12	8	5	11	7	4	10	6	4
		27-45	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	13	13	11	13	13	9	12	12	8	12	12	7
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	14	9	14	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	7	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	5	8	8	5	8	7	7	8	6	6	7	5	5	6	7	5
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	7	5	8	6	5	8	5	7
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	7	6	8	6	5	8	5	6	7	7	5	6	6	5	5	5	5	4
		20-27	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	9	11	11	7	11	9	6	11	8	5	10	7	5	10	6	4
			Exposed	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	11	7	12	10	7	12	8	6	11	7	5	11	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	14	14	14	14	14	14	14	14	12	14	14	10	14	14	9	14	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
			Exposed	14	14	14	14	14	13	14	14	12	14	14	10	14	14	9	14	14	8	14	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	7	5	9	7	7	8	6	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	8	9	9	8	9	9	7	9	9	6	9	8	5	9	6	7	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	9	7	6	9	6	5	9	6	7	8	5	6	7	7	5
			Exposed	9	9	9	9	9	9	9	9	8	9	9	7	9	8	7	9	7	6	9	7	6	9	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	11	13	13	10	13	13	9	13	13	9	12	11	7	12	9	6	11	8	5	11	7	5	10	6	4	9	5	5
			Exposed	13	13	10	13	13	9	13	12	8	13	11	7	13	10	7	13	9	6	13	8	6	12	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	14	14	11	14	14	10	13	13	8	12	12	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	15	15	12	15	15	11	15	15	9	15	14	8	14	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
80	B	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	7
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	5	6
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	9	6
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	10	7	10	9	6	10	8	5	10	7	4	10	6	4
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	12	11	12	12	9	11	11	8	11	11	7
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	9	13	13	8	12	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5	7	7	7	7	6	6	7	5	5	6	7	5
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	5	7	5	7
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	7	10	9	6	10	8	5	9	7	5	9	6	4
			Exposed	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	7	10	8	6	10	7	5	10	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	12	12	12	12	12	10	11	11	8	11	11	7	10	10	6	10	9	5	9	8	5
			Exposed	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	13	8	12	12	7	12	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	7	5	8	7	7	8	6	6
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	6	7	5	8	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	8	6	7	8	5	6	7	7	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	7	6	8	7	6	8	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	9	11	11	7	11	9	6	10	8	5	10	7	5	9	6	4	9	5	5
			Exposed	11	11	10	11	11	9	11	11	8	11	11	7	11	10	7	11	9	6	11	8	6	11	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	14	14	14	14	14	14	14	14	14	14	14	14	13	13	12	13	13	11	13	13	10	12	12	8	11	11	7	11	10	6	10	9	5	9	8	5	8	7	4
			Exposed	14	14	12	14	14	11	14	14	9	14	14	8	13	13	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
90	B	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	5	6
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	7	4	9	6	4
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	10	10	8	10	10	7
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	8	11	11	7	11	10	6	9	8	5	8	7	4
	C	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	6	6	6	5	5	6	7	5
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	5	7	5	7
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	6	7	7	5	6	6	5	5	5	4
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	9	9	6	9	8	5	9	7	5	8	6	4
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	7	9	8	6	9	7	5	9	6	4	9	5	5	8	7	5	7	6	4
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	8	10	10	7	10	10	6	9	9	5	9	8	5
			Exposed	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	7	11	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	7	7	6	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	7	7	6	6	7	5	5	6	7	5	5	6	4
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	6	7	7	5	6	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	9	10	10	7	10	9	6	9	8	5	9	7	5	9	6	4	8	5	5
			Exposed	10	10	10	10	10	9	10	10	8	10	10	7	10	10	7	10	9	6	10	8	6	10	7	5	10	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	12	12	12	12	12	11	12	12	10	11	11	8	11	11	7	10	10	6	10	9	5	9	8	5	8	7	4
			Exposed	13	13	12	13	13	11	13	13	9	13	13	8	12	12	8	12	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
100	B	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7
		7-20	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	7	6	5	6
		20-27	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	6	8	8	5	8	7	4	8	6	4
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	9	9	7
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	9	8	5	8	7	4
	C	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	5	5	5	7	5
		7-20	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5	6	5	7
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	6	6	7	5	6	6	5	5	5	4
		20-27	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	7	5	7	6	4
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	8	6	8	7	5	8	6	4	8	5	5	8	7	5	7	6	4
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	9	9	7	9	9	6	9	9	5	8	8	5
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	10	9	5	9	8	5	7	7	4	7	6	5	6	5	5
	D	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	6	6	6	5	5	6	7	5	5	6	4
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	6	7	6	5	6	6	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	6	7	7	5	6	6	6	5	6	6	5	5	5	4	7	4	3
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	9	9	6	9	8	5	8	7	5	8	6	4	8	5	5
			Exposed	9	9	9	9	9	9	9	9	8	9	9	7	9	9	7	9	9	6	9	8	6	9	7	5	9	6	4	9	5	5	8	7	5	7	6	4	6	5	3
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	8	10	10	7	9	9	6	9	9	5	9	8	5	8	7	4
			Exposed	11	11	11	11	11	11	11	11	9	11	11	8	11	11	8	11	11	7	11	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
0	B	0-7	Interior	57	57	54	57	57	48	57	57	43	57	56	39	57	50	35	57	45	32	57	41	29	48	35	24	41	29	21	35	25	18	31	22	16	27	19	14	24	17	12
			Exposed	57	50	35	57	44	31	55	39	28	50	35	25	45	32	22	40	29	20	37	27	19	31	22	16	26	19	13	23	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	57	57	47	57	51	42	57	46	38	57	41	34	57	37	31	53	34	28	48	31	25	40	26	21	34	22	18	29	19	16	26	17	14	23	15	12	20	13	11
			Exposed	57	37	30	51	33	27	46	29	24	41	27	22	37	24	20	34	22	18	31	20	16	26	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	58	58	55	58	58	47	58	56	40	58	50	35	58	45	31	58	41	28	58	37	25	55	31	21	47	27	18	40	23	16	35	20	14	31	18	12	27	16	11
			Exposed	58	45	31	58	40	27	58	36	24	56	32	22	51	29	20	46	26	18	42	24	16	35	20	14	30	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	59	59	59	59	59	59	59	59	52	59	59	45	59	57	40	58	51	36	52	47	32	44	39	26	38	34	22	32	29	18	28	25	16	25	22	14	22	20	12
			Exposed	59	56	40	56	50	35	50	45	30	45	40	27	41	36	24	37	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	57	54	37	57	48	33	57	43	30	53	38	27	48	35	24	44	31	22	40	29	20	33	24	17	28	21	14	24	18	12	21	15	11	19	14	10	17	12	8
			Exposed	48	34	24	43	31	21	38	27	19	34	25	17	31	22	16	28	20	14	26	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	57	40	33	55	35	29	49	32	26	44	29	23	40	26	21	36	23	19	33	21	18	28	18	15	24	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	40	26	21	35	23	19	32	20	17	29	18	15	26	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	58	48	34	58	43	29	58	38	26	58	35	23	55	31	21	50	28	19	45	26	18	38	22	15	32	19	13	28	16	11	24	14	10	21	12	8	19	11	7
			Exposed	55	31	21	48	28	19	43	25	17	39	22	15	35	20	14	32	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	59	59	44	59	54	38	54	48	33	49	43	29	44	39	26	40	36	23	36	33	21	31	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	44	39	26	39	35	23	35	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	57	45	31	55	40	28	49	35	25	44	32	22	40	29	20	36	26	18	33	24	17	28	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	40	29	20	35	25	18	32	23	16	28	21	14	26	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	52	33	27	46	30	24	41	26	22	37	24	20	33	22	18	30	20	16	28	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	33	21	18	30	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	58	40	27	58	36	24	56	32	22	50	29	20	45	26	18	41	24	16	38	22	15	32	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	45	26	18	40	23	16	36	21	14	32	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	57	50	35	50	45	31	45	40	27	41	36	24	37	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
10	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	39	40	40	35	40	40	32	40	40	29	40	35	24	40	29	21	35	25	18	31	22	16	27	19	14	24	17	12
			Exposed	40	40	35	40	40	31	40	39	28	40	35	25	40	32	22	40	29	20	37	27	19	31	22	16	26	19	13	23	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	41	41	41	41	41	41	41	41	38	41	41	34	41	37	31	41	34	28	41	31	25	40	26	21	34	22	18	29	19	16	26	17	14	23	15	12	20	13	11
			Exposed	41	37	30	41	33	27	41	29	24	41	27	22	37	24	20	34	22	18	31	20	16	26	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	53	53	53	53	53	47	53	53	40	53	50	35	53	45	31	53	41	28	53	37	25	53	31	21	47	27	18	40	23	16	35	20	14	31	18	12	27	16	11
			Exposed	53	45	31	53	40	27	53	36	24	53	32	22	51	29	20	46	26	18	42	24	16	35	20	14	30	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	57	57	57	57	57	57	57	57	52	57	57	45	57	57	40	57	51	36	52	47	32	44	39	26	38	34	22	32	29	18	28	25	16	25	22	14	22	20	12
			Exposed	57	56	40	56	50	35	50	45	30	45	40	27	41	36	24	37	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	40	40	37	40	40	33	40	40	30	40	38	27	40	35	24	40	31	22	40	29	20	33	24	17	28	21	14	24	18	12	21	15	11	19	14	10	17	12	8
			Exposed	40	34	24	40	31	21	38	27	19	34	25	17	31	22	16	28	20	14	26	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	41	40	33	41	35	29	41	32	26	41	29	23	40	26	21	36	23	19	33	21	18	28	18	15	24	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	40	26	21	35	23	19	32	20	17	29	18	15	26	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	53	48	34	53	43	29	53	38	26	53	35	23	53	31	21	50	28	19	45	26	18	38	22	15	32	19	13	28	16	11	24	14	10	21	12	8	19	11	7
			Exposed	53	31	21	48	28	19	43	25	17	39	22	15	35	20	14	32	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	57	57	44	57	54	38	54	48	33	49	43	29	44	39	26	40	36	23	36	33	21	31	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	44	39	26	39	35	23	35	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	40	40	31	40	40	28	40	35	25	40	32	22	40	29	20	36	26	18	33	24	17	28	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	40	29	20	35	25	18	32	23	16	28	21	14	26	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	41	33	27	41	30	24	41	26	22	37	24	20	33	22	18	30	20	16	28	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	33	21	18	30	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	54	40	27	54	36	24	54	32	22	50	29	20	45	26	18	41	24	16	38	22	15	32	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	45	26	18	40	23	16	36	21	14	32	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	57	50	35	50	45	31	45	40	27	41	36	24	37	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
20	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24	28	28	21	28	25	18	28	22	16	27	19	14	24	17	12
			Exposed	28	28	28	28	28	28	28	28	28	28	28	25	28	28	22	28	28	20	28	27	19	28	22	16	26	19	13	23	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	26	21	28	22	18	28	19	16	26	17	14	23	15	12	20	13	11
			Exposed	28	28	28	28	28	27	28	28	24	28	27	22	28	24	20	28	22	18	28	20	16	26	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	42	42	42	42	42	42	42	42	40	42	42	35	42	42	31	42	41	28	42	37	25	42	31	21	42	27	18	40	23	16	35	20	14	31	18	12	27	16	11
			Exposed	42	42	31	42	40	27	42	36	24	42	32	22	42	29	20	42	26	18	42	24	16	35	20	14	30	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	45	46	46	40	46	46	36	46	46	32	44	39	26	38	34	22	32	29	18	28	25	16	25	22	14	22	20	12
			Exposed	46	46	40	46	46	35	46	45	30	45	40	27	41	36	24	37	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	27	28	28	24	28	28	22	28	28	20	28	24	17	28	21	14	24	18	12	21	15	11	19	14	10	17	12	8
			Exposed	28	28	24	28	28	21	28	27	19	28	25	17	28	22	16	28	20	14	26	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	28	28	28	28	28	28	28	28	26	28	28	23	28	26	21	28	23	19	28	21	18	28	18	15	24	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	28	26	21	28	23	19	28	20	17	28	18	15	26	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	42	42	34	42	42	29	42	38	26	42	35	23	42	31	21	42	28	19	42	26	18	38	22	15	32	19	13	28	16	11	24	14	10	21	12	8	19	11	7
			Exposed	42	31	21	42	28	19	42	25	17	39	22	15	35	20	14	32	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	46	46	44	46	46	38	46	46	33	46	43	29	44	39	26	40	36	23	36	33	21	31	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	44	39	26	39	35	23	35	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	28	28	28	28	28	28	28	28	25	28	28	22	28	28	20	28	26	18	28	24	17	28	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	28	28	20	28	25	18	28	23	16	28	21	14	26	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	28	28	27	28	28	24	28	26	22	28	24	20	28	22	18	28	20	16	28	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	28	21	18	28	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	44	40	27	44	36	24	44	32	22	44	29	20	44	26	18	41	24	16	38	22	15	32	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	44	26	18	40	23	16	36	21	14	32	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	48	48	35	48	45	31	45	40	27	41	36	24	37	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
30	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	21	27	25	18	27	22	16	27	19	14	24	17	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	25	27	27	22	27	27	20	27	27	19	27	22	16	26	19	13	23	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	26	21	28	22	18	28	19	16	26	17	14	23	15	12	20	13	11
			Exposed	28	28	28	28	28	27	28	28	24	28	27	22	28	24	20	28	22	18	28	20	16	26	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	28	34	34	25	34	31	21	34	27	18	34	23	16	34	20	14	31	18	12	27	16	11
			Exposed	34	34	31	34	34	27	34	34	24	34	32	22	34	29	20	34	26	18	34	24	16	34	20	14	30	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	32	39	39	26	37	34	22	32	29	18	28	25	16	25	22	14	22	20	12
			Exposed	39	39	39	39	39	35	39	39	30	39	39	27	39	36	24	37	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	24	17	27	21	14	24	18	12	21	15	11	19	14	10	17	12	8
			Exposed	27	27	24	27	27	21	27	27	19	27	25	17	27	22	16	27	20	14	26	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	28	28	28	28	28	28	28	28	26	28	28	23	28	26	21	28	23	19	28	21	18	28	18	15	24	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	28	26	21	28	23	19	28	20	17	28	18	15	26	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	34	34	34	34	34	29	34	34	26	34	34	23	34	31	21	34	28	19	34	26	18	34	22	15	32	19	13	28	16	11	24	14	10	21	12	8	19	11	7
			Exposed	34	31	21	34	28	19	34	25	17	34	22	15	34	20	14	32	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	39	39	39	39	39	38	39	39	33	39	39	29	39	39	26	38	36	23	36	33	21	31	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	39	39	26	39	35	23	35	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	28	28	28	28	28	28	28	28	25	28	28	22	28	28	20	28	26	18	28	24	17	28	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	28	28	20	28	25	18	28	23	16	28	21	14	26	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	28	28	27	28	28	24	28	26	22	28	24	20	28	22	18	28	20	16	28	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	28	21	18	28	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	36	36	27	36	36	24	36	32	22	36	29	20	36	26	18	36	24	16	36	22	15	32	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	36	26	18	36	23	16	36	21	14	32	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	41	41	35	41	41	31	41	40	27	40	36	24	37	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
40	B	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	22	16	22	19	14	22	17	12	22	17	12
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	19	22	22	16	22	19	13	22	16	12	20	14	10	17	13	9	15	11	12
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	22	18	24	19	16	24	17	14	23	15	12	20	13	11
			Exposed	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	22	18	24	20	16	24	17	14	22	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	29	21	29	27	18	29	23	16	29	20	14	28	18	12	27	16	11
			Exposed	29	29	29	29	29	27	29	29	24	29	29	22	29	29	20	29	26	18	29	24	16	29	20	14	29	17	12	26	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	26	32	32	22	31	29	18	28	25	16	25	22	14	22	20	12
			Exposed	34	34	34	34	34	34	34	34	30	34	34	27	34	34	24	34	33	21	34	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	17	22	21	14	22	18	12	21	15	11	19	14	10	17	12	8
			Exposed	22	22	22	22	22	21	22	22	19	22	22	17	22	22	16	22	20	14	22	18	13	22	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	23	19	24	21	18	24	18	15	23	15	13	20	13	11	18	12	10	16	10	8	14	9	11
			Exposed	24	24	21	24	23	19	24	20	17	24	18	15	24	17	14	23	15	13	21	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	29	29	29	29	29	29	29	29	26	29	29	23	29	29	21	29	28	19	29	26	18	29	22	15	28	19	13	27	16	11	24	14	10	21	12	8	19	11	7
			Exposed	29	29	21	29	28	19	29	25	17	29	22	15	29	20	14	29	18	13	29	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	34	34	34	34	34	34	34	34	33	34	34	29	34	34	26	33	33	23	32	32	21	30	27	17	26	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	34	34	26	34	34	23	34	31	20	31	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	24	17	24	20	14	24	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	24	24	20	24	24	18	24	23	16	24	21	14	24	19	13	23	17	12	21	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	26	26	26	26	26	24	26	26	22	26	24	20	26	22	18	26	20	16	26	18	15	23	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	26	21	18	26	19	16	26	17	14	24	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	31	31	27	31	31	24	31	31	22	31	29	20	31	26	18	31	24	16	31	22	15	30	18	12	27	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	31	26	18	31	23	16	31	21	14	31	19	13	29	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	36	36	35	36	36	31	36	36	27	35	35	24	34	33	21	33	30	19	30	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	36	33	21	33	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
50	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	13	18	16	12	18	14	10	17	13	9	15	11	12
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	19	16	20	17	14	19	15	12	19	13	11
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	17	14	20	14	12	19	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	25	18	25	23	16	25	20	14	24	18	12	23	16	11
			Exposed	25	25	25	25	25	25	25	25	24	25	25	22	25	25	20	25	25	18	25	24	16	25	20	14	25	17	12	25	15	10	23	13	9	20	11	8	18	10	7
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	29	29	22	27	27	18	26	25	16	25	22	14	22	20	12
			Exposed	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	30	21	30	30	19	29	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	18	12	18	15	11	18	14	10	17	12	8
			Exposed	18	18	18	18	18	18	18	18	18	18	18	17	18	18	16	18	18	14	18	18	13	18	16	11	18	13	9	16	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	18	15	20	15	13	19	13	11	18	12	10	16	10	8	14	9	11
			Exposed	20	20	20	20	20	19	20	20	17	20	18	15	20	17	14	20	15	13	20	14	11	18	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	23	25	25	21	25	25	19	25	25	18	25	22	15	25	19	13	24	16	11	23	14	10	21	12	8	19	11	7
			Exposed	25	25	21	25	25	19	25	25	17	25	22	15	25	20	14	25	18	13	25	17	11	24	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	29	29	23	28	28	21	27	27	17	25	23	14	23	20	12	20	18	11	17	16	9	15	14	8
			Exposed	30	30	26	30	30	23	30	30	20	30	28	18	28	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	17	20	20	14	20	17	12	20	15	10	18	13	9	16	11	12	14	10	11
			Exposed	20	20	20	20	20	18	20	20	16	20	20	14	20	19	13	20	17	12	20	15	11	18	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	20	16	22	18	15	21	15	12	20	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	22	21	18	22	19	16	22	17	14	22	15	13	22	14	12	20	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	24	16	27	22	15	26	18	12	25	16	11	23	13	9	20	12	8	18	10	7	16	9	9
			Exposed	27	26	18	27	23	16	27	21	14	27	19	13	27	17	11	27	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	32	32	32	32	32	31	32	32	27	31	31	24	30	30	21	29	29	19	28	27	17	26	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	32	32	21	32	29	18	29	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7

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10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
60	B	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	14	10	15	13	9	15	11	12
		7-20	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	15	12	17	13	11
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	14	12	17	12	10	17	11	9	15	9	12	13	8	11
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	22	16	22	20	14	21	18	12	21	16	11
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	20	14	22	17	12	22	15	10	22	13	9	20	11	8	18	10	7
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	22	25	25	18	24	24	16	22	22	14	21	20	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	21	27	27	19	27	26	16	24	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	14	10	15	12	8
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	11	15	13	9	15	11	8	14	10	11	12	9	9	11	12	8
		7-20	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	15	13	17	13	11	16	12	10	16	10	8	14	9	11
			Exposed	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	15	13	17	14	11	17	12	10	15	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	18	22	22	15	22	19	13	21	16	11	20	14	10	19	12	8	18	11	7
			Exposed	22	22	21	22	22	19	22	22	17	22	22	15	22	20	14	22	18	13	22	17	11	22	14	10	21	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	23	26	26	21	24	24	17	23	23	14	22	20	12	20	18	11	17	16	9	15	14	8
			Exposed	27	27	26	27	27	23	27	27	20	27	27	18	27	25	16	26	23	14	24	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	12	17	15	10	17	13	9	16	11	12	14	10	11
			Exposed	17	17	17	17	17	17	17	17	16	17	17	14	17	17	13	17	17	12	17	15	11	17	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	18	15	19	15	12	18	13	11	17	11	9	15	10	12	13	8	11	12	12	9
			Exposed	19	19	18	19	19	16	19	17	14	19	15	13	19	14	12	19	13	10	18	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	24	16	24	22	15	23	18	12	22	16	11	21	13	9	20	12	8	18	10	7	16	9	9
			Exposed	24	24	18	24	23	16	24	21	14	24	19	13	24	17	11	24	15	10	24	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	28	28	28	28	28	28	28	28	27	28	28	24	27	27	21	26	26	19	26	26	17	24	23	14	22	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	28	28	21	28	28	18	28	26	16	26	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
70	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	11	12
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	12	10	14	11	9	14	9	12	13	8	11
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	19	18	12	19	16	11
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	20	17	12	20	15	10	20	13	9	19	11	8	18	10	7
		27-45	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	22	22	22	18	21	21	16	21	21	14	20	20	12
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	24	16	23	22	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	12	8
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	9	13	11	8	13	10	11	12	9	9	11	12	8
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	13	11	14	12	10	14	10	8	13	9	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	12	10	14	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	20	15	19	19	13	19	16	11	18	14	10	17	12	8	17	11	7
			Exposed	20	20	20	20	20	19	20	20	17	20	20	15	20	20	14	20	18	13	20	17	11	20	14	10	19	12	8	18	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	21	22	22	17	21	21	14	20	20	12	19	18	11	17	16	9	15	14	8
			Exposed	24	24	24	24	24	23	24	24	20	24	24	18	24	24	16	24	23	14	23	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	10	15	13	9	15	11	12	14	10	11
			Exposed	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	12	15	15	11	15	13	9	15	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	15	12	16	13	11	15	11	9	15	10	12	13	8	11	12	12	9
			Exposed	16	16	16	16	16	16	16	16	14	16	15	13	16	14	12	16	13	10	16	12	10	15	10	8	13	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	22	15	21	18	12	20	16	11	19	13	9	18	12	8	17	10	7	16	9	9
			Exposed	22	22	18	22	22	16	22	21	14	22	19	13	22	17	11	22	15	10	22	14	10	20	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	26	26	26	26	26	26	26	26	26	25	25	24	25	25	21	24	24	19	23	23	17	22	22	14	21	20	12	19	17	10	17	15	9	15	13	8	13	12	7
			Exposed	26	26	21	26	26	18	26	26	16	25	23	14	24	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
80	B	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	9	12	11	12
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	12	10	13	11	9	13	9	12	13	8	11
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	12	17	16	11
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	12	17	15	10	17	13	9	17	11	8	17	10	7
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	21	21	21	21	18	20	20	16	19	19	14	18	18	12
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	16	21	21	13	21	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	8
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	9	12	11	8	12	10	11	12	9	9	11	12	8
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	12	10	13	10	8	12	9	11
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	12	10	13	10	8	13	9	11	12	11	9	10	10	8	9	9	7
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	16	11	16	14	10	16	12	8	15	11	7
			Exposed	17	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	17	13	17	17	11	17	14	10	17	12	8	17	10	7	16	9	9	14	12	8	12	11	7
		27-45	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	21	21	20	20	17	19	19	14	18	18	12	18	18	11	17	16	9	15	14	8
			Exposed	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	22	14	21	21	13	20	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	10	13	13	9	13	11	12	13	10	11
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	9	13	11	12	13	10	10	12	8	9	10	11	8	9	10	7
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	11	14	11	9	13	10	12	13	8	11	12	12	9
			Exposed	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	13	10	14	12	10	14	10	8	13	8	11	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	15	19	18	12	18	16	11	17	13	9	17	12	8	16	10	7	15	9	9
			Exposed	19	19	18	19	19	16	19	19	14	19	19	13	19	17	11	19	15	10	19	14	10	19	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	24	24	24	24	24	24	24	24	24	23	23	23	23	23	21	22	22	19	22	22	17	20	20	14	19	19	12	18	17	10	17	15	9	15	13	8	13	12	7
			Exposed	24	24	21	24	24	18	24	24	16	23	23	14	23	21	13	22	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7

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ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
90	B	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	9	12	11	8	11
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	10	15	13	9	15	11	8	15	10	7
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	18	16	18	18	14	17	17	12
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	16	19	19	13	19	19	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	11	10	9	9	10	12	8
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	10	8	11	9	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	10	8	11	9	11	11	11	9	10	10	8	9	9	7
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	11	15	14	10	15	12	8	14	11	7
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	11	15	14	10	15	12	8	15	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	18	18	14	17	17	12	16	16	11	16	16	9	15	14	8
			Exposed	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	14	19	19	13	19	18	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	12	11	10	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	12	11	10	10	11	8	9	10	11	8	9	10	7
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	9	12	10	12	12	8	11	12	12	9
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	10	12	10	8	12	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	17	12	17	16	11	16	13	9	15	12	8	15	10	7	14	9	9
			Exposed	17	17	17	17	17	16	17	17	14	17	17	13	17	17	11	17	15	10	17	14	10	17	12	8	17	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	22	22	22	22	22	22	22	22	22	21	21	21	21	21	21	20	20	19	20	20	17	19	19	14	18	18	12	17	17	10	16	15	9	15	13	8	13	12	7
			Exposed	22	22	21	22	22	18	22	22	16	21	21	14	21	21	13	20	19	12	20	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7
100	B	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	12
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	9	12	10	8	11
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	10	14	13	9	14	11	8	14	10	7
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	17	16	16	16	14	16	16	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	13	18	18	11	17	16	10	16	14	9	14	13	8
	C	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	11	9	9	9	9	12	8
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	9	11
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	9	11	10	11	9	10	10	8	9	9	7
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	14	10	13	12	8	13	11	7
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	11	14	14	10	14	12	8	14	10	7	14	9	9	13	12	8	12	11	7
		27-45	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	17	17	17	17	14	16	16	12	15	15	11	15	15	9	14	14	8
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	13	17	17	11	17	15	9	15	13	8	13	12	7	11	10	9	10	9	8
	D	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	10	11
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	10	10	10	8	9	10	11	8	9	10	7
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	10	12	11	8	11	11	12	9
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	10	11	10	8	11	8	11	11	11	9	10	10	8	8	8	7	12	7	6
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	12	15	15	11	15	13	9	14	12	8	14	10	7	13	9	9
			Exposed	15	15	15	15	15	15	15	15	14	15	15	13	15	15	11	15	15	10	15	14	10	15	12	8	15	10	7	15	9	9	13	12	8	12	10	7	10	9	6
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	18	18	14	17	17	12	16	16	10	15	15	9	15	13	8	13	12	7
			Exposed	19	19	19	19	19	18	19	19	16	19	19	14	19	19	13	19	19	12	19	18	11	17	15	9	14	13	8	12	11	7	11	10	9	9	8	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
0	B	0-7	Interior	29	29	27	29	29	24	29	29	21	29	28	19	29	25	17	29	22	16	29	20	14	24	17	12	20	15	10	17	12	9	15	11	8	13	9	7	12	8	6
			Exposed	29	25	17	29	22	15	27	19	14	24	17	12	22	16	11	20	14	10	18	13	9	15	11	8	13	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	29	29	23	29	25	21	29	23	19	29	20	17	29	18	15	26	17	14	24	15	12	20	13	10	17	11	9	14	9	8	13	8	7	11	7	6	10	6	5
			Exposed	29	18	15	25	16	13	23	14	12	20	13	11	18	12	10	17	11	9	15	10	8	13	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	29	29	27	29	29	23	29	28	20	29	25	17	29	22	15	29	20	14	29	18	12	27	15	10	23	13	9	20	11	8	17	10	7	15	9	6	13	8	5
			Exposed	29	22	15	29	20	13	29	18	12	28	16	11	25	14	10	23	13	9	21	12	8	17	10	7	15	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	29	29	29	29	29	29	29	29	26	29	29	22	29	28	20	29	25	18	26	23	16	22	19	13	19	17	11	16	14	9	14	12	8	12	11	7	11	10	6
			Exposed	29	28	20	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	29	27	18	29	24	16	29	21	15	26	19	13	24	17	12	22	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	24	17	12	21	15	10	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	29	20	16	27	17	14	24	16	13	22	14	11	20	13	10	18	11	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	29	24	17	29	21	14	29	19	13	29	17	11	27	15	10	25	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	27	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	29	29	22	29	27	19	27	24	16	24	21	14	22	19	13	20	18	11	18	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	22	19	13	19	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	29	22	15	27	20	14	24	17	12	22	16	11	20	14	10	18	13	9	16	12	8	14	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	20	14	10	17	12	9	16	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	26	16	13	23	15	12	20	13	11	18	12	10	16	11	9	15	10	8	14	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	16	10	9	15	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	29	20	13	29	18	12	28	16	11	25	14	10	22	13	9	20	12	8	19	11	7	16	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	22	13	9	20	11	8	18	10	7	16	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
10	B	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	20	16	20	20	14	20	17	12	20	15	10	17	12	9	15	11	8	13	9	7	12	8	6
			Exposed	20	20	17	20	20	15	20	19	14	20	17	12	20	16	11	20	14	10	18	13	9	15	11	8	13	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	20	20	20	20	20	20	20	20	19	20	20	17	20	18	15	20	17	14	20	15	12	20	13	10	17	11	9	14	9	8	13	8	7	11	7	6	10	6	5
			Exposed	20	18	15	20	16	13	20	14	12	20	13	11	18	12	10	17	11	9	15	10	8	13	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	26	26	26	26	26	23	26	26	20	26	25	17	26	22	15	26	20	14	26	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	6	13	8	5
			Exposed	26	22	15	26	20	13	26	18	12	26	16	11	25	14	10	23	13	9	21	12	8	17	10	7	15	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	29	29	29	29	29	29	29	29	26	29	29	22	29	28	20	29	25	18	26	23	16	22	19	13	19	17	11	16	14	9	14	12	8	12	11	7	11	10	6
			Exposed	29	28	20	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	20	20	18	20	20	16	20	20	15	20	19	13	20	17	12	20	15	11	20	14	10	16	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	20	17	12	20	15	10	19	13	9	17	12	8	15	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	20	20	16	20	17	14	20	16	13	20	14	11	20	13	10	18	11	9	16	10	9	14	9	7	12	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	20	13	10	17	11	9	16	10	8	14	9	7	13	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	26	24	17	26	21	14	26	19	13	26	17	11	26	15	10	25	14	9	22	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	26	15	10	24	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	29	29	22	29	27	19	27	24	16	24	21	14	22	19	13	20	18	11	18	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	22	19	13	19	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	20	20	15	20	20	14	20	17	12	20	16	11	20	14	10	18	13	9	16	12	8	14	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	20	14	10	17	12	9	16	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	20	16	13	20	15	12	20	13	11	18	12	10	16	11	9	15	10	8	14	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	16	10	9	15	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	27	20	13	27	18	12	27	16	11	25	14	10	22	13	9	20	12	8	19	11	7	16	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	22	13	9	20	11	8	18	10	7	16	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	28	25	17	25	22	15	22	20	13	20	18	12	18	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
20	B	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	10	14	12	9	14	11	8	13	9	7	12	8	6
			Exposed	14	14	14	14	14	14	14	14	14	14	14	12	14	14	11	14	14	10	14	13	9	14	11	8	13	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	10	14	11	9	14	9	8	13	8	7	11	7	6	10	6	5
			Exposed	14	14	14	14	14	13	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	13	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15	21	20	14	21	18	12	21	15	10	21	13	9	20	11	8	17	10	7	15	9	6	13	8	5
			Exposed	21	21	15	21	20	13	21	18	12	21	16	11	21	14	10	21	13	9	21	12	8	17	10	7	15	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	22	23	23	20	23	23	18	23	23	16	22	19	13	19	17	11	16	14	9	14	12	8	12	11	7	11	10	6
			Exposed	23	23	20	23	23	17	23	22	15	22	20	13	20	18	12	18	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	14	10	14	12	8	14	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	14	14	12	14	14	10	14	13	9	14	12	8	14	11	8	14	10	7	13	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	14	14	14	14	14	14	14	14	13	14	14	11	14	13	10	14	11	9	14	10	9	14	9	7	12	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	14	13	10	14	11	9	14	10	8	14	9	7	13	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	21	21	17	21	21	14	21	19	13	21	17	11	21	15	10	21	14	9	21	13	9	19	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	21	15	10	21	14	9	21	12	8	19	11	7	17	10	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	23	23	22	23	23	19	23	23	16	23	21	14	22	19	13	20	18	11	18	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	22	19	13	19	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	14	14	14	14	14	14	14	14	12	14	14	11	14	14	10	14	13	9	14	12	8	14	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	14	14	10	14	12	9	14	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	14	14	13	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	14	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	14	10	9	14	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	22	20	13	22	18	12	22	16	11	22	14	10	22	13	9	20	12	8	19	11	7	16	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	22	13	9	20	11	8	18	10	7	16	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	24	24	17	24	22	15	22	20	13	20	18	12	18	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
30	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	12	9	13	11	8	13	9	7	12	8	6
			Exposed	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	13	9	13	11	8	13	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	10	14	11	9	14	9	8	13	8	7	11	7	6	10	6	5
			Exposed	14	14	14	14	14	13	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	13	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	17	12	17	15	10	17	13	9	17	11	8	17	10	7	15	9	6	13	8	5
			Exposed	17	17	15	17	17	13	17	17	12	17	16	11	17	14	10	17	13	9	17	12	8	17	10	7	15	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	13	19	17	11	16	14	9	14	12	8	12	11	7	11	10	6
			Exposed	19	19	19	19	19	17	19	19	15	19	19	13	19	18	12	18	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	12	8	13	10	7	12	9	6	10	7	5	9	7	7	8	6	6
			Exposed	13	13	12	13	13	10	13	13	9	13	12	8	13	11	8	13	10	7	13	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	14	14	14	14	14	14	14	14	13	14	14	11	14	13	10	14	11	9	14	10	9	14	9	7	12	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	14	13	10	14	11	9	14	10	8	14	9	7	13	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	17	17	17	17	17	14	17	17	13	17	17	11	17	15	10	17	14	9	17	13	9	17	11	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5
			Exposed	17	15	10	17	14	9	17	12	8	17	11	7	17	10	7	16	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	19	19	19	19	19	19	19	19	16	19	19	14	19	19	13	19	18	11	18	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	19	19	13	19	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	14	14	14	14	14	14	14	14	12	14	14	11	14	14	10	14	13	9	14	12	8	14	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	14	14	10	14	12	9	14	11	8	14	10	7	13	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	14	14	13	14	14	12	14	13	11	14	12	10	14	11	9	14	10	8	14	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	14	10	9	14	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	18	18	13	18	18	12	18	16	11	18	14	10	18	13	9	18	12	8	18	11	7	16	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	18	13	9	18	11	8	18	10	7	16	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	20	20	17	20	20	15	20	20	13	20	18	12	18	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
40	B	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	9	11	11	8	11	9	7	11	8	6
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	9	6	11	8	6	10	7	5	8	6	7	7	5	6
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	11	9	12	9	8	12	8	7	11	7	6	10	6	5
			Exposed	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	10	8	12	8	7	11	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	10	14	13	9	14	11	8	14	10	7	14	9	6	13	8	5
			Exposed	14	14	14	14	14	13	14	14	12	14	14	11	14	14	10	14	13	9	14	12	8	14	10	7	14	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	13	16	16	11	15	14	9	14	12	8	12	11	7	11	10	6
			Exposed	17	17	17	17	17	17	17	17	15	17	17	13	17	17	12	17	16	10	17	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	8	11	10	7	11	9	6	10	7	5	9	7	7	8	6	6
			Exposed	11	11	11	11	11	10	11	11	9	11	11	8	11	11	8	11	10	7	11	9	6	11	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	10	9	12	9	7	11	7	6	10	6	5	9	6	5	8	5	6	7	7	5
			Exposed	12	12	10	12	11	9	12	10	8	12	9	7	12	8	7	11	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	14	14	14	14	14	14	14	14	13	14	14	11	14	14	10	14	14	9	14	13	9	14	11	7	14	9	6	13	8	5	12	7	5	10	6	4	9	5	5
			Exposed	14	14	10	14	14	9	14	12	8	14	11	7	14	10	7	14	9	6	14	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	17	17	17	17	17	17	17	17	16	17	17	14	17	17	13	16	16	11	16	16	10	15	13	8	13	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	17	17	13	17	17	11	17	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	10	7	12	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	12	12	10	12	12	9	12	11	8	12	10	7	12	9	6	11	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	13	13	13	13	13	12	13	13	11	13	12	10	13	11	9	13	10	8	13	9	7	11	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	13	10	9	13	9	8	13	8	7	12	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	15	15	13	15	15	12	15	15	11	15	14	10	15	13	9	15	12	8	15	11	7	15	9	6	13	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	15	13	9	15	11	8	15	10	7	15	9	6	14	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	18	18	17	18	18	15	18	18	13	17	17	12	17	16	10	16	15	9	15	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	18	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
50	B	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	8	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	6	9	8	6	9	7	5	8	6	7	7	5	6
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	9	8	10	8	7	10	7	6	9	6	5
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	8	7	10	7	6	9	6	5	8	5	7	7	7	6	6	6	5
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	11	8	12	10	7	12	9	6	11	8	5
			Exposed	13	13	13	13	13	13	13	13	12	13	13	11	13	13	10	13	13	9	13	12	8	13	10	7	13	8	6	13	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	14	14	11	14	14	9	13	12	8	12	11	7	11	10	6
			Exposed	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	15	10	15	15	9	14	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	7	5	9	7	7	8	6	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	8	9	9	8	9	9	7	9	9	6	9	8	5	9	6	7	8	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	9	10	9	7	10	7	6	9	6	5	9	6	5	8	5	6	7	7	5
			Exposed	10	10	10	10	10	9	10	10	8	10	9	7	10	8	7	10	7	6	10	7	5	9	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	13	13	13	13	13	13	13	13	13	13	13	11	13	13	10	13	13	9	13	13	9	13	11	7	12	9	6	12	8	5	11	7	5	10	6	4	9	5	5
			Exposed	13	13	10	13	13	9	13	12	8	13	11	7	13	10	7	13	9	6	13	8	5	12	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	14	14	11	14	14	10	13	13	8	12	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	15	15	13	15	15	11	15	15	10	15	14	9	14	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	8	6	10	7	5	9	6	7	8	5	6	7	5	5
			Exposed	10	10	10	10	10	9	10	10	8	10	10	7	10	9	6	10	8	6	10	7	5	9	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	10	8	11	9	7	10	7	6	10	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	11	10	9	11	9	8	11	8	7	11	7	6	11	7	6	10	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	13	13	13	13	13	12	13	13	11	13	13	10	13	13	9	13	12	8	13	11	7	13	9	6	12	8	5	11	6	4	10	6	4	9	5	5	8	7	4
			Exposed	13	13	9	13	11	8	13	10	7	13	9	6	13	8	6	13	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	16	16	16	16	16	15	16	16	13	15	15	12	15	15	10	14	14	9	14	13	8	13	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	16	16	10	16	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
60	B	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	7	5	7	6	7	7	5	6
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	8	5	7	7	7	6	6	6	6
		20-27	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	10	7	11	9	6	10	8	5
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	10	7	11	8	6	11	7	5	11	6	4	10	6	4	9	5	5
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	12	12	9	12	12	8	11	11	7	11	10	6
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	13	8	12	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	7	7	6	6
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	7	7	5	6	7	5	5	6	6	4	5	6	4
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	8	6	5	8	5	6	7	7	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	7	6	8	7	5	8	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	9	11	11	7	11	9	6	10	8	5	10	7	5	9	6	4	9	5	5
			Exposed	11	11	10	11	11	9	11	11	8	11	11	7	11	10	7	11	9	6	11	8	5	11	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	10	12	12	8	11	11	7	11	10	6	10	9	5	8	8	4	7	7	4
			Exposed	13	13	13	13	13	11	13	13	10	13	13	9	13	12	8	13	11	7	12	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	7	5	8	6	7	8	5	6	7	5	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	6	8	7	5	8	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	7	6	9	6	5	8	5	7	7	5	6	6	6	5	6	6	4
			Exposed	9	9	9	9	9	8	9	8	7	9	7	6	9	7	6	9	6	5	9	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	12	12	12	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	11	7	11	9	6	11	8	5	10	6	4	10	6	4	9	5	5	8	7	4
			Exposed	12	12	9	12	11	8	12	10	7	12	9	6	12	8	6	12	7	5	12	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	14	14	14	14	14	14	14	14	13	14	14	12	13	13	10	13	13	9	13	13	8	12	11	7	11	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	14	14	10	14	14	9	14	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
70	B	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	7	6	6	6	5
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	9	9	6	9	8	5
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	8	6	10	7	5	10	6	4	9	6	4	9	5	5
		27-45	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	11	11	11	11	9	11	11	8	10	10	7	10	10	6
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	9	12	12	8	11	11	6	10	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	5	5	6	6	4	5	6	4
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	6	5	7	5	6	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	5	7	5	6	6	6	5	6	6	4	5	5	4	7	4	3
		20-27	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	9	10	10	7	10	9	6	9	8	5	9	7	5	8	6	4	8	5	5
			Exposed	10	10	10	10	10	9	10	10	8	10	10	7	10	10	7	10	9	6	10	8	5	10	7	5	10	6	4	9	5	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	11	11	10	11	11	8	10	10	7	10	10	6	9	9	5	8	8	4	7	7	4
			Exposed	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8	12	11	7	11	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	7	7	5	6	7	5	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	7	5	7	6	7	7	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	7	6	8	6	5	7	5	7	7	5	6	6	6	5	6	6	4
			Exposed	8	8	8	8	8	8	8	8	7	8	8	7	8	7	6	8	6	5	8	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	7	10	9	6	10	8	5	9	6	4	9	6	4	9	5	5	8	7	4	7	7	4
			Exposed	11	11	9	11	11	8	11	10	7	11	9	6	11	8	6	11	7	5	11	7	5	10	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	13	13	13	13	13	13	13	13	13	13	13	12	12	12	10	12	12	9	12	12	8	11	11	7	10	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	13	13	10	13	13	9	13	13	8	13	12	7	12	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
80	B	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6
		7-20	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	7	6	7	6	6	6	5
		20-27	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5
			Exposed	8	8	8	8	8	8	8	8	8	8	8	7	8	8	7	8	8	6	8	8	5	8	7	5	8	7	5	8	7	5	8	7	4	7	6	4	6	5	3
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	10	8	9	9	7	9	9	6	9	9	5	8	8	4	7	7	4
			Exposed	11	11	11	11	11	11	11	11	10	11	11	9	11	11	8	11	11	7	10	10	6	10	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	C	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5	6	5	7	6	5	6	6	5	5	6	6	4	5	6	3
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	5	6	6	6	5	6	6	4
			Exposed	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	5	7	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	6	4	8	6	4	8	5	5	7	7	4	7	7	4
			Exposed	9	9	9	9	9	8	9	9	7	9	9	6	9	8	6	9	7	5	9	7	5	9	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	12	12	12	12	12	12	12	12	12	11	11	11	11	11	10	11	11	9	11	11	8	10	10	7	10	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	12	12	10	12	12	9	12	12	8	11	11	7	11	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
	D	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	5	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	5	7	5	7	7	5	6	6	6	5	6	6	4
			Exposed	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	5	7	6	5	7	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	9	8	5	9	6	4	8	6	4	8	5	5	7	7	4	7	7	4
			Exposed	9	9	9	9	9	8	9	9	7	9	9	6	9	8	6	9	7	5	9	7	5	9	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	12	12	12	12	12	12	12	12	12	11	11	11	11	11	10	11	11	9	11	11	8	10	10	7	10	10	6	9	8	5	8	7	4	7	6	4	6	6	5
			Exposed	12	12	10	12	12	9	12	12	8	11	11	7	11	10	6	11	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
90	B	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	7	6	5	6	5
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	4	7	6	4	7	5	5
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	9	9	8	9	9	7	8	8	6
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	6	9	9	5	9	8	5	8	7	4	7	6	4
	C	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	5	5	5	5	5	5	6	4	5	6	4
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	7	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	5	5	6	4	5	5	4	7	4	3
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5	7	6	4	7	5	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5	7	6	4	7	5	5	7	7	4	7	6	4	6	5	3
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	8	9	9	7	8	8	6	8	8	5	8	8	4	7	7	4
			Exposed	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	9	9	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	5	5
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	7	6	5	6	6	7	5	6	6	4	5	5	4	7	5	3
		7-20	Interior	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	7	6	5	6	6	6	5	6	6	4
			Exposed	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	5	6	5	6	6	6	5	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8	8	6	8	8	5	8	6	4	8	6	4	7	5	5	7	7	4
			Exposed	8	8	8	8	8	8	8	8	7	8	8	6	8	8	6	8	7	5	8	7	5	8	6	4	8	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	10	9	10	10	8	9	9	7	9	9	6	8	8	5	8	7	4	7	6	4	6	6	5
			Exposed	11	11	10	11	11	9	11	11	8	11	11	7	10	10	6	10	9	6	10	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3
100	B	0-7	Interior	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
			Exposed	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	4	4	6
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	7	6	5	6	5
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	4	7	6	4	7	5	5
		27-45	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	8	8	8	7	8	8	6
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	6	9	9	5	8	8	5	8	7	4	7	6	4
	C	0-7	Interior	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	4	4	6
			Exposed	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	4	4	6	4	4	5	4	6	4	4	6	4	4	6	4
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	7	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	5	5	6	4	5	5	4	7	4	3
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5	7	6	4	6	5	5
			Exposed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	7	5	7	6	4	7	5	5	7	7	4	7	6	4	6	5	3
		27-45	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	8	8	8	7	8	8	6	7	7	5	7	7	4	7	7	4
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	9	9	7	9	9	6	8	8	5	8	7	4	7	6	4	6	6	5	5	5	4	5	7	4
	D	0-7	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	5	5
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	7	5	5	6	4	5	5	4	7	5	3
		7-20	Interior	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	6	5	6	5	5	6	4
			Exposed	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	5	5	4	7	5	4	6	4	3	6	3	3
		20-27	Interior	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	5	7	6	4	7	6	4	7	5	5	6	7	4
			Exposed	7	7	7	7	7	7	7	7	7	7	7	6	7	7	6	7	7	5	7	7	5	7	6	4	7	5	5	7	6	4	6	6	4	6	5	3	5	4	3
		27-45	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	9	9	8	9	9	7	8	8	6	8	8	5	7	7	4	7	6	4	6	6	5
			Exposed	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	9	9	6	9	9	5	8	7	4	7	6	4	6	5	5	5	5	4	7	6	4	6	5	3

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
0	B	0-7	Interior	56	56	53	56	56	47	56	56	42	56	54	38	56	49	34	56	44	31	56	40	28	47	34	24	40	29	20	34	25	17	30	22	15	26	19	13	23	17	12
			Exposed	56	49	34	56	43	30	54	39	27	48	35	24	44	31	22	40	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	56	56	46	56	50	41	56	45	37	56	40	33	56	36	30	52	33	27	47	30	25	39	25	21	33	22	18	29	19	15	25	16	13	22	14	12	19	13	10
			Exposed	56	36	30	50	32	26	45	29	24	40	26	21	36	23	19	33	21	18	30	19	16	25	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	57	57	54	57	57	46	57	55	40	57	49	35	57	44	30	57	40	27	57	37	25	54	31	21	46	26	18	39	23	15	34	20	13	30	17	12	26	15	10
			Exposed	57	44	30	57	39	26	57	35	24	55	31	21	50	28	19	45	26	18	41	24	16	34	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	57	57	57	57	57	57	57	57	50	57	57	44	57	55	39	56	50	35	51	46	31	43	39	26	37	33	21	32	28	18	28	25	15	24	22	13	22	19	12
			Exposed	57	55	39	55	49	34	49	44	30	44	39	26	40	36	23	36	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	56	53	36	56	47	32	56	42	29	52	37	26	47	34	24	43	31	21	39	28	20	33	24	17	28	20	14	24	17	12	21	15	11	18	13	9	16	12	13
			Exposed	47	34	24	42	30	21	37	27	19	33	24	17	30	22	15	27	20	14	25	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	56	39	32	54	35	28	48	31	25	43	28	23	39	25	21	36	23	19	32	21	17	27	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	39	25	21	35	22	18	31	20	16	28	18	15	25	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	57	47	33	57	42	29	57	38	25	57	34	23	54	31	21	49	28	19	44	25	17	37	21	14	32	18	12	27	16	11	24	14	9	21	12	8	18	11	7
			Exposed	53	30	21	47	27	18	42	24	16	38	22	15	34	20	13	31	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	57	57	43	57	53	37	53	47	32	48	42	29	43	38	26	39	35	23	36	32	21	30	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	43	38	25	38	34	22	34	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	56	44	30	54	39	27	48	35	24	43	31	22	39	28	20	35	26	18	32	23	16	27	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	39	28	20	35	25	17	31	22	16	28	20	14	25	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	51	32	27	45	29	24	40	26	21	36	23	19	33	21	17	30	19	16	27	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	32	21	17	29	19	15	26	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	57	39	27	57	35	24	55	31	21	49	28	19	44	26	17	40	23	16	37	21	14	31	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	44	25	17	39	23	15	35	20	14	32	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	55	49	34	49	44	30	44	39	26	40	35	23	36	32	21	33	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	36	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
10	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34	39	39	31	39	39	28	39	34	24	39	29	20	34	25	17	30	22	15	26	19	13	23	17	12
			Exposed	39	39	34	39	39	30	39	39	27	39	35	24	39	31	22	39	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	40	40	40	40	40	40	40	40	37	40	40	33	40	36	30	40	33	27	40	30	25	39	25	21	33	22	18	29	19	15	25	16	13	22	14	12	19	13	10
			Exposed	40	36	30	40	32	26	40	29	24	40	26	21	36	23	19	33	21	18	30	19	16	25	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	52	52	52	52	52	46	52	52	40	52	49	35	52	44	30	52	40	27	52	37	25	52	31	21	46	26	18	39	23	15	34	20	13	30	17	12	26	15	10
			Exposed	52	44	30	52	39	26	52	35	24	52	31	21	50	28	19	45	26	18	41	24	16	34	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	56	56	56	56	56	56	56	56	50	56	56	44	56	55	39	56	50	35	51	46	31	43	39	26	37	33	21	32	28	18	28	25	15	24	22	13	22	19	12
			Exposed	56	55	39	55	49	34	49	44	30	44	39	26	40	36	23	36	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	39	39	36	39	39	32	39	39	29	39	37	26	39	34	24	39	31	21	39	28	20	33	24	17	28	20	14	24	17	12	21	15	11	18	13	9	16	12	13
			Exposed	39	34	24	39	30	21	37	27	19	33	24	17	30	22	15	27	20	14	25	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	40	39	32	40	35	28	40	31	25	40	28	23	39	25	21	36	23	19	32	21	17	27	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	39	25	21	35	22	18	31	20	16	28	18	15	25	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	52	47	33	52	42	29	52	38	25	52	34	23	52	31	21	49	28	19	44	25	17	37	21	14	32	18	12	27	16	11	24	14	9	21	12	8	18	11	7
			Exposed	52	30	21	47	27	18	42	24	16	38	22	15	34	20	13	31	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	56	56	43	56	53	37	53	47	32	48	42	29	43	38	26	39	35	23	36	32	21	30	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	43	38	25	38	34	22	34	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	56	44	30	54	39	27	48	35	24	43	31	22	39	28	20	35	26	18	32	23	16	27	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	39	28	20	35	25	17	31	22	16	28	20	14	25	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	51	32	27	45	29	24	40	26	21	36	23	19	33	21	17	30	19	16	27	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	32	21	17	29	19	15	26	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	57	39	27	57	35	24	55	31	21	49	28	19	44	26	17	40	23	16	37	21	14	31	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	44	25	17	39	23	15	35	20	14	32	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	55	49	34	49	44	30	44	39	26	40	35	23	36	32	21	33	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	36	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
20	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	20	27	25	17	27	22	15	26	19	13	23	17	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	22	15	26	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	25	28	25	21	28	22	18	28	19	15	25	16	13	22	14	12	19	13	10
			Exposed	28	28	28	28	28	26	28	28	24	28	26	21	28	23	19	28	21	18	28	19	16	25	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	41	41	41	41	41	41	41	41	40	41	41	35	41	41	30	41	40	27	41	37	25	41	31	21	41	26	18	39	23	15	34	20	13	30	17	12	26	15	10
			Exposed	41	41	30	41	39	26	41	35	24	41	31	21	41	28	19	41	26	18	41	24	16	34	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	44	45	45	39	45	45	35	45	45	31	43	39	26	37	33	21	32	28	18	28	25	15	24	22	13	22	19	12
			Exposed	45	45	39	45	45	34	45	44	30	44	39	26	40	36	23	36	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	26	27	27	24	27	27	21	27	27	20	27	24	17	27	20	14	24	17	12	21	15	11	18	13	9	16	12	13
			Exposed	27	27	24	27	27	21	27	27	19	27	24	17	27	22	15	27	20	14	25	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	28	28	28	28	28	28	28	28	25	28	28	23	28	25	21	28	23	19	28	21	17	27	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	28	25	21	28	22	18	28	20	16	28	18	15	25	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	41	41	33	41	41	29	41	38	25	41	34	23	41	31	21	41	28	19	41	25	17	37	21	14	32	18	12	27	16	11	24	14	9	21	12	8	18	11	7
			Exposed	41	30	21	41	27	18	41	24	16	38	22	15	34	20	13	31	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	45	45	43	45	45	37	45	45	32	45	42	29	43	38	26	39	35	23	36	32	21	30	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	43	38	25	38	34	22	34	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	23	16	27	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	27	27	20	27	25	17	27	22	16	27	20	14	25	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	28	28	27	28	28	24	28	26	21	28	23	19	28	21	17	28	19	16	27	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	28	21	17	28	19	15	26	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	43	39	27	43	35	24	43	31	21	43	28	19	43	26	17	40	23	16	37	21	14	31	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	43	25	17	39	23	15	35	20	14	32	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	47	47	34	47	44	30	44	39	26	40	35	23	36	32	21	33	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	36	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
30	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	20	27	25	17	27	22	15	26	19	13	23	17	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	22	15	26	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	25	28	25	21	28	22	18	28	19	15	25	16	13	22	14	12	19	13	10
			Exposed	28	28	28	28	28	26	28	28	24	28	26	21	28	23	19	28	21	18	28	19	16	25	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	30	34	34	27	34	34	25	34	31	21	34	26	18	34	23	15	34	20	13	30	17	12	26	15	10
			Exposed	34	34	30	34	34	26	34	34	24	34	31	21	34	28	19	34	26	18	34	24	16	34	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	31	38	38	26	36	33	21	32	28	18	28	25	15	24	22	13	22	19	12
			Exposed	38	38	38	38	38	34	38	38	30	38	38	26	38	36	23	36	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	26	27	27	24	27	27	21	27	27	20	27	24	17	27	20	14	24	17	12	21	15	11	18	13	9	16	12	13
			Exposed	27	27	24	27	27	21	27	27	19	27	24	17	27	22	15	27	20	14	25	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	28	28	28	28	28	28	28	28	25	28	28	23	28	25	21	28	23	19	28	21	17	27	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	28	25	21	28	22	18	28	20	16	28	18	15	25	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	34	34	33	34	34	29	34	34	25	34	34	23	34	31	21	34	28	19	34	25	17	34	21	14	32	18	12	27	16	11	24	14	9	21	12	8	18	11	7
			Exposed	34	30	21	34	27	18	34	24	16	34	22	15	34	20	13	31	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	38	38	38	38	38	37	38	38	32	38	38	29	38	38	26	37	35	23	36	32	21	30	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	38	38	25	38	34	22	34	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	23	16	27	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	27	27	20	27	25	17	27	22	16	27	20	14	25	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	28	28	27	28	28	24	28	26	21	28	23	19	28	21	17	28	19	16	27	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	28	21	17	28	19	15	26	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	36	36	27	36	35	24	36	31	21	36	28	19	36	26	17	36	23	16	36	21	14	31	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	36	25	17	36	23	15	35	20	14	32	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	40	40	34	40	40	30	40	39	26	39	35	23	36	32	21	33	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	36	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
40	B	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	17	22	22	15	22	19	13	22	17	12
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	22	15	22	19	13	22	16	11	19	14	10	17	12	9	15	11	12
		7-20	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	22	18	23	19	15	23	16	13	22	14	12	19	13	10
			Exposed	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	21	18	23	19	16	23	16	14	22	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	25	29	29	21	29	26	18	29	23	15	28	20	13	27	17	12	26	15	10
			Exposed	29	29	29	29	29	26	29	29	24	29	29	21	29	28	19	29	26	18	29	24	16	29	20	13	29	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	26	32	32	21	30	28	18	28	25	15	24	22	13	22	19	12
			Exposed	33	33	33	33	33	33	33	33	30	33	33	26	33	33	23	33	32	21	33	30	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	20	22	22	17	22	20	14	22	17	12	21	15	11	18	13	9	16	12	13
			Exposed	22	22	22	22	22	21	22	22	19	22	22	17	22	22	15	22	20	14	22	18	13	21	15	11	18	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	21	17	23	18	15	23	15	12	20	13	11	17	11	9	15	10	13	14	9	11
			Exposed	23	23	21	23	22	18	23	20	16	23	18	15	23	16	13	23	15	12	21	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	29	29	29	29	29	29	29	29	25	29	29	23	29	29	21	29	28	19	29	25	17	29	21	14	28	18	12	26	16	11	24	14	9	21	12	8	18	11	7
			Exposed	29	29	21	29	27	18	29	24	16	29	22	15	29	20	13	29	18	12	28	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	33	33	33	33	33	33	33	33	32	33	33	29	33	33	26	32	32	23	31	31	21	29	27	17	26	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	33	33	25	33	33	22	33	30	20	31	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	23	16	24	20	14	23	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	24	24	20	24	24	17	24	22	16	24	20	14	24	18	13	23	17	12	21	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	25	25	25	25	25	24	25	25	21	25	23	19	25	21	17	25	19	16	25	17	14	23	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	25	21	17	25	19	15	25	17	14	23	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	30	30	27	30	30	24	30	30	21	30	28	19	30	26	17	30	23	16	30	21	14	29	18	12	26	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	30	25	17	30	23	15	30	20	14	30	18	12	29	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	35	35	34	35	35	30	35	35	26	34	34	23	33	32	21	32	29	19	30	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	35	32	21	32	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
50	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	18	13	18	17	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	13	18	16	11	18	14	10	17	12	9	15	11	12
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	15	19	16	13	19	14	12	18	13	10
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	16	14	19	14	12	19	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	25	18	25	23	15	25	20	13	24	17	12	23	15	10
			Exposed	25	25	25	25	25	25	25	25	24	25	25	21	25	25	19	25	25	18	25	24	16	25	20	13	25	17	12	25	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	28	28	21	27	27	18	25	25	15	24	22	13	22	19	12
			Exposed	29	29	29	29	29	29	29	29	29	29	29	26	29	29	23	29	29	21	29	29	19	28	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	17	12	18	15	11	18	13	9	16	12	13
			Exposed	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	18	14	18	18	13	18	15	11	18	13	9	15	11	12	13	10	12	13	9	10	12	8	10	7
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	15	12	19	13	11	17	11	9	15	10	13	14	9	11
			Exposed	19	19	19	19	19	18	19	19	16	19	18	15	19	16	13	19	15	12	19	14	11	18	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	23	25	25	21	25	25	19	25	25	17	25	21	14	24	18	12	23	16	11	22	14	9	21	12	8	18	11	7
			Exposed	25	25	21	25	25	18	25	24	16	25	22	15	25	20	13	25	18	12	25	16	11	24	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	23	28	28	21	26	26	17	25	23	14	22	20	12	19	17	11	17	15	9	15	13	8
			Exposed	29	29	25	29	29	22	29	29	20	29	27	17	28	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	20	17	12	20	14	10	17	13	9	15	11	12	14	10	11
			Exposed	20	20	20	20	20	17	20	20	16	20	20	14	20	18	13	20	17	12	20	15	11	18	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	21	21	21	21	21	21	21	21	21	21	21	19	21	21	17	21	19	16	21	17	14	21	15	12	19	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	21	21	17	21	19	15	21	17	14	21	15	12	21	14	11	19	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	27	27	27	27	27	24	27	27	21	27	27	19	27	26	17	27	23	16	27	21	14	26	18	12	24	15	10	23	13	9	20	11	8	17	10	7	15	9	9
			Exposed	27	25	17	27	23	15	27	20	14	27	18	12	27	17	11	26	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	31	31	31	31	31	30	31	31	26	31	31	23	30	30	21	29	29	19	28	27	17	25	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	31	31	21	31	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
60	B	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	11	15	14	10	15	12	9	15	11	12
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	14	12	16	13	10
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	14	12	16	12	10	16	11	9	14	9	12	13	13	10
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	22	15	22	20	13	21	17	12	20	15	10
			Exposed	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	18	22	22	16	22	20	13	22	17	12	22	15	10	22	13	9	19	11	8	17	10	7
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	25	21	24	24	18	23	23	15	22	22	13	21	19	12
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	26	21	26	26	19	26	25	15	24	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	13	9	15	12	13
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	11	15	13	9	15	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	15	12	16	13	11	16	11	9	15	10	13	14	9	11
			Exposed	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	15	12	16	14	11	16	11	9	15	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	17	22	21	14	21	18	12	20	16	11	20	14	9	19	12	8	18	11	7
			Exposed	22	22	21	22	22	18	22	22	16	22	22	15	22	20	13	22	18	12	22	16	11	22	14	9	20	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	25	25	21	24	24	17	22	22	14	21	20	12	19	17	11	17	15	9	14	13	8
			Exposed	26	26	25	26	26	22	26	26	20	26	26	17	26	25	15	25	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	12	17	14	10	17	13	9	15	11	12	14	10	11
			Exposed	17	17	17	17	17	17	17	17	16	17	17	14	17	17	13	17	17	12	17	15	11	17	13	9	15	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	16	18	17	14	18	15	12	17	13	10	17	11	9	15	9	12	13	13	10	11	11	9
			Exposed	18	18	17	18	18	15	18	17	14	18	15	12	18	14	11	18	12	10	17	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	24	24	24	24	24	24	24	24	21	24	24	19	24	24	17	24	23	16	24	21	14	23	18	12	22	15	10	21	13	9	20	11	8	17	10	7	15	9	9
			Exposed	24	24	17	24	23	15	24	20	14	24	18	12	24	17	11	24	15	10	24	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	28	28	28	28	28	28	28	28	26	27	27	23	27	27	21	26	26	19	25	25	17	24	22	14	21	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	28	28	21	28	28	18	28	25	16	26	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
70	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	10	13	12	9	13	11	12
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	13	10
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	12	10	14	11	9	14	9	12	13	13	10
		20-27	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	15	19	19	13	19	17	12	18	15	10
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	13	19	17	12	19	15	10	19	13	9	19	11	8	17	10	7
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	22	22	18	21	21	15	20	20	13	19	19	12
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	15	23	21	13	21	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	9	13	12	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	9	13	11	12	13	10	10	12	13	9	10	12	8
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	11	14	11	9	14	10	13	13	9	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	11	9	14	10	12	13	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	14	19	18	12	18	16	11	18	14	9	17	12	8	16	11	7
			Exposed	19	19	19	19	19	18	19	19	16	19	19	15	19	19	13	19	18	12	19	16	11	19	14	9	19	12	8	18	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	22	22	17	21	21	14	19	19	12	19	17	11	17	15	9	14	13	8
			Exposed	23	23	23	23	23	22	23	23	20	23	23	17	23	23	15	23	23	14	23	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	10	14	13	9	14	11	12	14	10	11
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	13	9	14	11	12	13	9	10	11	12	9	10	11	8	9	10	7	7
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	12	16	13	10	15	11	9	14	9	12	13	13	10	11	11	9
			Exposed	16	16	16	16	16	15	16	16	14	16	15	12	16	14	11	16	12	10	16	11	9	15	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	19	21	21	17	21	21	16	21	21	14	20	18	12	20	15	10	19	13	9	18	11	8	17	10	7	15	9	9
			Exposed	21	21	17	21	21	15	21	20	14	21	18	12	21	17	11	21	15	10	21	14	9	20	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	23	24	24	21	24	24	19	23	23	17	22	22	14	20	19	12	19	17	10	16	14	9	14	13	8	13	11	7
			Exposed	25	25	21	25	25	18	25	25	16	25	23	14	23	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
80	B	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	12
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	11	9	12	9	12	12	13	10
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	17	12	17	15	10
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	13	17	17	12	17	15	10	17	13	9	17	11	8	17	10	7
		27-45	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	20	18	19	19	15	19	19	13	18	18	12
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	15	21	21	13	20	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	13
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	12	11	10	10	11	11	10	11	13	9	10	12	8
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	9	12	10	13	12	9	11
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	9	12	10	12	12	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	12	17	16	11	16	14	9	15	12	8	15	11	7
			Exposed	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	17	12	17	16	11	17	14	9	17	12	8	17	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	20	17	19	19	14	18	18	12	17	17	11	16	15	9	14	13	8
			Exposed	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15	21	21	14	21	21	13	20	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	10	13	13	9	13	11	12	13	10	11
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	11	13	13	9	13	11	12	13	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	13	10	14	11	9	13	9	12	13	13	10	11	11	9
			Exposed	14	14	14	14	14	14	14	14	14	14	12	14	14	11	14	14	12	14	14	11	14	11	10	12	13	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	16	19	19	14	19	18	12	18	15	10	17	13	9	16	11	8	16	10	7	15	9	9
			Exposed	19	19	17	19	19	15	19	19	14	19	18	12	19	17	11	19	15	10	19	14	9	19	12	8	17	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	22	22	21	22	22	19	21	21	17	20	20	14	19	19	12	18	17	10	16	14	9	14	13	8	13	11	7
			Exposed	23	23	21	23	23	18	23	23	16	23	23	14	22	21	13	21	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Stronghold BUTYL OSB
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind 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
90	B	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	9	12	11	13	10
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	15	10
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	15	10	15	13	9	15	11	8	15	10	7
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	18	15	17	17	13	17	17	12
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	15	19	19	13	19	18	11	18	16	10	16	14	9	14	13	8
	C	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	13
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	10	10	10	13	9	10	12	8
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	10	13	11	9	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	10	12	11	8	11	11	11	9	10	10	8	13	9	7
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	14	9	14	12	8	14	11	7
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	12	15	15	11	15	14	9	15	12	8	15	10	7	15	9	9	14	12	8	12	11	7
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	17	17	17	14	17	17	12	16	16	11	15	15	9	15	13	8
			Exposed	19	19	19	19	19	19	19	19	19	19	19	17	19	19	15	19	19	14	19	19	13	18	17	11	17	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	11	12	11	10	11
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	11	11	12	11	9	10	11	12	9	10	11	8	9	10	7
		7-20	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	11	9	12	9	12	12	13	10	11	11	9
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	11	9	12	10	12	12	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	17	12	16	15	10	16	13	9	15	11	8	15	10	7	14	9	9
			Exposed	17	17	17	17	17	15	17	17	14	17	17	12	17	17	11	17	15	10	17	14	9	17	12	8	16	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	20	19	20	20	17	19	19	14	18	18	12	17	17	10	16	14	9	14	13	8	13	11	7
			Exposed	21	21	21	21	21	18	21	21	16	21	21	14	21	21	13	20	19	12	19	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7
100	B	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	12
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	9	12	10	13	10
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	10
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	10	14	13	9	14	11	8	14	10	7
		27-45	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	16	16	13	16	16	12
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	17	11	17	16	10	16	14	9	14	13	8
	C	0-7	Interior	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	13
			Exposed	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	12	9	9	10	9	13	9	9	12	8
		7-20	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	13	10	9	11
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	8	11	10	11	9	10	10	8	13	9	7
		20-27	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	14	14	11	14	14	9	13	12	8	13	11	7
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	12	14	14	11	14	14	9	14	12	8	14	10	7	14	9	9	13	12	8	12	11	7
		27-45	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	16	14	14	13	8
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	17	13	17	17	11	16	15	9	14	13	8	13	11	7	11	10	9	10	9	8
	D	0-7	Interior	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	10	11
			Exposed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	12	10	9	10	10	12	9	10	11	8	9	10	7
		7-20	Interior	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	9	12	11	13	10	10	11	9
			Exposed	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	9	11	10	12	11	12	10	11	11	9	9	9	8	13	8	7	11	7	6
		20-27	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	15	10	15	13	9	14	11	8	14	10	7	13	9	9
			Exposed	15	15	15	15	15	15	15	15	14	15	15	12	15	15	11	15	15	10	15	14	9	15	12	8	15	10	7	15	9	9	13	11	8	11	10	7	10	9	6
		27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	17	17	17	14	17	17	12	16	16	10	15	14	9	14	13	8	13	11	7
			Exposed	19	19	19	19	19	18	19	19	16	19	19	14	19	19	13	19	19	12	18	17	11	16	15	9	14	12	8	12	11	7	11	9	9	9	13	8	8	11	7

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.