



**Orientation: Landscape**  
**Roof Type: Gable**  
**Table 1 of 2**

The table shows worst-case span for each range of conditions. Site-specific designs may result in a better span result. Review the design package from the EcoX estimator (<http://ecox-estimator.ecolibriumsolar.com>) for site-specific span and cantilever results.



Approved for: Canadian Solar, Hyundai, Jinko, SolarWorld, SunEdison, Trina, Yingli, and Q-Cells Modules.

Max Span / Max Cantilever (in)			Ground Snow Load (psf)											
			0		10		20		30		40		50	
			Wind Exposure Category											
Wind Speed (mph)	Roof Slope	Roof Zone	B	C	B	C	B	C	B	C	B	C	B	C
110 (ASCE7-10)	0:12-3:12 (0-12°)	Interior (1)	102.9/34.3	91.8/30.6	77.6/25.9	77.6/25.9	66.2/22.1	66.2/22.1	65.7/21.9	65.7/21.9	58.1/19.4	58.1/19.4	52.3/17.4	52.3/17.4
		Edge (2)	84.2/28.1	70.4/23.5	77.6/25.9	69.6/23.2	66.2/22.1	66.2/22.1	65.7/21.9	65.7/21.9	58.1/19.4	58.1/19.4	52.3/17.4	52.3/17.4
		Corner (3)	67.8/22.6	56.9/19.0	67.8/22.6	56.9/19.0	66.2/22.1	56.9/19.0	65.7/21.9	56.9/19.0	58.1/19.4	56.9/19.0	52.3/17.4	52.3/17.4
	4:12-6:12 (18°-27°)	Interior (1)	103/34.3	91.4/30.5	78.5/26.2	78.5/26.2	67.2/22.4	67.2/22.4	66.9/22.3	66.9/2.3	59.6/19.9	59.6/19.9	53.6/17.9	53.6/17.9
		Edge (2)	84.1/28.0	70.2/23.4	78.5/26.2	70.2/23.4	67.2/22.4	67.2/22.4	66.9/22.3	66.9/22.3	59.6/19.9	59.6/19.9	53.6/17.9	53.6/17.9
		Corner (3)	67.8/22.6	56.8/18.9	67.8/22.6	56.8/18.9	67.2/22.4	56.8/18.9	66.9/22.3	56.9/19.0	59.6/19.9	56.9/19.0	53.6/17.9	53.6/17.9
	7:12-12:12 (30°-45°)	Interior (1)	95.9/32.0	82.8/27.6	84.8/28.3	77.4/25.8	76.9/25.6	71.3/23.8	75.4/25.1	70.1/23.4	69.7/23.2	65.4/21.8	65.1/21.7	61.6/20.5
		Edge (2)	95.9/32.0	80.5/26.8	84.8/28.3	77.4/25.8	76.9/25.3	71.3/23.8	75.4/25.1	70.1/23.4	69.7/23.2	65.4/21.8	65.1/21.7	61.6/20.5
		Corner (3)	95.9/32.0	80.5/26.8	84.8/28.3	77.4/25.8	76.9/25.6	71.3/23.8	75.4/25.1	70.1/23.4	69.7/23.2	65.4/21.8	65.1/21.7	61.6/20.5
> 12:12 (> 45°)	Interior (4)	94.5/31.5	81.2/27.1	94.4/31.5	81.2/27.1	90.2/30.1	80.9/27.0	91.6/30.5	81.2/27.1	87.8/29.3	79.2/26.4	84.4/28.1	76.7/25.6	
	Edge (5)	90.6/30.2	75.8/25.3	90.6/30.2	75.8/25.3	90.2/30.1	75.8/25.3	90.6/30.2	75.8/25.3	87.8/29.3	75.8/25.3	84.4/28.1	75.8/25.3	
115 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	102.9/34.3	83.4/27.8	77.6/25.9	76.4/25.5	66.2/22.1	65.4/21.8	65.7/21.9	65.0/21.7	58.1/19.4	58.1/19.4	52.3/17.4	52.3/17.4
		Edge (2)	80.2/26.7	66.3/22.1	77.6/25.9	66.3/22.1	66.2/22.1	65.4/21.8	65.7/21.9	65.0/21.7	58.1/19.4	58.1/19.4	52.3/17.4	52.3/17.4
		Corner (3)	64.7/21.6	55.8/18.6	64.7/21.6	54.3/18.1	64.7/21.6	54.3/18.1	64.7/21.6	54.6/18.1	58.1/19.4	54.3/18.1	52.3/17.4	52.3/17.4
	4:12-6:12 (18°-27°)	Interior (1)	103.0/34.3	87.2/29.1	78.5/26.2	77.2/25.7	67.2/22.4	66.4/22.1	66.9/22.3	66.1/22.0	59.6/19.9	59.6/19.9	53.6/17.9	53.6/17.9
		Edge (2)	80.2/26.7	67.0/22.3	78.5/26.2	67.1/22.4	67.2/22.4	66.4/22.1	66.9/22.3	66.1/22.0	59.6/19.9	59.6/19.9	53.6/17.9	53.6/17.9
		Corner (3)	64.7/21.6	54.2/18.1	64.7/21.6	54.2/18.1	64.6/21.5	54.3/18.1	34.7/21.6	54.3/18.1	59.6/19.9	54.3/18.1	53.6/17.9	53.6/17.9
	7:12-12:12 (30°-45°)	Interior (1)	92.3/30.8	79.6/26.5	64.0/25.9	75.4/25.1	75.5/25.2	69.7/23.2	74.1/24.7	68.6/22.9	68.6/22.9	64.2/21.4	64.2/21.4	60.6/20.2
		Edge (2)	92.3/30.8	76.8/25.6	82.9/27.6	75.4/25.1	75.5/25.2	69.7/23.2	74.1/24.7	68.6/22.9	68.6/22.9	64.2/21.4	64.2/21.4	60.6/20.2
		Corner (3)	92.3/30.8	76.8/25.6	82.9/27.6	75.4/25.1	75.5/25.2	69.7/23.2	74.1/24.7	68.6/22.9	68.6/22.9	64.2/21.4	64.2/21.4	60.6/20.2
> 12:12 (> 45°)	Interior (4)	90.8/30.3	77.9/26.0	90.8/30.3	77.9/26.0	87.8/29.3	77.9/26.0	89.1/29.7	77.9/26.0	85.6/28.5	76.9/25.6	82.4/27.5	74.6/24.9	
	Edge (5)	86.4/28.8	72.4/24.1	86.4/28.8	72.4/24.1	86.4/28.8	72.4/24.1	86.4/28.8	72.4/24.1	85.6/28.5	72.4/24.1	82.4/27.5	72.4/24.1	
125 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	92.1/30.7	73.2/24.4	77.6/25.9	72.7/24.2	66.2/22.1	63.1/21.0	65.7/21.9	62.7/20.9	58.1/19.4	57.1/19.0	52.3/17.4	52.3/17.4
		Edge (2)	70.4/23.5	58.4/19.5	69.6/23.2	58.4/19.5	66.2/22.1	59.0/19.7	65.7/21.9	59.0/19.7	58.1/19.4	57.1/19.0	52.3/17.4	52.3/17.4
		Corner (3)	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	56.9/19.0	57.1/19.0	52.3/17.4	47.9/16.0
	4:12-6:12 (18°-27°)	Interior (1)	92.1/30.7	76.6/25.5	78.5/26.2	73.5/24.5	67.2/22.4	64.0/21.3	66.9/22.3	63.7/21.2	59.6/19.9	58.1/19.4	53.6/17.9	53.6/17.9
		Edge (2)	70.4/23.5	58.9/19.6	70.2/23.4	58.9/19.6	67.2/22.4	58.9/19.6	66.9/22.3	59.0/19.7	59.6/19.9	58.1/19.4	53.6/17.9	53.6/17.9
		Corner (3)	56.9/19.0	47.8/15.9	56.8/18.9	47.8/15.9	56.9/19.0	47.8/15.9	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	53.6/17.9	47.9/16.0
	7:12-12:12 (30°-45°)	Interior (1)	83.0/27.7	71.3/23.8	77.6/25.9	69.9/23.3	71.4/23.8	65.3/21.8	70.2/23.4	64.3/21.4	65.5/21.8	60.7/20.2	61.6/20.5	57.6/19.2
		Edge (2)	81.0/27.0	67.9/22.6	77.6/25.9	67.6/22.5	71.4/23.8	65.3/21.8	70.2/23.4	64.3/21.4	65.5/21.8	60.7/20.2	61.6/20.5	57.6/19.2
		Corner (3)	81.0/27.0	67.9/22.6	77.6/25.9	67.6/22.5	71.4/23.8	65.3/21.8	70.2/23.4	64.3/21.4	65.5/21.8	60.7/20.2	61.6/20.5	57.6/19.2
> 12:12 (> 45°)	Interior (4)	84.3/28.1	72.1/24.0	84.3/28.1	72.1/24.0	83.2/27.7	72.1/24.0	84.3/28.1	72.1/24.0	81.3/27.1	72.1/24.0	78.6/26.2	70.6/23.5	
	Edge (5)	79.1/26.4	66.4/22.1	79.1/26.4	66.4/22.1	79.1/26.4	66.4/22.1	79.1/26.4	66.4/22.1	79.1/26.4	66.4/22.1	78.6/26.2	66.4/22.1	

**Notes & Assumptions:**

1. Risk Category = 2
2. Roof Exposure = Partial
3. Average Roof Height = 30 ft.
4. Average 60-cell module dimensions used (65 in. x 39 in.)
5. Values are worst-case maximum spans for the given slope range. Actual maximum spans given by site specific design may be larger than shown.



**Orientation: Landscape**  
**Roof Type: Gable**  
**Table 2 of 2**

The table shows worst-case span for each range of conditions. Site-specific designs may result in a better span result. Review the design package from the EcoX estimator (<http://ecox-estimator.ecolibriumsolar.com>) for site-specific span and cantilever results.



Approved for: Canadian Solar, Hyundai, Jinko, SolarWorld, SunEdison, Trina, Yingli, and Q-Cells Modules.

Max Span / Max Cantilever (in)			Ground Snow Load (psf)											
			0		10		20		30		40		50	
			Wind Exposure Category											
Wind Speed (mph)	Roof Slope	Roof Zone	B	C	B	C	B	C	B	C	B	C	B	C
140 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	84.9/28.3	67.6/22.5	75.6/25.2	67.6/22.5	64.9/21.6	61.6/20.5	64.5/21.5	61.2/20.4	58.1/19.4	56.0/18.7	52.3/17.4	51.9/17.3
		Edge (2)	65.2/21.7	54.1/18.0	64.4/21.5	54.1/18.0	64.4/21.5	54.7/18.2	64.5/21.5	54.7/18.2	58.1/19.4	54.7/18.2	52.3/17.4	51.9/17.3
		Corner (3)	52.7/17.6	41.6/13.9	52.7/17.6	41.6/13.9	54.2/18.1	41.6/13.9	52.7/17.6	41.6/13.9	52.7/17.6	41.6/13.9	52.3/17.4	41.6/13.9
	4:12-6:12 (18°-27°)	Interior (1)	84.9/28.3	70.8/23.6	76.4/25.5	70.8/23.6	65.9/22.0	52.4/20.8	65.6/21.9	62.0/20.7	59.6/19.9	56.9/19.0	53.6/17.9	52.9/17.6
		Edge (2)	65.1/21.7	54.6/18.2	65.1/21.7	54.6/18.2	65.1/21.7	54.7/18.2	65.1/21.7	54.7/18.2	59.6/19.9	54.7/18.2	53.6/17.9	52.9/17.6
		Corner (3)	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8
	7:12-12:12 (30°-45°)	Interior (1)	77.6/25.9	66.5/22.2	74.1/24.7	66.4/22.1	68.7/22.9	62.4/20.8	67.6/22.5	61.6/20.5	63.4/21.1	58.3/19.4	59.9/20.0	55.6/18.5
		Edge (2)	74.9/25.0	62.6/20.9	74.1/24.7	62.8/20.9	68.7/22.9	62.4/20.8	67.6/22.5	61.6/20.5	63.4/21.1	58.3/19.4	59.9/20.0	55.6/18.5
		Corner (3)	74.9/25.0	62.6/20.9	74.1/24.7	62.8/20.9	68.7/22.9	62.4/20.8	67.6/22.5	61.6/20.5	63.4/21.1	58.3/19.4	59.9/20.0	55.6/18.5
> 12:12 (> 45°)	Interior (4)	75.9/25.3	64.8/21.6	75.9/25.3	64.8/21.6	75.9/25.3	64.8/21.6	75.9/25.3	64.8/21.6	75.4/25.1	64.8/21.6	73.2/24.4	64.8/21.6	
	Edge (5)	70.3/23.4	59.1/19.7	70.3/23.4	59.1/19.7	70.3/23.4	59.1/19.7	70.3/23.4	59.1/19.7	70.3/23.4	59.1/19.7	70.3/23.4	59.1/19.7	
155 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	73.6/24.5	58.9/19.6	70.2/23.4	58.9/19.6	62.3/20.8	58.5/19.5	61.9/20.6	58.2/19.4	56.5/18.8	53.6/17.9	52.3/17.4	50.0/16.7
		Edge (2)	56.7/18.9	46.9/15.6	56.1/18.7	46.9/15.6	56.1/18.7	47.7/15.9	56.7/18.9	47.7/15.9	26.5/18.8	47.7/15.9	52.3/17.4	47.7/15.9
		Corner (3)	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6
	4:12-6:12 (18°-27°)	Interior (1)	73.6/24.5	61.6/20.5	72.2/24.1	61.7/20.6	63.2/21.1	59.2/19.7	62.9/21.0	59.0/19.7	57.5/19.2	54.5/18.2	53.3/17.8	50.9/17.0
		Edge (2)	56.7/18.9	47.6/15.9	56.6/18.9	47.7/15.9	56.1/18.9	47.7/15.9	56.7/18.9	47.7/12.9	56.7/18.9	47.7/15.9	53.3/17.8	47.7/15.9
		Corner (3)	44.6/14.9	61.6/10.5	44.6/14.9	31.6/10.5	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6
	7:12-12:12 (30°-45°)	Interior (1)	68.7/22.9	58.7/19.6	68.0/22.7	58.7/19.6	63.7/21.2	57.3/19.1	62.9/21.0	56.6/18.9	59.4/19.8	54.1/18.0	56.5/18.8	51.9/17.3
		Edge (2)	65.1/21.7	54.6/18.2	64.9/21.6	54.7/18.2	63.7/21.1	54.0/18.2	62.9/21.0	54.7/18.2	59.4/19.8	54.1/18.0	56.5/18.8	51.9/17.3
		Corner (3)	65.1/21.7	54.7/18.2	64.9/21.6	54.7/18.2	63.7/21.2	54.7/18.2	62.9/21.0	54.7/18.2	59.4/19.8	54.1/18.0	56.5/18.8	51.9/17.3
> 12:12 (> 45°)	Interior (4)	69.1/23.0	58.5/19.5	69.1/23.0	58.5/19.5	69.1/23.0	58.5/19.5	69.1/23.0	58.5/19.5	69.1/23.0	58.5/19.5	68.4/22.8	58.5/19.5	
	Edge (5)	63.3/21.1	53.2/17.7	63.3/21.1	53.2/17.7	63.3/21.1	53.2/17.7	63.3/21.1	53.2/17.7	63.3/21.1	53.2/17.7	63.3/21.1	53.2/17.7	
170 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	65.0/21.7	52.1/17.4	62.1/20.7	52.1/17.4	59.7/19.9	54.6/18.2	59.4/19.8	54.6/18.2	54.6/18.2	51.3/17.1	50.8/16.9	48.1/16.0
		Edge (2)	50.2/16.7	36.9/12.3	49.7/16.6	36.9/12.3	49.7/16.6	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6
		Corner (3)	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3
	4:12-6:12 (18°-27°)	Interior (1)	65.0/21.1	54.5/18.2	65.0/21.7	54.6/18.2	60.5/20.2	54.6/18.2	60.2/20.1	54.6/18.2	55.5/18.5	52.1/17.4	51.7/17.2	48.9/16.3
		Edge (2)	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6
		Corner (3)	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3
	7:12-12:12 (30°-45°)	Interior (1)	61.6/20.5	52.5/17.5	61.6/20.5	52.5/17.5	59.2/19.7	52.5/17.5	58.5/19.5	52.3/17.4	55.7/18.6	50.2/16.7	53.3/17.8	48.4/16.1
		Edge (2)	57.6/19.2	48.4/16.2	57.4/19.1	48.5/16.2	57.4/19.1	48.5/16.2	57.6/19.2	48.5/16.2	55.7/18.6	48.5/16.2	53.3/17.8	48.4/16.1
		Corner (3)	57.6/19.2	48.4/16.2	57.4/19.1	48.5/16.2	57.4/19.1	48.5/16.2	57.6/19.2	48.5/16.2	55.7/18.6	48.5/16.2	53.3/17.8	48.4/16.1
> 12:12 (> 45°)	Interior (4)	63.2/21.1	53.2/17.7	63.2/21.1	53.2/17.7	63.2/21.1	53.2/17.7	63.2/21.1	53.2/17.7	63.2/21.1	53.2/17.7	63.2/21.1	53.2/17.7	
	Edge (5)	57.6/19.2	48.4/16.1	57.6/19.2	48.4/16.1	57.6/19.2	48.4/16.1	57.6/19.2	48.4/16.1	57.6/19.2	48.4/16.1	57.6/19.2	48.4/16.1	

**Notes & Assumptions:**

1. Risk Category = 2
2. Roof Exposure = Partial
3. Average Roof Height = 30 ft.
4. Average 60-cell module dimensions used (65 in. x 39 in.)
5. Values are worst-case maximum spans for the given slope range. Actual maximum spans given by site specific design may be larger than shown.



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**Roof Type: Hip**  
**Table 1 of 2**

The table shows worst-case span for each range of conditions. Site-specific designs may result in a better span result. Review the design package from the EcoX estimator (<http://ecox-estimator.ecolibriumsolar.com>) for site-specific span and cantilever results.



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Max Span / Max Cantilever (in)			Ground Snow Load (psf)											
			0		10		20		30		40		50	
			Wind Exposure Category											
Wind Speed (mph)	Roof Slope	Roof Zone	B	C	B	C	B	C	B	C	B	C	B	C
110 (ASCE7-10)	0:12-3:12 (0-12°)	Interior (1)	102.7/34.2	87.6/29.2	77.6/25.9	77.6/25.9	66.2/22.1	66.2/22.1	65.7/21.9	65.7/21.9	58.1/19.4	58.1/19.4	52.3/17.4	52.3/17.4
		Edge (2)	83.2/27.7	69.6/23.2	77.6/25.9	69.6/23.2	66.2/22.1	66.2/22.1	65.7/21.9	65.7/21.9	58.1/19.4	58.1/19.4	52.3/17.4	52.3/17.4
		Corner (3)	69.7/23.2	56.9/19.0	67.8/22.6	56.9/19.0	66.2/22.1	56.9/19.0	65.7/21.9	56.9/19.0	56.9/19.0	56.9/19.0	52.3/17.4	52.3/17.4
	4:12-6:12 (18°-27°)	Interior (1)	103/34.3	91.4/30.5	78.5/26.2	78.5/26.2	67.2/22.4	67.2/22.4	66.9/22.3	66.9/22.3	59.6/19.9	59.6/19.9	53.6/17.9	53.6/17.9
		Edge (2)	84.1/28.0	70.3/23.4	78.5/26.2	70.3/23.4	67.2/22.4	67.2/22.4	66.9/22.3	66.9/22.3	59.6/19.9	59.6/19.9	53.6/17.9	53.6/17.9
		Corner (3)	67.8/22.6	56.8/18.9	67.8/22.6	56.8/18.9	67.2/22.4	56.9/19.0	66.9/22.3	56.8/18.9	56.9/19.0	56.9/19.0	53.6/17.9	53.6/17.9
	> 6:12 (> 27°)	Interior (4)	93.1/31.0	80.3/26.8	83.4/27.8	75.9/25.3	75.8/25.3	70.0/23.3	74.4/24.8	68.9/23.0	65.6/21.9	64.5/21.5	64.4/21.5	60.8/20.3
		Edge (5)	91.4/30.5	76.3/25.4	83.4/27.8	75.9/25.3	75.8/25.3	70.0/23.3	74.4/24.8	68.9/23.0	65.6/21.9	64.5/21.5	64.4/21.5	60.8/20.6
115 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	100.2/33.4	83.4/27.8	77.6/25.9	76.4/25.5	66.2/22.1	65.4/21.8	65.7/21.9	65.0/21.7	58.1/19.4	58.1/19.4	52.3/17.4	52.3/17.4
		Edge (2)	80.2/26.7	66.3/22.1	77.6/25.9	66.3/22.1	66.2/22.1	65.4/21.8	65.7/21.9	65.0/21.7	58.1/19.4	58.1/19.4	52.3/17.4	52.3/17.4
		Corner (3)	64.7/21.6	54.3/18.1	64.7/21.6	54.3/18.1	64.7/21.6	54.3/18.1	64.7/21.6	54.3/18.1	52.7/17.6	54.3/18.1	52.3/17.4	52.3/17.4
	4:12-6:12 (18°-27°)	Interior (1)	103.0/34.3	87.2/29.1	78.5/26.2	77.2/25.7	67.2/22.4	66.4/22.1	66.9/22.3	66.1/22.0	59.6/19.9	59.6/19.9	53.6/17.9	53.6/17.9
		Edge (2)	79.9/26.6	67.0/22.3	78.5/26.2	67.0/22.3	67.2/22.4	66.4/22.1	66.9/22.3	66.1/22.0	59.6/19.9	59.6/19.9	53.6/17.9	53.6/17.9
		Corner (3)	64.6/21.5	54.3/18.1	78.5/26.2	54.3/18.1	64.7/21.6	54.3/18.1	64.7/21.6	54.3/18.1	52.7/17.6	54.3/18.1	53.6/17.9	53.6/17.9
	> 6:12 (> 27°)	Interior (4)	89.6/29.9	77.1/25.7	81.4/27.1	73.8/24.6	74.4/24.8	68.4/22.8	73.0/24.3	67.4/22.5	62.4/20.8	63.2/21.1	63.5/21.2	59.7/19.9
		Edge (5)	87.1/29.0	72.8/24.6	81.4/27.1	72.8/24.3	74.4/24.8	68.4/22.8	73.0/24.3	67.4/22.5	62.4/20.8	63.2/21.1	63.5/21.2	59.7/19.9
125 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	87.7/29.2	73.2/24.4	77.6/25.9	72.7/24.2	66.2/22.1	63.1/21.0	65.7/21.9	62.7/20.9	58.1/19.4	57.1/19.0	52.3/17.4	52.3/17.4
		Edge (2)	69.6/23.2	58.4/19.5	70.4/23.5	58.4/19.5	66.2/22.1	59.0/19.7	65.7/21.9	59.0/19.7	58.1/19.4	57.1/19.0	52.3/17.4	52.3/17.4
		Corner (3)	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	52.3/17.4	47.9/16.0
	4:12-6:12 (18°-27°)	Interior (1)	91.7/30.6	76.6/25.5	78.5/26.2	73.5/24.5	67.2/22.4	64.0/21.3	66.9/22.3	63.7/21.2	59.6/19.9	58.1/19.4	53.6/17.9	53.6/17.9
		Edge (2)	70.2/23.4	58.9/19.6	70.2/23.4	59.0/19.7	67.2/22.4	59.0/19.7	66.9/22.3	59.0/19.7	59.6/19.9	58.1/19.4	53.6/17.9	53.6/17.9
		Corner (3)	56.8/18.9	47.8/15.9	56.8/18.9	47.9/16.0	56.9/19.0	47.9/16.0	56.9/19.0	47.9/16.0	56.9/19.0	47.8/15.9	53.6/17.9	47.8/15.9
	> 6:12 (> 27°)	Interior (4)	83.2/27.7	71.5/23.8	77.7/25.9	70.0/23.3	71.5/23.8	65.3/21.8	70.3/23.4	64.4/21.5	65.6/21.9	60.7/20.2	61.7/20.6	57.6/19.2
		Edge (5)	79.7/26.6	66.7/22.2	77.7/25.9	66.7/22.0	71.5/23.8	65.3/21.8	70.3/23.4	64.4/21.5	65.6/21.9	60.7/20.2	61.7/20.6	57.6/19.2

**Notes & Assumptions:**

1. Risk Category = 2
2. Roof Exposure = Partial
3. Average Roof Height = 30 ft.
4. Average 60-cell module dimensions used (65 in. x 39 in.)
5. Values are worst-case maximum spans for the given slope range. Actual maximum spans given by site specific design may be larger than shown.



**Orientation: Landscape**  
**Roof Type: Hip**  
**Table 2 of 2**

The table shows worst-case span for each range of conditions. Site-specific designs may result in a better span result. Review the design package from the EcoX estimator (<http://ecox-estimator.ecolibriumsolar.com>) for site-specific span and cantilever results.



Approved for: Canadian Solar, Hyundai, Jinko, SolarWorld, SunEdison, Trina, Yingli, and Q-Cells Modules.

Max Span / Max Cantilever (in)			Ground Snow Load (psf)											
			0		10		20		30		40		50	
			Wind Exposure Category											
Wind Speed (mph)	Roof Slope	Roof Zone	B	C	B	C	B	C	B	C	B	C	B	C
140 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	80.9/27.0	67.6/22.5	75.6/25.2	67.6/22.5	64.9/21.6	61.6/20.5	64.5/21.5	61.2/20.4	58.1/19.4	56.0/18.7	52.3/17.4	51.9/17.3
		Edge (2)	64.4/21.5	54.1/18.0	64.4/21.5	54.1/18.0	64.4/21.5	54.1/18.0	64.5/21.5	54.1/18.0	58.1/19.4	54.1/18.0	52.3/17.4	51.9/17.3
		Corner (3)	52.7/17.6	41.6/13.9	52.7/17.6	41.6/13.9	52.7/17.6	41.6/13.9	52.7/17.6	41.6/13.9	52.7/17.6	41.6/13.9	52.3/17.4	41.6/13.9
	4:12-6:12 (18°-27°)	Interior (1)	84.6/28.2	70.9/23.6	76.4/25.5	70.9/23.6	65.9/22.0	62.4/20.8	65.6/21.9	62.1/20.7	59.6/19.9	56.9/19.0	53.6/17.9	52.9/17.6
		Edge (2)	65.0/21.7	54.7/18.2	65.1/21.7	54.7/18.2	65.1/21.7	54.7/18.2	65.1/21.7	54.7/18.2	59.6/19.9	54.7/18.2	53.6/17.9	52.9/17.6
		Corner (3)	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8	52.7/17.6	41.5/13.8
110 (ASCE 7-05)	> 6:12	Interior (4)	75.2/25.1	64.4/21.5	72.5/24.2	64.4/21.5	67.4/22.5	61.0/20.3	66.4/22.1	60.3/20.1	62.4/20.8	57.2/19.1	59.0/19.7	54.6/18.2
	(> 27°)	Edge (5)	70.7/23.6	59.3/19.8	70.7/23.6	59.3/19.8	67.4/22.5	59.3/19.8	66.4/22.1	59.3/19.8	62.4/20.8	57.2/19.1	59.0/19.7	54.6/18.2
155 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	73.6/24.5	58.9/19.6	70.2/23.4	58.9/19.6	62.3/20.8	58.5/19.5	61.9/20.6	58.2/19.4	56.5/18.8	53.6/17.9	52.3/17.4	50.0/16.7
		Edge (2)	56.7/18.9	46.9/15.6	56.1/18.7	46.9/15.6	56.7/18.9	47.7/15.9	56.7/18.9	46.9/15.6	56.1/18.7	47.7/15.9	52.3/17.4	46.9/15.6
		Corner (3)	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6	44.6/14.9	31.7/10.6
	4:12-6:12 (18°-27°)	Interior (1)	73.6/24.5	61.6/20.5	72.2/24.1	61.7/20.5	63.2/21.1	59.2/19.7	62.9/21.0	59.0/19.7	57.5/19.2	54.5/18.2	53.3/17.8	50.9/17.0
		Edge (2)	56.7/18.9	61.6/20.5	56.7/18.9	47.7/15.9	56.7/18.9	47.7/15.9	56.7/18.9	47.7/15.9	56.7/18.9	47.7/15.9	53.3/17.8	47.7/15.9
		Corner (3)	44.6/14.9	31.6/10.5	44.6/14.9	31.6/10.5	44.6/14.9	31.7/10.6	44.6/14.9	31.6/10.5	44.6/14.9	31.6/10.5	44.6/14.9	31.6/10.5
120 (ASCE 7-05)	> 6:12	Interior (4)	68.5/22.8	58.5/19.5	67.9/22.6	58.5/19.5	63.6/21.2	57.1/19.0	62.7/20.9	56.5/18.8	59.3/19.8	54.0/18.0	56.4/18.8	51.7/17.2
	(> 27°)	Edge (5)	63.6/21.2	53.4/17.8	63.6/21.2	53.4/17.8	63.6/21.2	53.4/17.8	62.7/20.9	53.4/17.8	59.3/19.8	53.4/17.8	56.4/18.8	51.7/17.2
170 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	62.1/20.7	52.1/17.4	62.1/20.7	52.1/17.4	59.7/19.9	52.1/17.4	59.4/19.8	52.1/17.4	54.6/18.2	51.3/17.1	50.8/16.9	48.1/16.0
		Edge (2)	49.7/16.6	36.9/12.3	49.7/16.6	36.9/12.3	50.2/16.7	36.9/12.3	50.2/16.7	36.9/12.3	50.2/16.7	36.9/12.3	50.2/16.7	37.7/12.6
		Corner (3)	35.1/11.7	24.9/8.3	65.1/17.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3
	4:12-6:12 (18°-27°)	Interior (1)	65.0/21.7	54.6/18.2	64.9/21.6	54.6/18.2	60.5/20.2	54.6/18.2	60.2/20.1	54.6/18.2	55.5/18.5	52.1/17.4	51.7/17.2	48.9/16.3
		Edge (2)	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6	50.2/16.7	37.7/12.6
		Corner (3)	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3	35.1/11.7	24.9/8.3
130 (ASCE 7-05)	> 6:12	Interior (4)	62.9/21.0	53.3/17.8	62.9/21.0	53.3/17.8	60.1/20.0	53.3/17.8	59.3/19.8	53.0/17.7	56.4/18.8	50.9/17.0	53.9/18.0	49.1/16.4
	(> 27°)	Edge (5)	57.8/19.3	48.6/16.2	57.8/19.3	48.6/16.2	57.8/19.3	48.6/16.2	57.8/19.3	48.6/16.2	56.4/18.8	48.6/16.2	53.9/18.0	48.6/16.2

**Notes & Assumptions:**

1. Risk Category = 2
2. Roof Exposure = Partial
3. Average Roof Height = 30 ft.
4. Average 60-cell module dimensions used (65 in. x 39 in.)
5. Values are worst-case maximum spans for the given slope range. Actual maximum spans given by site specific design may be larger than shown.



**Orientation: Portrait**  
**Roof Type: Gable**  
**Table 1 of 2**

The table shows worst-case span for each range of conditions. Site-specific designs may result in a better span result. Review the design package from the EcoX estimator (<http://ecox-estimator.ecolibriumsolar.com>) for site-specific span and cantilever results.



Approved for: Canadian Solar, Hyundai, Jinko, SolarWorld, SunEdison, Trina, Yingli, and Q-Cells Modules.

Max Span / Max Cantilever (in)			Ground Snow Load (psf)											
			0		10		20		30		40		50	
			Wind Exposure Category											
Wind Speed (mph)	Roof Slope	Roof Zone	B	C	B	C	B	C	B	C	B	C	B	C
110 (ASCE7-10)  85 (ASCE7-05)	0:12-3:12 (0-12°)	Interior (1)	79.6/29.5	67.9/22.6	60.2/20.1	60.2/20.1	51.3/17.1	51.3/17.1	50.9/17.0	50.9/17.0	45.1/15.0	45.1/15.0	40.6/13.5	40.6/13.5
		Edge (2)	64.5/21.5	54.0/18.0	60.2/20.1	54.0/18.0	51.3/17.1	51.3/17.1	50.9/17.0	50.9/17.0	45.1/15.0	45.1/15.0	40.6/13.5	40.6/13.5
		Corner (3)	52.6/18.5	41.1/13.7	52.6/17.5	41.1/13.7	51.3/17.1	41.1/13.7	50.9/17.0	41.1/13.7	45.1/15.0	41.1/13.7	40.6/13.5	40.6/13.5
	4:12-6:12 (18°-27°)	Interior (1)	79.8/26.6	70.9/23.6	60.8/20.3	60.3/20.1	52.1/17.4	52.1/17.4	51.9/17.3	51.9/17.3	46.2/15.4	46.2/15.4	41.6/13.9	41.6/13.9
		Edge (2)	65.2/21.7	54.4/18.1	60.8/20.3	54.4/18.1	52.1/17.4	52.1/17.4	51.9/17.3	51.9/17.3	46.2/15.4	46.2/15.4	41.6/13.9	41.6/13.9
		Corner (3)	52.6/17.5	40.9/13.6	52.6/17.5	40.9/13.6	52.1/17.4	41.1/13.7	51.9/17.3	41.1/13.7	46.2/15.4	41.1/13.7	41.6/13.9	41.1/13.7
	7:12-12:12 (30°-45°)	Interior (1)	74.3/24.8	64.2/21.4	65.8/21.9	60.0/20.0	59.6/19.9	55.3/18.4	58.5/19.5	54.3/18.1	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
		Edge (2)	74.3/24.8	62.4/20.8	65.8/21.9	60.0/20.0	59.6/19.9	55.3/18.4	28.5/19.5	54.3/18.1	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
		Corner (3)	74.3/24.8	62.4/20.8	65.8/21.9	60.0/20.0	59.6/19.9	55.3/18.4	58.5/19.5	54.3/18.1	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
> 12:12 (> 45°)	Interior (4)	73.3/24.4	62.9/21.0	73.2/24.4	62.9/21.0	70.0/23.3	62.7/20.9	71.1/23.7	62.9/21.0	61.5/20.5	61.4/20.5	51.1/17.0	51.1/17.0	
	Edge (5)	70.2/23.4	58.8/19.6	70.2/23.4	58.8/19.6	70.0/23.3	58.8/19.6	70.2/23.4	58.8/19.6	61.5/20.5	58.8/19.6	51.1/17.0	51.1/17.0	
115 (ASCE 7-10)  90 (ASCE 7-05)	0:12-3:12 (0-12°)	Interior (1)	77.7/25.9	64.7/21.6	60.2/20.1	59.1/19.7	51.3/17.1	50.7/16.9	50.9/17.0	50.4/16.8	45.1/15.0	45.1/15.0	40.6/13.5	40.6/13.5
		Edge (2)	61.5/20.5	51.4/17.1	60.2/20.1	41.4/17.1	51.3/17.1	50.7/16.9	50.9/17.0	50.4/16.8	45.1/15.0	45.1/15.0	40.6/13.5	40.6/13.5
		Corner (3)	50.2/16.7	37.4/12.5	50.2/16.7	37.4/12.5	50.2/16.7	37.4/12.5	50.2/16.7	37.4/12.5	45.1/15.0	37.4/12.5	40.6/13.5	37.4/12.5
	4:12-6:12 (18°-27°)	Interior (1)	79.8/26.6	67.6/22.5	60.8/20.3	59.9/20.0	52.1/17.4	51.5/17.2	51.9/17.3	51.2/17.1	46.2/15.4	46.2/15.4	41.6/13.9	41.6/13.9
		Edge (2)	62.2/20.7	51.9/17.3	60.8/20.3	52.0/17.3	52.1/17.4	51.5/17.2	51.9/17.3	51.2/17.1	46.2/15.4	46.2/15.4	41.6/13.9	41.6/13.9
		Corner (3)	50.2/16.7	37.3/12.4	50.2/16.7	37.3/12.4	50.2/16.7	37.4/12.5	50.2/16.7	37.4/12.5	46.2/15.4	37.4/12.5	41.6/13.9	37.4/12.5
	7:12-12:12 (30°-45°)	Interior (1)	71.6/23.9	61.7/20.6	64.3/21.4	58.5/19.5	58.5/19.5	54.0/18.0	57.4/19.1	53.2/17.7	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
		Edge (2)	71.6/23.9	59.5/19.8	64.3/21.4	58.5/19.5	58.5/19.5	54.0/18.0	57.4/19.1	53.2/17.7	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
		Corner (3)	74.6/23.9	59.5/19.8	64.3/21.4	58.5/19.5	58.5/19.5	54.0/18.0	54.7/19.1	53.2/17.7	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
> 12:12 (> 45°)	Interior (4)	70.4/23.5	60.4/20.1	70.4/23.5	60.4/20.1	68.1/22.7	60.4/20.1	69.1/23.0	60.4/20.1	61.5/20.5	59.6/19.9	51.1/17.0	51.1/17.0	
	Edge (5)	67.0/22.3	56.1/18.7	67.0/22.3	56.1/18.7	67.0/22.3	56.1/18.7	67.0/22.3	56.1/18.7	61.5/20.5	56.1/18.7	51.1/17.0	51.1/17.0	
125 (ASCE 7-10)  100 (ASCE 7-05)	0:12-3:12 (0-12°)	Interior (1)	68.0/22.7	56.8/18.9	60.2/20.1	56.4/18.8	51.3/17.1	48.9/16.3	50.9/17.0	48.6/16.2	45.1/15.0	44.3/14.8	40.6/13.5	40.6/13.5
		Edge (2)	54.0/18.0	43.2/14.4	54.0/18.0	43.2/14.4	51.3/17.1	43.2/14.4	50.9/17.0	43.2/14.4	45.1/15.0	44.2/14.7	40.6/13.5	40.6/13.5
		Corner (3)	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	40.6/13.5	37.4/12.5
	4:12-6:12 (18°-27°)	Interior (1)	71.3/23.8	59.4/19.8	60.8/20.3	57.0/19.0	52.1/17.4	49.6/16.5	51.9/17.3	49.4/16.5	46.2/15.4	45.1/16.5	41.6/13.9	41.6/13.9
		Edge (2)	54.5/18.2	44.2/14.7	54.6/18.2	44.2/14.7	52.1/17.4	44.2/14.7	51.9/17.3	44.2/14.7	46.2/15.4	44.2/14.7	41.6/13.9	41.6/13.9
		Corner (3)	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	37.4/12.5
	7:12-12:12 (30°-45°)	Interior (1)	64.4/21.5	55.3/18.4	60.1/20.0	54.2/18.1	55.0/18.5	50.6/16.9	54.4/18.1	49.9/16.6	47.2/15.7	47.0/15.7	38.5/12.8	38.5/12.8
		Edge (2)	62.4/20.8	52.6/17.5	60.1/20.0	52.6/17.5	55.4/18.5	50.6/16.9	54.4/18.1	49.9/16.6	47.2/15.7	47.0/15.7	38.5/12.8	38.5/12.8
		Corner (3)	62.4/20.8	52.6/17.5	60.1/20.0	52.6/17.5	55.4/18.5	50.6/16.9	54.4/18.1	49.9/16.6	47.2/15.7	47.0/15.7	38.5/12.8	38.5/12.8
> 12:12 (> 45°)	Interior (4)	65.3/21.8	55.9/18.6	65.3/21.8	55.9/18.6	64.5/21.5	55.9/18.6	65.3/21.8	55.9/18.6	61.5/20.5	55.9/18.6	51.1/17.0	51.1/17.0	
	Edge (5)	61.4/20.5	51.5/17.2	61.4/20.5	51.5/17.2	61.4/20.5	51.5/17.2	64.1/20.5	51.5/17.2	61.4/20.5	51.5/17.2	51.1/17.0	51.1/17.0	

**Notes & Assumptions:**

1. Risk Category = 2
2. Roof Exposure = Partial
3. Average Roof Height = 30 ft.
4. Average 60-cell module dimensions used (65 in. x 39 in.)
5. Values are worst-case maximum spans for the given slope range. Actual maximum spans given by site specific design may be larger than shown.





**Orientation: Portrait**  
**Roof Type: Gable**  
**Table 2 of 2**

The table shows worst-case span for each range of conditions. Site-specific designs may result in a better span result. Review the design package from the EcoX estimator (<http://ecox-estimator.ecolibriumsolar.com>) for site-specific span and cantilever results.



Approved for: Canadian Solar, Hyundai, Jinko, SolarWorld, SunEdison, Trina, Yingli, and Q-Cells Modules.

Max Span / Max Cantilever (in)			Ground Snow Load (psf)											
			0		10		20		30		40		50	
			Wind Exposure Category											
Wind Speed (mph)	Roof Slope	Roof Zone	B	C	B	C	B	C	B	C	B	C	B	C
140 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	62.7/20.9	52.5/17.5	58.6/19.5	52.5/17.5	50.4/16.8	47.8/15.9	50.0/16.7	47.4/15.8	45.1/15.0	43.4/14.5	40.6/13.5	40.2/13.4
		Edge (2)	49.9/16.6	37.1/12.4	49.9/16.6	37.1/12.4	50.4/16.8	37.1/12.4	50.0/16.7	37.1/12.4	45.1/15.0	37.9/12.6	40.6/13.5	37.9/12.6
		Corner (3)	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3
	4:12-6:12 (18°-27°)	Interior (1)	65.6/21.9	55.0/18.3	59.2/19.7	55.0/18.3	51.1/17.0	48.4/16.1	50.9/17.0	48.2/16.1	46.2/15.4	44.2/14.7	38.5/12.8	38.5/12.8
		Edge (2)	50.4/16.8	37.9/12.6	50.5/16.8	37.9/12.6	50.5/16.8	37.9/12.6	50.5/16.8	37.9/12.6	46.2/15.4	37.9/12.6	38.5/12.8	37.8/12.6
		Corner (3)	35.3/11.8	25.0/8.3	35.2/11.7	25.0/8.3	35.2/11.7	25.0/8.3	35.2/11.7	25.0/8.3	35.3/11.8	25.0/8.3	35.2/11.7	24.9/8.3
	7:12-12:12 (30°-45°)	Interior (1)	60.2/20.1	51.6/17.2	57.5/19.2	51.5/17.2	53.3/17.8	48.4/16.1	52.4/17.5	47.7/15.9	47.2/15.7	45.2/15.1	38.5/12.8	38.5/12.8
		Edge (2)	57.8/19.3	48.7/16.2	57.5/19.2	48.7/16.2	53.3/17.8	48.4/16.1	52.4/17.5	47.7/15.9	47.2/15.7	45.2/15.1	38.5/12.8	38.5/12.8
		Corner (3)	57.8/19.3	48.7/16.2	57.5/19.2	48.7/16.2	53.3/17.8	48.4/16.1	52.4/17.5	47.7/15.9	47.2/15.7	45.2/15.1	38.5/12.8	38.5/12.8
> 12:12 (> 45°)	Interior (4)	58.9/19.6	50.3/16.8	58.9/19.6	50.3/16.8	58.9/19.6	50.3/16.8	58.9/19.6	50.3/16.8	58.5/19.5	50.3/16.8	51.1/17.0	50.3/16.8	
	Edge (5)	54.5/18.2	44.2/14.7	54.5/18.2	44.2/14.7	54.5/18.2	44.2/14.7	54.5/18.2	44.2/14.7	54.5/18.2	44.2/14.7	51.1/17.0	44.2/14.7	
155 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	54.4/18.1	43.9/14.6	54.4/18.1	43.9/14.6	48.3/16.1	43.9/14.6	48.0/16.0	43.9/14.6	43.8/14.6	41.6/13.9	40.6/13.5	38.8/12.9
		Edge (2)	39.9/13.3	28.2/9.4	39.9/13.3	28.2/9.4	39.9/13.3	28.2/9.4	40.8/13.6	28.2/9.4	40.8/13.6	28.8/9.6	40.6/13.5	28.2/9.4
		Corner (3)	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3
	4:12-6:12 (18°-27°)	Interior (1)	57.1/19.0	47.8/15.9	56.0/18.7	47.8/15.9	49.0/16.3	45.9/15.3	48.8/16.3	45.7/15.2	44.6/14.9	42.2/14.1	38.5/12.8	38.5/12.8
		Edge (2)	40.8/13.6	28.8/9.6	40.8/13.6	28.8/9.6	40.8/13.6	28.8/9.6	40.8/13.6	28.8/9.6	40.8/13.6	28.8/9.6	38.5/12.8	28.8/9.6
		Corner (3)	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3
	7:12-12:12 (30°-45°)	Interior (1)	53.3/17.8	44.7/14.9	52.7/17.6	44.7/14.9	49.4/16.5	44.4/14.8	48.7/16.2	43.9/14.6	46.1/15.4	41.9/14.0	38.5/12.8	38.5/12.8
		Edge (2)	50.5/16.8	37.8/12.6	50.5/16.8	37.8/12.6	49.4/16.5	37.8/12.6	48.7/16.2	37.8/12.6	46.1/15.4	37.8/12.6	38.5/12.8	37.8/12.6
		Corner (3)	50.5/16.8	37.8/12.6	50.5/16.8	37.8/12.6	49.4/16.5	37.8/12.6	48.7/16.2	37.5/12.6	46.1/15.4	37.8/12.6	38.5/12.8	37.8/12.6
> 12:12 (> 45°)	Interior (4)	53.6/17.9	43.3/14.4	53.6/17.9	43.3/14.4	53.6/17.9	43.3/14.4	53.6/17.9	43.3/14.4	53.6/17.9	43.3/14.4	51.1/17.0	43.3/14.4	
	Edge (5)	49.1/16.4	35.9/12.0	49.1/16.4	35.9/12.0	49.1/16.4	35.9/12.0	49.1/16.4	35.9/12.0	49.1/16.4	35.9/12.0	49.1/16.4	35.9/12.0	
170 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	48.1/16.0	34.5/11.5	48.1/16.0	34.5/11.5	46.3/15.4	34.5/11.5	46.0/15.3	34.5/11.5	42.3/14.1	34.5/11.5	39.4/13.1	34.5/11.5
		Edge (2)	31.3/10.4	22.2/7.4	31.3/10.4	22.2/7.4	31.3/10.4	22.2/7.4	32.0/10.7	22.2/7.4	31.3/10.4	22.2/7.4	31.3/10.4	22.2/7.4
		Corner (3)	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0
	4:12-6:12 (18°-27°)	Interior (1)	50.4/16.8	37.8/12.6	50.4/16.8	37.8/12.6	46.9/15.6	37.8/12.6	46.7/15.6	37.8/12.6	43.0/14.3	37.8/12.6	38.5/12.8	37.8/12.6
		Edge (2)	31.9/10.6	22.6/7.5	31.9/10.6	22.6/7.5	32.0/10.7	22.6/7.5	31.9/10.6	22.7/7.6	31.9/10.6	22.6/7.5	31.9/10.6	22.6/7.5
		Corner (3)	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0
	7:12-12:12 (30°-45°)	Interior (1)	47.7/15.9	35.1/11.7	47.7/15.9	35.1/11.7	45.9/15.3	35.1/11.7	45.4/15.1	35.1/11.7	43.2/14.4	35.1/11.7	38.5/12.8	35.1/11.7
		Edge (2)	42.1/14.0	29.8/9.9	42.1/14.0	29.8/9.9	42.1/14.0	29.8/9.9	42.1/14.0	29.8/9.9	42.1/14.0	29.8/9.9	38.5/12.8	29.8/9.9
		Corner (3)	42.1/14.0	29.8/9.9	42.1/14.0	29.8/9.9	42.1/14.0	29.8/9.9	42.1/14.0	29.8/9.9	42.1/14.0	29.8/9.9	38.5/12.8	29.8/9.9
> 12:12 (> 45°)	Interior (4)	49.0/16.3	35.9/12.0	49.0/16.3	35.9/12.0	49.0/16.3	35.9/12.0	49.0/16.3	35.9/12.0	49.0/16.3	35.9/12.0	49.0/16.3	35.9/12.0	
	Edge (5)	42.0/14.0	29.8/9.9	42.0/14.0	29.8/9.9	42.0/14.0	29.8/9.9	42.0/14.0	29.8/9.9	42.0/14.0	29.8/9.9	42.0/14.0	29.8/9.9	

**Notes & Assumptions:**

1. Risk Category = 2
2. Roof Exposure = Partial
3. Average Roof Height = 30 ft.
4. Average 60-cell module dimensions used (65 in. x 39 in.)
5. Values are worst-case maximum spans for the given slope range. Actual maximum spans given by site specific design may be larger than shown.



**Orientation: Portrait**  
**Roof Type: Hip**  
**Table 1 of 2**

The table shows worst-case span for each range of conditions. Site-specific designs may result in a better span result. Review the design package from the EcoX estimator (<http://ecox-estimator.ecolibriumsolar.com>) for site-specific span and cantilever results.



Approved for: Canadian Solar, Hyundai, Jinko, SolarWorld, SunEdison, Trina, Yingli, and Q-Cells Modules.

Max Span / Max Cantilever (in)			Ground Snow Load (psf)											
			0		10		20		30		40		50	
			Wind Exposure Category											
Wind Speed (mph)	Roof Slope	Roof Zone	B	C	B	C	B	C	B	C	B	C	B	C
110 (ASCE7-10)  85 (ASCE7-05)	0:12-3:12 (0-12°)	Interior (1)	79.6/26.5	67.9/22.6	60.2/20.1	60.2/20.1	51.3/17.1	51.3/17.1	50.9/17.0	50.9/17.0	45.1/15.0	45.1/15.0	40.6/13.5	40.6/13.5
		Edge (2)	64.5/21.5	54.0/18.0	60.2/20.1	54.5/18.2	51.3/17.1	51.3/17.1	50.9/17.0	50.9/17.0	45.1/15.0	45.1/15.0	40.6/13.5	40.6/13.5
		Corner (3)	52.6/17.5	41.1/13.7	52.6/17.5	41.1/13.7	51.3/17.1	41.1/13.7	50.9/17.0	41.1/13.7	45.1/15.0	41.1/13.7	40.6/13.5	40.6/13.5
	4:12-6:12 (18°-27°)	Interior (1)	79.8/26.6	70.9/23.6	60.8/20.3	60.8/20.3	52.1/17.4	52.1/17.4	51.9/17.3	51.9/17.3	46.2/15.4	46.2/15.4	38.5/12.8	38.5/12.8
		Edge (2)	65.2/17.7	54.4/18.1	60.8/20.3	54.4/18.1	52.1/17.4	52.1/17.4	51.9/17.3	51.9/17.3	46.2/15.4	46.2/15.4	38.5/12.8	38.5/12.8
		Corner (3)	52.6/17.5	40.9/13.6	52.6/17.5	40.9/13.6	52.1/17.4	41.1/13.7	51.9/17.3	41.1/13.7	46.2/15.4	40.9/13.6	38.5/12.8	38.5/12.8
	> 6:12 (> 27°)	Interior (4)	72.2/24.1	62.2/20.7	64.6/21.5	58.8/19.6	58.8/19.6	54.3/18.1	57.7/19.2	53.4/17.8	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
		Edge (5)	70.8/23.6	59.1/19.7	64.6/21.5	58.8/19.6	58.8/19.6	54.3/18.1	57.7/19.2	53.4/17.8	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
	115 (ASCE 7-10)  90 (ASCE 7-05)	0:12-3:12 (0-12°)	Interior (1)	77.7/25.9	64.7/21.6	60.2/20.1	59.2/19.7	51.3/17.1	50.7/16.9	50.9/17.0	50.4/16.8	45.1/15.0	45.1/15.0	40.6/13.5
Edge (2)			61.5/20.5	51.4/17.1	60.2/20.1	52.0/17.3	51.3/17.1	50.7/16.9	50.9/17.0	50.4/16.8	45.1/15.0	45.1/15.0	40.6/13.5	40.6/13.5
Corner (3)			50.2/16.7	37.4/12.5	50.2/16.7	37.4/12.5	50.2/16.7	37.4/12.5	50.2/16.7	37.4/12.5	45.1/15.0	37.4/12.5	40.6/13.5	37.4/12.5
4:12-6:12 (18°-27°)		Interior (1)	79.8/16.6	67.6/22.5	60.8/20.3	59.9/20.0	52.1/17.4	51.5/17.2	51.9/17.3	51.2/17.1	46.2/15.4	46.2/15.4	38.5/12.8	38.5/12.8
		Edge (2)	62.2/20.7	52.0/17.3	60.8/20.3	52.0/17.3	52.1/17.4	51.5/17.2	51.9/17.3	51.2/17.1	46.2/15.4	46.2/15.4	38.5/12.8	38.5/12.8
		Corner (3)	50.2/16.7	37.3/12.4	50.2/16.7	37.3/12.4	50.2/16.7	37.3/12.4	50.2/16.7	37.4/12.5	46.2/15.4	37.4/12.5	38.5/12.8	37.3/12.4
> 6:12 (> 27°)		Interior (4)	69.4/23.1	59.8/19.9	63.1/21.0	57.2/19.1	57.6/19.2	53.1/17.7	56.6/18.9	52.2/17.4	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
		Edge (5)	67.5/22.5	56.4/18.8	63.1/21.0	56.4/18.8	57.6/19.2	53.1/17.7	56.6/18.9	52.2/17.4	47.2/15.7	47.2/15.7	38.5/12.8	38.5/12.8
125 (ASCE 7-10)  100 (ASCE 7-05)		0:12-3:12 (0-12°)	Interior (1)	68.0/22.7	56.8/18.9	60.2/20.1	56.4/18.8	51.3/17.1	48.9/16.3	50.9/17.0	48.6/16.2	45.1/15.0	44.3/14.8	40.6/13.5
	Edge (2)		54.0/18.0	43.2/14.4	54.6/18.2	44.2/14.7	51.3/17.1	43.2/14.4	50.9/17.0	43.2/14.4	45.1/15.0	43.2/14.4	40.6/13.5	40.6/13.5
	Corner (3)		41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	40.6/13.5	29.1/9.7
	4:12-6:12 (18°-27°)	Interior (1)	71.1/23.7	59.4/19.8	60.8/20.3	57.0/19.0	52.1/17.4	49.6/16.5	51.9/17.3	49.4/16.5	46.2/15.0	45.1/15.0	38.5/12.8	38.5/12.8
		Edge (2)	54.6/18.2	44.2/14.7	54.6/18.2	44.2/14.7	52.1/17.4	44.2/14.7	51.9/17.3	44.1/14.7	46.2/15.4	44.2/14.7	38.5/12.8	38.5/12.8
		Corner (3)	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	41.1/13.7	29.1/9.7	38.5/12.8	29.0/9.7
	> 6:12 (> 27°)	Interior (4)	64.5/21.5	55.4/18.5	60.3/20.1	54.3/18.1	55.4/18.5	50.7/16.9	54.5/18.2	49.9/16.6	47.2/15.7	47.1/15.7	38.5/12.8	38.5/12.8
		Edge (5)	31.8/20.6	51.7/17.2	60.3/20.1	51.7/17.2	55.4/18.5	50.7/16.9	54.5/18.2	49.9/16.6	47.2/15.7	47.1/15.7	38.5/12.8	38.5/12.8

**Notes & Assumptions:**

1. Risk Category = 2
2. Roof Exposure = Partial
3. Average Roof Height = 30 ft.
4. Average 60-cell module dimensions used (65 in. x 39 in.)
5. Values are worst-case maximum spans for the given slope range. Actual maximum spans given by site specific design may be larger than shown.



**Orientation: Portrait**  
**Roof Type: Hip**  
**Table 2 of 2**

The table shows worst-case span for each range of conditions. Site-specific designs may result in a better span result. Review the design package from the EcoX estimator (<http://ecox-estimator.ecolibriumsolar.com>) for site-specific span and cantilever results.



Approved for: Canadian Solar, Hyundai, Jinko, SolarWorld, SunEdison, Trina, Yingli, and Q-Cells Modules.

Max Span / Max Cantilever (in)			Ground Snow Load (psf)											
			0		10		20		30		40		50	
			Wind Exposure Category											
Wind Speed (mph)	Roof Slope	Roof Zone	B	C	B	C	B	C	B	C	B	C	B	C
140 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	62.7/20.9	52.5/17.5	58.6/19.5	52.5/18.5	50.4/16.8	47.8/15.9	50.0/16.7	47.4/15.8	45.1/15.0	43.4/14.5	40.6/13.5	40.2/13.4
		Edge (2)	49.9/16.6	37.1/12.4	50.5/16.8	37.1/12.4	50.4/16.8	37.1/12.4	50.0/16.7	37.1/12.4	45.1/15.0	37.1/12.4	40.6/13.5	37.9/12.6
		Corner (3)	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3	35.3/11.8	25.0/8.3
110 (ASCE 7-05)	4:12-6:12 (18°-27°)	Interior (1)	65.8/21.9	55.0/18.3	59.2/19.7	55.0/18.3	51.1/17.0	48.4/16.1	50.9/17.0	48.2/16.1	46.2/15.4	44.2/14.7	38.5/12.8	38.5/12.8
		Edge (2)	50.5/16.8	37.9/12.6	50.4/16.8	37.9/12.6	50.5/16.8	37.9/12.6	50.4/16.8	37.9/12.6	46.2/15.4	37.9/12.6	38.5/12.8	37.8/12.6
		Corner (3)	35.3/11.8	25.0/8.3	35.2/11.7	25.0/8.3	35.2/11.7	25.0/8.3	35.2/11.7	25.0/8.3	35.2/11.7	25.0/8.3	35.2/11.7	24.9/8.3
	> 6:12 (> 27°)	Interior (4)	58.3/19.4	49.9/16.6	56.2/18.7	49.9/16.6	52.3/17.4	47.3/15.8	51.5/17.2	46.7/15.6	47.2/15.7	44.4/14.8	38.5/12.8	38.5/12.8
		Edge (5)	54.8/18.3	44.6/14.9	54.8/18.3	44.6/14.9	52.3/17.4	44.6/14.9	51.5/17.2	44.6/14.9	47.2/15.7	44.4/14.8	38.5/12.8	38.5/12.8
155 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	54.4/18.1	43.9/14.6	55.5/18.5	43.9/14.6	48.3/16.1	45.4/15.1	48.0/16.0	45.1/15.0	43.8/14.6	41.6/13.9	40.6/13.5	38.8/12.9
		Edge (2)	39.9/13.3	28.2/9.4	40.8/13.6	28.2/9.4	40.8/13.6	28.8/9.6	40.8/13.6	28.2/9.4	39.9/13.3	28.2/9.4	40.6/13.5	28.2/9.4
		Corner (3)	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3
120 (ASCE 7-05)	4:12-6:12 (18°-27°)	Interior (1)	57.1/19.0	47.8/15.9	56.0/18.7	47.8/15.9	49.0/16.3	45.9/15.3	48.8/16.3	45.7/15.2	44.6/14.9	42.2/14.1	38.5/12.8	38.5/12.8
		Edge (2)	40.8/13.6	28.8/9.6	40.8/13.6	28.8/9.6	40.8/13.6	28.8/9.6	40.8/13.6	28.8/9.6	40.8/13.6	28.8/9.6	38.5/12.8	28.8/9.6
		Corner (3)	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3	26.8/8.9	19.0/6.3
	> 6:12 (> 27°)	Interior (4)	53.1/17.7	43.6/14.5	52.6/17.5	43.6/14.5	49.3/16.4	43.6/14.5	48.6/16.2	43.6/14.5	46.0/15.3	41.8/13.9	38.5/12.8	38.5/12.8
		Edge (5)	49.3/16.4	36.1/12.0	49.3/16.4	36.1/12.0	49.3/16.4	36.1/12.0	48.6/16.2	36.1/12.0	46.0/15.3	36.1/12.0	38.5/12.8	36.1/12.0
170 (ASCE 7-10)	0:12-3:12 (0-12°)	Interior (1)	48.1/16.0	34.5/11.5	48.1/16.0	34.5/11.5	46.3/15.4	37.8/12.6	46.0/15.3	37.8/12.6	42.3/14.1	34.5/11.5	39.4/13.1	34.5/11.5
		Edge (2)	31.3/10.4	22.2/7.4	31.3/10.4	22.2/7.4	32.0/10.7	22.7/7.6	32.0/10.7	22.2/7.4	31.3/10.4	22.2/7.4	32.0/10.7	22.2/7.4
		Corner (3)	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0
130 (ASCE 7-05)	4:12-6:12 (18°-27°)	Interior (1)	50.4/16.8	37.8/12.6	50.4/16.8	37.8/12.6	46.9/15.6	37.8/12.6	46.7/15.6	37.8/12.6	43.0/14.3	37.7/12.6	38.5/12.8	37.7/12.6
		Edge (2)	31.9/10.6	22.6/7.5	31.9/10.6	22.7/7.6	31.9/10.6	22.6/7.5	31.9/10.6	22.7/7.6	31.9/10.6	22.6/7.5	31.9/10.6	22.6/7.5
		Corner (3)	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0	21.1/7.0	15.0/5.0
	> 6:12 (> 27°)	Interior (4)	48.7/16.2	36.1/12.0	48.7/16.2	36.1/12.0	46.6/15.5	36.1/12.0	46.0/15.3	36.1/12.0	43.8/14.6	36.1/12.0	38.5/12.8	36.1/12.0
		Edge (5)	42.3/14.1	29.9/10.0	42.3/14.1	29.9/10.0	42.3/14.1	29.9/10.0	42.3/14.1	29.9/10.0	42.3/14.1	29.9/10.0	38.5/12.8	29.9/10.0

**Notes & Assumptions:**

1. Risk Category = 2
2. Roof Exposure = Partial
3. Average Roof Height = 30 ft.
4. Average 60-cell module dimensions used (65 in. x 39 in.)
5. Values are worst-case maximum spans for the given slope range. Actual maximum spans given by site specific design may be larger than shown.