Free Engineering Support

Wind and Snow loads generally exceed 90mph and literally over a ton of snow (>2200lbs) This depends on panel choice – Coastal areas may require 110mph certification. All larger mounts built since April 2010 exceed 90mph with virtually all panel choices. *To be CERTIFIED to EXCEED 110mph you must order 75mm verticals ($200 each post - not discounted. Stamped drawings will then also be supplied)*

Defining Pedestal support requirements takes engineering hours and final calculations depend on soil calculation and height above ground. *Always consult a Local Civil Engineer who can specify the concrete and depth to meet local building codes safety margin for the soil conditions in your area*

Send us your pedestal and panel choice, height above grade and desired wind speed and we'll send you a post specification and un-factored moment required to support your array in up to that speed. AT NO COST!

Sample output below shows 12 Sharp 235NU, on a PS2400F on an 8" Steel Post 6.5 ft above grade at 110mph. Therefore your pedestal or any method of attachment must be designed to handle a moment of 49,021Nm at it's base.

All True North Power Mounts are "100% Made in Ontario"

4 x PS2400F Shipping Package
4' x 4' x 20ft ~ 3050lbs
1.2 x 1.2 x 6 m ~ 1380kg

Panel/Array Config	PS2400F 2x6	Panels	Watts	Kg	lbs
PORTRAIT PANEL MOUNT Rows	2	12	2820	240	529.1
Panels/Row	6	each	235	20	44.1
Mounting Bolt mm	M8		P	83.44	184.0
Spacing SideSide	6	mm	Min 5mm for Sides		
Spacing EndEnd	6	mm	Min 5mm for Ends		

Sharp	Mono NU-U235F1		
Panel Size mm	1640 X 994		
Panel Area M^2	1.63		
Panel Area Ft^2	17.55		

Pedestal Loads Calc	PS2400F 2x6
Post AGL Ft	6.5
Wall thick in	0.322
OD in	8.625
Moment Nm	49,021

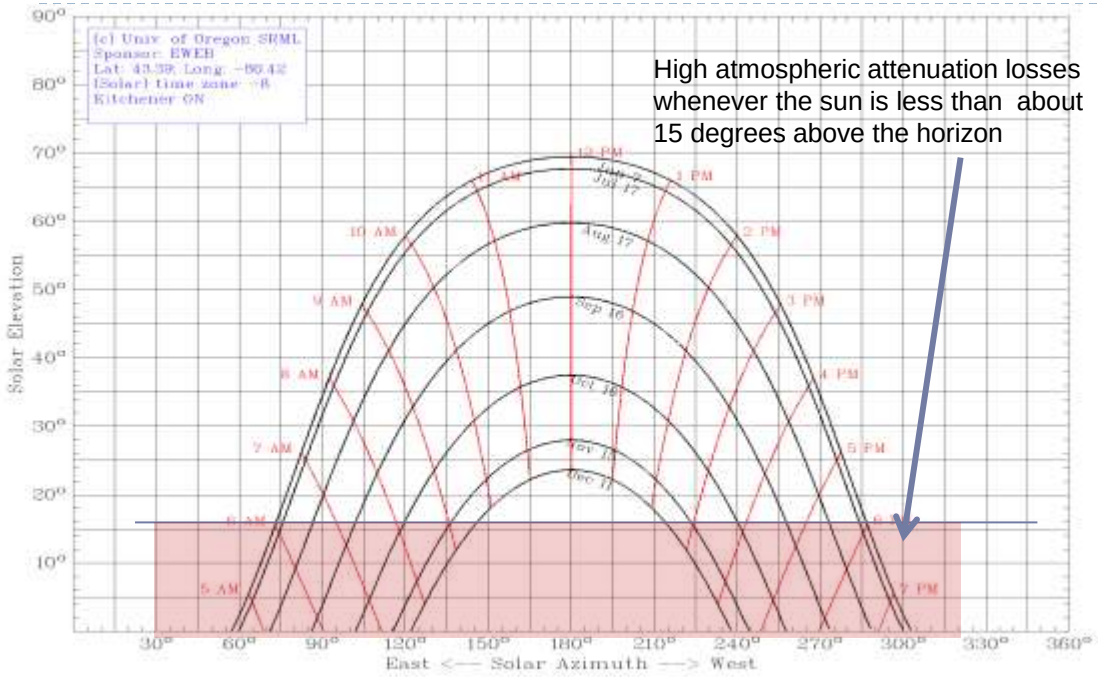
LOADS	lb/Ft2
H-Rail	119.26
V-Rail	36.78
StrgBk	103.60

4 post			Portrait	
Array KW	RAIL		Horiz	Vert
11.28	AILS Required		4	6
	RAIL LENGTHS		5994	2606
Rail Approx	50H			2606
	75H			
	Array Outer Dim (Meters)		6.006	3.286
		Feet	19.70	10.78
Array Installed		Meters	19.74	sq Meter
	Area	Feet	212.43	sq Feet
Wind Speed	110	mph		Array Tilt
	49.2	m/s		90

Solar Siting and Tracking

TRUE NORTH POWER NG

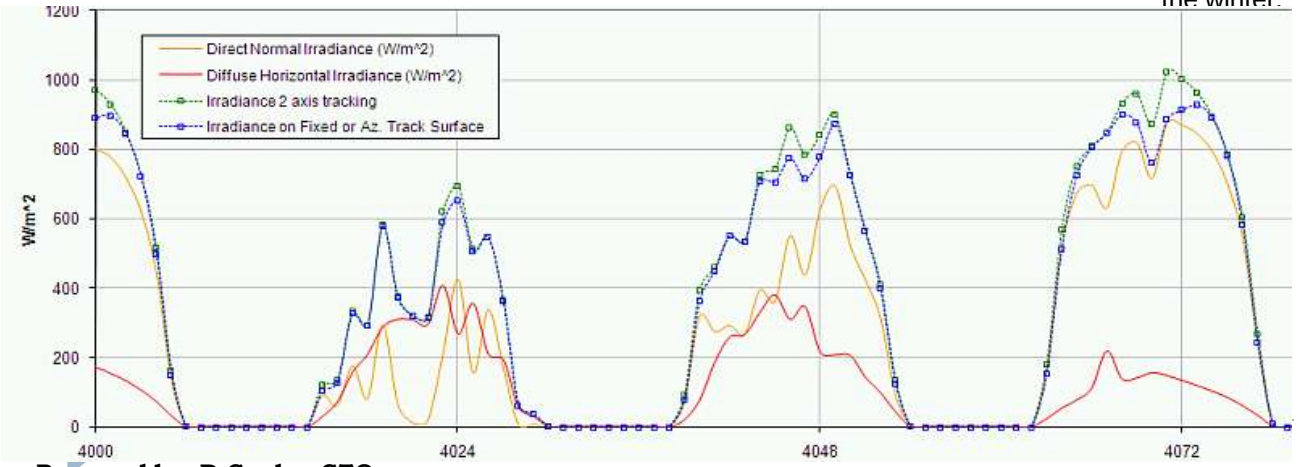
Summer and Winter Array Tilt Angles



Adjusting the tilt of the array only twice a year, to optimize production for summer and winter, will gain between 8 and 11% more energy than leaving a fixed array all year. Adjusting the tilt angle every month adds only a small amount of extra production, possibly less than 2%.

Adjusting winter setting for Dec 21st (winter solstice) is largely a waste of time since, in Canada at least, it is likely to be cloudy or even snowing that week and even if it is full sun all day the atmospheric attenuation at such a low angle and the few hours of sun there is does not collect any significant energy over a what would be collected with a tilt angle optimized or the 1st of Dec.

Also atmospheric attenuation is very high when the sun is less than 15 degrees above the horizon so pointing directly at early morning and late evening light is not nearly as valuable as the sunlight energy between roughly 8 am to 5:30pm in the summer and 9 till 4pm in the winter.



At left is an example of diffuse vs specular (direct sun) light and the value of tracking the sun precisely. Note that precise tracking is only valuable in specular light such as in desert and high sun areas. In most of Canada at least passive pointing systems gather nearly the same energy annually as so called ”dual axis” trackers and use a lot less energy in the process by not “chasing” the diffuse energy around clouds and snow a lot of the time. If you adjust the array tilt angle only twice annually you’ll capture >90-95% of the energy and revenue of a dual axis tracker with less drive train energy and maintenance.

Prepared by: D Cooke, CTO

Solar Pedestal Shading

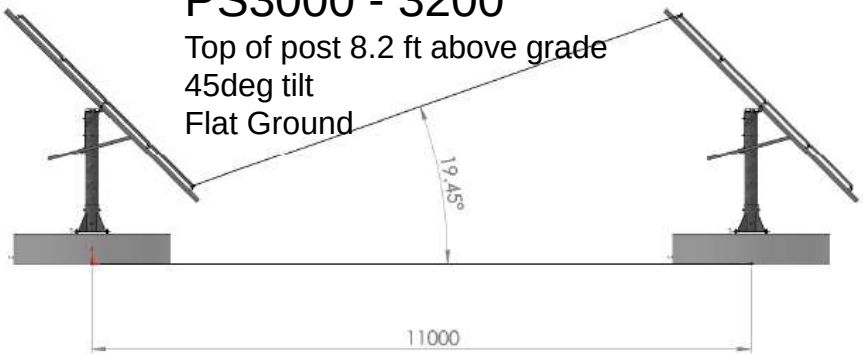
Pedestal spacing depends on many factors

Height of the Pole (South towers can be shorter to help)
Tilt of the array
Slope of the ground
Tracking or not

Try using a piece of squared paper and a protractor for a quick assessment

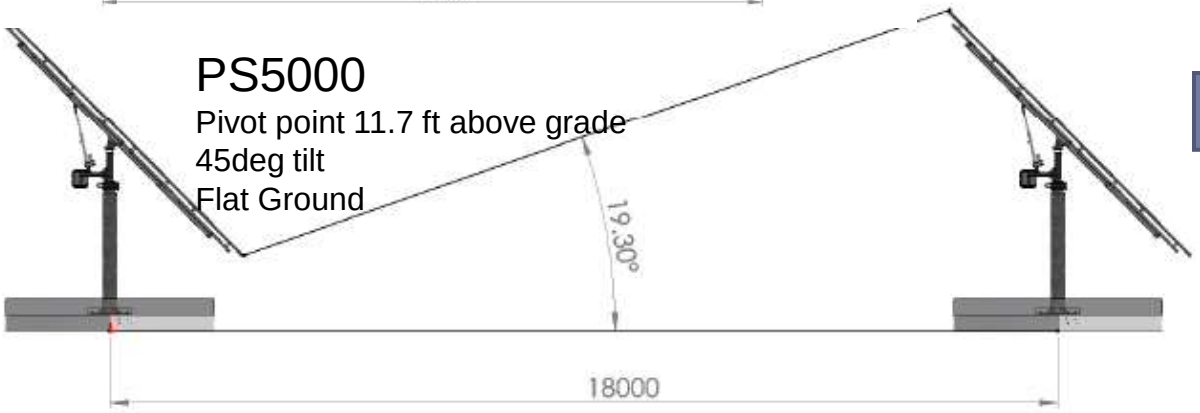
PS3000 - 3200

Top of post 8.2 ft above grade
45deg tilt
Flat Ground



PS5000

Pivot point 11.7 ft above grade
45deg tilt
Flat Ground



SOUTH

If you have limited space then you want to design the post spacing and tilt angle to give you limited to no shading during the lowest sun angles, ie sunrise, sunset and winter solstice (21 Dec). Remember 21 Dec angle is only 1 DAY and in Canada it's likely cloudy or snowing anyway so not a critical optimization parameter.

Better Space them for shading at about 15-20 degrees sun angle and above where the solar power is higher and the atmospheric attenuation is lower.

Check the site angles for a solar chart.

Prepared by: D Cooke, CTO