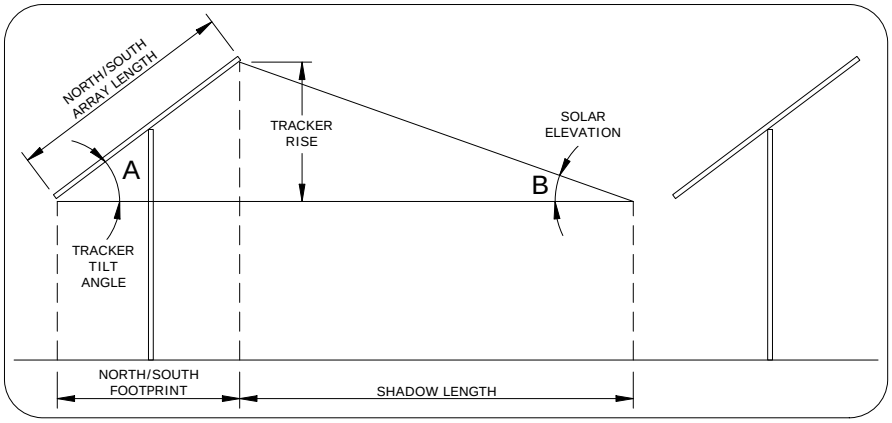
ZOMEWORKS CORPORATION

Passive Energy Products

Environmentally and Financially Sustainable: Do not rely on Hydrocarbons or Tax Credits

TRACKER SPACING

Place a lone tracker where there is no shading. Remember that the sun rises and sets north in summer and south in winter of an East-West line.
Installing more than one tracker requires placing each where it least shades the others.
Trackers east and west must shade one another some times. Trackers North and South need not.
Trackers are best placed, suitably spaced, in North/South lines. The longest shadow cast North is at noon on the winter solstice.



The pole spacing must keep the lower, southern tip of one tracker beyond the northern edge of its neighbor's shadow.
The poles must be farther apart than the sum of the north-south footprint and the shadow length.
North-south footprint = (north-south array length) cos A.
Shadow length = (tracker rise) (cot B) = (sin A) (north-south array length) (cot B).
The solar elevation at noon on the winter solstice is 90° - latitude – 23.5° (solar declination).

Example: Tracker's 8' wide in North-South direction set on California/Oregon border 42° degrees north. Seasonal tilt set @ 40°

Footprint = (8') cos 40° = 6.13'

Solar elevation is:

90° - 42° - 23.5° = 24.5°

North-South pole spacing must exceed:

6.13' + [(sin 40°) 8'] cot 24.5 =

6.13' + [5.142'] cot 24.5° = 17.41'

Trackers arranged in other than north-south lines must be far apart, 4 or 5 times E/W width, or have their angles of rotation restricted to avoid shading.

A careful study should be made to optimize such an installation. It is beyond simple analysis unless one constructs a scale model with an included sundial for positioning.

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