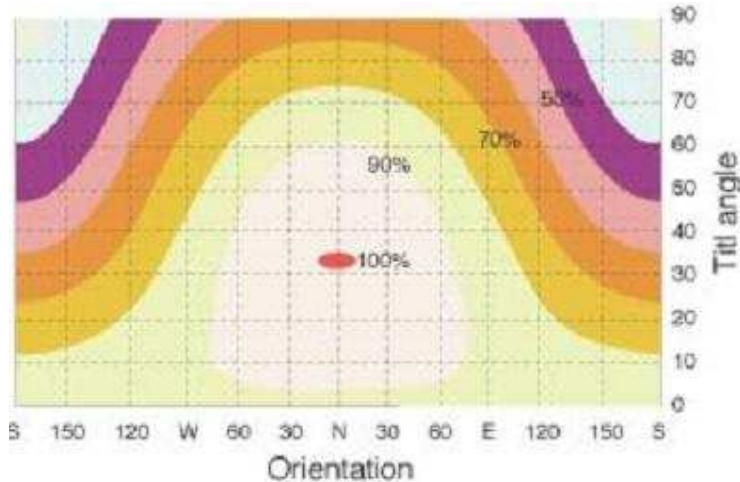# Solar Panel Tilt and Orientation in Australia

Solar panels are installed differently based on their geographic locations throughout the world. The premise behind this is simple; the sun is in a different place in the sky, so panels need to be directed according to this positioning. The ideal situation is when the sun is hitting the panels at a perfectly perpendicular angle (90°). This maximizes the amount of energy striking the panels and being produced. The two factors that such an angle is controlled by are the orientation (North/South/East/West) and the angle of the panels from the surface of the Earth. So in Australia, what angle and orientation are best?

Tilting

The tilt involves primarily the angle that the panels are facing up into the sky. On a flat roof, the tilt is 0°, whereas if the angles were to be facing a wall, it would be 90°. As indicated in the above diagram, **an angle of approximately 32° is the best, but anywhere between 20° and 40° is optimal for around a 90% efficiency**. As soon as a panel is tilted below 5°, efficiency will become an issue, as well as if it is placed at an angle larger than 60°. All in all, tilting is an important factor, but not as important as the orientation can be.

Orientation

Australia, being in the Southern Hemisphere, experiences a sun that is predominantly coming at us from the North. There is of course deviance throughout the seasons, but **ideally solar panels should be facing as close to true North as possible** to reduce the impact that the Winter seasons have on efficiency. Once again referring to the graph above, one can see that even North Easterly and North Westerly facing panels will be largely operating at around the 90% of their rated outputs. Once angles start approach that East North East or West North West orientation however, the numbers start reducing rapidly. **A directly East or West facing panel will never operate at better than 85% of its rated output**.