

Annex A

When light hits a transparent and smooth medium such as glass, part of it will travel into the medium and part of it will be reflected from the surface depending on the medium's reflectivity. While reflectivity of the medium remains unchanged, the reflectance from the medium increases exponentially with increasing angle of incidence¹, as illustrated in Figure 1 below.

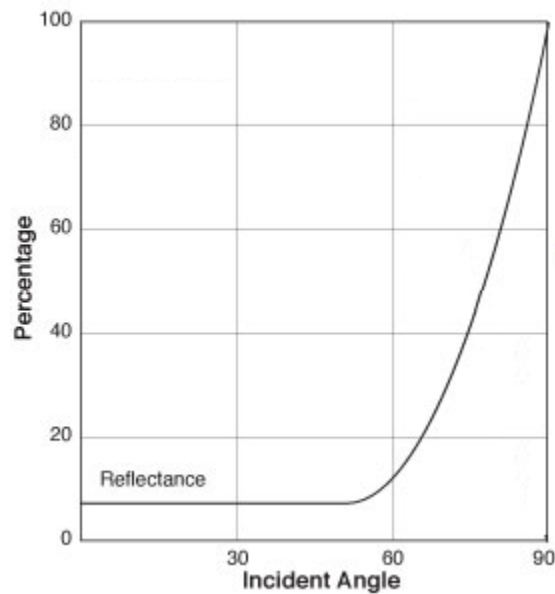


Figure 1 – Chart showing relationship between reflectance percentage and angle of incidence of typical glass. Chart courtesy of Solar Energy Research Institute of Singapore (SERIS)

When solar panels are installed at high inclination, not only will the amount of electricity generated be reduced, there is also likelihood that light can be reflected into homes of nearby vicinity resulting in discomfort from glare. Figure 2 below illustrates a case scenario for solar panels installed on inclined roof of house B.

¹ Angle of incidence is measured from “normal” incidence in which light strikes the glass straight on.

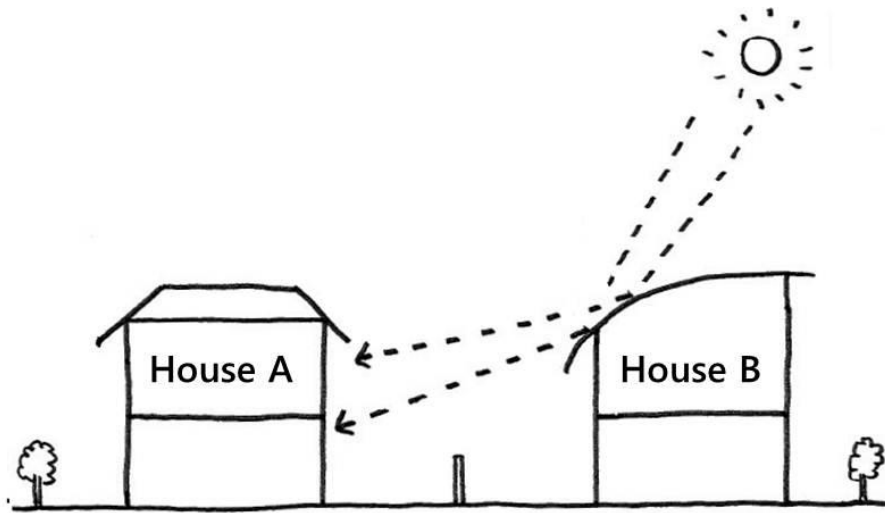


Figure 2 – Illustration of glare resulted due to installation of solar panels on inclined surface

To mitigate these glare concerns, homeowners and industry players are advised to limit the tilt of their solar panels to not more than 15 degrees from the horizontal plane, as illustrated in Figure 3. Solar panels on flat roofs are preferred, however, any proposal for solar panels on pitched roofs should also be guided by the maximum 15 degree tilt angle from the horizontal plane.

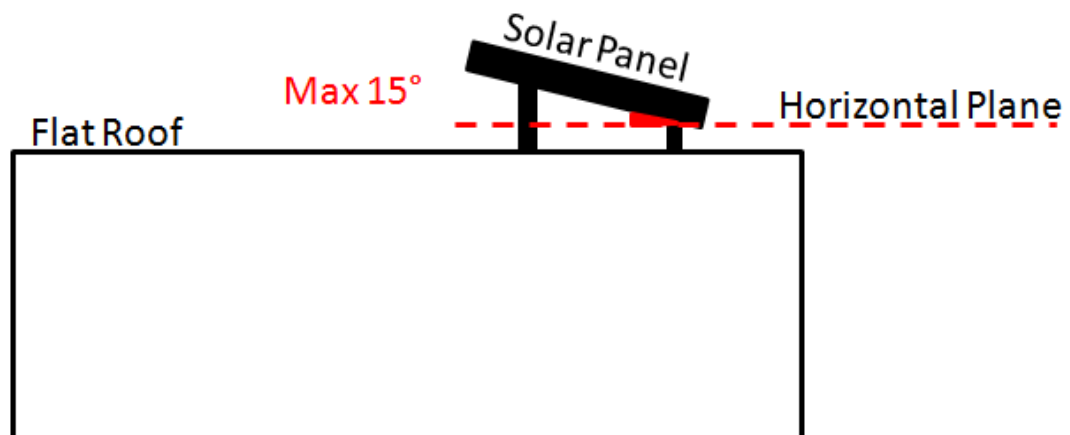


Figure 3 – Illustration of the 15 degrees maximum tilt angle of the solar panel in relation to the horizontal plane.