SOLAR RADIATION GHI vs DNI vs DFI

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Of the solar radiation emitted by the sun, there are three main components to consider, which are very simply related as follows:

Global Horizontal Irradiance (GHI) = Direct Normal Irradiance (DNI) + Diffuse Horizontal Irradiance (DIF)

GLOBAL HORIZONTAL IRRADIANCE

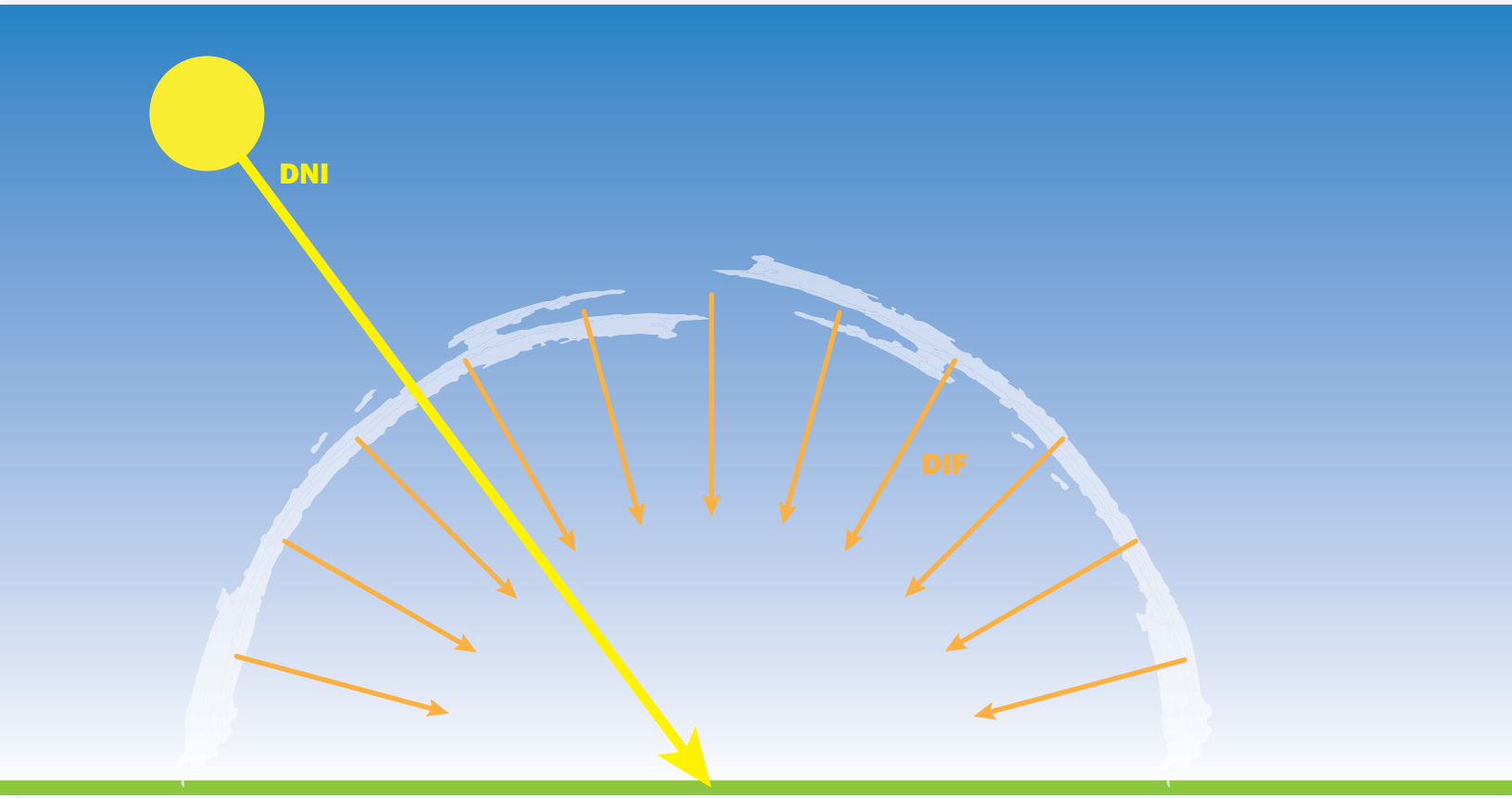
As indicated by the equation above, GHI is a measure of the amount of total shortwave radiation (UV, visible and solar infrared) received from the sun by a surface horizontal to the ground.

DIRECT NORMAL IRRADIANCE

DNI is the component of solar radiation that reaches the earth surface without passing through atmospheric interferences like clouds, fog, etc. As the name suggests, it is typically represented as a straight line from the sun based on its position in the sky.

DIFFUSE HORIZONTAL IRRADIANCE

DIF represents the component of solar radiation that passes through atmospheric interferences which then causes it to be scattered as it reaches the earth's surface. As the name suggests, this is the diffused light quality we see on an overcast or cloudy day.



These values are particulary important when trying to determine where and how to orient solar PV panels for generation of electricity.