

## Data Requirement and Structure

PvDesktop is GIS application for photovoltaic layout design. The main input data are shapefiles.

PvDesktop uses:

- Solar system alignment design (Line shapefile)
- Poles location data (Point shapefile)
- Photovoltaic panels data (Polygon shapefile) and,
- Solar obstruction object data
  - Building (Polygon shapefile)
  - and Tree (Polygon shapefile)
- DEM data (Optional data)

### Solar system alignment design

Solar system alignment design is done with line shapefiles. These data are used to determine solar panel pole alignment. All solar pole positions are located on this line with the specified spacing. The data structures for each solar system alignment design attribute are shown in the table below.

Field	Type	Description
ID	Integer	Identification number
spacing	Double	Pole spacing
remark	String	Note

### Poles location data

Pole location data is stored as a point shapefile. This data is used to locate solar panels. Pole shape files are created by PvDesktop. PvDesktop uses alignment data (Line data) and its spacing from the data mention above. Actually, the user can create this GIS data with other software, then add it to the PvDesktop map legend too. The data structure is shown in table below.

### Photovoltaic panels data

Photovoltaic panels are stored as a polygon shape file. This data is created by PvMapper.

### Solar obstruction object data

PvDesktop has two types of solar obstruction objects: buildings and trees. There are used for the shadow analysis process and 3D visualization process (Sketchup). The data structures for trees and buildings are shown in the table below.

Field	Type	Description
id	Integer	Identification number
diameter	Double	Tree diameter
Height	Double	Tree height
type	String	Type of tree forms

Field	Type	Description
id	Integer	Identification number
Height	Double	Building height