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GEOG576

Project Proposal

# How can LIDAR technology be used to determine solar radiation potential?

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## OVERVIEW

Alongside solar energy being the fastest growing renewable energy, LIDAR technology is revolutionizing solar energy planning by optimizing the locations for solar panels derived from lidar point cloud data. Arcgis provides many of the tools needed to quickly and accurately perform a site assessment for solar radiation (watt hours per square meter) and duration of direct sunlight (in hours). This study will provide an example on how exactly the LIDAR cloud point can be used to identify sites with solar radiation potential.

## GOALS

1. Process raw LIDAR data to a classified LAS dataset and extract the buildings footprints.
2. Derive a digital surface model and digital elevation model from the LIDAR cloud point.
3. Determine the solar radiation of an area defined by the building footprint to identify potential locations for installing a solar array for energy collection.

## SPECIFICATIONS

The raw LIDAR data is public data made available through the USGS National map. The LIDAR point cloud data must be classified into classes of points representing the ground, first return points, noise and buildings, and then processed into a digital elevation model and digital surface model. The building footprint can be extracted from the classified LAS dataset. The Area Solar Radiation tool in the Spatial Analyst toolset will be used to derive a raster of solar radiation.

## DATA

### LIDAR Cloud points

The cloud points were downloaded as a LAS file from the USGS national map. An area in south-west Portland was selected for this study. The file will need to be converted to a LAS file.