Spatiotemporal Analysis of Grid Supply Photovoltaics in New Jersey

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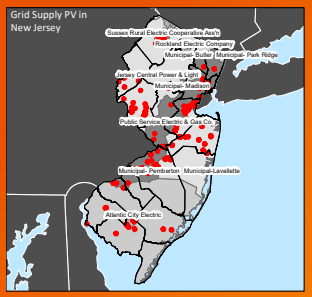
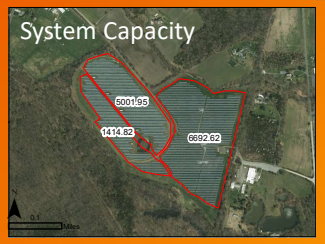
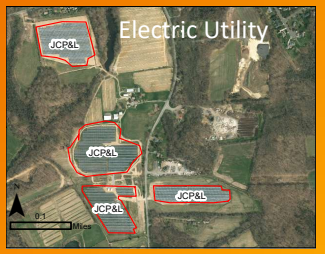
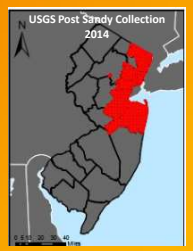
Spatial Distribution of Grid Supply Installations

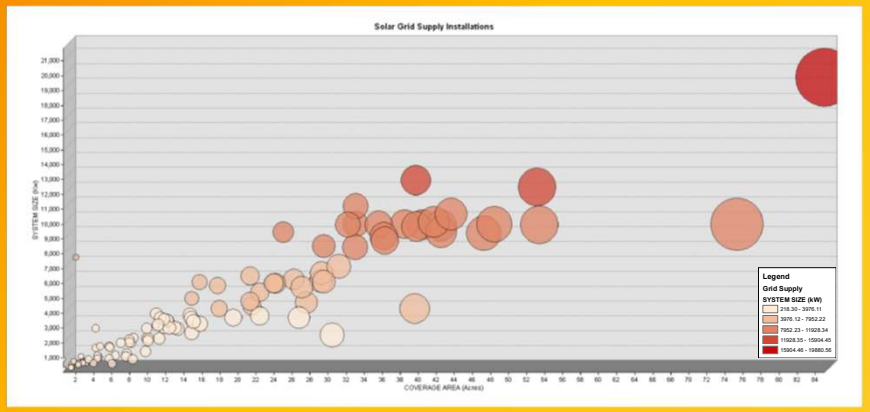




With this information, we can now easily analyze the location, coverage, and system size of these projects.







Abstract

Understanding where renewable energy projects are located is important for successful management and promotion of clean energy. This research determines the spatial distribution of Grid Supply Solar Photovoltaic Systems in New Jersey, investigates system efficiency over time, and uses LiDAR to examine an installed Grid Supply PV System.

Methods

The methods of this study include data processing and geocoding of PV System point locations from data made available by the NJ BPU Solar Report, oblique imagery based digitization of over 100 systems, and an analysis of equipment efficiency based on system acreage and capacity.

This research also uses LiDAR data from the USGS Post Sandy 2014 collection to create a digital surface model of the Tinton Falls Grid Supply System. From this data, elevation, slope, and aspect were calculated. This is useful information in understanding system design.

Results and Discussion

The results of this work yield a new data set made available in the NJDEP BGIS Dropdown Menu. Using this information we can more accurately track where these projects are, what type of land use is around them, how the acreage, capacity, and efficiency of these projects changes over time. Using the LiDAR data we can better analyze a successfully installed projects to have a more complete understanding of system design requirements such shading, set backs, and angle of PV panels.

Next Steps

In future, more comprehensive analyses, this information can be used in conjunction with other resources, such as the NJDEP Solar Siting Analysis, to site and calculate potential for further renewable energy development in New Jersey.

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Using LiDAR to Examine Grid Supply PV