



# Identifying Suitable Areas for Solar Power Generating Facilities while Reducing Conflicts with Sensitive Habitats and Wildlife Populations



## Abstract

Solar energy is a rapidly growing industry in the state of Georgia. The increasing popularity of solar farms is encouraging decision makers and developers to incorporate a sustainable plan for utility-scale solar developments. However, the construction and siting of solar farms could have a threatening impact on environmentally sensitive habitats and associated species. NASA DEVELOP partnered with The Nature Conservancy and the Georgia Department of Natural Resources to conduct an analysis to inform solar site planning and to communicate with key stakeholders. The team analyzed land cover trends from Landsat 8 OLI in addition to solar insolation data sets from Terra CERES. These Earth observations were combined to classify and extract data layers for a solar site suitability and conflict identification model following the Land Use Conflict Identification Strategy (LUCIS). Additionally, the DEVELOP team utilized endangered species habitat layers, with a focus on the gopher tortoise (*Gopherus polyphemus*) primarily due to its role as a keystone species in these sensitive areas. These data were used to generate end products that depict potential conflicts between ideal solar energy sites and endangered species habitats, and prioritize development areas outside of these conflicts. This project also developed a case study with higher resolution and supplementary ancillary data in Taylor County, GA. The results of this project will be utilized by The Nature Conservancy and Georgia Department of Natural Resources to recommend suitable sites for environmentally conscious solar farm construction.

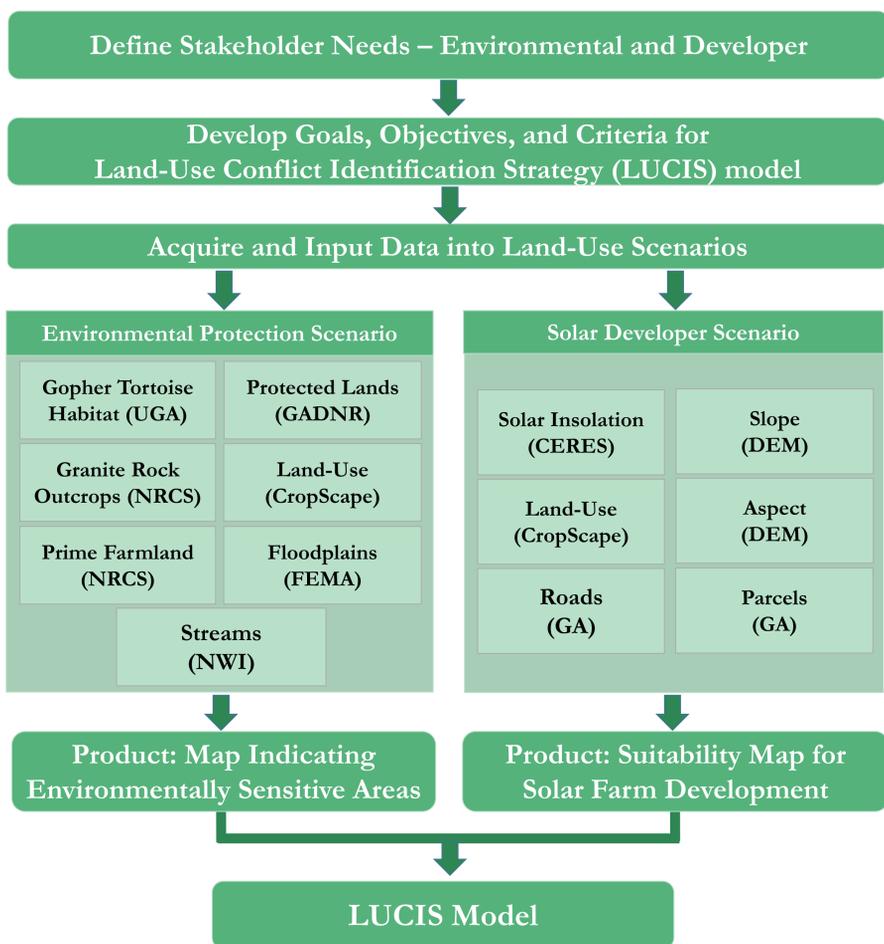
## Objectives

- ▶ **Raise** awareness for the need to consider vulnerable environmentally sensitive areas in the solar farm development process
- ▶ **Create** a Land-Use Conflict Identification Strategy (LUCIS) model that identifies areas suitable for solar farm development in the state of Georgia and delineates conflict areas with environmentally sensitive areas
- ▶ **Utilize** the LUCIS model to create user-friendly communication platforms that our partners and stakeholders can use to support future land-use planning

## Study Area



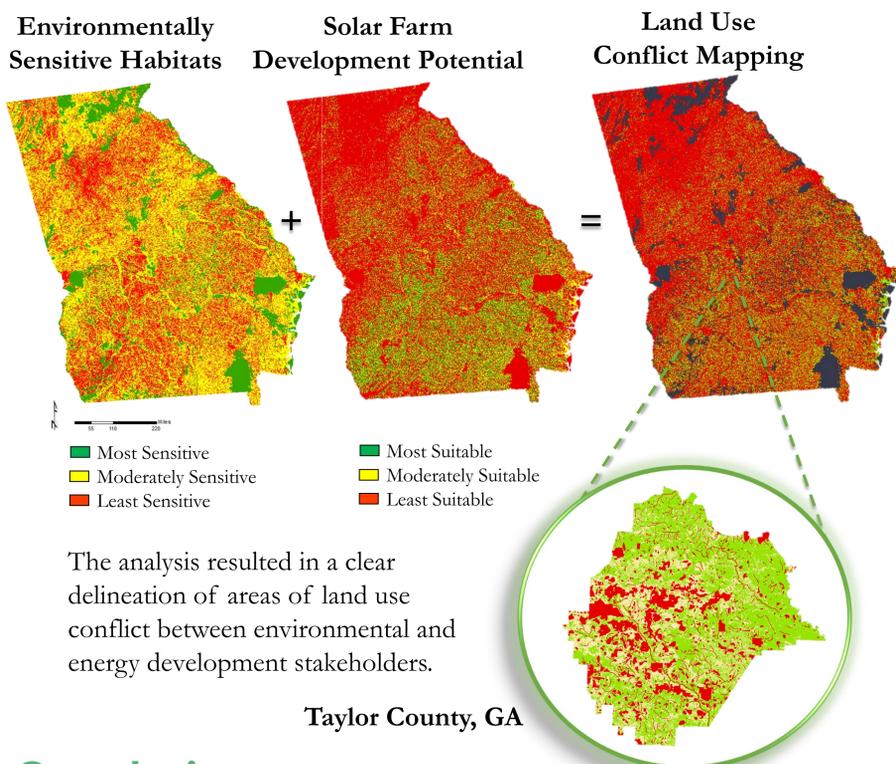
## Methodology



## Earth Observations

Platform	Instrument	
Terra (1999)	Clouds and the Earth's Radiant Energy System (CERES)	
Aqua (2002)	Clouds and the Earth's Radiant Energy System (CERES)	
Landsat 8 (2013)	Operational Land Imager & Thermal Infrared Sensor (OLI & TIRS)	

## Results



## Conclusions

- ▶ The rapid growth of the solar industry in Georgia has created concerns about potential environmental impacts and the placement of solar farms.
- ▶ There are several vulnerable wildlife areas and endangered species threatened by continued solar farm development.
- ▶ This project created a series of maps that identify the most suitable locations for solar farm implementation while minimizing effects on sensitive wildlife habitats.
- ▶ These results can assist solar farm developers to accommodate the concerns of environmental agencies and local communities.

## Project Partners

- ▶ The Nature Conservancy
- ▶ The Georgia Department of Natural Resources

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