CENSUS OPEN INNOVATION LABS

THE OPPORTUNITY PROJECT

2022 PROBLEM STATEMENT

Advancing Island Communities' Energy Infrastructure

National Renewable Energy Laboratory (NREL) and Puerto Rico Negociado de Energía

THE CHALLENGE – Help American island communities such as Puerto Rico transition to a resilient grid powered 100% by renewable energy, by creating digital tools that use federal open data to assist city planners, developers of energy solutions, and local leaders to achieve their communities' renewable energy goals.

EXECUTIVE CHAMPIONS –
Garrett Nilsen, Acting Director, Solar Energy Technologies Office, U.S. Department of Energy
Edison Avilés-Deliz, Chairman, Negociado de Energía

THE PROBLEM – Climate change poses an increasing threat to the resiliency and efficiency of our nation's electric grids. Nowhere is this more prominent than our island communities, where rising global temperatures and changing weather patterns are challenging grid operators to rethink infrastructure and make new investments in resiliency. Island communities are facing increased wildfire risk. Rising sea water and warming water temperatures are reducing the efficiency of water-cooled energy generation facilities, forcing them to curtail generation, or, in some cases, even shut down due to water temperature issues. Extreme temperatures and severe storms are testing the limits of energy generation and delivery operations. Complicating matters further, a lack of data-driven tools makes it difficult for decision makers to prioritize investments, accurately assess risk and opportunities, or evaluate the costs and benefits of emerging technologies.

THE OPPORTUNITY – Looking to rebuild from the devastation of Hurricane Maria with an efficient and resilient electrical grid, Puerto Rico has committed to meeting its electricity needs with 100% renewable energy by 2050. The design of this renewable grid must balance clean generation sources with meeting the community's energy needs. The U.S. Department of Energy's Open Energy Data Initiative (OEDI), in partnership with leading cloud services providers, has made over *1 petabyte* of high-resolution resource data, profile data, and community data accessible from the cloud. This newly released data presents an opportunity for local planners, energy and land developers, and community leaders to identify priority areas for resiliency improvements through improved risk assessment tools, community needs forecasting, or tools for developing grid improvement plans that consider a more holistic approach (e.g. cross-referencing renewable energy generation potential with areas focused on strategic community development).

VISION FOR SPRINT OUTCOMES – Island communities have better access to data-driven tools and information to quickly and easily identify priority areas for resiliency investments, better assess risk and reward, anticipate future needs, and make informed investments that help Puerto Rican and other island communities achieve their renewable energy goals while supporting local communities.

TARGET END USERS – City planners, developers, community leaders, and engaged citizens.

RELATED DATA SETS – Relevant data sets on DOE's Open Energy Data Initiative (OEDI) public data include:

- Any of the data from the Open Energy Data Initiative (OEDI) Data Lakes.
- NREL's National Solar Radiation Database (NSRDB)
- Wind Integration National Dataset (WIND) Toolkit
- PV Rooftop Database for Puerto Rico (PVRDB-PR)
- Puerto Rico and Virgin Islands High Resolution Wind Resource
- US Offshore Wind Resource data for 2000-2019
- High Resolution Ocean Surface Wave Hindcast (US Wave) Data
- End-Use Load Profiles for the U.S. Building Stock
- LEAD Tool's Annual Median Income (AMI), Federal Poverty Level (FPL), and State Medium Income (SMI) data for Puerto Rico
- Additional NREL Puerto Rico Datasets on OEDI *(Coming soon)*
- Puerto Rico infrastructure data
- Puerto Rico census data
- NOAA Weather and Climate Data
- FEMA Flood zone data
- USGS Fire risk assessment data
- National Weather Service fire weather data
- Previous TOP Puerto Rico products, such as PRADOS