



Public Safety Complex in Manatee County [Credit: Manatee County]

Manatee County Clear Sky Assessment Process

Prioritizing Solar + Storage for Resilient Facilities & Communities

October 2021

Project Summary

The Clear Sky Tampa Bay project was a 15-month collaborative research effort to support solar + storage deployment for community resilience in Florida. The Clear Sky Decision Support Toolkit is a collection of resources designed to support users in conducting solar + storage prioritization and feasibility screening assessments at critical facilities. The Tampa Bay Regional Planning Council worked with four local governments in the region to test and apply the Toolkit. This case study series describes how each partner government used the Toolkit and highlights key insights and lessons learned that other users can follow to replicate the process. To download the Toolkit visit www.tbrpc.org/clearsky.

Background

Manatee County applied the Clear Sky Decision Support Toolkit to two of the county's critical facilities: Nolan Middle School, which serves as a special needs emergency shelter, and its Public Safety Complex (PSC), which houses critical services including emergency management, communications, and medical services, traffic control, and more. The PSC serves as the Emergency Operations Center during activation events. The Clear Sky assessment process improved interagency communication and coordination and informed siting decisions for a potential solar + storage system for the Manatee County PSC.

Geographic Context

Manatee County spans 893 square miles with a population of approximately 420,000 residents. Manatee County Government is comprised of nearly 1,900 employees and owns 286 operational facilities. The County faces hazards including tropical cyclone winds and storm surge, tidal influences, and tornadoes.



About the Clear Sky Decision Support Toolkit:

The Toolkit includes a guide and Microsoft Excel-based Decision Support Template organized across five modules to help users assess solar and storage at critical facilities.

Quick Screening Module:

Narrow the scope of analysis from multiple facilities to no more than three. Helps users more quickly eliminate facilities that have limited need for a resilient energy solution or do not meet basic solar siting criteria from further data collection efforts.

Prioritization Module:

Determine the highest priority facility for analysis. Provides a structure for assessing the relative criticality of community functions performed by three facilities based on the facilities' role in supporting FEMA Community Lifelines and other aspects of community resilience.

PV Siting Module:

Helps users evaluate whether the site meets essential installation requirements for PV technology and whether essential power needs could be met by the installation of the PV system.

Critical Load Module:

Establishes criteria for understanding which entities rate the facility as critical and considers the facility's critical functions and associated power requirements.

Utility Engagement Module:

Helps users engage with local utility providers to identify sites for priority restoration and consider surrounding electricity infrastructure and its relationship to the facility in making solar and storage decisions.

Energy and Resilience in Manatee County, Florida

Manatee County strives to meet energy efficiency goals, which include expanding the County's use of solar energy where feasible. In 2017, Manatee County became the first county in Florida to achieve the Florida Green Building Coalition's "Platinum" certification for environmental stewardship.

As of 2021, the County has two facilities equipped with solar arrays and 35 permanent generators installed across 28 County campuses. The facilities equipped with generators are considered "critical" for the County's continuity of operations following a power disruption.

Existing facility assessments include regular water and energy conservation audits. Prior to using the Clear Sky Decision Support Toolkit, solar + storage projects were prioritized based on funding availability and public optics. Solar siting decisions did not necessarily include resilience factors; staff focused on the availability of roof space and potential return on investment.

Clear Sky Toolkit Stakeholders

The Clear Sky Toolkit is designed to facilitate dialogue, data collection, and decision-making across multiple stakeholder entities.

- **Toolkit Leads:** Energy and Sustainability Division Manager (Eric Caplan), GIS Analyst (Lea Harper)
- **Additional Stakeholders:** Energy and sustainability staff, Emergency Management Chief, Public Safety Department, Manatee County Schools, and Florida Power & Light.

Facility Prioritization

Energy and sustainability staff at Manatee County began the Clear Sky assessment process by requesting a critical infrastructure list from the County's electric utility, Florida Power & Light (FPL). With help from the county's Emergency Management Chief, staff categorized and reduced the scope of analysis from an initial 10 sites to five based on the resilience needs and post-disaster restoration timeframes at each facility.

Sustainability staff then worked with the Public Safety Department to understand how two of the facilities (Nolan Middle School and the PSC) serve the public during an emergency event. Based on the results of the Prioritization Module analysis, staff proceeded initially with the PSC for further analysis using the Clear Sky Toolkit, though plan to also run the analysis on Nolan Middle School at a later date.

Community Resilience Factors

The Prioritization Module directed staff to select the FEMA Community Lifelines associated with the PSC (Figure 1). The PSC plays a significant role in community resilience and public safety, supporting the following Community Lifelines: Health and Medical; Food, Water and Shelter; Safety and Security; Transportation; and Communications.

The PSC serves the entire population of Manatee County residents and visitors. It operates on a 24/7 basis, 365 days a year, and it cannot have any disruptions in power. The PSC currently has two 1,000 kilowatts (kW) backup diesel generators installed on-site to ensure uninterrupted power.

Utility Engagement

Staff established direct contact with its electric utility provider, FPL, to identify the initial list of critical facilities. Later, staff re-engaged FPL to answer questions related to feeder limits, interconnection agreements, and distribution.

Sustainability staff found that some of the most valuable information gained from this module was learning about the available utility infrastructure to support solar + storage interconnection in that location and gaining a clearer understanding of the power interruption trends for this facility. This has enabled County staff to engage in more productive conversations about the future of solar + storage applications and have a more holistic approach regarding backup power generation at critical facilities.



Figure 1. The FEMA Lifelines associated with Manatee County's Public Safety Complex.

Identifying Critical Loads

Sustainability staff collected information regarding back-up generation power, building profile, occupancy, and energy consumption from PSC staff. By quantifying and analyzing the PSC's critical functions and associated energy loads, stakeholders determined that 50% of the facility's energy load is critical and would need to continue operating during an emergency.

Staff were particularly intrigued by the variation in energy consumption depending on the time of year, which was elevated during the summer months of hurricane season. This is most likely due to a couple key factors: increased temperatures during the summer season requires more energy consumption for keeping facilities cool, and summer is also when emergency operations activations are most likely to occur.

Based on results from the Critical Loads module and subsequent financial analysis (using the National Renewable Energy Laboratory's REopt Lite tool) sustainability staff concluded that an optimal solar and storage configuration at the PSC would augment, rather than replace, two existing diesel generators at the site.

Lessons Learned

Manatee County staff discovered the variety of impacts that should be addressed when siting and selecting a facility for a solar + storage project. County staff gained a more holistic understanding of solar and storage siting considerations beyond simple financial analyses, including potential resilience benefits tied to FEMA Community Lifeline and community resilience impacts, building electricity loads, and utility agreements.

The Clear Sky Decision Support Template helped staff break down disciplinary silos that had historically impeded interdepartmental communication. The process facilitated public-private collaboration and gave stakeholders a better understanding of solar + storage in the context of resilience. The assessment process encouraged Manatee County staff to reach out to different entities for data, as well as evaluate data themselves that they may not have otherwise. The data collection process outlined in the Clear Sky Toolkit enabled them to gain deeper insights about the County facilities in a more organized way.

Next Steps

Manatee County staff will continue to assess the Nolan Middle School facility, which ranked second in the Prioritization Module, and is currently working with the Manatee County School Board to implement a solar + storage project. This would greatly benefit Manatee County's vulnerable population as this facility is the only special needs emergency shelter in the county.

Tips for Toolkit Users

Additional Tips for Success:

1. Be mindful that various stakeholders may express similar priorities using different terms.
2. Remember that the Clear Sky Toolkit is a research tool which prompts users to seek out information necessary to support decision making. It is not intended to yield definitive answers and should not substitute detailed feasibility and engineering studies.
3. Toolkit users should talk with public safety representatives about the assessment and objectives prior to making data requests to mitigate data collection challenges.



Clear Sky Tampa Bay

A Regional Framework for Enhancing Resilience through Solar + Storage



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Manatee County, Florida

Eric Caplan – Energy and Sustainability Division Manager
Lea Harper – Building & Energy Technologies Section Manager