Clear Sky Tampa Bay: Tampa Bay Regional Policy Landscape Analysis (Florida Energy Resilience Policy Landscape)

Wilson Rickerson, Jonathon Monken, and Rees Sweeney-Taylor

Converge Strategies

NREL Technical Monitor: Sara Farrar

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Clear Sky Tampa Bay

Tampa Bay Regional Policy Landscape Analysis

October 2021

About the Clear Sky Tampa Bay Project

The Clear Sky Tampa Bay (CSTB) project—convened by the Tampa Bay Regional Planning Council (TBRPC) and composed of county and city partners, private and public sector stakeholders, solar energy experts, and academic partners—is creating a regional technical and economic framework for integrating disaster risk reduction and other resilience factors into solar + storage siting and cost-benefit analyses. The CSTB project was one of just eight nationally selected to participate in this round of the Solar Energy Innovation Network (SEIN), a collaborative research effort to develop novel applications of solar energy led by the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) with funding from the U.S. Department of Energy's Solar Energy Technologies Office.

About This Slide Deck

- This deck focuses on policies and programs that may enable, constrain, or inform the deployment of solar and storage for resilience in the Tampa Bay Region.
- This deck also reviews current planning approaches within the Tampa Bay Region to ensure that resources developed under the CSTB project are consistent with established practice and relevant to regional practitioners.

★ **Speaker notes will follow each presentation slide, providing important context about the given information. Speaker notes highlighted in lilac indicate policy findings that have influenced or impacted the Clear Sky Decision Support Toolkit development. For more information on and to download the Toolkit, visit https://www.tbrpc.org/clearsky/.**

Overview

CLEAR SKY TAMPA BAY

01 Regional Emergency Management Policy and Planning

02 State and Regional Solar Energy Markets and Policy

Speaker Notes: Overview

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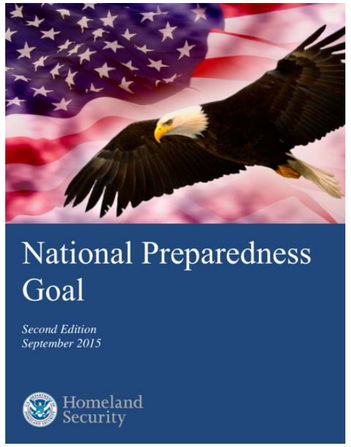
- Section 1 reviews the emergency planning and disaster preparedness plans and policies within the Tampa Bay Region to identify a) how power outages are integrated into planning, b) the process by which investments in critical facility resilience is prioritized by Tampa Bay counties, c) the extent to which emergency power has been identified as a need in county emergency management plans. A key takeaway from this section is that most of the counties prioritize backup power investments, but the proposed projects rely entirely on diesel or natural gas generators. Solar + storage is not yet incorporated into local power outage mitigation strategies. This section also reviews federal and state policies, codes, and standards that require backup power within the Tampa Bay Region. To date, these mandates have also resulted exclusively in fossil-fuel backup power systems.
- Section 2 reviews state and local policies and programs that are shaping the solar and storage market in the Tampa Bay Region. A key take away from this section is that Florida is one of the leading solar energy markets in the country, but market growth to date has been driven by large-scale, utility-owned generation. Statewide net metering policy has supported small-scale solar energy market growth, and there have been campaigns to aggregate residential demand for PV within the Tampa Bay Region. To date, there has not yet been significant deployment of solar + storage for resilience at either the utility-scale or the residential/small commercial markets. There have been limited solar + storage resilience pilots with the Tampa Bay Region, such as the school shelter program, but these were demonstration programs and have not been scaled.
- Overall, explicit policy drivers to encourage resilient solar + storage are not in place, either on the emergency management or the solar energy side. However, there are favorable statewide solar energy policies such as net metering, a history of significant solar + storage investments by utilities in the Tampa Bay Region, and a clear and unmet need for backup power articulated in county emergency management strategies. There is an opportunity for the Tampa Bay Region to focus and unify these trends in service of regional resilience through the CSTB project.

The Five Mission Areas of National Preparedness



PPD-8: National Preparedness

National Preparedness Goal

Event

Prevention | **Protection** | **Mitigation** | **Response** | **Recovery**

5 Mission Areas

Prevent, or stop a threatened or actual act of imminent terrorism.

Secure the homeland against acts of terrorism and manmade or natural disasters.

Reduce loss of life and property by lessening the impact of disasters.

Save lives, protect property and the environment, and meet basic human needs after an incident has occurred.

Assist communities affected by an incident to recover effectively

Speaker Notes: The Five Mission Areas of National Preparedness

- One of the key innovations of the CSTB effort is that it seeks to align solar + storage with emergency preparedness and disaster resilience priorities.
- Emergency preparedness consists of a spectrum of strategies both before and after disaster events.
- The National Preparedness Goal lays out the five missions areas of national preparedness that form the basis for federal, state, and local preparedness activities.
- As you can see in the slide, prevention, protection, and mitigation mission areas are focused on capabilities before an event occurs, whereas the response and recovery mission areas focus after the event occurs.
- As discussed in the next slides, the Tampa Bay Region has a long history of collaborating across these mission areas, and Tampa Bay counties have put in place a broad range of plans and policies that guide and govern regional and local preparedness.

Tradition of Regional Collaboration on Disaster on Resilience and Disaster Preparedness

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2009

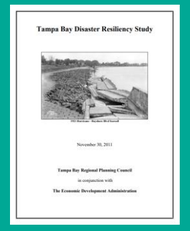
Project Phoenix

Tampa Catastrophic Plan: Category 5 Hurricane Scenario

2011

Disaster Resiliency Study

Economic study on the impacts of a natural disaster



2017

The Cost of Doing Nothing

Economic study on the impacts of sea-level rise

2018

Regional Resiliency Coalition

Government coalition to develop regional goals and strategies

The Leadership SUMMIT
TAMPA BAY REGIONAL RESILIENCY COALITION

2020

Project Phoenix 2.0: The Recovery

Training exercise examining emergency management capabilities

PROJECT PHOENIX 2.0

Speaker Notes: Tradition of Regional Collaboration on Disaster on Resilience and Disaster Preparedness

CLEAR SKY TAMPA BAY

- The CSTB project builds on - and benefits from - many years of focused and structured collaboration within the region around resilience to topics such as extreme weather, natural disasters, and climate change.
- The efforts highlighted in this slide are examples of initiatives supported by the TBRPC that have convened regional stakeholders to focus jointly on preparedness and resilience challenges.
- The next slide covers some specific insights from these efforts that we are integrating into the CSTB project.

Key Insights: Solar + Storage for Regional Resilience

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Long track record of regional collaboration on preparedness and resilience

Strong foundation of regional emergency preparedness and planning

Power outages are identified as a substantial risk, but backup power has not been a significant focus of regional collaboration to date

Although the Florida solar energy market is large (Slide 46), clean energy for resilience has not been a significant focus of regional preparedness

Speaker Notes: Key Insights: Solar + Storage for Regional Resilience

CLEAR SKY TAMPA BAY

Key Insights:

- **Long track record of regional collaboration**. TBRPC and its members have actively and collaboratively focused on catastrophic disaster planning for more than a decade. This has included scenario and exercise development, economic development studies, and regional coalitions and convening.
- **Strong regional emergency preparedness foundation**. These efforts draw on a robust body of emergency management doctrine and planning documents that underpin local regional preparedness for, and recovery from, catastrophic events. Project Phoenix identifies more than 20 types of local plans and procedures (p. 14).
- **Power outages are identified as a substantial risk**. Project Phoenix contemplates a scenario in which power outages last for weeks to months. Distributed energy resilience has not been a central focus.
- **Backup power is not a significant focus in these documents**. When distributed generators are mentioned, the focus is primarily on their limitations related to fuel supplies during long-duration power outages (e.g. sites "will have power for several days as long as they are not flooded") or health hazards (e.g. "Improper use of portable generators has led to excess morbidity and mortality following hurricanes").
- **Despite Florida's leading role in solar power nationally (see Slide 46), clean energy for resilience has historically not been a significant focus of regional preparedness collaboration**. Clean energy has not been featured in these efforts, although Day 2 of the 2020 Tampa Bay Regional Resiliency Coalition Leadership Summit featured a panel on Clean Energy Strategies for Resilient Sustainable Communities, the TBRPC Clean Energy Workgroup has "innovative energy resilience projects" as part of its focus, and the Tampa Bay Regional Resiliency Coalition is an official partner of 2020 and 2019 Solar United Neighbors campaigns in Hillsborough.

Where does energy resilience fit within local plans?

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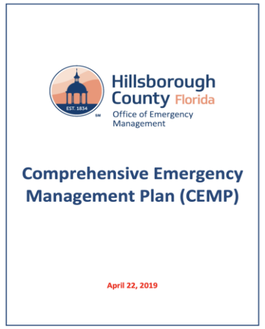
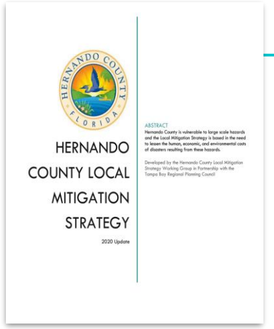


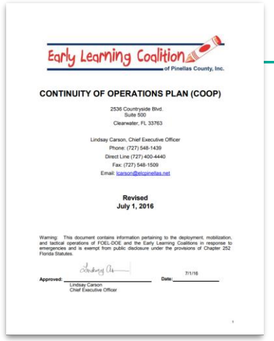
CEMP

Comprehensive Emergency Management Plan

Describes strategies, policies, operational goals, and roles for emergencies from prevention through recovery. *Required for all Florida counties.*

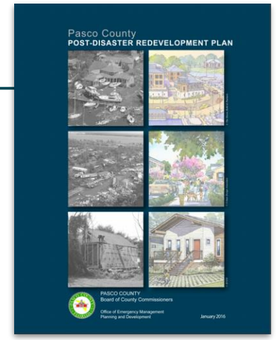


Analyzes hazards and identifies prioritized mitigation projects. ***Update required every 5 years to access FEMA hazard mitigation assistance funds.***



Defines how to to continue or resume operations after crisis or loss of resource. ***Required for critical local government agencies.***

Identifies policies, operational strategies, and roles and responsibilities for recovery and redevelopment after a disaster. ***Required for Florida coastal communities.***



Speaker Notes: Where does energy resilience fit within local plans?

CLEAR SKY TAMPA BAY

- Many research studies across the country have observed the potential role that solar energy could play in energy resilience, emergency management, and disaster response. However, there have not yet been studies that view the potential for solar through the lens of actual local emergency management plans and doctrine.
- A key question for the CSTB project is how current emergency management planning and practice is structured, and how energy fits into these frameworks.
- As discussed in this slide, there are a large number of relevant plans, procedures, and guidance documents in place to support emergency management in the Tampa Bay Region.
- The four documents highlighted in the Disaster Resiliency study are the CEMPs, COOPs, PDRPs, and LMS.
- This slide defines generally what each of the plans focuses on and details the laws or programs that require them.
- Of these, the Local Mitigation Strategy documents are the most directly relevant since they articulate investment priorities of each county to mitigate the potential impacts of a range of hazards before the events occur.
- Although solar + storage can play a role in disaster recovery (e.g. mobile PV generators deployed after storms), the primary focus of the CSTB project is on deploying solar + storage to mitigate the impacts of disasters and keep critical functions running even if the grid goes down.

Local Mitigation Strategies: Lessons for the Clear Sky Decision Support Toolkit

CLEAR SKY TAMPA BAY

LMS

Local Mitigation Strategy

1

PROJECT PRIORITIZATION

Each county LMS establishes criteria for evaluating and prioritizing mitigation projects for investment

2

CRITICAL FACILITIES

LMS documents lists the types of facilities considered critical. Some counties also rank facility criticality.

3

GENERATORS

Mitigation projects prioritized by the counties include generators for backup power at critical facilities

Speaker Notes: Local Mitigation Strategies: Lessons for the Clear Sky Decision Support Toolkit

CLEAR SKY TAMPA BAY

- Counties are required to have LMS plans and update them every five years in order to access FEMA hazard mitigation assistance funds.
- The plans contain volumes of valuable information and can span several hundred pages.
- The CSTB team reviewed both the 2015 and 2019/2020 updates for each county (when available) and focused on three particular areas:
  1. P*roject Prioritization*: Each county creates a list of potential hazard mitigation projects that could support critical operations during emergencies. This list is updated over time as projects are successfully funded (or as priorities change). The CSTB team reviewed and compared the prioritization methods of each county (see next slide) to directly inform the design of scoring and prioritization functions integrated into the CSTB Toolkit.
  2. *Critical Facilities*: Each of the counties identifies critical facility types. The CSTB team reviewed and compared the definitions used by each county in order to provide guidance to Toolkit users on the specific context related to critical facilities within the Tampa Bay Region.
  3. *Generators*: It is assumed that critical facilities that need backup power would be a natural location to target the deployment of resilient solar+storage systems. The LMSs list priority projects for investment based on project type and whether a funding strategy for them has been identified. The CSTB team pulled data from the LMS documents on backup power projects identified as priorities but lacking a funding strategy (see Slide 28).

LMS Project Prioritization Criteria, by County by Year

CLEAR SKY TAMPA BAY

County	Year	General	Social - Population Served	Social - Jurisdictions Served	Social - Health & Safety	Social - Partnership	General	Technical - Geographic Extent	Technical - Community Exposure / Vulnerability	Technical - Critical Facilities	Technical - Essential Services	Technical - Repetitive Damage Corrected	Technical - Effective Project Useful Life	Technical - Timeframe	Administrative	Political - General	Political - Public Support	Law, Policy, and Planning - General	LPP - Consistency with Existing Emergency Management Plans	LPP - Consistency with Existing Mitigation Strategy (LMS) Goals	LPP - Consistency with Local Programs and Processes / Credits	LPP - Consistency with Structure Growth-Management Plans	Economic - Benefit Cost Analysis	Economic - Economic Effect or Loss	Economic - Funding / Financing Available	Environment
Citrus County	2015	●					●						●		●	●	●	●					●	●		●
Hernando	2015	●					●						●		●	●	●	●					●	●		●
Hillsborough	2015								●		●		●						●	●		●	●		●	
Pinellas	2015	●	●	●	●						●	●				●		●	●	●			●	●	●	●
Manatee	2019	●	●	●	●	●			●			●	●	●			●		●		●	●	●		●	●
Pasco	2019		●						●				●			●			●	●	●		●		●	●
Citrus County	2020						●	●		●	●	●											●	●	●	
Hernando	2020									●		●								●			●		●	

Speaker Notes: LMS Project Prioritization Criteria, by County by Year

- The table in this slide compares the categories used by the different counties to evaluate mitigation strategies in 2015 and 2019/2020 LMS documents.
- The categories are organized roughly from left to right to correspond to social, technical, administrative, political, legal, economic, and environmental considerations.
- Specific insights related to this comparison are contained in the next slide - the key takeaway from this slide is that the counties each use different scoring and prioritization approaches, and these approaches have evolved over time.

Key Insights: Mitigation Prioritization within LMS

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Mitigation Prioritization has moved from STAPLEE (e.g. Citrus and Hernando 2015 Plans) to closer alignment "with…goals [such as] mitigating repetitive losses and hardening critical facilities."

Counties use multiple criteria to evaluate mitigation priorities, and each county uses different categories and scoring methodologies.

Every county includes benefit-cost analysis as a prioritization criterion, but counties define benefit-cost differently, e.g., Citrus uses benefit-cost ratio while Hernando uses population served compared to cost.

The use of multiple criteria and indexed scoring are a useful benchmark for the Clear Sky Siting Framework.

Speaker Notes: Key Insights: Mitigation Prioritization within LMS

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- The mitigation prioritization process has evolved over time. Five years ago, for example, Citrus and Hernando counties based their prioritization on the STAPLEE method. STAPLEE is an acronym that refers to each of the categories that should be used for project prioritization, namely Social, Technical, Administration, Political, Legal, Economic, and Environmental. This method was recommended by FEMA in mitigation planning guidance from 2003.
- More recently, the counties have moved away from STAPLEE to evaluation categories that focus more deeply and/or more broadly on specific issues and that introduce more specific and nuanced scoring criteria. For example Citrus and Hernando counties now both include a specific evaluation category focused on critical facilities.
- Counties have also moved away from STAPLEE categories. Again staying with the Citrus and Hernando county examples, both counties included environmental impact in the 2015 criteria under STAPLEE but neither include environmental criteria in their latest plans.
- A key takeaway of this analysis for the Clear Sky Toolkit is that there is not a unified or common prioritization method across the counties that can serve as a model for the Toolkit. The methods, however, do share common features that can inform the Toolkit: flexible scoring systems with multiple categories that inform investment prioritization and that require stakeholders to use their judgement.
- A related finding from the CSTB research is that there currently is no widely accepted prioritization methodology specifically to distinguish between critical facilities in general, or to distinguish between where energy resilience investments should be targeted. Building these features into the Toolkit will represent an innovation within the emergency management field.

What's critical? Start with FEMA Community Lifelines.

CLEAR SKY TAMPA BAY

FEMA

A lifeline enables the continuous operation of **critical government** and **business functions** and is essential to **human health and safety** or **economic security.**

[https://www.fema.gov/emergency-managers/practitioners/lifelines]

Speaker Notes: What's critical? Start with FEMA Community Lifelines.

- As a first step to prioritizing critical facilities, it is important to understand what makes a facility critical in the first place.
- There is no nationally accepted definition of critical facilities, and the designation of criticality is left up to the individual states and municipalities.
- As a result, there is a wide diversity in approaches to critical facility definitions.
- In 2019, the Department of Homeland Security (DHS) introduced the concept of community lifelines in the National Response Framework (Fourth Edition). The community lifelines provide a framework that helps unify community focus on criticality by identifying the specific functions that are essential to human health and safety, rather than focusing on a specific facility type.
- The CSTB project uses the Federal Emergency Management Agency's (FEMA's) Community Lifelines to help establish a common language across the counties related to criticality. The Community Lifelines are also used as part of the Clear Sky Decision Support Template.

Critical Facilities Categories in LMS, by Lifeline and County*

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County	Year	Safety and Security	Food, Water, Shelter	Health and Medical	Energy (Power & Fuel)	Communications	Transportation	Hazardous Materials	TOTAL
Citrus	2020	3	3	2	4	0	1	0	**13**
Hernando	2020	3	3	2	3	1	1	0	**13**
Hillsborough	2015	17	15	7	3	3	2	0	**47**
Manatee	2019	8	5	4	2	3	1	2	**25**
Pinellas	2015	20	8	14	5	9	6	1	**63**
Total	N/A	51	34	29	17	16	11	3	**161**

* The Pasco County LMS does not include critical facility categories

Speaker Notes: Critical Facilities Categories in LMS, by Lifeline and County*

CLEAR SKY TAMPA BAY

- The CSTB team reviewed the county LMS documents in order to identify how critical facilities are identified by each county.
- The CSTB team then mapped the facility types to the FEMA Community Lifelines in order to see where there were areas of common focus. It was also useful to see where there were areas of lesser focus or gaps in terms of how the county critical facilities corresponded to the community lifeline categories.
- As can be seen in the chart, there is a wide range of practice across the counties. The next slides summarize additional insights from this analysis.
- For Hillsborough and Pinellas counties, the 2015 definitions were used since the more recent LMS updates did not include updated critical facility definitions.

Hillsborough County Criticality by Outage Duration

CLEAR SKY TAMPA BAY

Priority	Planned Restoration Time	Safety and Security	Food, Water, Shelter	Health and Medical	Energy (Power & Fuel)	Communications	Transportation	Hazardous Materials	TOTAL
CFI 1	Uninterrupted	7	5	2	1	2	0	0	17
CFI 2	<24 hours	5	2	2	1	0	2	0	12
CFI 3	<48 hours	3	4	2	0	0	0	0	9
CFI 4	<72 hours	1	1	0	1	1	0	0	4
CFI 5	>72 hours	1	3	1	0	0	0	0	5
Total	N/A	17	15	7	3	3	2	0	47

Speaker Notes: Hillsborough County Criticality by Outage Duration

CLEAR SKY TAMPA BAY

- In addition to the fact that the counties use different critical facility definitions, the LMS documents generally do not distinguish between the relative criticality of facility types.
- The Hillsborough County LMS from 2015, however, is an exception. Hillsborough grouped critical facilities according to a Critical Facility Index (CFI), that distinguished between facilities based on their maximum acceptable amount of down time. Facilities that are CFI 5, for example, can be down for more than 72 hours, whereas CFI 1 facilities' operations cannot be interrupted.
- This CFI tiering is a useful benchmark for the CSTB siting framework since criticality is tiered in a way that is directly relevant to power outages and energy resilience.

Key Insights: Critical Facilities

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Each county defines critical facilities differently and uses different numbers of critical facility categories ranging from 13 (Citrus and Hernando) to over 60 (Pinellas).

Critical facility types can be mapped to FEMA Community Lifelines, although some lifelines (e.g Transportation and Hazardous Materials) have few associated facilities.

Tampa Bay Region counties generally do not distinguish between the relative criticality of facility types in LMS documents.

The Hillsborough County Critical Facility Index defines facilities in tiers according to their maximum acceptable downtime after an outage, which is a useful benchmark for the Clear Sky Toolkit.

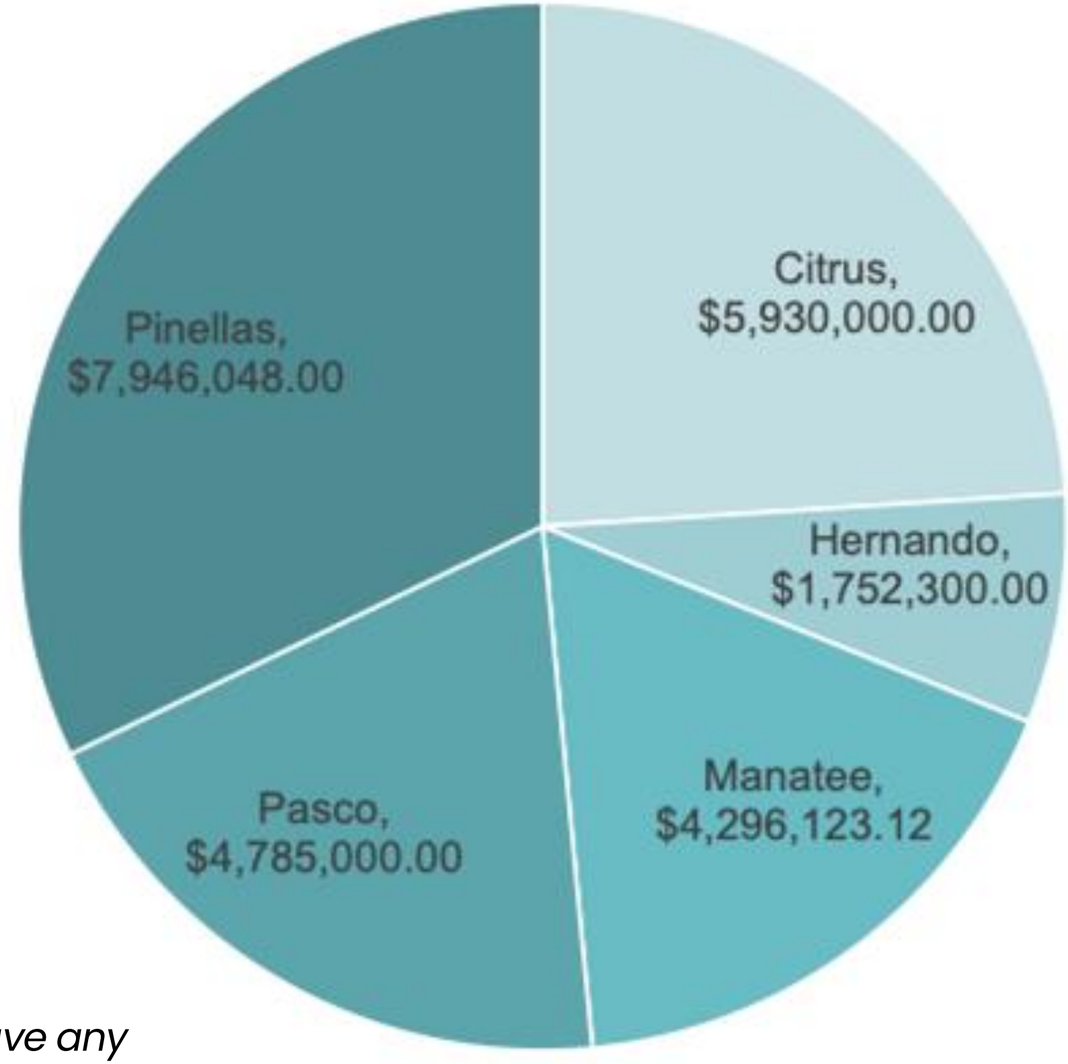
Speaker Notes: Key Insights: Critical Facilities

CLEAR SKY TAMPA BAY

- This slide summarizes the key insights described in the previous three slides.
- Each of the counties defines criticality differently, both in terms of the type and number of facilities identified. Although the county definitions of critical facilities are a useful starting point for the CSTB project, there is an opportunity to provide guidance on prioritizing energy resilience and solar+storage for critical facilities in the Tampa Bay Region.
- Community Lifelines are one way to ground a discussion of critical facilities in terminology that is common across the counties and is also the emerging standard at the federal level for defining critical functions - and for targeting federal grant funds. A quick mapping of community lifelines to critical facility definitions across the counties reveals some areas of common focus (e.g. health care) and some areas of common gaps (e.g. hazardous materials).
- Although most of the counties do not prioritize between critical facilities, the Hillsborough County approach from the 2015 LMS provides a useful starting point since it differentiates between facility types based on the maximum acceptable downtime. The CSTB team plans to integrate a version of the Hillsborough CFI into the Toolkit.

Tampa Bay Region* LMS Documents Identify Large Pipeline of Unfunded Emergency Generators for Public Facilities

CLEAR SKY TAMPA BAY



**Hillsborough County does not have any generator projects in its LMS list*

Speaker Notes: Tampa Bay Region* LMS Documents Identify Large Pipeline of Unfunded Emergency Generators for Public Facilities

CLEAR SKY TAMPA BAY

- By identifying the prioritized but unfunded generators, the CSTB team puts a spotlight on: a) critical facilities that require backup power (which could be used as part of the prioritization module in the Toolkit), b) pre-identified candidate sites where solar + storage could be deployed to augment or replace diesel generators, and c) sites where additional sources of public sector funding (i.e. from solar PV incentives and programs) could help overcome shortfalls in traditional backup power funding. Finally, pre-identifying a large pipeline of potential emergency backup power projects that are owned by a creditworthy counterparty (i.e. local government) but that lack financing could attract interest from private sector capital providers (e.g. utilities) that might not otherwise be interested in small-scale, one-off projects.
- Converge Strategies LLC (CSL) reviewed the 2019/2020 LMS documents for each of the counties and pulled data from the lists of mitigation projects that the counties had identified through their prioritization process. The mitigation priority lists contain a broad range of project types, including infrastructure hardening, flood control, and stormwater management improvements. CSL specifically analyzed mitigation projects that a) involved the installation of backup generators at critical facilities and b) had not yet identified a funding or financing strategy. These projects could form the basis of a pipeline of resilient solar+storage systems.
- CSL also reviewed the State of Florida 2010 Shelter Retrofit Report. Under Florida statute, the Florida Division of Emergency Management receives $3 million each year to retrofit schools to create shelters in compliance with the Public Shelter Design Criteria provisions of the Florida Building Code; also known as Enhanced Hurricane Protection Area provisions. Florida also pursues FEMA Hazard Mitigation Grant Program funds to retrofit schools. Citrus, Hernando, Pasco, and Pinellas each have shortages in shelter space. Most priority retrofit projects focus on fenestration protection. Only Manatee County includes gensets as priority projects for shelter retrofits.

Key Insights: County Emergency Power Planning

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$24.7 million in unfunded generator projects identified in County LMS

180 generators across 5 counties

2.735 MW of generators proposed for Pinellas County alone

Generators would rely on diesel or natural gas fuel, and none of the proposed backup power systems would incorporate solar PV or storage

Speaker Notes: County Emergency Power Planning

CLEAR SKY TAMPA BAY

- This slide contains examples of the data pulled from the LMS reports related to the identified (but unfunded) diesel generators
- There are ~180 generators across 5 counties that would require $24.7 million in funding. This amount represents a sizeable pipeline of potential energy resilience projects and highlights that the LMS projects are a reasonable starting point for targeting resilient solar+storage siting efforts.
- The counties do not generally include generator sizes, with the exception of Pinellas. There are 2.735 MW of generator projects identified within Pinellas County alone.
- The identified generators would be fueled by either natural gas or diesel fuel - there is no mention of solar energy, battery storage, or other technologies that would not rely on fossil fuels. This highlights the opportunity for TBRPC to engage the county LMS Working Groups around the resilient solar + storage opportunity. More broadly, there may be opportunities for TBRPC to investigate and clarify whether and how FEMA and/or DHS programs can support resilient solar and storage programs to provide backup power. See, for example, information on generator eligibility under the FEMA Hazard Mitigation Grant Program.

Example Energy Resilience Policy Requirements in the Tampa Bay Region (as of October, 2020)

CLEAR SKY TAMPA BAY

	U.S. Air Force	Hospitals	Florida Nursing Homes	Florida Gas Stations	Electricity Dependent Medical Devices
Requirement	7 days of power for critical missions	96 Hours of Fuel Supply and Critical Loads on Dedicated Circuits	96 Hours of temperature control 48-72 hours of fuel supply	Wired to accept generators within 36 hours with 72 hours of fuel storage	HHS ASPR reports locations of electricity-dependent Medicare beneficiaries
Policy	Air Force Policy Directive 90-17	NFPA 99 Health Care Facilities Code	Rule 59A-4.1265	Florida Statute 526.143	emPOWER
Relevant Tampa Bay Region Examples	MacDill Air Force Base Energy Assurance Lease and ERCIP	Tampa General Hospital	In Tampa Bay Region, 703 of 721 providers have installed backup generators	Florida Department of Agriculture and Consumer Services (FDACS) Database*	29,413 dependent beneficiaries in Tampa Bay Region

**As of October 2020, links to the online database hosted by FDACS were not available.*

Speaker Notes: Example Energy Resilience Policy Requirements in the Tampa Bay Region (as of October, 2020)

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- In addition to the backup power priorities identified through documents such as the LMS, there are number of critical facility types that are required to install backup power to meet federal or state policies, regulations, or codes.
- Some of these policies are relatively new, and they reflect an emerging trend in energy resilience requirements for critical facilities.
- This table includes examples of critical facility types, their corresponding emergency power requirements, and examples within the Tampa Bay Region.
- The Air Force requires critical missions to be able to either operate independent from the utility grid for 7 days or be able to relocate. MacDill Air Force Base is currently pursuing funding under the military Energy Resilience and Conservation Improvement Program (ERCIP) and is also pursuing a natural gas and battery storage resilience project in partnership with TECO under an energy assurance lease. The Navy and Army also each have energy resilience requirements; across the country, military bases have installed microgrids that often incorporate renewable energy technologies.
- The National Fire Protection Association's (NFPA) Health Care Facilities code requires critical spaces within hospitals to be served by backup generators on dedicated circuits. The common standard is for hospitals to have 96 hours of backup fuel available for their generators.
- As of 2018, Florida statute requires nursing homes to install backup power to ensure 96 hours of temperature control, as can be seen in subsequent slides.
- Florida statute also requires certain gas stations to be wired and configured to accept diesel generators in the event of a disaster in order to allow stationary or mobile generators to power the fuel pumps. As of October 2020, links to this database were not accessible through the FDACS website and links to the database from other sites were broken.
- The U.S. Department of Health and Human Services Assistant Secretary for Preparedness and Response publishes the emPOWER tool, which provides zip code-level detail on medicare recipients that rely on electricity-dependent medical devices. Specific data for individuals can be securely transmitted to authorized public health authorities to the purposes of deploying response assets and resources.

Tampa Bay Region Health Care Emergency Power Plan of 2017, Implementation by County

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County	Total Providers	Providers Implemented	% Providers Implemented	Total Beds	Beds Implemented	% Beds Implemented
Citrus	32	31	97%	2,356	2,252	96%
Hernando	31	31	100%	1,960	1,960	100%
Hillsborough	296	293	99%	11,511	11,380	99%
Manatee	55	53	96%	4,198	3,968	95%
Pasco	67	63	94%	5,247	4,854	93%
Pinellas	240	232	97%	16,306	15,555	95%
Total	**721**	**703**	**98%**	**41,578**	**39,969**	**96%**

Speaker Notes: Tampa Bay Region Health Care Emergency Power Plan of 2017, Implementation by County

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- As discussed above, policy can drive energy resilience adoption by critical facilities at scale - although in this case the resilience was supplied primarily by diesel generators.
- On September 16, 2017, Governor Rick Scott directed Florida Agency for Health Care Administration Secretary Justin Senior and Florida Department of Elder Affairs Secretary Jeffrey Bragg to issue emergency rules to keep Floridians safe in healthcare facilities during emergencies. The rules were issued following incidents such as the death of residents in the Hollywood Hills facility in the aftermath of Hurricane Irma.
- Florida Administrative Code Rule 59A-4.1265 “Emergency Environmental Control for Nursing Homes” requires "the acquisition of a sufficient alternate power source such as a generator(s), maintained at the nursing home, to ensure that current licensees of nursing homes will be equipped to ensure the protection of resident health, safety, welfare, and comfort for a minimum of ninety-six (96) hours in the event of the loss of primary electrical power.”
- Rule 59A-36.025 “Emergency Environmental Control for Assisted Living Facilities” establishes a similar rule for assisted living facilities.
- Through aggressive government publicity and action and the threat of fines and revocation of operating licenses, the vast majority of providers have successfully met the requirements of the code.
- A map with compliance by county can be found at the fl-generator.com website.

Electricity-Dependent Medicare Beneficiaries, by County

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County	Total Population	Medicare Beneficiaries	% of Population	Electricity-Dependent Beneficiaries	% of Population
Citrus	149,657	56,987	38.08%	2,464	1.65%
Hernando	193,920	55,824	28.79%	2,821	1.45%
Hillsborough	1,471,968	228,108	15.50%	9,404	0.64%
Manatee	403,253	101,308	25.12%	3,363	0.83%
Pasco	553,947	124,523	22.48%	6,131	1.11%
Pinellas	974,996	231,623	23.76%	8,593	0.88%
Total	**3,747,741**	**798,373**	**21.30%**	**32,776**	**0.87%**

"Electricity-dependent" patients used a “ventilator, BiPAP, enteral feeding machine, intravenous (IV) infusion pump, suction pump, at-home dialysis machine, electric wheelchair, electric scooter, and electric bed equipment in the past 13 months”; “oxygen concentrator equipment in the past 36 months”; or “implanted cardiac devices… in the past 5 years.” Source: U.S. Department of Health and Human Services

Speaker Notes: Electricity-Dependent Medicare Beneficiaries, by County

- Though not a policy requirement to install energy resilience, the federal emPOWER program does provide an important set of metrics about energy resilience for the Tampa Bay Region.
- There are more than 32,000 medicare beneficiaries across the Tampa Bay Region that are electricity-dependent as defined in this slide.
- Although potentially beyond the scope of this project, the provision of resilient solar + storage systems to households with electricity-dependent patients could be an important effort for TBRPC and its partners in the future.

Example: Map of Electricity-Dependent Medicare Beneficiaries in Hillsborough County

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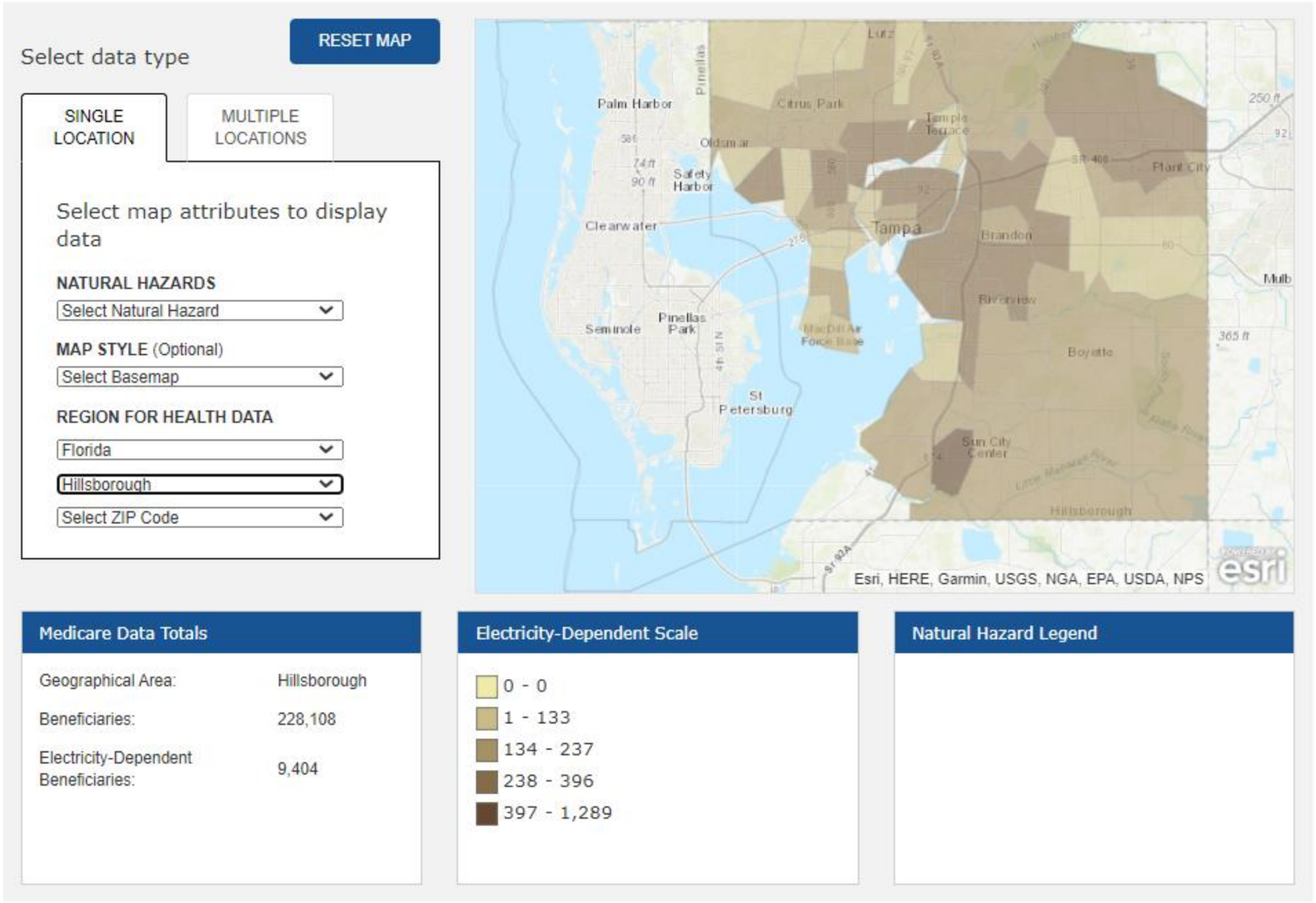

Source: https://empowermap.hhs.gov/

Speaker Notes: Example: Map of Electricity-Dependent Medicare Beneficiaries in Hillsborough County

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- This slide shows a screenshot of the emPOWER website, using Hillsborough as an example. As can be seen in the map, Hillsborough has different concentrations of electricity-dependent residents across the county.
- Hillsborough is shown here as an example. Similar maps are available for, the entire Tampa Bay Region, as well as each county and by specific zip code. As can be seen on the previous slide, Hillsborough County has the highest total number of electricity-dependent patients of the 6 counties. However, while Citrus and Hernando counties each have fewer total electricity-dependent patients, their electricity-dependent patients represent a higher percentage of the counties' overall populations.
- There may be opportunities for TBRPC to overlay its special needs shelters with electricity-dependent patient populations as an energy resilience investment targeting exercise in the future.

Key Insights: Energy Resilience Requirements

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Federal and state energy resilience policies are driving backup power installations at critical facilities in the Tampa Bay Region.

Most of these policies are relatively new and demonstrate an emerging policy trend in response to increasing extreme weather and/or national security concerns.

There may be opportunities for solar power and battery storage to support compliance with these (or similar) requirements in the future.

Energy resilience requirements are useful for prioritizing and targeting critical facility engagement efforts with the Tampa Bay region.

Speaker Notes: Key Insights: Energy Resilience Requirements

- This slide summarizes the key insights from the previous slides on energy resilience requirements in the region.
- Federal and state energy resilience requirements are driving backup power installations at critical facilities.
- Most of these policies are new in the last last 2-3 years, and they represent an emerging policy trends.
- Solar and storage currently do not play a significant role in energy resilience requirements compliance, but there are opportunities to engage regarding solar and storage with the sectors that face these requirements.
- These requirements could also be integrated as a category in the CSTB site prioritization tool.

Section 01 Summary

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- The Tampa Bay Region has a long history of collaboration around disaster preparedness and emergency management, but these efforts have not focused extensively on backup power or resilient solar power to date.
- The Tampa Bay counties each have well-established emergency management plans and processes, and it will be important to ground the CSTB toolkit in established county practice.
- Tampa Bay region Local Mitigation Strategies provide lessons about how to structure the Toolkit's approach to identifying and prioritizing critical facilities.
- The counties have identified a significant pipeline of backup power projects that represent a potential opportunity for engagement around resilient solar+storage deployment.
- Recent federal and state energy resilience policies are driving backup power installations at critical facilities in the Tampa Bay Region, and there may be opportunities for solar power to support compliance with these requirements in the future.

Overview

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01 Regional Emergency Management Policy and Planning

02 State and Regional Solar Energy Markets and Policy

CSTB Focuses Solar + Storage Potential to Mitigate Impacts of Disasters on Critical Facilities

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Prevention | Protection | Mitigation | Response | Recovery

Generation

Transmission

Distribution

Facilities

Load/ Mission

We are here

TAMPA BAY REGIONAL PLANNING COUNCIL

PARATI DEFENDERE

TECO TAMPA ELECTRIC AN EMERA COMPANY

pjm

FLORIDA SOLAR ENERGY CENTER® Creating Energy Independence

Speaker Notes: CSTB Focuses Solar + Storage Potential to Mitigate Impacts of Disasters on Critical Facilities

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- Energy resilience strategies can span many types of energy systems, from individual critical loads within buildings up to the transmission system and bulk power generators.
- Energy resilience can also focus on different preparedness mission areas, ranging from investments to improve facilities in advance of events, to efforts to help energy systems respond and recover after events.
- The graphic outline above was developed as part of the first Round of the Solar Energy Innovation Network to help stakeholder appreciate the range of conversations related to solar and storage for energy resilience, and locate their own efforts in relation to the systems they are working on and in relation to the efforts of other stakeholders.
- CSTB, for example, is focusing on installing solar and storage to mitigate the effects of power outages on critical facilities. CSTB's objectives are therefore aligned with those of MacDill Air Force Base, which is required by the Air Force to sustain critical missions for up to 7 days in the face of power outages (although it should be noted that MacDill is focusing on natural gas, battery storage, and on-base distribution system upgrades, rather than solar and storage).
- The other stakeholders on this graphic are intended as examples for discussion; their positions on the graphic do not necessarily reflect their full range of energy resilience activities.
    - For example, the Florida Solar Energy Center (FSEC) appears on this graphic as focusing on response and recovery because of its long history of developing solar PV solutions for disaster response, recovery, and relief. FSEC, however, has also been involved in solar PV disaster mitigation activities such as the SunSmart E-Shelter Program.
    - TECO likewise plays many roles across these issue areas, although for the purposes of this graphic, TECO is shown as focusing primarily at the distribution system level, with activities related to both mitigation and hardening, as well as response and recovery after an event.
- There are also many other stakeholders active in energy resilience than reflected on this "map," and it can be a useful exercise to discuss where other stakeholders might be located on this matrix.

Florida Ranks 3rd in Country for Annual Solar Capacity Additions

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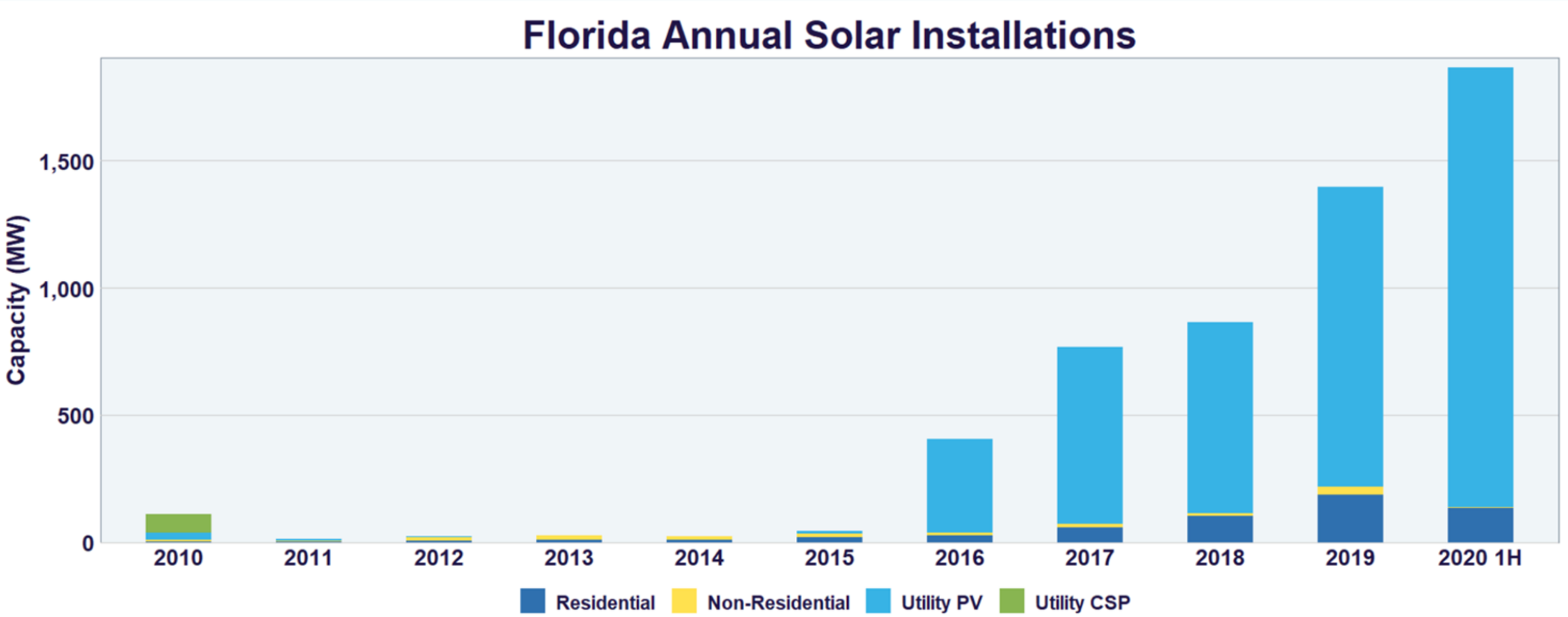

Total Solar Installed	National Ranking	Solar Jobs[1]	Growth Projection
5,577.67 MW	3rd	12,202	8,632.31 MW over the next 5 years
1,396.01 MW in 2019	Ranks 2nd in 2019	Ranks 2nd in 2019	Ranks 3rd

Source: Solar Energy Industries Association

Speaker Notes: Florida Ranks 3rd in Country for Annual Solar Capacity Additions

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- This slide shows that Florida has had dramatic recent growth in solar energy over the last several years.
- Whereas solar electricity market growth was limited during the first half of the last decade, the state has installed several thousand megawatts of PV capacity since 2016, with more than 1,500 MW in just the first half of 2020 alone.
- At this rate, Florida is on track to rank third in the country for the total amount of PV installations in 2020.
- The Solar Energy Industries Association predicts that Florida will install an additional 8.6 gigawatts of PV capacity over the next five years, which will keep it at the #3 rank for capacity installed.
- As can be seen in the graphic, however, the large majority of recently installed capacity has been utility PV - i.e. large power plants driven by utility companies rather than smaller-scale, onsite (e.g. rooftop) systems at homes, businesses, or public sector buildings.
- Put another way, Florida's current and projected PV growth is not occuring in a way that supports the CSTB objectives of providing emergency power and energy resilience for critical facilities.
- It is also important to note that the market for solar and storage for resilience remains nascent. The number of projects remains small overall and there are not comparable statistics for how many resilient solar and storage systems exist within each state and how the states rank against one another
- Aligning the state's explosive PV market growth with emergency preparedness priorities will require new partnerships, strategies, and policies.

Tampa Bay Region is Served by 6 Utilities

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Utility Type	Investor-Owned Utilities (IOUs)			Rural Electric Cooperatives		
County	Duke Energy	Florida Power & Light (FPL)	Tampa Electric (TECO)	PRECO	SECO	WREC
Citrus	X				X	X
Hernando	X					X
Hillsborough			X	X		
Manatee		X		X		
Pasco	X		X			X
Pinellas	X		X			

Source: FL Public Service Commission

Speaker Notes: Tampa Bay Region is Served by 6 Utilities

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- Given the size of the utility PV market in Florida, dialogue and partnership with utility companies will likely be critical to any successful attempt to deploy solar and storage for critical facilities in the Tampa Bay Region.
- The utility landscape in the Tampa Bay Region is complex, with parts of each county served by 2-3 different utilities.
- The graphic above shows which counties are served by which utilities.
- In addition to the large investor-owned utilities, parts of the Tampa Bay Region counties are also served by member-owned rural electric cooperatives:
  - Withlacoochee River Electric Cooperative (WREC)
  - Sumter Electric Cooperative (SECO)
  - Peace River Electric Cooperative (PRECO)
- The rural electric cooperative companies are themselves each members of the Seminole Electric Cooperative that owns and operates large power plants that supply its members. These include, for example, a 650 megawatt coal plant in Putnam County, an 850 MW natural gas power plant in Hardee and Polk counties, and a 2.2 MW solar PV plant in Hardee County.

Current Florida Solar + Storage Markets Mostly composed of Utility-Owned Systems: Florida Power & Light (FPL) Examples

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30-by-30 Initiative

FPL planning to install 30 million solar panels (i.e. 10-13 GW) by 2030

Storage Pilot Projects

50 MW battery storage pilot projects authorized by Florida Public Service Commission

Manatee County

Three FPL projects with capacity of nearly 600 MW developed or in development

- 74 MW Parrish Plant (2016)
- 74.5 MW Southfork Plant (2020)
- 409 MW / 900 MWh Manatee Energy Storage Center charged from Parrish Plan (2021)

Speaker Notes: Current Florida Solar + Storage Markets Mostly composed of Utility-Owned Systems: Florida Power & Light (FPL) Examples

CLEAR SKY TAMPA BAY

- This slide provides a snapshot of large-scale PV development in Florida, using FPL activity within the Tampa Bay Region as an example.
- Utilities typically build PV plants under 75 MW plants to avoid the requirements of the Power Plant Siting Act.
- FPL has announced a 30-by-30 initiative to install 30 million solar panels - equivalent to 10 gigawatts - by 2030.
- Most of these power plants will likely be large-scale installations, similar to the 74 MW Parrish Plant and the 74.5 MW Southfork Plant, both installed in Manatee County.
- In addition to large-scale PV, Florida utilities are also making investments in large-scale battery storage. FL Public Service Commission authorized FPL to invest in more than 50 MW under small and large-scale Battery Storage Pilot Projects as part of the Settlement Agreement in FPL's 2016 base rate case.
- FPL has also announced plans to install the "world's largest solar-powered battery storage system" - the 409 MW / 900 MWh Manatee Energy Storage Center. The Storage Center will be charged with solar electricity from the existing Parrish PV plant.
- As discussed in previous slides, however, utility PV and storage projects have not been designed to support critical facility energy resilience in the event of power outages.

Investor-Owned Utility Incentive Programs Offer Two Paths for Customers to Invest in Utility-Scale Solar

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Solar Support Program	Program Description	Duke Energy	Florida Power and Light	TECO
Solar Subscription	Customers voluntarily pay an extra monthly surcharge or one time fee to support solar development in Florida.	Duke Shared Solar	FPL Solar Now	TECO Sun to Go
Solar Investment	Customers opt-in to initially pay higher rates to support solar, with future bill credits that ultimately save the customer money.	Duke Clean Energy Connection	FPL Solar Together	TECO SunSelect

Speaker Notes: Investor-Owned Utility Incentive Programs Offer Two Paths for Customers to Invest in Utility-Scale Solar

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- The three investor-owned utilities (IOUs) that serve the Tampa Bay Region do offer their customers the opportunity to participate in solar energy programs, but these programs do not support the deployment of on-site systems. Instead, they allow customers to support large solar energy projects. As an example, the projects in the Duke Shared Solar project can be found here.
- The two primary models for customer participation in solar include:
  - A subscription model under which customers can pay a monthly fee on top of their normal electricity to support solar PV development.
  - An investment model under which customers pay a higher initial electricity rate, tied to solar energy, that remains stable over time. As electricity rates rise for other customers over time, the stable PV rates are projected to save money for the customers that adopted them.
- As can be seen in the slide, each of the three IOUs offer both of these program types under different names.

Energy Efficiency Programs Improve Resilience

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IOU programs do not support onsite solar generation in the Tampa Bay Region, but utility incentives for energy efficiency incentives, thermal energy storage, and demand response support onsite energy resilience through load reduction and control

DUKE ENERGY®

Energy Efficiency for Business Program

FPL Energy®

Business Programs and Resources

TECO® ENERGY AN EMERA COMPANY

Save Energy

Speaker Notes: Energy Efficiency Programs Improve Resilience

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- Although the IOUs do not have programs that could support energy resilience through on-site solar or storage, they do offer energy efficiency and conservation programs that both public and private sector customers can participate in.
- Energy efficiency and conservation can enhance energy resilience by reducing the critical loads that must be maintained or restored during a disaster.
- Critical facilities that are investigating backup power from solar and storage or other sources should simultaneously explore energy efficiency opportunities as the first step.
- In addition to energy efficiency programs, some of the utilities also offer demand response programs that compensate customers for having loads that can be controlled or reduced to support grid reliability.
  - TECO, for example, offers incentives for customers with standby generators though it is unclear if solar and storage systems would qualify to participate.
  - Utilities in other states have recently allowed storage systems connected to solar energy systems to participate in their demand response programs.

Florida State Policies That Support Distributed Generation (as of October 2020)

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These four policies help enable distributed solar PV generation		
Policy	**Legal Basis**	**Impact**
Net Metering	F.A.C. 25-6.065 & §366.91	For IOUs, net metering is carried forward at the retail rate; the three electric co-ops in the Tampa Bay Region use the wholesale rate instead. A recent Public Service Commission workshop on the subject suggests that net metering will remain in place for the foreseeable future.
Property-Assessed Clean Energy (PACE)	§163.08 & HB 7179	PACE allows property owners to borrow money for energy improvements via a special property assessment. Applies to Citrus, commercial properties in Hernando and Pinellas, unincorporated portions of Pasco and Manatee, and the towns of Bradenton, Bradenton Beach, Longboat Key, and Palmetto.
Property Tax Abatement	§193.624	Florida provides a 100% property tax exemption for residential renewable energy property and an 80% property tax abatement for non-residential renewable energy property.
Sales Tax Exemption	§212.08	Solar energy systems are exempt from Florida's sales and use tax.

Speaker Notes: Florida State Policies That Support Distributed Generation (as of October 2020)

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- Although the utilities do not directly support on-site solar energy installations, Florida state law requires utilities to offer net metering for renewable energy projects, including solar PV.
- Net metering is the primary driver for distributed solar in Florida. In September 2020, the Florida Public Service Commission held a fact finding workshop and determined that the status quo for net metering should be preserved (see details below).
- IOU net metering policy:
  - Projects can be up to 2 MW in size.
  - The law requires IOUs to credit on-site generators for the value of the electricity they export (rather than consume on site) at a rate equal to the rate that customers pay for electricity they purchase from the grid.
  - These credits can be applied to future bills for up to 12 months, at the end of which time the IOUs pay customers for any remaining excess generation at the wholesale rate.
  - These policy details can be entered into the National Renewable Energy Laboratory's REOpt Lite benefit-cost analysis model to evaluate the economic viability of PV.
- NOTE: State law requires rural cooperatives to offer net metering, but does not provide guidance as to how the policy should be structured. The rural electric cooperatives that serve the Tampa Bay Region do not credit excess generation at the retail rate and instead credit excess generation at a lower wholesale rate.
- The City of Dunedin in Pinellas County offers its own solar energy grant program to local homeowners and businesses of $0.25 / watt up to $2,500. As of November, 2020, the FY21 funds had been expended and the program will not fund new applications until FY22.

Solar United Neighbors' Cooperative Campaigns Driving Residential Solar Across the Tampa Bay Region

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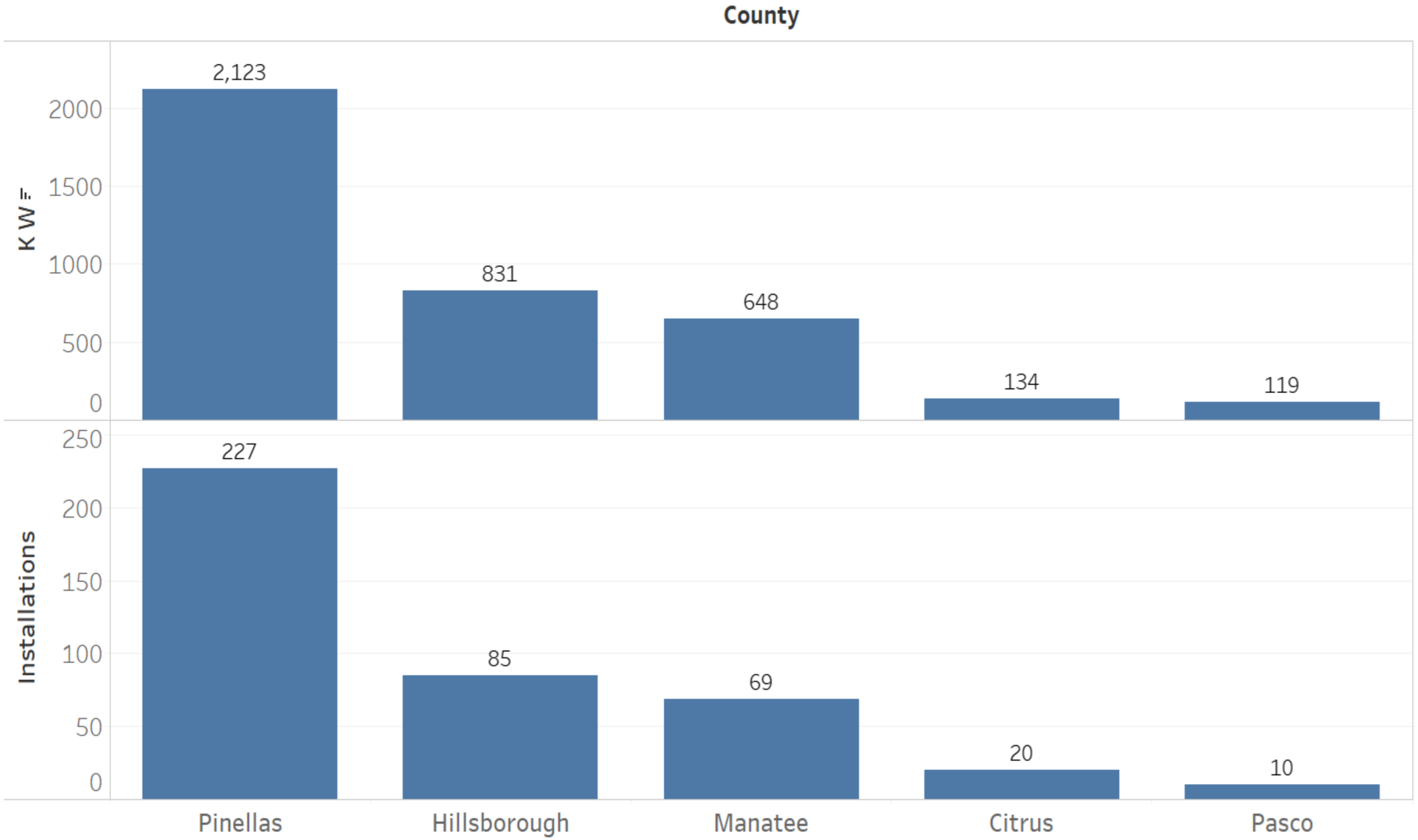

3.8 MW*
Capacity Installed

411
Installations

$20 million
Savings

$7.9 million
Invested

**Limited storage included*

Speaker Notes: Solar United Neighbors' Cooperative Campaigns Driving Residential Solar Across the Tampa Bay Region

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- The Solar United Neighbors (SUN) of Florida campaigns are an example of distributed solar PV deployment.
- The SUN campaigns aggregate groups of prospective residential PV buyers so that they can purchase solar as a group and get a lower price on home PV installations.
- There have been 13 campaigns within the Tampa Bay Region since 2016 that have resulted in 411 installations totaling 3.8 MW. These installations represent $7.9 million in investment and will generate $20 million in savings for homeowners over the systems' life.
- The Tampa Bay Regional Resiliency Coalition (convened by TBRPC) has been a partner of several of the recent SUN campaigns, including the Hillsborough 2020 campaign.
- According to SUN Florida representatives, there have been some solar + storage systems installed as part of the campaigns, but solar + storage is not a specific focus of the SUN campaigns, and installations for resilience purposes to date have been limited.
- The SUN campaigns focus on residential installations rather than on commercial, industrial, or public sector. This is consistent with statewide solar trends. Although utility PV dominates the market, there are distributed PV installations, but residential installations and total installed capacity substantially outweigh non-residential distributed PV installations.
- Although the SUN campaigns do not focus on solar + storage for resilience, they are an example of how organizing and aggregating demand can help drive distributed generation installations regionally and could be a model for future aggregated purchasing for resilience in the future.

SunSmart e-Shelters Program Equips Schools with Solar + Storage to Serve as Emergency Shelters

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Pinellas
80.64 kW

- Campbell Park Elementary
- Douglas L. Jamerson, Jr. Elementary
- Fairmount Park Elementary
- James B. Sanderline PK-8 School
- John M. Sexton Elementary School
- McMullen-Booth Elementary
- Palm Harbor Middle School
- Safety Harbor Middle School

Hillsborough
30.24 kW

- Durant High School
- Knights Elementary
- Lawton Chiles Elementary

Pasco
60.48 kW

- Centennial Middle
- Chasco Elementary
- Pine View Elementary School
- Raymond B. Stewart Middle School
- River Range Middle School
- Wiregrass Ranch High School

Hernando
20.16 kW

- Explorer K-8
- Hernando High School

Citrus
19.44 kW

- Citrus High School
- Citrus Springs Middle School

211 kW
Capacity Installed

21
Schools

16
Cities

4
Utilities

Speaker Notes: SunSmart e-Shelters Program Equips Schools with Solar + Storage to Serve as Emergency Shelters

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- As discussed on previous slides, there are currently no dedicated state policies or utility programs to support solar + storage for resilience at critical facilities, and group purchasing programs (e.g. SUN) do not focus on non-residential systems or on energy resilience.
- There is precedent, however, for resilient solar + storage installed on critical facilities across Florida through the SunSmart e-Shelters Program that was managed by the Florida Solar Energy Center at the University of Central Florida.
- As part of the American Reinvestment and Recovery Program, the U.S. Department of Energy provided $10 million to the Florida Department of Agriculture and Consumer Services to deploy ~10 kW PV systems paired with 48 kW battery systems at 118 school sites that serve as emergency shelters across Florida.
- 21 schools across the Tampa Bay Region have resilient solar + storage systems installed through the program (see graphic above).
- The systems are connected to critical loads through a dedicated electricity panel. Examples of the critical loads include lighting, communications, and outlets for charging. The 10 kW / 48 kW systems are not capable of sustaining the full load of the shelter
- During Hurricane Irma, 6 million people in Florida lost power. 40 SunSmart e-shelters opened, and 31 solar systems provided power as designed to critical loads (9 systems did not function).
  - One PV system carried critical loads on its own for two days when the school generator ran out of fuel.
  - In another example, a school operated a nebulizer, a HAM radio, charged electronic devices, and ran a coffee maker.

Key Insights: Florida Solar Markets and Trends

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The solar market in Florida is booming, but current policies and deployment models do not support solar and storage for resilience at critical facilities.

The solar market is primarily driven by large-scale utility PV projects, and utilities do not offer programs to support onsite solar and storage.

Florida law requires utilities to offer net metering, which has been an important driver for distributed PV. In 2020, a PSC workshop affirmed the net metering policy. Net metering, however, is insufficient on its own to support non-residential PV.

TBRPC has partnered with group purchasing campaigns for PV within the Tampa Bay Region, but these campaigns have focused on residential PV, rather than non-residential solar and storage.

Local and State Program Funding for Solar + Storage

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Program Name	Resilience Eligibility	Budget Cycle	Eligible Applicants
Building Resilient Infrastructure and Communities (BRIC)	"Solar and storage eligible"	Annual	Local/State government
Emergency Management Performance Grant	Funds resilience of community lifelines	Annual	Counties
Hurricane Loss Mitigation Program	Previously funded generator projects	Annual	Local/State government; private entities
Assistance to Firefighters Grant Program	Supports "community resilience"	Annual	Fire Departments
State Homeland Security Program	"Generators, batteries, power cells" are eligible	Annual	Local/State government
Urban Area Security Initiative	"Generators, batteries, power cells" are eligible	Annual	Local/State government
Port Security Grant Program	Funds "community" and "port resilience"	Annual	Maritime entities

Speaker Notes: Local and State Program Funding for Solar + Storage

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- In addition to reviewing the solar energy policies and local emergency management planning documents within the Tampa Bay Region, the CSTB team also conducted a high-level survey of emergency management, homeland security, and community development funding sources that could potentially be used to support emergency power - and possibly solar and storage systems - in the future.
- This slide focuses on programs that make funding available on an annual basis, whereas the following slide profiles programs under which funds are triggered by a disaster event.
- There has not previously been a study of whether or not these programs have previously funded solar + storage or whether they could be used to fund such systems in the future.
- Although a full analysis of these programs is beyond the scope of this project, the CSTB team conducted a high-level review of of these programs to identify when funding is released, which entities can apply, and whether generators or other energy resilience technologies are explicitly mentioned as eligible investments. Hyperlinks to each of the programs are included in the slide.
- The forthcoming FEMA BRIC program is the only program that specifically calls out solar and storage as eligible investments, but other programs may allow solar and storage investments either now or in the future, and this could be an interesting line of inquiry for TBRPC given its emergency management, regional resiliency, and clean energy.

Post-Disaster Funding Programs to Support Solar + Storage

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Program Name	Resilience Eligibility	Budget Cycle	Eligible Applicants
Rebuild Florida Critical Facility Hardening Program	"Stationery generators, affixed to the structure, are eligible"	Post-Disaster	Local/State government
Hazards Mitigation Grant Program	"Generator" and "Utility Mitigation" are fundable projects	Post-Disaster	Local/State government; non-profit entities
Rebuild Florida General Planning Support Program	Not explicit, but lifelines are covered	Post-Disaster	Local/State government; non-profit entities
Rebuild Florida General Infrastructure Program	Not explicit, but lifelines are covered	Post-Disaster	Regional partnerships
Community Development Block Grant--Disaster Recovery	Funds non-housing infrastructure to promote resilience	Post-Disaster	Local/State government; non-profit entities

Speaker Notes: Post-Disaster Funding Programs to Support Solar + Storage

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- This slide continues the analysis from the previous slide and focuses on programs whose funds are triggered by disasters. These include both federal- and state-sponsored programs.
- As with the programs on the previous slide, these programs represent an opportunity for additional research and specific engagement regarding solar and storage for energy resilience at critical facilities.

Key Insights: DHS/FEMA Programs

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There remains uncertainty as to whether generators – and PV + storage specifically – are eligible under these grant programs. An exception to this is the BRIC Program, which specifically highlights microgrid investments.

These programs support many potentially competing priorities beyond energy resilience and emergency power.

The application process and funding limitations for FEMA and DHS programs can make them challenging for local governments to reliably access.

The BRIC Program is an important emerging program and the Clear Sky Siting Framework should align it scoring and guidance to the extent possible.

Speaker Notes: Key Insights: DHS/FEMA Programs

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- There are a number of federal programs from FEMA, DHS, and HUD that could potentially support backup power, but it is unclear whether and how these programs have been (or could be) used to support solar and storage for critical facility resilience.
- Even if it is determined that these programs are potential pathways for solar and storage funding, these programs are not dedicated specifically to energy resilience and so potential solar + storage projects would have to be considered alongside many other potential competing uses for these limited funds.
- Some of these funds also require relatively complex application processes that may make them challenging for local governments to reliably access.
- As of October 2020, the FEMA BRIC program has not yet awarded funds to projects, but BRIC explicitly allows solar and storage as an eligible investment. The BRIC program also represents the latest generation of emergency management program design from FEMA and the CSTB project should align its scoring and guidance with BRIC program requirements to the extent possible and practical.

Thank You.

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