RESILIENTPOWER

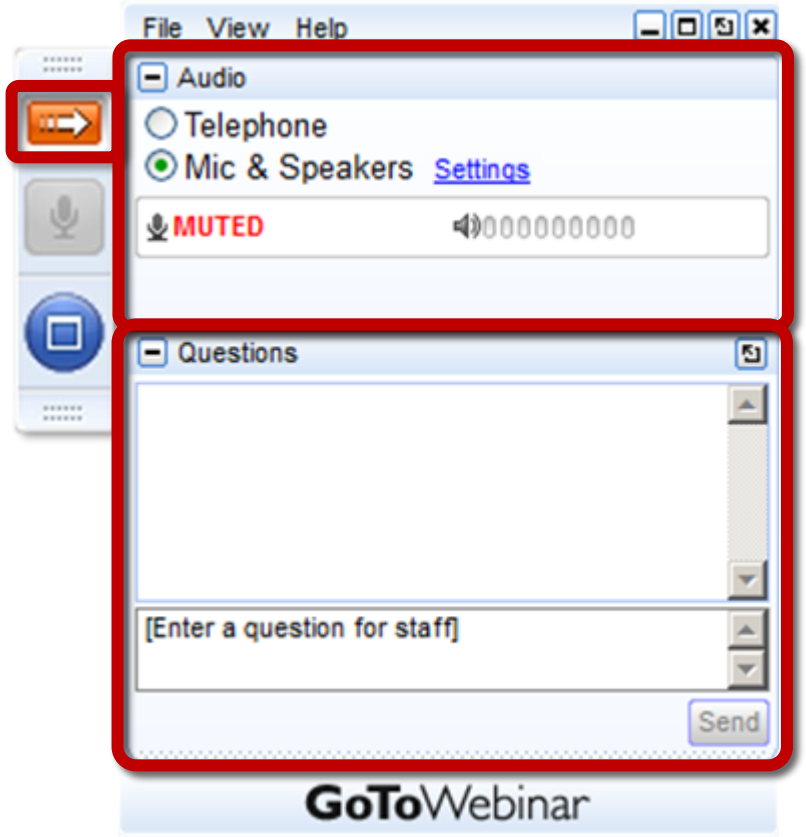
A project of CleanEnergyGroup

Resilient Power for Florida Community Health Centers

CleanEnergy Group

July 13, 2023

WEBINAR LOGISTICS



Join audio:

- Choose Mic & Speakers to use VoIP
- Choose Telephone and dial using the information provided

Use the orange arrow to open and close your control panel

Submit questions and comments via the Questions panel

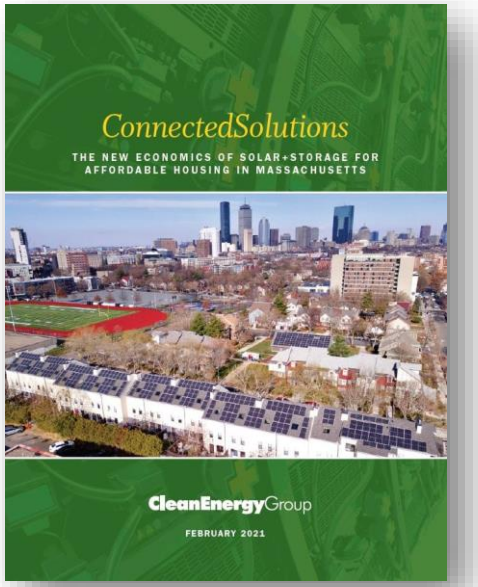
This webinar is being recorded. We will email you a webinar recording within 48 hours. CEG's webinars are archived at www.cleanegroup.org/webinars

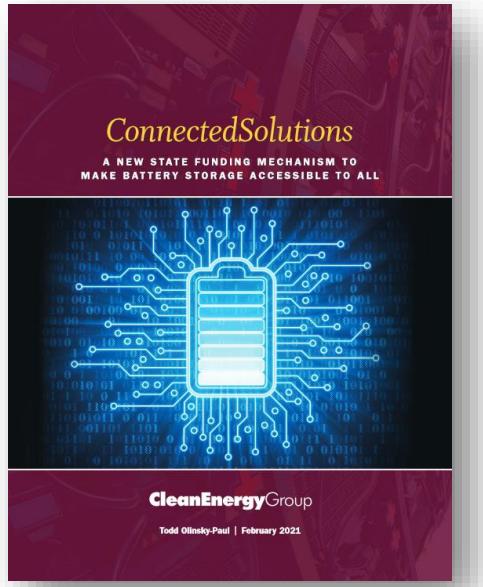
Clean Energy Group (CEG) works at the forefront of clean energy innovation to accelerate an equitable and inclusive transition to a resilient, sustainable, clean energy future.

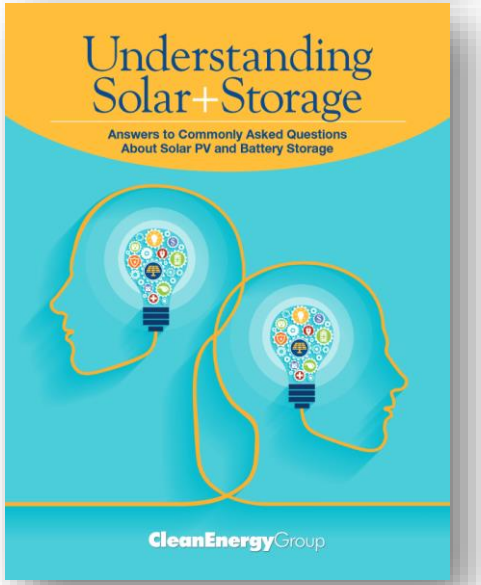
Visit www.cleanegroup.org to learn more about our current initiatives, recent publications, and upcoming events.

THE RESILIENT POWER PROJECT

- Increase public/private investment in clean, resilient power systems (solar+storage)
- Protect low-income and vulnerable communities, with a focus on affordable housing and critical public facilities
- Engage city, state and federal policy makers to develop supportive policies and programs
- Visit www.resilient-power.org for more information and resources







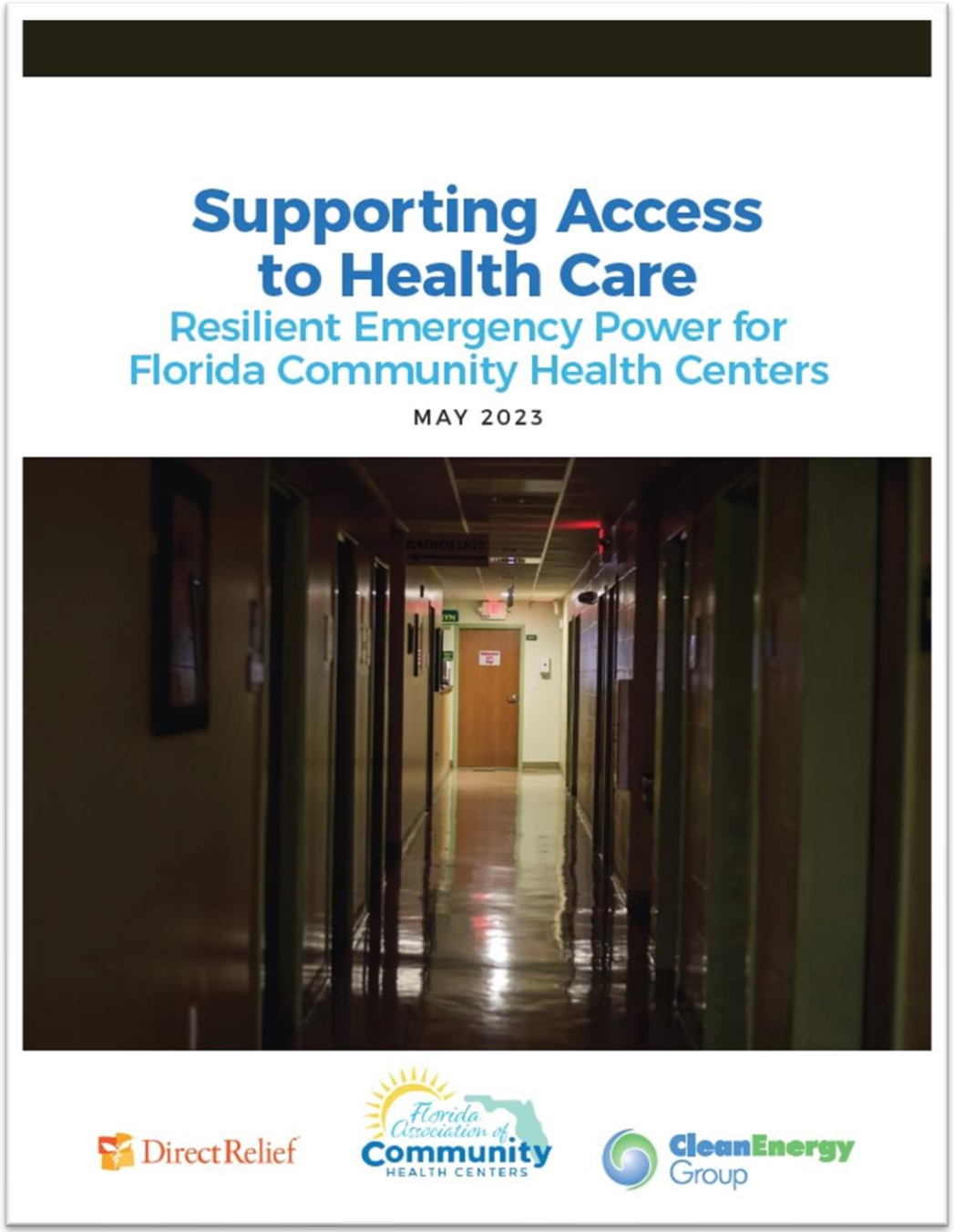
Supporting Access to Health Care:

Resilient Emergency Power for Florida Community Health Centers

May 2023

Direct Relief
Florida Association of Community Health Centers
Clean Energy Group

www.cleanegroup.org/publication/resilient-emergency-power-for-florida-community-health-centers



WEBINAR SPEAKERS

Gianna Van Winkle
Florida Association of Community Health Centers

Andrew MacCalla
Direct Relief

Connor Sheehan
American Microgrid Solutions

Marriele Mango
Clean Energy Group

Thank you for attending our webinar

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www.cleanegroup.org
www.facebook.com/clean.energy.group
@cleanenergygrp on Twitter

Clean Energy Group

RESILIENT POWER
A Project of Clean Energy Group

UPCOMING WEBINARS

- **U.S. State Renewables Portfolio & Clean Electricity Standards: Berkeley Lab's 2023 Review** (7/26)
- **Community Solar + Resilience Hub in Duluth, Minnesota** (7/27)
- **Can Virtual Power Plants Replace Peaker Plants? A Conversation with CEG and Brattle Group** (8/3)

Read more and register at www.cleanegroup.org/webinars

Resilient Power for Health Clinics

Marriele Mango, Clean Energy Group

CleanEnergyGroup

Clean Energy Group's Technical Assistance Fund

- Supports the development of clean energy projects aimed at decreasing energy burdens and increasing resiliency
- Funds preliminary technical and financial feasibility analyses to help determine size, cost, and benefits of solar, battery storage and other resilient energy technologies
- Grants range from $5,000 -$15,000 depending on scope of project
- Prioritizes projects serving low-income populations or Black, Indigenous, and People of Color (BIPOC) communities
- Low barrier to entry

SUPPORTING 250+ PROJECTS ACROSS THE COUNTRY

Boulder: Nonprofit transportation center serving elderly and disabled residents

Boston: Multiple housing properties representing 1,000+ units of senior and affordable housing

DC: First solar+storage resilience center at affordable housing in DC

New Mexico: Added resilience for remote wildfire operations command center

Puerto Rico: Supporting the installation of solar+storage at multiple community medical clinics

Access to Reliable Electricity is Integral to Public Health

- At *least* 2.5 million people rely on electricity-dependent medical equipment
- Millions more use electricity for home care services or refrigeration for medication

Compared to 2000-2010, weather-related power outages increased by 78% between 2011–2021.

This is especially true in the Southeast, which has had the most weather-related major outages since 2000.

"We are a society so dependent on electricity. It will be difficult for folks dependent on medical equipment."[1]

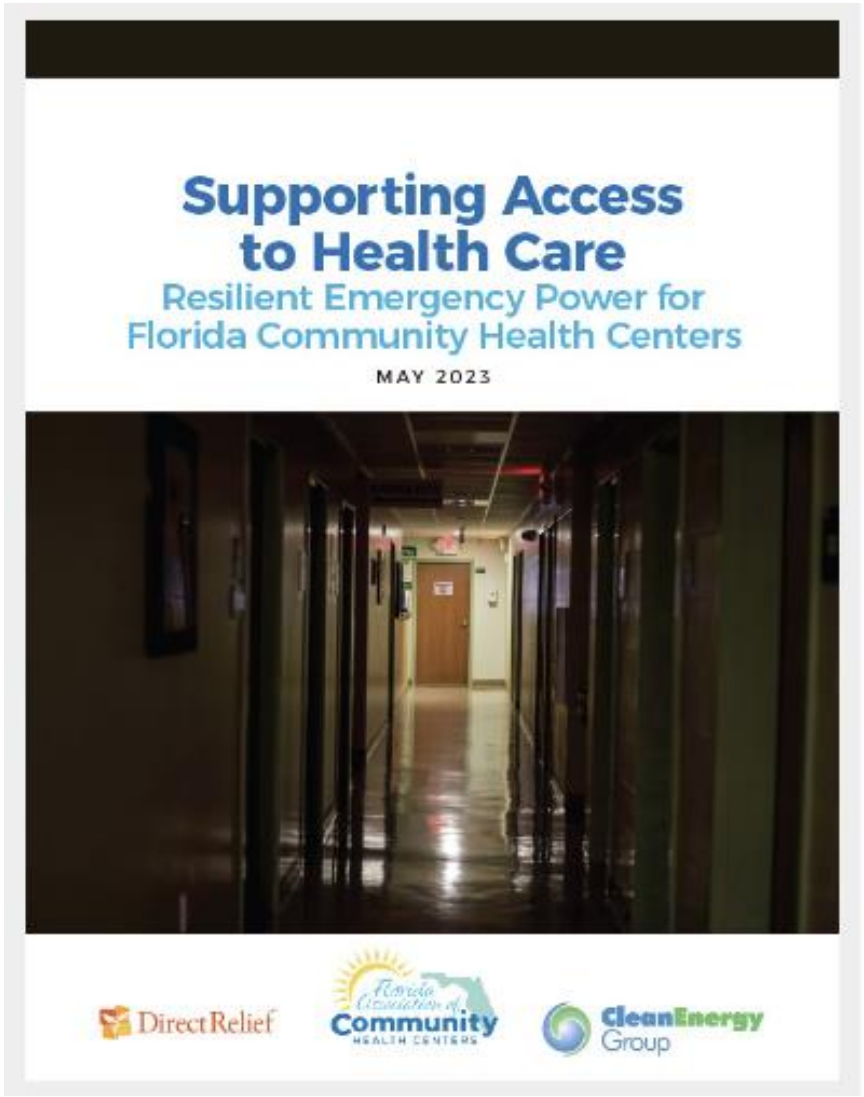
— *Junice Wilson, Mendocino Coast Home Health and Hospice,* Wall Street Journal *(4.27.2019)*

Home Health, Hospitals, and Outages

- 2033 NE blackout: Respiratory device failure accounted for 65 emergency department visits and 37 hospitalizations over a two-day period
- 2019 California PSPS: 30% increase in ER patients in one hospital. Generator reliability concerns forced patients 60 miles away for surgery at a hospital with a second level of generators
- 2017: George Washington University found that most of the 3,000 deaths after Hurricane Maria were health complications from power outages

“We ended up admitting eleven people to the hospital during the first [PSPS] outage because they didn’t have power to run equipment they needed.”

- Dr. Brian Evans, Chief Executive Officer, Sierra Nevada Memorial Hospital in Grass Valley



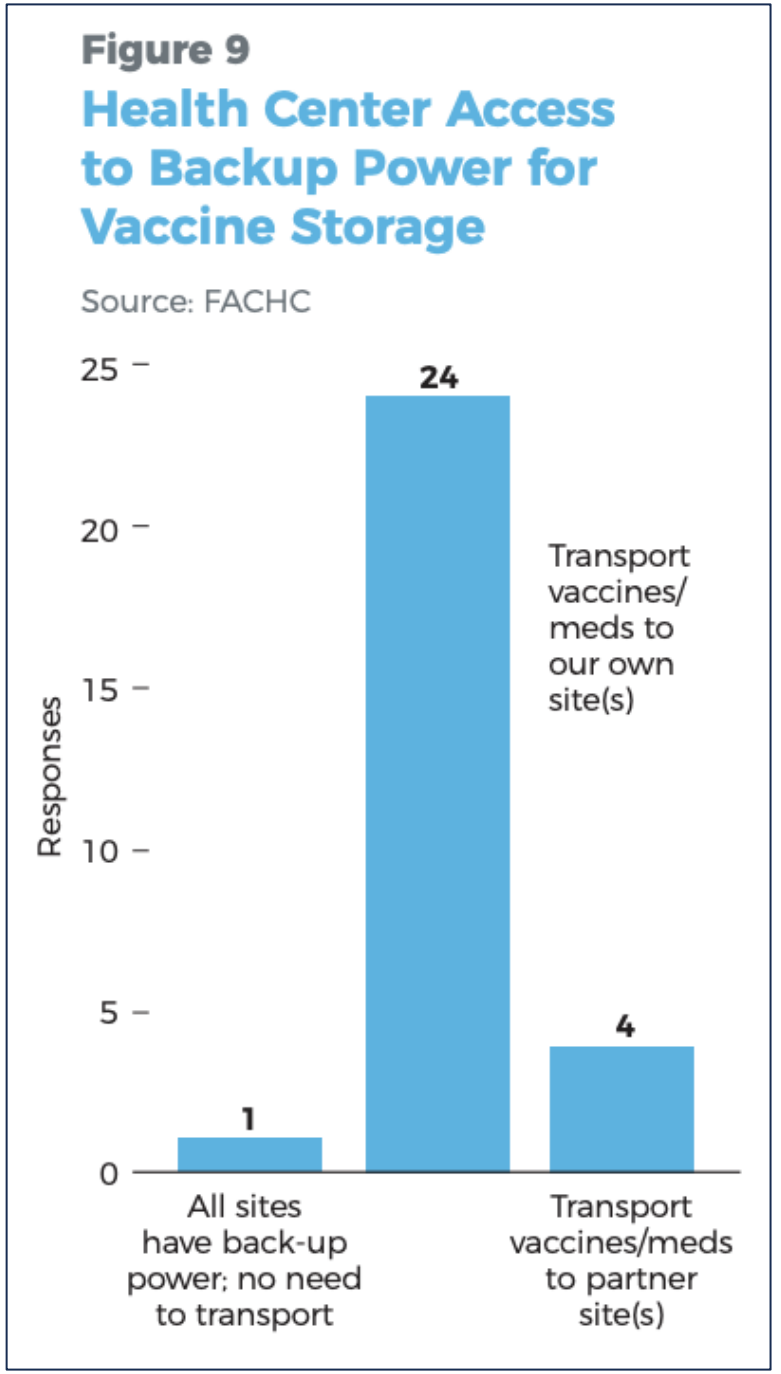
Supporting Access to Health Care: Resilient Power for Florida Community Health Centers

The Florida Association of Community Health Centers (FACHC) conducted a survey on emergency backup power capabilities at Florida's 800+ community health centers.

CEG and FACHC, with support and input from Direct Relief, summarized the findings of the survey in this report. The report includes a technoeconomic analysis for using solar+storage for emergency backup power at seven of the health centers surveyed.

Reliance on Community Health Clinics During an Outage

- Trust, local community care
- For rural communities, health clinics can be the only health resource for miles
- Health clinics are not required to have backup generators
- Most clinics must close or greatly reduce operations in the event of an outage
  - Loss of vaccines and temperature-regulated medicines w/o refrigeration
  - Residents forced to go to hospitals, adding to hospital strain and capacity issues



Battery Storage: A Reliable, Resilient Energy Solution

- Can automatically island from the grid during an outage
- Optimum resilience when paired with solar PV
  - Fuel shortages not an issue
- Does not emit pollutants
- Can deliver electric bill savings and generate revenue
- Supports continuity of services

Value of Resiliency:
Health Centers reported potential daily losses of up to $300,000 per day of power outage – averaging $41,000 per day

Health Clinic Case Study: CrescentCare New Orleans, LA

Hurricane Ida

- Equipped with diesel generators
- Fuel shortages required major staff capacity to ensure power wasn't interrupted
- Generators failed, leaving the facility without power for days

Solar and Battery Storage through the Community Lighthouse Initiative

- S+S Resiliency: 5 days
- Generators incorporated for redundancy – combined 9 days backup power
- ~ $16k in annual electric savings
- Direct Relief funded

Marriele Mango, Project Director
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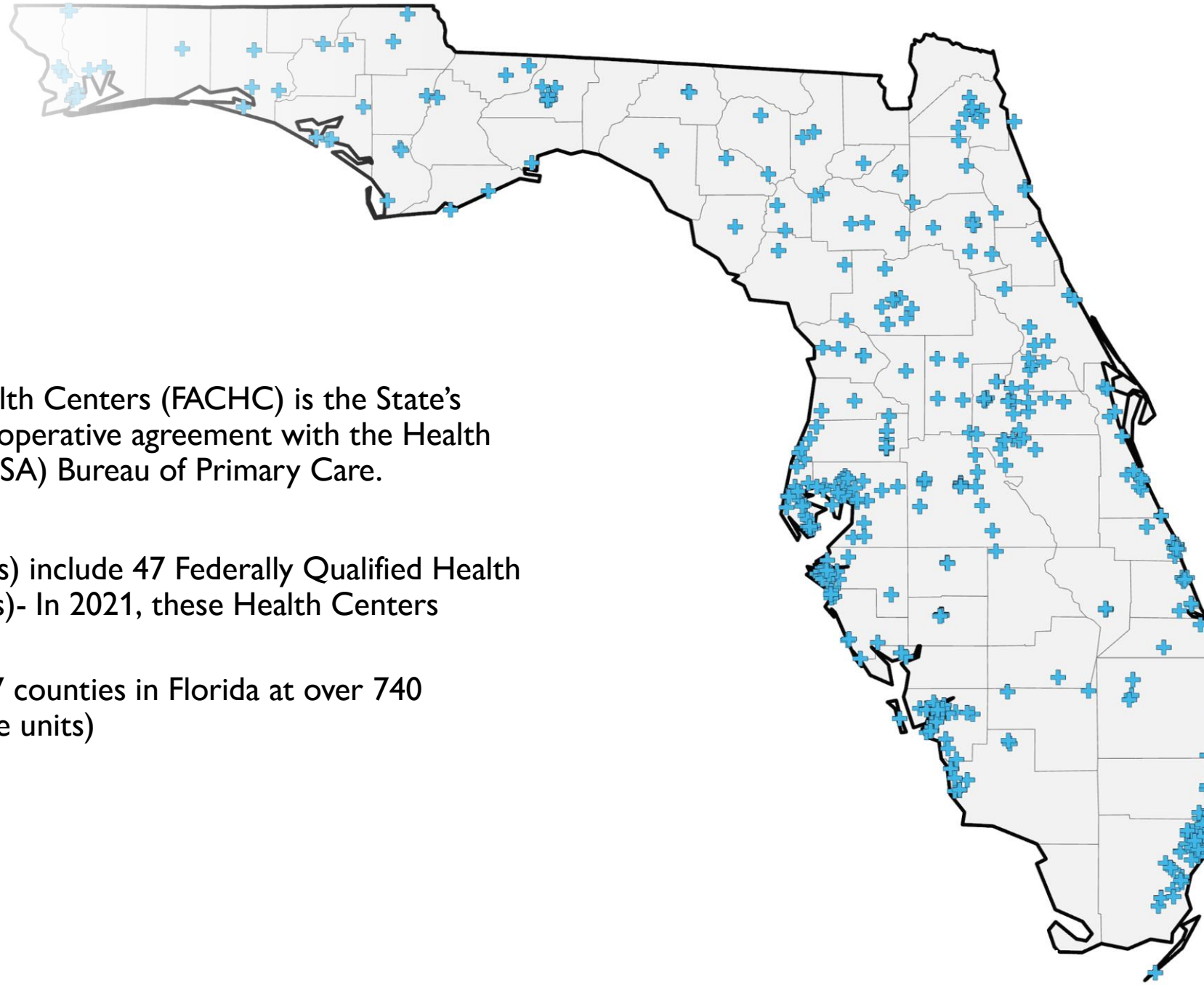
Florida Association of Community Health Centers



The Florida Association of Community Health Centers (FACHC) is the State's Primary Care Association(PCA) under a cooperative agreement with the Health Resources and Services Administration (HRSA) Bureau of Primary Care.

Florida's Community Health Centers (CHCs) include 47 Federally Qualified Health Centers(FQHCs) and 5 "Look-alikes" (LALs)- In 2021, these Health Centers served ~1.7 million patients in Florida.

CHCs provide services to residents in all 67 counties in Florida at over 740 locations (including school-based and mobile units)

The Project

In 2022, FACHC partnered with Direct Relief to develop a better understanding of backup power capabilities at Health Centers.

The primary goals of the project included assessing current utilization and increasing awareness of expansion options.

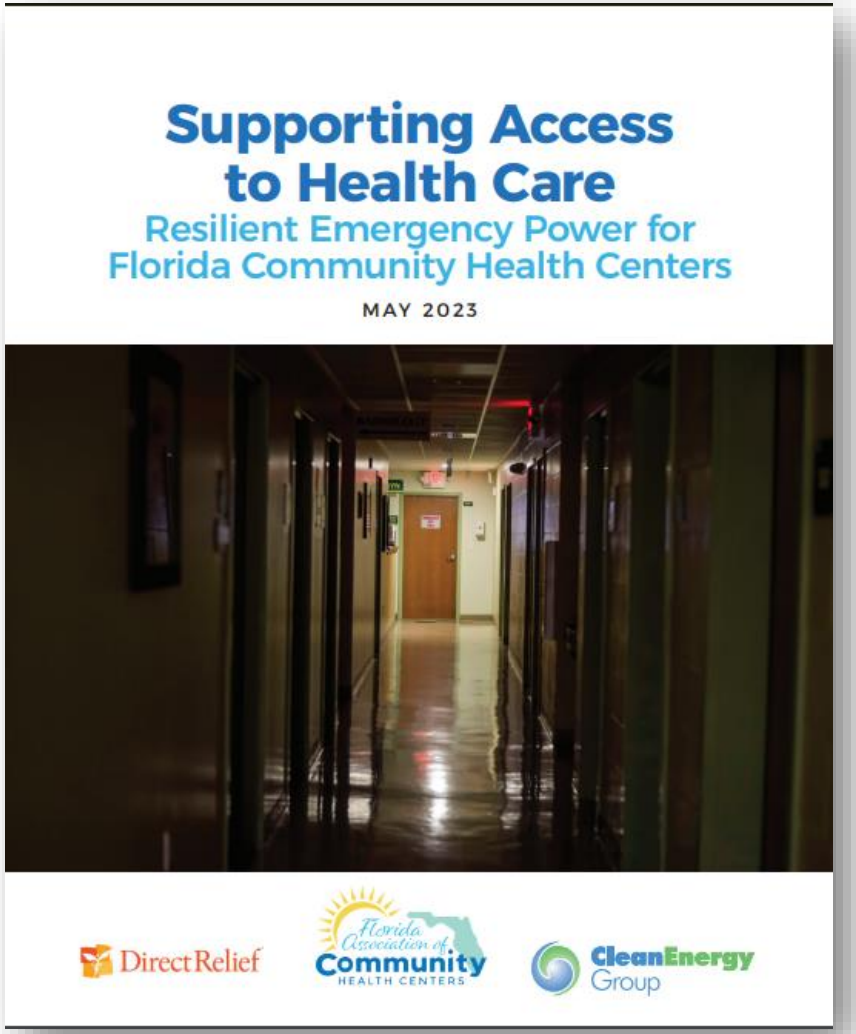
- Survey Deployed Statewide (June 2022) **32 Responses**
- Follow-up Interviews (Fall 2022)
- Health Center Visits (Spring 2023)
- AMS Site Screenings (Ongoing) **15 total**

The Report

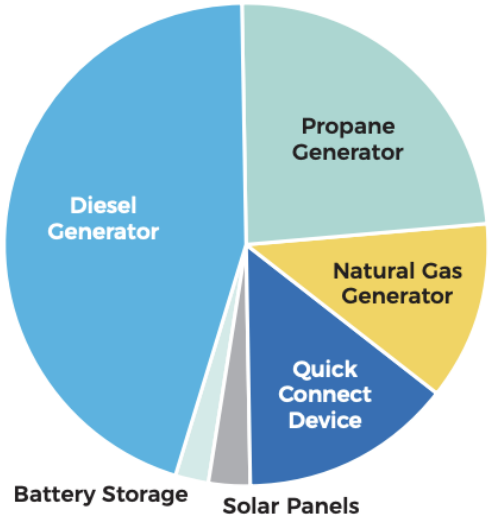
- Examines current emergency backup power capabilities of Florida Health Centers, as well s opportunities for opportunities for solar+storage at Health Centers.

- Includes technoeconomic survey results for installing and operating solar+storage at seven Health Centers of various sizes across Florida.

- Concludes with a discussion of next steps for the Health Centers as well as recommendations for additional health centers and partners interested in replicating this effort.



CHC Survey Findings



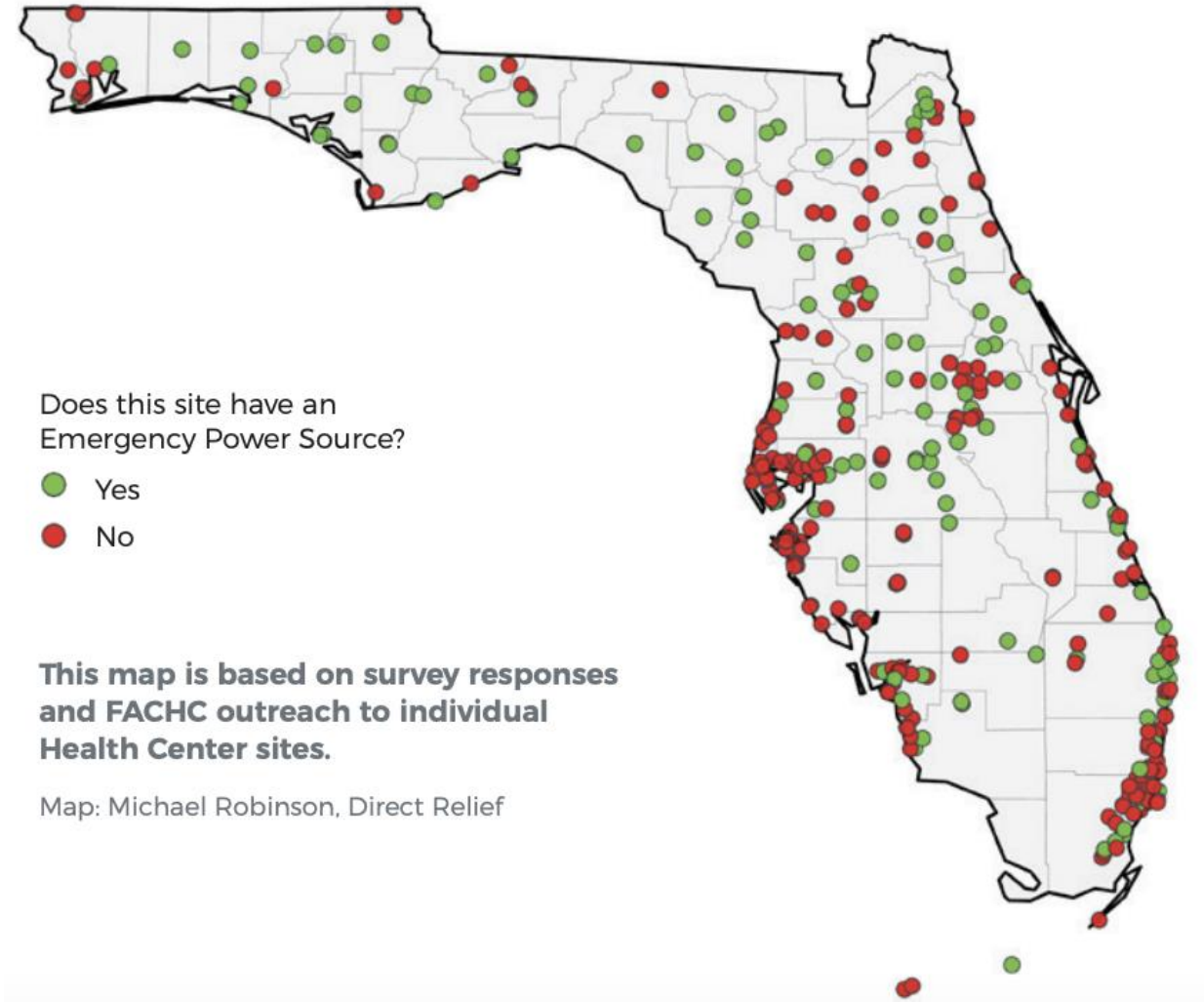
- Over 60% of CHC service sites do not have access to a backup power system.
- Health Centers that have a Backup Power System, have a Generator (45% of those that have backup power, utilize diesel)
- Most Health Centers want and have considered backup power but Only 19% had identified potential partners or funding for systems.

<u>Perceived CHC Barriers</u>

- **Economics.** Cost of was the #1 hurdle for Health Centers, with almost 50% of respondents selecting "Installation Cost" as the primary barrier.
- **Structure and Location.** 30% of Health Centers indicated that the facilities age and/or other vulnerabilities impacted their ability to pursue backup power investments.
- **Knowledge and Capacity.** Over 20% of Health Centers reported lack of knowledge or capacity to explore available backup power options as a primary barrier. Solar, and battery storage in particular, are newer technologies.

CHC Recommendations

- Assess your Health Center's need for emergency power.
  - Develop an understanding of a facility's current energy consumption
  - Identify each site's critical functions.
- Explore a range of emergency power options.
  - Traditional
  - Solar+Storage
  - Hybrid Models
- Continue communication with FACHC as well as ongoing coordination and collaboration with public health partners, county emergency managers, and coalitions.
- Participate in your Local Mitigation Strategy Working Group.



- Ongoing support for CHCs
- Continued conversations with current potential partners and funders
- Updated report planned for 2024

BIG IDEA:

RELIABLE POWER FOR HEALTH

collective ENERGY company

+

Direct Relief®

Problem: 1

Power is Essential for Health

Without electricity, health facilities are unable to serve their patients: cold medicines go bad, health records are inaccessible, and medical equipment is useless.

The Grid has Become Unreliable

The utility grid is underfunded, inefficient, and aging. Increasing temperatures and natural disasters are leading to more regular and longer lasting outages.

Outages Don't Effect Everyone Equally

Lack of reliable power has direct health consequences for all, but especially for people living in low-income and medically vulnerable communities.

Problem #2: Climate Change

Climate Change is Negatively Affecting Health

- Air Pollution: Cardiovascular, Asthma
- Vector Borne: Malaria, Dengue, Vibrosis, Lyme
- Heat
- Malnutrition
- Water Borne Illness

Health Sector is a Large Contributor to GHG Emissions

US Health Sector Contributes 10% of the total GHG emissions

This is making the problems worse for patients

Impacts Don't Affect Everyone Equally

As always, people living in low-income and medically vulnerable communities and who are served by FQHCs are hit worst and first.

Problem #3: Rising Costs

Increasing Costs of Power and Health Care Delivery

- Power costs in the US are rising year over year
- Refrigerated RX costs are increasing
- Many loses are uninsurable

Health Centers have Increasingly Tight Budgets

- Power costs should be a fixed line item in the budget
- Outages should not create financial hardships to centers

Impacts Don't Affect Everyone Equally

As always, people living in low-income and medically vulnerable communities and who are served by FQHCs are hit worst and first.

Origin:

Andrew MacCalla, Founder + CEO

After 16 years of responding to disasters and supporting health centers as VP of Emergency Response for Direct Relief, Andrew has witnessed firsthand what happens to community health centers when the power goes out and has dedicated himself to preventing this foreseeable problem. Andrew has overseen the installation of more solar and/or storage projects on health centers than anyone in the country, making him the go-to resource for health centers as well as for the national and state associations overseeing them.

"The largest loss of life is often not in the initial natural disaster, but in the power loss that follows."

Florida

Causes of Power Shutoffs:

- Heat Waves
- High Winds
- Wildfires
- Weather/Storms
- Vehicles
- Cold Snaps
- Droughts
- Grid Failures
- High Demand
- Planned Outages
- Public Safety Shutoffs
- Animals

Puerto Rico

Why it Matters:

- Health
- Heat
- Water
- Avoiding ER Visits
- Refrigerated RX
- Lost Revenue
- Electronic Health Records
- Electricity Dependent Medical Devices
- Continuity of Care
- Resiliency Hubs
- Communications
- Death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DirectRelief

Goals:

- Prevent patients from dying because of health center closures due to power outages.
- Enable quality, equitable health care services for the medically underserved and the most vulnerable in our communities by ensuring energy reliability and resiliency.
- Avoid lost health center revenue from closures and spoiled medicines.
- Provide long-term savings on electricity costs that critical facilities can use to put towards other services.
- Finance solar and backup batteries in a way that benefits investors and philanthropic institutions, but with the bottom line of serving health centers first.
- Offset thousands of tons of carbon emissions by moving from fossil fuel and generator power to clean power.

Business Model:

Partner

Team up with companies, foundations, and non-profits that support FQHCs, health, and clean energy.

Educate

Offer resources to health centers interested in learning about the solar + storage options available.

Develop

Evaluate site(s) and health center needs, then design, install, commission, and maintain solar + storage.

Finance

Stack non-traditional, affordable funding from foundations, impact investors, and more.

Turn Over

Transfer ownership of the system(s) as soon as possible to pass maximum savings to the health center(s).

What is a Health Center?

1961

Federally Qualified Health Centers (FQHC) were established by Lyndon Johnson as part of the War on Poverty to guarantee quality health care in underserved areas. They are independent 501c3 non-profits but receive guaranteed reimbursements, making them a particularly reliable and secure payor.

Today

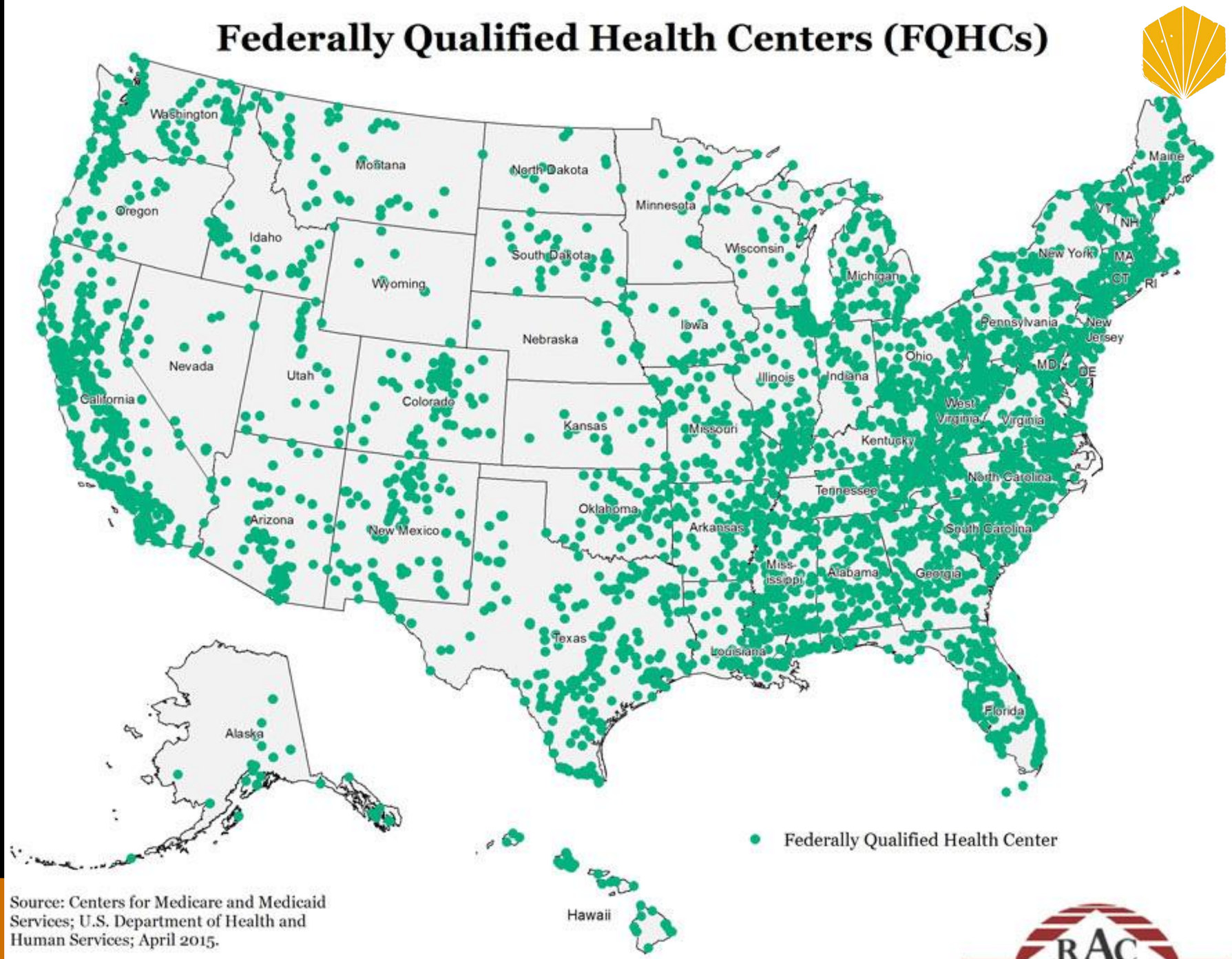
There are 14,000+ FQHCs across the US. FQHCs serve 1 in 11 Americans (30M patients), 91% of whom are low income. 63% are racial or ethnic minorities. 82% are either uninsured or publicly insured. They serve 1 in 8 children and 1 in 5 rural residents.

Future

FQHCs are growing rapidly and were recently allocated $6.1B to provide Covid19 treatment, which will lead to more patients, new sites, and expansion of existing facilities. Unlike hospitals, however, most FQHCs don't have backup power, exposing them to devastating power outages.

Market:

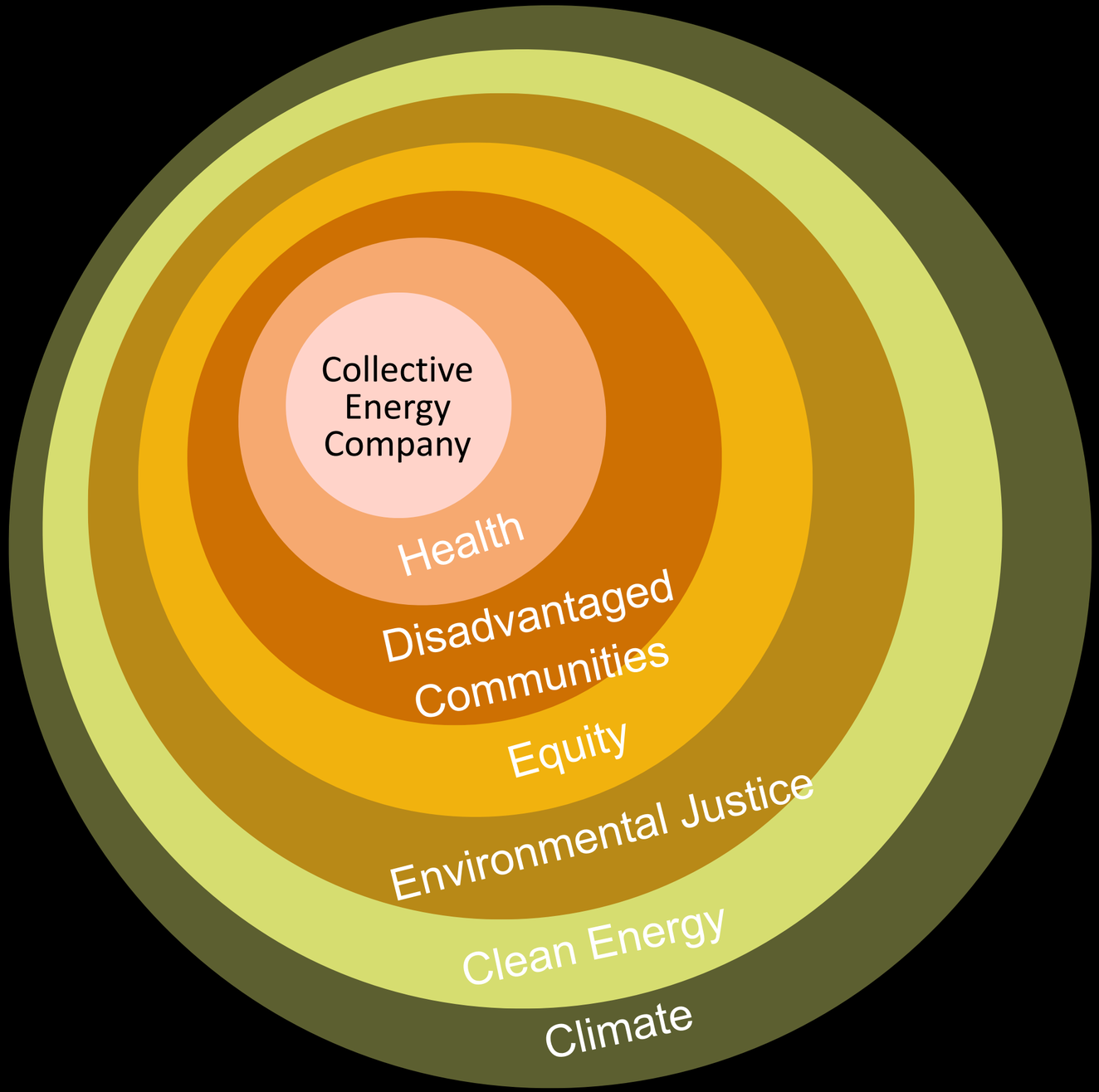
Aggregated, FQHCs are the largest medical service provider in the country. They opperate in every state and serve the most medically vulnerable populations.



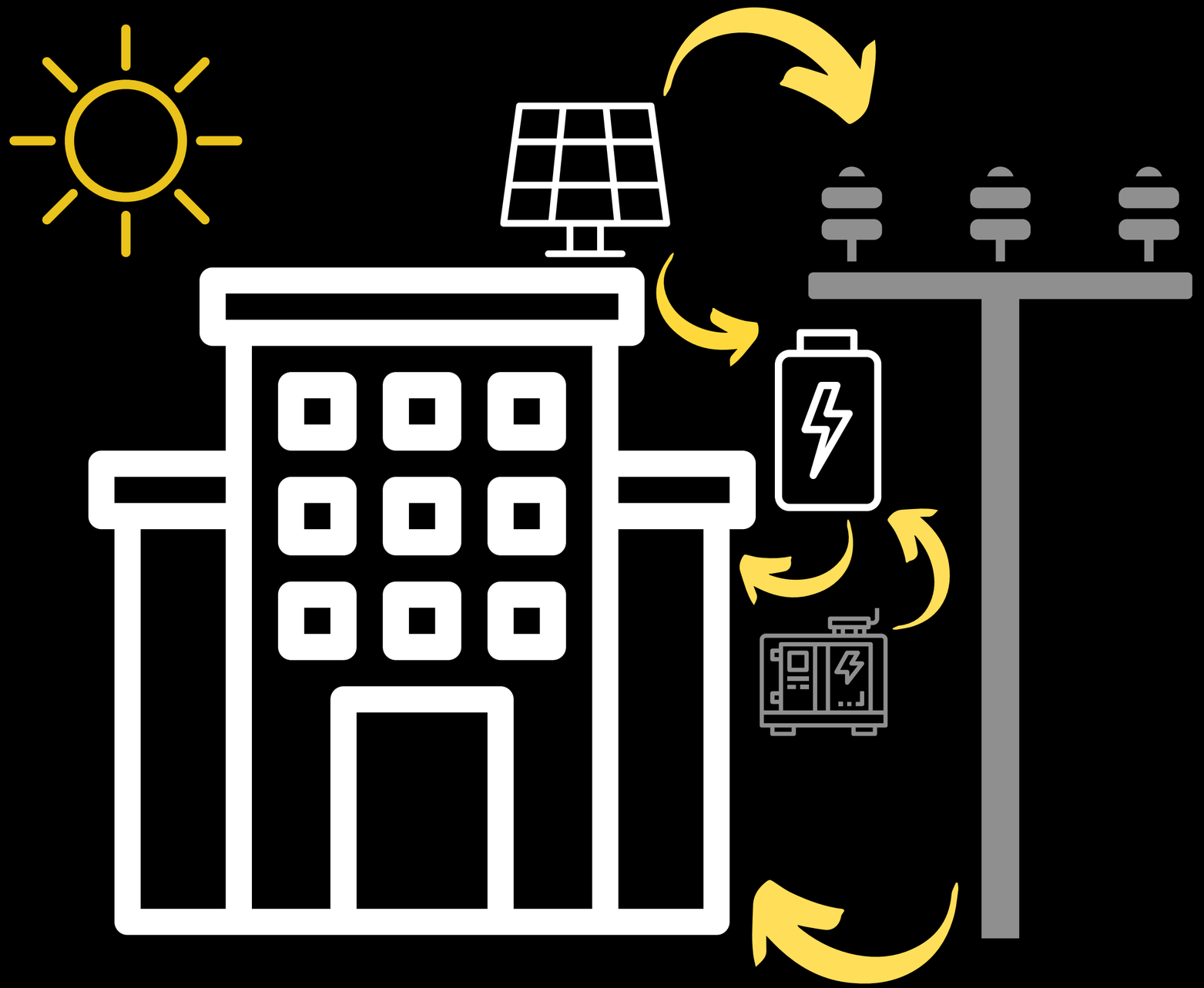
RAC Rural Assistance Center

Impact:

By bringing clean, reliable, affordable electricity to health care facilities in low-income and under-served areas, Collective Energy not only lightens the load on our planet but also cares for and empowers our most vulnerable communities.

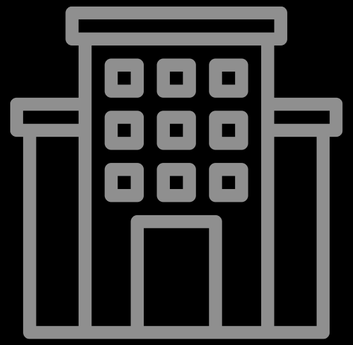


How Does it Work?



How Valuable is a Battery?

In a CPCA Survey at their Annual Meeting...



50% of respondents said they'd experienced at least one 4-hour outage in the past year

69% of respondents said the estimated financial losses for a 1-day outage would be $10,000 or more

54% of respondents said it's reasonable to pay more than $1,000/month for energy reliability

2 Ways to Pay:

You Pay:

- You pay the cost of installation
- You pay Collective Energy to manage the project and act as your Owner's Rep
- You pay to maintain the system
- As a nonprofit, you can now receive a 30% rebate from the US Treasury

We Pay:

- Collective Energy pays costs of installation
- We manage the project
- We maintain the system
- We get the tax credit and depreciation
- Your utility bill savings pay the remaining balance over time

How to Pay for it?

Federal Programs

- Infrastructure and Jobs Act
- Inflation Reduction Act

Grants

- DOE
- FEMA
- Philanthropy

Loans

- Community Banks
- Rural Energy For America
- C-PACE Loan
- CDFIs

3rd Party Financing

- Power Purchase Agreement

If We Pay:

We Pay:

- You sign up for an Energy Service Agreement
- We manage and oversee the entire project
- After project completion and interconnection:
  - You’re billed monthly at predetermined ESA rate for kw of solar energy produced
  - You’re billed at a predetermined fixed monthly rate for the battery
- We maintain, monitor, and repair the system throughout the ESA term (up to 20yrs)
- We remove and replace system components at the end of their life during the ESA term
  - Battery at year 12
  - Inverters at year 16
- You own system at end of the term

What is an Energy Service Agreement?

Pay for Clean Power with your Utility Bill Savings!

A Energy Service Agreement is a common financing structure that offers shared value to the host and the developer. The host benefits from cleaner and lower cost energy at a fixed rate with no up front costs. The developer benefits from the tax credits and depreciation the of the clean energy system on your building and energy payments from the host.

SEIA Solar Energy Industries Association®

Case Study:

Crescent Care
New Orleans, LA

Case Study:

Direct Relief HQ
Santa Barbara, CA

Partners:

CHARGE

Community Health Access to Resilient Green Energy

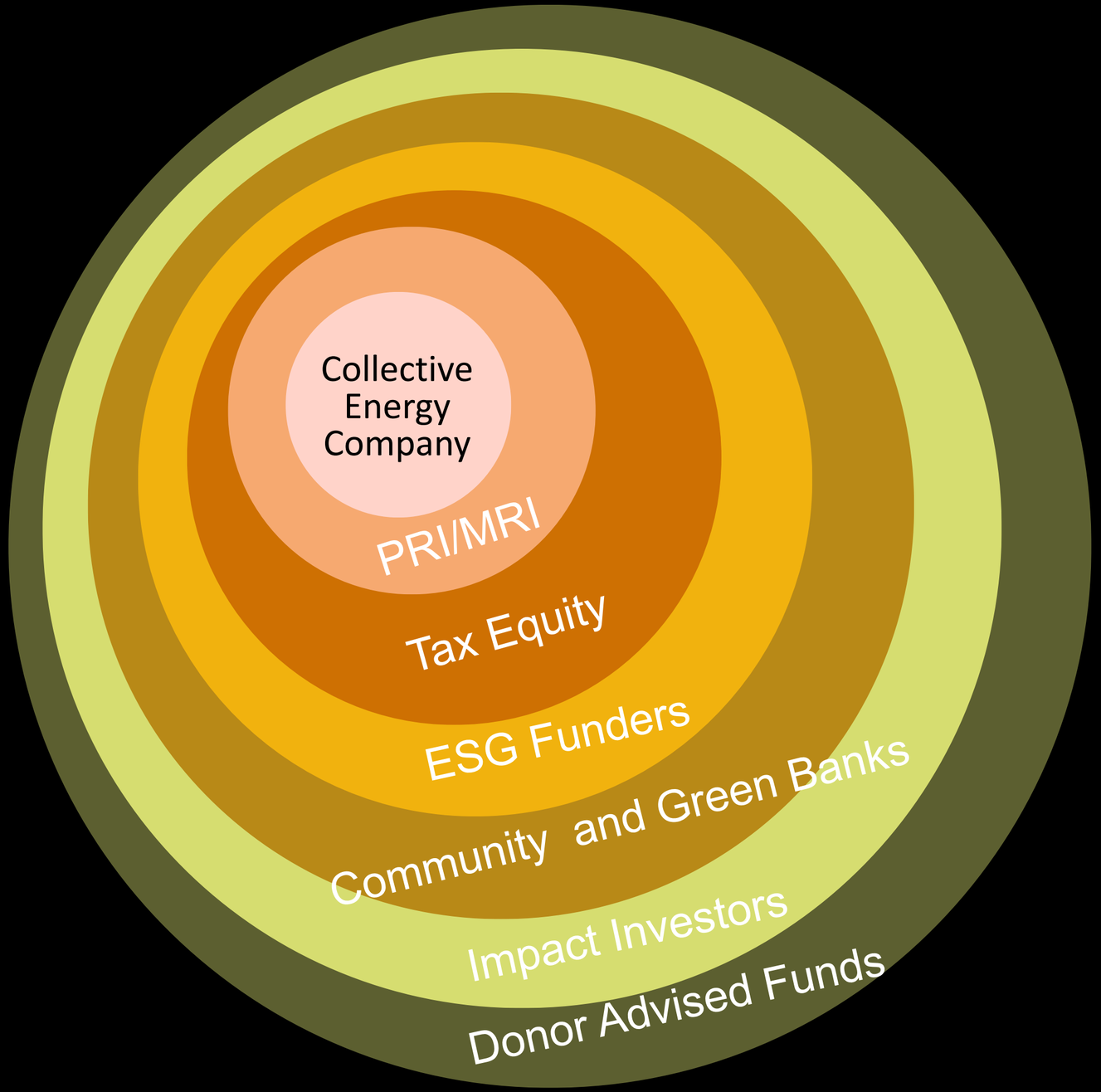
NATIONAL ASSOCIATION OF Community Health Centers®

collective ENERGY company

CAPITAL LINK

Appeal:

Collective Energy appeals to a coveted range of investors, funds, and lenders looking to prioritize positive change in sectors they care about while also producing returns that enable further impact.



Partners:

It's going to take the collective.

California Primary Care Association

National Association of Community Health Centers®

ASTERI SOLAR

AMERICAN MICROGRID SOLUTIONS

THE KRESGE FOUNDATION

CAPITAL LINK

GRID ALTERNATIVES

CleanEnergyGroup
Innovation in Finance, Technology & Policy

CALIFORNIA SOLAR + STORAGE ASSOCIATION
smart local energy

Florida Association of Community HEALTH CENTERS

Let's Connect:

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www.CollectiveEnergyCo.com

collective ENERGY company

Florida Resilient Power System Assessment

Key Findings and Takeaways

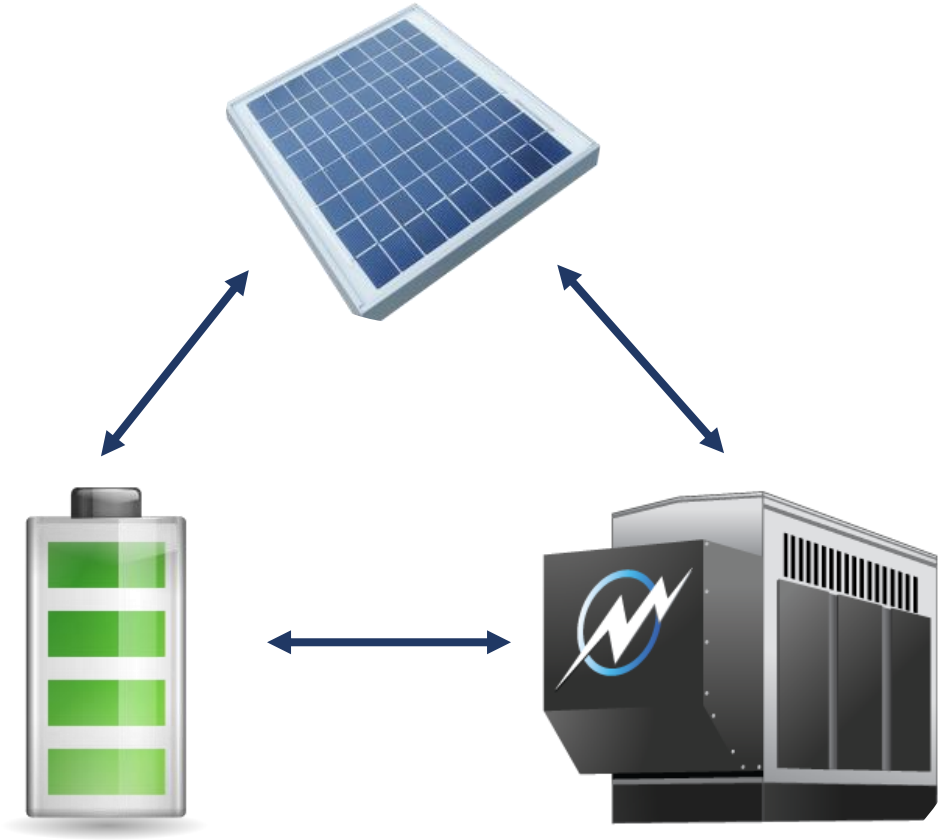
American Microgrid Solutions

July 2023

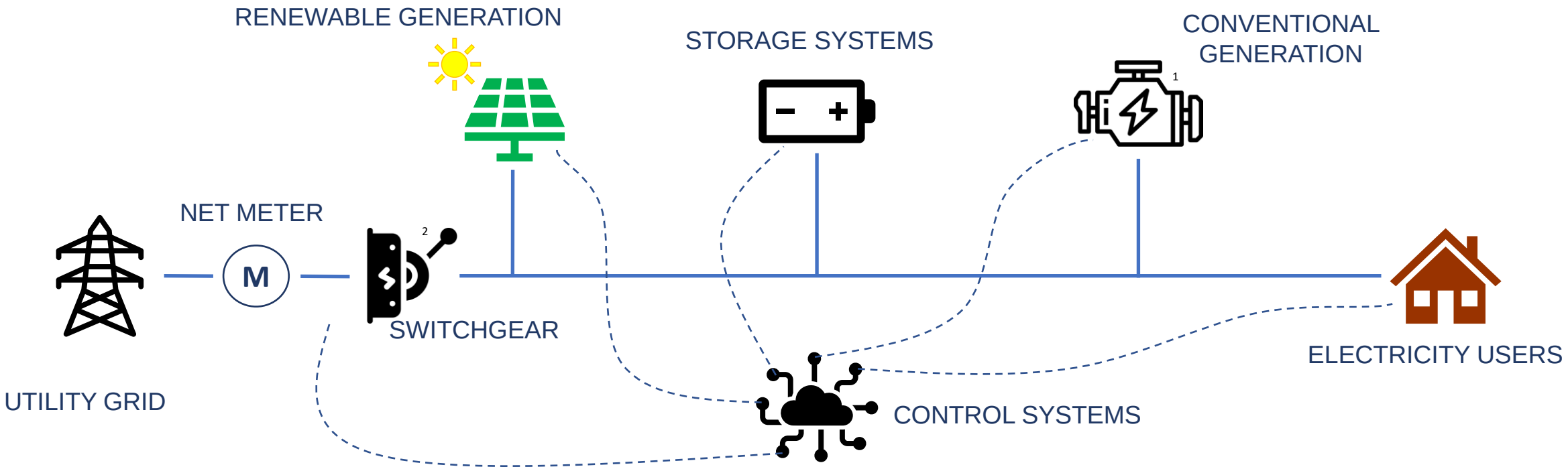
AMERICAN MICROGRID SOLUTIONS

Generating Savings, Security, & Sustainability

- American Microgrid Solutions **designs & develops** microgrids and other energy tools to improve **savings, security, and sustainability** for critical facilities
- Systems combine **solar, battery storage, conventional generation,** and **advanced controls**
- Resilience Hubs projects underway in 12 states
- > 100 Resilient Power solutions in > 30 states and Puerto Rico
- **Turnkey services** from concept to commissioning, including finance
- Team brings decades of **advanced energy experience** from utilities, telecom, Wall Street, and national security



Anatomy of Resilient Power



[1] Icon made by monkik from www.flaticon.com
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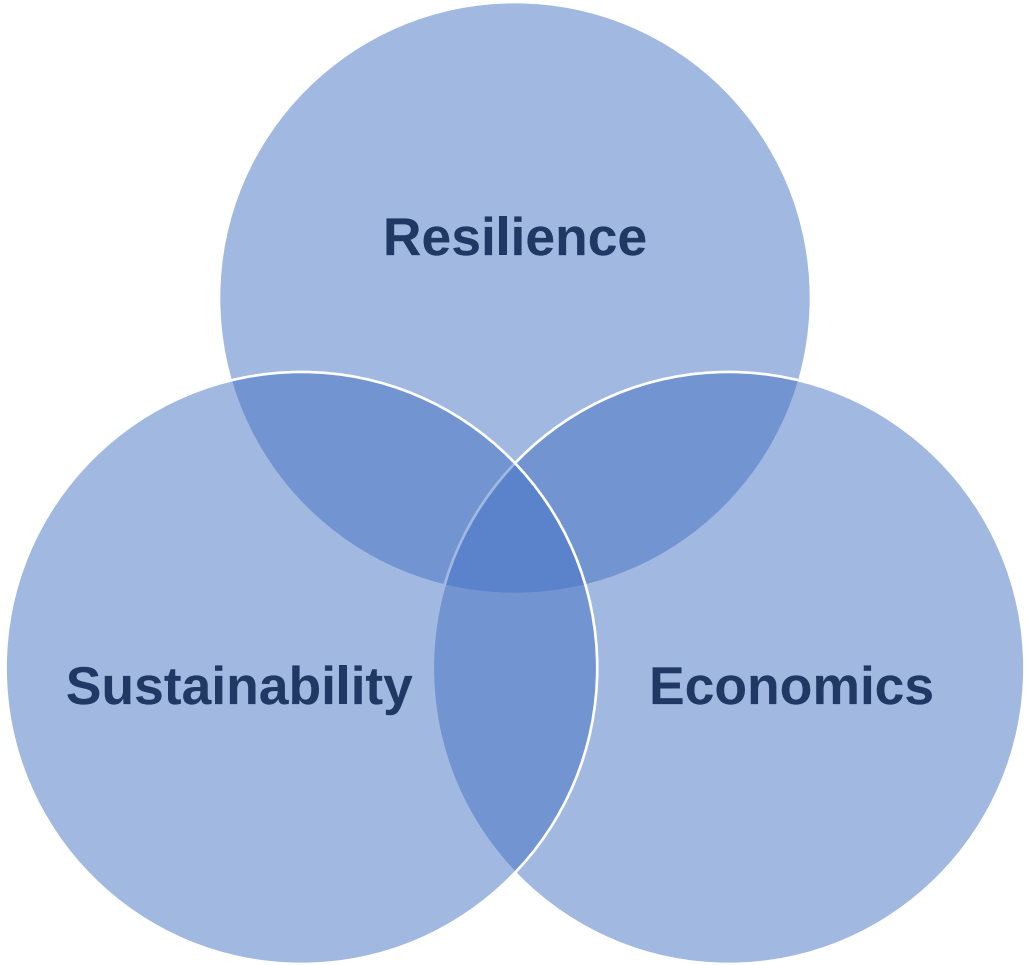
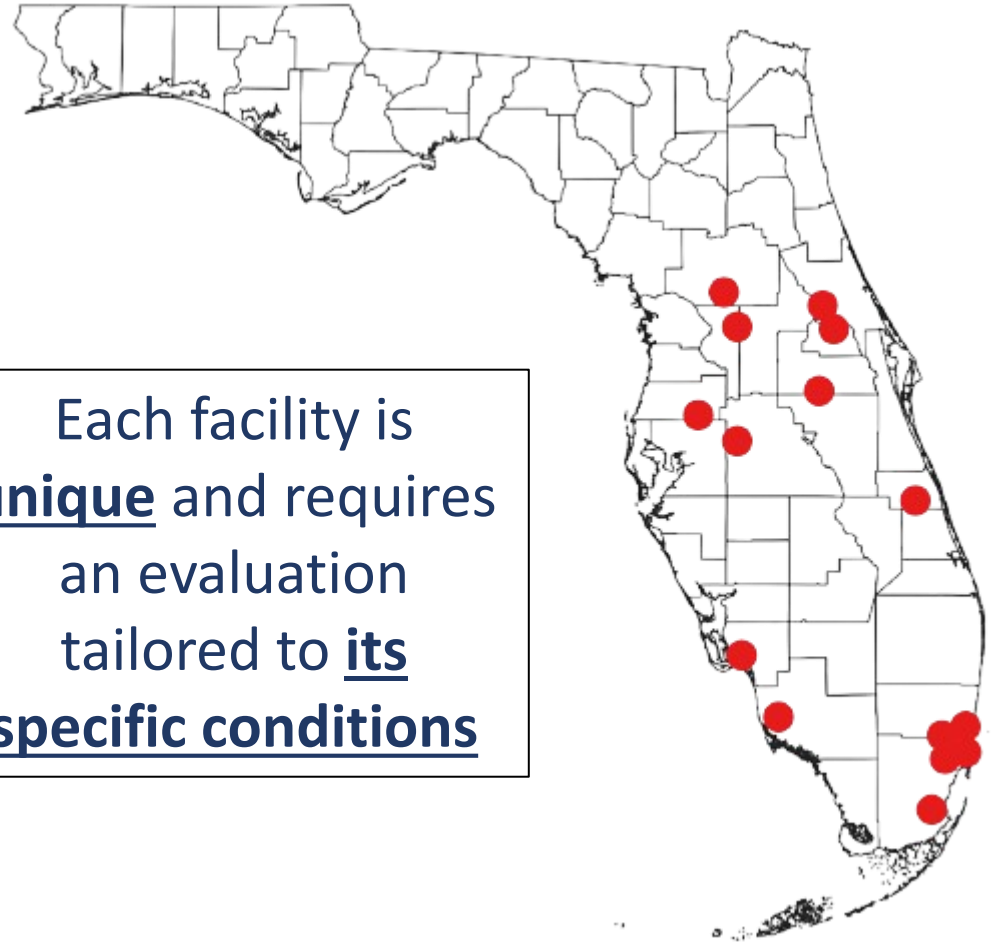
Balancing Goals in 3 Key Areas



Project Scope

- **Objective:** Identify a **solar+storage and generator** solution for 15 Florida Health Centers
- **Budget:** $500,000 per system
- **Considerations:**
  - Existing facility conditions
  - Existing generation
  - Building load profile
  - Critical loads
  - Resilience Performance
  - Projected utility savings
  - Sustainability impact

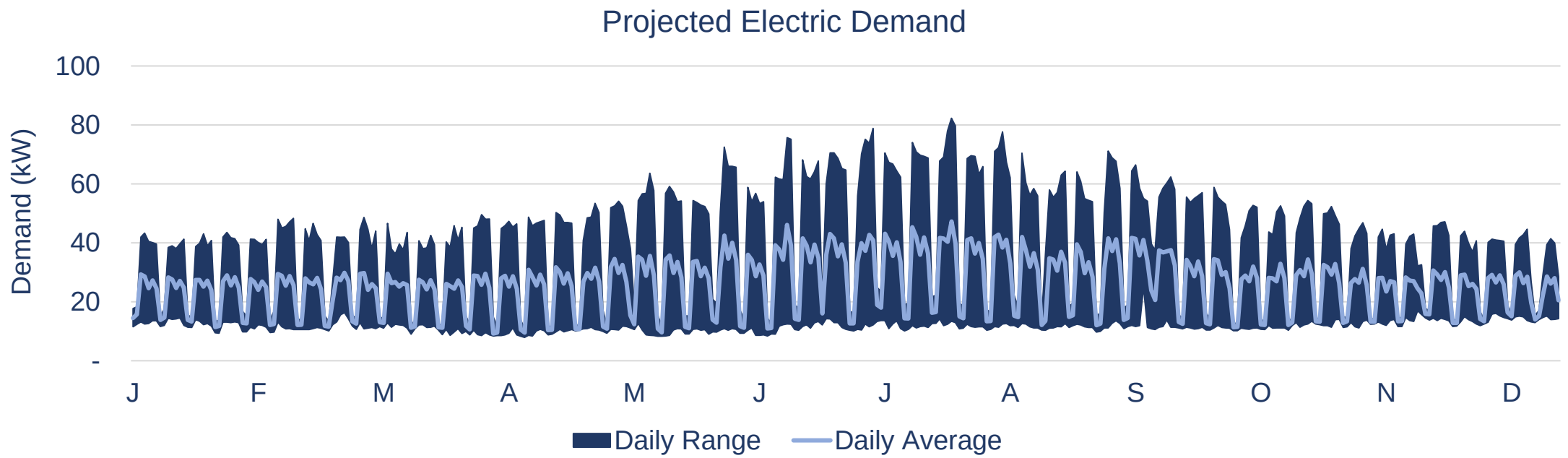


Each facility is **unique** and requires an evaluation tailored to **its specific conditions**

Existing Facility Conditions

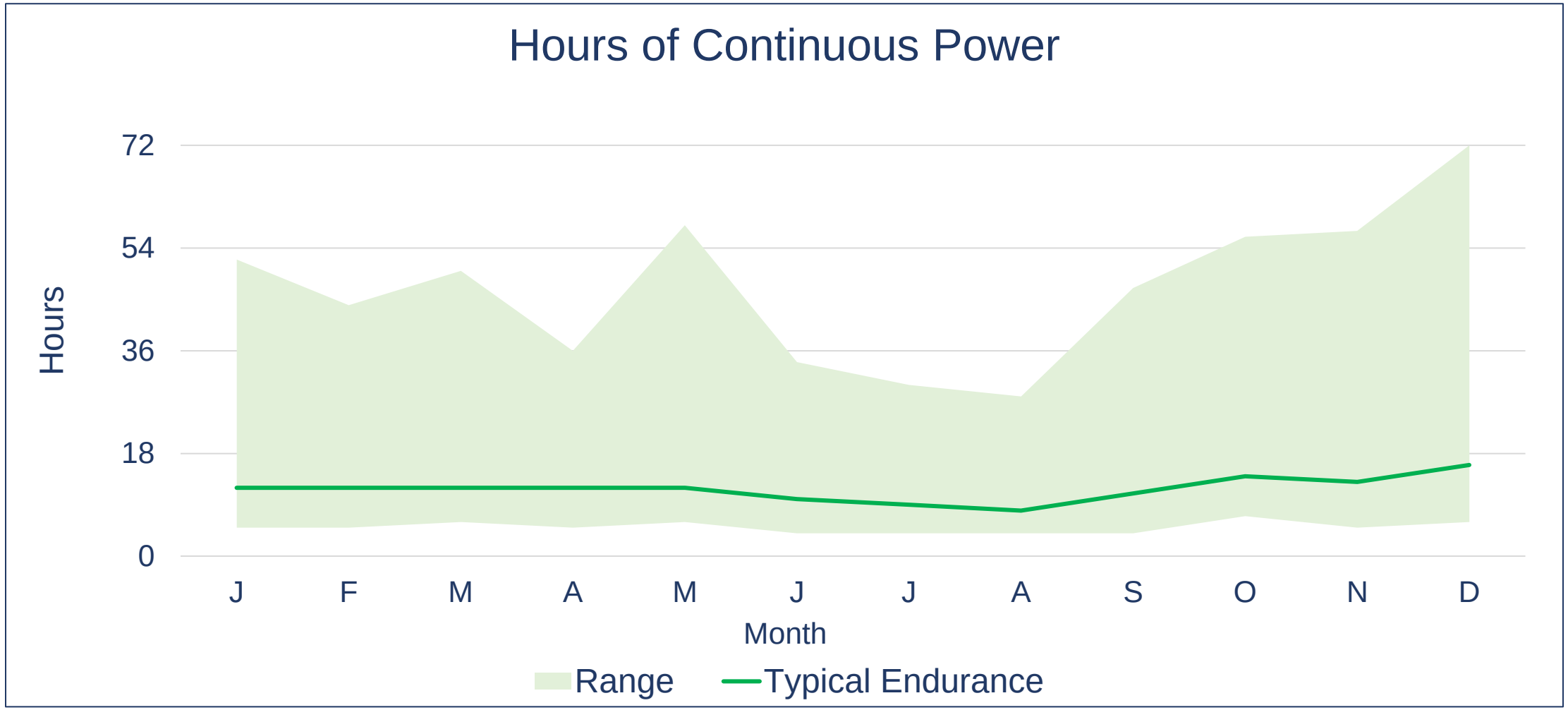
- Roof Considerations
  - Pitch and orientation
  - Roof congestion
  - Age and structural integrity
- Property Space Availability
  - Physical space for battery and/or conventional generator
- Electrical Infrastructure
  - Spare breakers
  - Ease of segregating critical loads
- Onsite Generation
  - Is there a generator already present?
- Utility and AHJ Requirements
  - Interconnection ease
  - Permitting

Energy Analysis



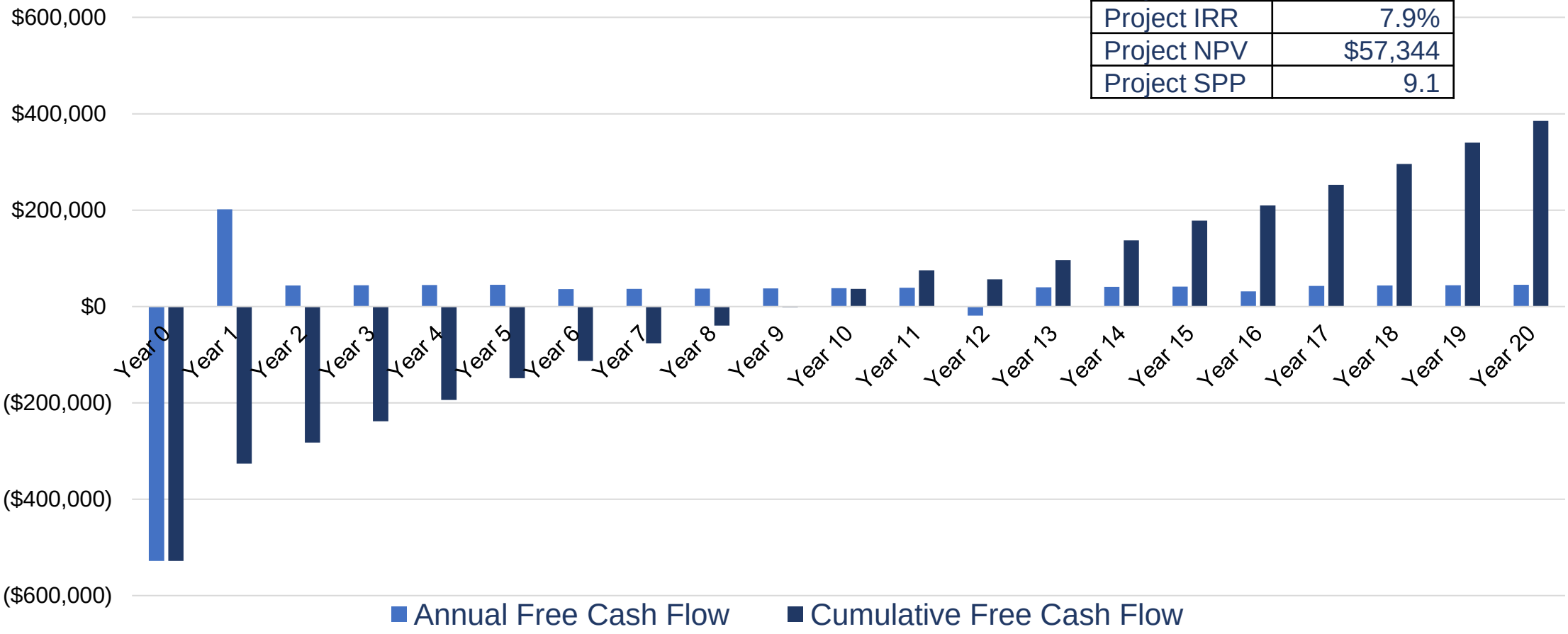
Data	Interval data 2022 - 2023
Profiles	Typical operation, full-building usage
Projected Annual Usage	228,000 kWh
Peak Demand (Annual)	82 kW

Annual Resilience Endurance Profile – Solar and Battery

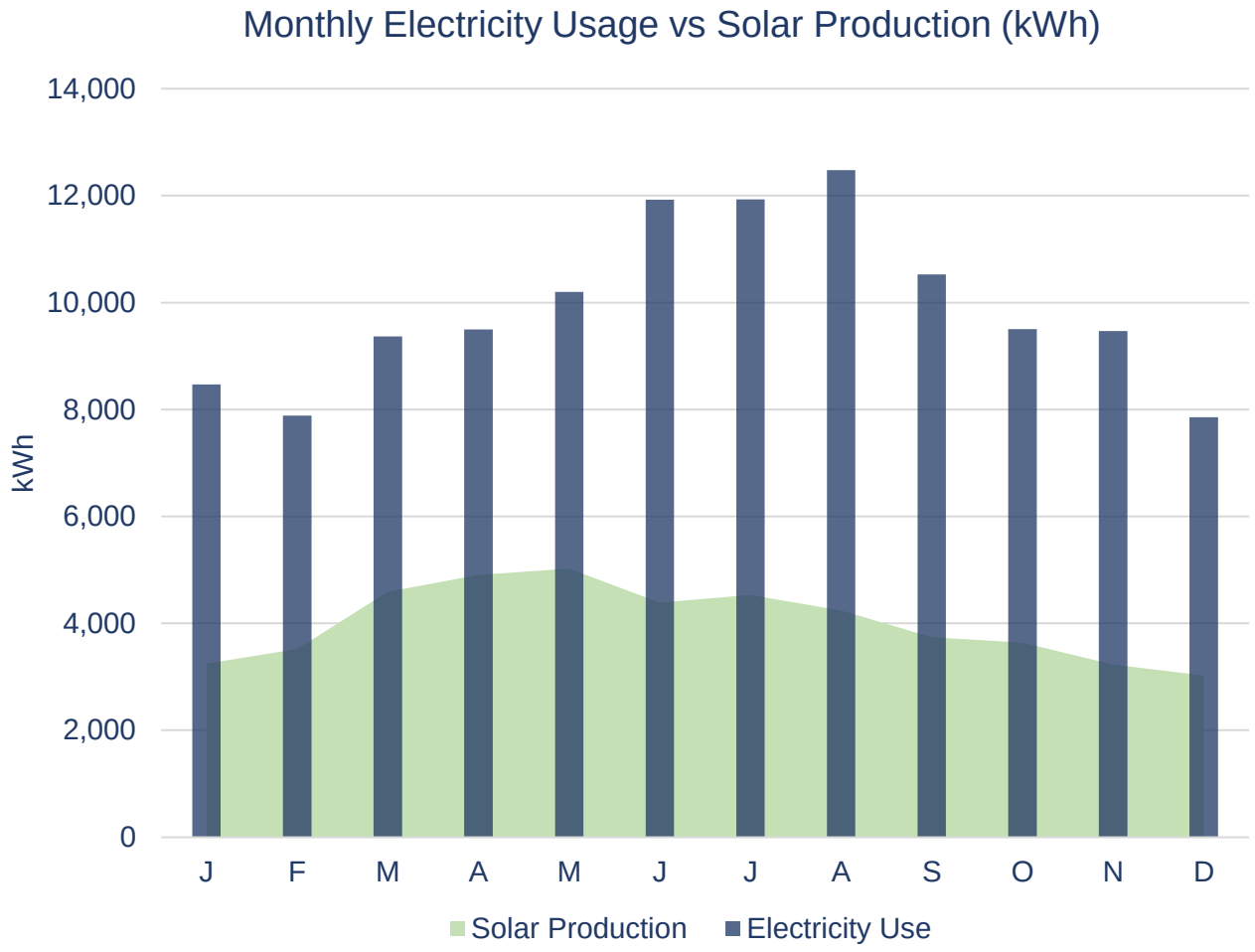


Financial Forecast

Project Life	20 Years
Project IRR	7.9%
Project NPV	$57,344
Project SPP	9.1

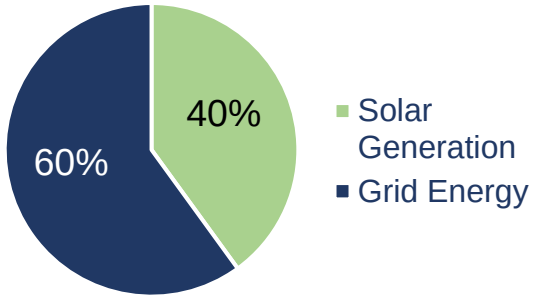


Sustainability Performance



Offsets 85,000 vehicle miles driven annually

Equivalent to carbon sequestered by 42 acres of forest every year



Site Screening Results

Site	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7
Site Size Category	**Small**	**Small**	**Medium**	**Medium**	**Medium**	**Large**	**Large**
Square Footage	6,480	7,824	15,000	21,000	24,000	49,722	53,000
Solar Size (kW)	22	24	31	64	51	68	74
Storage Size (kW/kWh)	57 / 129	24 / 54	56 / 126	168 / 448	61 / 148	73 / 194	45 / 102
Total System Costs	$308,000	$179,000	$327,000	$633,000	$401,000	$465,000	$390,000
Annual Utility Savings	$2,100	$3,400	$3,000	$7,300	$9,200	$12,500	$11,600
Annual Utility Cost Reduction (%)	20%	68%	18%	13%	14%	9%	15%
Duration Backup Power–Minimum (hours)	4	4	4	4	4	4	4
Duration Backup Power–Typical (hours)	14	14	9	8	8	8	8
Building loads supported during an outage (%)[a]	Full building	Full Building	Full building	Full building	30%	18%	18%
Annual CO_2 Emissions Reduction (metric tons)[b]	22	26	34	64	56	72	81
Replacement Costs (Year 12–16) & Operations and Maintence Costs[c]	$41,400	$19,200	$41,500	$147,000	$50,000	$64,300	$39,400

Thank you for the opportunity to work with you on your Resilient Power project!

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