Investing in Georgia's Energy, Land, and Water Resources

Solar Resiliency Technical Assistance Program

Webinar

Kristofor Anderson Kelly Cutts April 2, 2020



Webinar Goals

By participating in this webinar, you will:

- Discover GEFA's available funding opportunities for performing solar resiliency feasibility studies;
- Hear from energy engineers, solar installers, utility representatives, and battery storage experts; and
- Gain a better understanding of critical infrastructure resiliency.



Webinar Agenda

- Background and Overview
- Industry Experts
 - State of the Solar Industry in Georgia
 - Solar Technology Overview
 - Battery & Storage Combined with Solar
 - Utility Perspective on Solar/Storage Resiliency
- GDS: Resiliency Programs & Feasibility Study Example
- How to Apply for GEFA Funding
- Next Steps
- Q&A

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Program Background

GEFA SEP Planning Stakeholder Group

Spring 2019 Meeting GEFA DOE Funding Planning - Resiliency Hubs

GEFA ESF-12 Function

Energy Support Function 12 = Energy Assurance GEMA State Operations Center, Hurricane Response Critical Facilities

Solar Industry Feedback

Timing is right, feasibility studies will reduce risk

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Solar Resiliency Program Overview

Phase I: (Current) Technical Assistance Workshop for Local Government.

Phase II: (April 2020 – September 2020) GEFA has contracted with GDS Associates, Inc. to provide for no-cost feasibility studies.

Phase III: (Spring 2021- Fall 2023) Pending DOE funding approval Solar/Battery Resiliency Project Funding Investing in Georgia's Energy, Land, and Water Resources



Phase II: Feasibility Study Process

GEFA has contracted with GDS Associates, Inc. to help local governments create resilient critical facilities using solar plus energy storage and identify the technical solutions available to achieve the highest and best use of their resources.

The fully funded feasibility studies will be completed by GDS Associates, Inc. and will ensure critical systems continue to operate during utility outages through the combined use of solar and battery storage.

- 1. Applications to GEFA: Opens Monday April 6, 2020 at 9:00 a.m.
- **2.** Evaluation:
- 3. Notification of Selection
- 4. GDS Associates, Inc. Conducts Feasibility Studies
- 5. Award Notification (pending future DOE funding)

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State of the Solar Industry in Georgia

Don Moreland Solar Crowdsource don@solarcrowdsource.com



Solar in Georgia

Current Status – By the numbers

- Number of installations: 1,817
- Installed capacity: 2,448MW
- Percentage of Georgia electricity from solar: 1.74%
- State ranking: 11th
- Jobs: 4,798
- Economic development: \$3+ billion

Types of Solar

- Utility scale: in front of meter
- Distributed generation: behind the meter (BTM)

Ways Local Governments Can Integrate Solar

Self-own

- Use energy to reduce utility expense
- Solar + storage increases resiliency
- Finance
 - SPLOST (Athens)
 - GEFA Conservation Loan for water treatment facilities

SEPA: Solar Energy Procurement Agreement

- Purchase energy only through long-term contract with provider
- No out-of-pocket, O&M
- Atlanta and Macon

Solarize: community group purchase programs

 11 in GA; 600 installations; 4MW of solar capacity; 1.8MWh of battery storage

Why Solar Now?

- Tax credits phasing out
 - 2020: 26%
 - 2021: 22%
 - 2022: 10%
- Rates going up: 15% over next 3 years
- Monthly netting program
- Increase property values
- Sustainable clean, renewable energy
- Economic development tool

About Solar Crowdsource

Solarize Programs for Local Governments

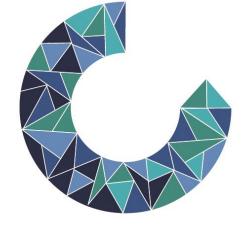
- Stakeholder collaboration
- RFP
- Website, intake, CRM
- Education events
- Project management
- No cost to community

Crowdfunding Programs for Nonprofits

- Site evaluation
- Project scope
- Campaign structure
- Website, intake, payment processing
- RFP (if necessary)
- No out-of-pocket cost to nonprofit







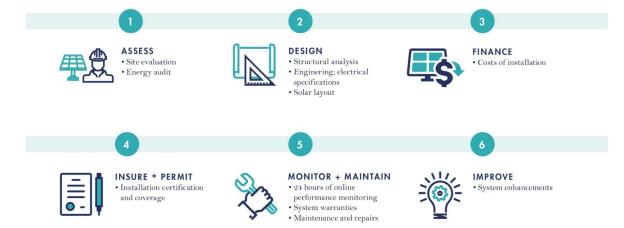
CHERRY STREET ENERGY



Our Process

Our unique platform allows us to work with our customers to find the best solution to fit their energy needs

How & Why We Do It



Our Mission Do Good and Do Well

Do Good

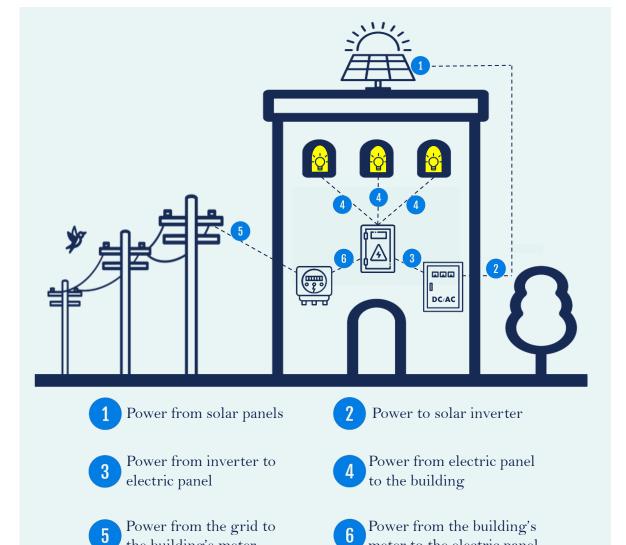
- Offer customers a local energy choice
- Simplify the switch to solar by providing a fully integrated, turnkey solution.
- Contribute to a healthier future

Do Well

- Reduce our customer's energy bill.
- Provide continued technological innovation.
- Implement a business model with proven, repeatable, and scalable results

The Solar Process How power gets to a building





meter to the electric panel

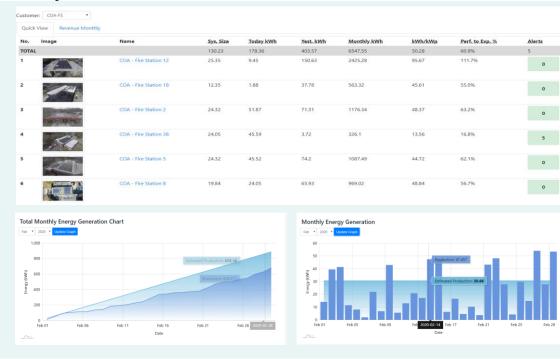
the building's meter



3

The Cherry Street Dashboard Proprietary software for 0&M

Cherry Street Dashboard:



Next Steps:

- Create real-time communication between inverters and software
- Allow for flexible transmission of solar energy between systems
- Build a customer-facing dashboard
- Create a scalable method of data aggregation

Resilient Operations

The City of Atlanta SEPA executed in 2017

Atlanta is committed to achieving 100% renewable electricity by 2035. By leveraging a solar energy procurement agreement (SEPA) with Cherry Street Energy, the city is able to immediately offset their energy burden without upfront costs to build the solar infrastructure.

Cherry Street Energy will initially help the city offset 30% of its energy burden, and over time will help the city reach 100% of the goal.

Cherry Street Energy continues to work with the City of Atlanta to implement solar at locations across the city.



MLK Aquatic Center



Grove Park Recreation Center



CT Martin Recreation Center



Rosel Fann Recreation Center



Fire Station 38



Fire Station 12

Resiliency Case Study

FRRY STREET ENERGY

Fulton County Community Resilience Hub

Fulton County is striving to improve their public buildings to be climate resilient. The purpose of their goal is to ensure that their buildings continue to function as extreme weather events and emergencies are expected to increase. The strive to do this by providing solar plus storage at each location and collect rainwater on-site.

As they continue to determine where they will be focusing their first phase of resilience hubs, Cherry Street Energy has been helping Fulton County find the best candidates to benefit from a solar plus storage in their first phase.



College Park Regional Health Center



Louise Watley Library at Southeast



Metropolitan Branch Library



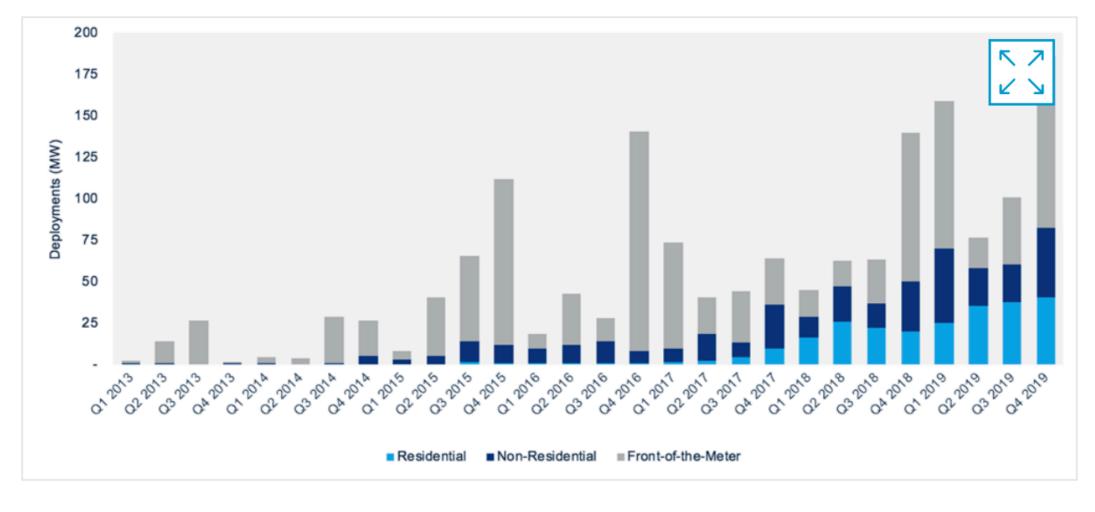
Neighborhood Union Health Center

Resiliency Case Study

The Relationship of Solar & Energy Storage (AKA Batteries)



U.S. Quarterly Energy Storage Deployments by Segment (MW)



Source: Wood Mackenzie U.S. Energy Storage Monitor 2019 Year in Review

2019 Energy Storage in the US Exceeded 522 Megawatts / 1,113 Megawatt hours What are Megawatt Hours?

Variations of Lithium Batteries & Manufacturers

Tesla



Sonnen



LG Chem & Samsung



Economics: Cost of Energy Storage has dropped 76% since 2012

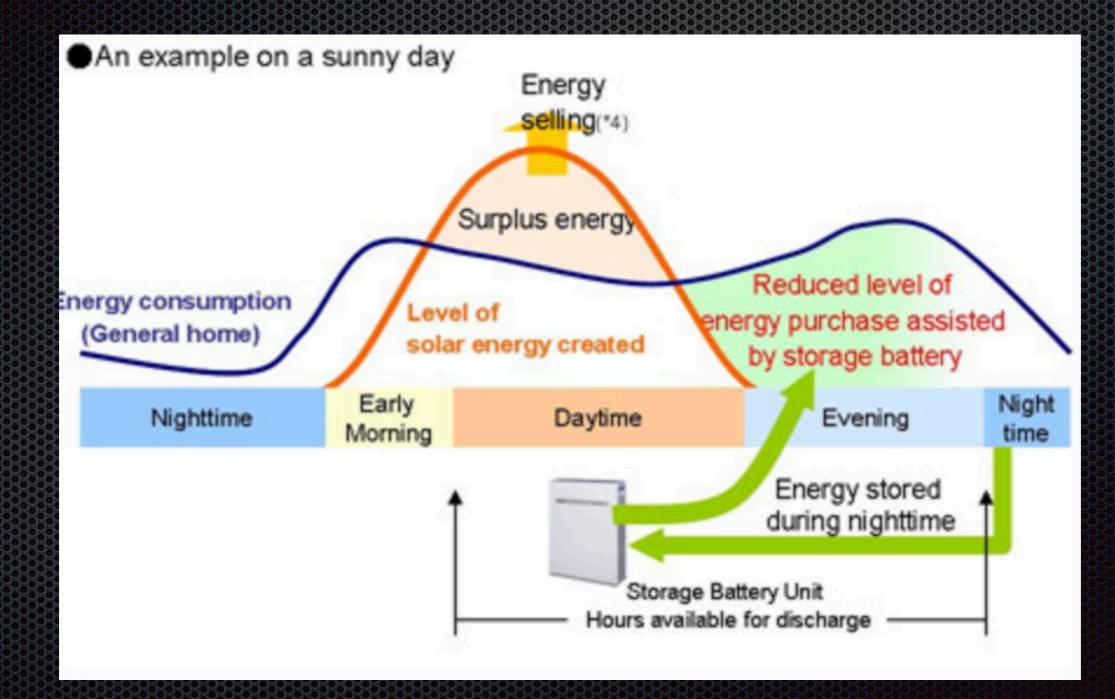
Battery Type: 99% of Energy Storage in 2019 was Lithium Ion

Durability:

- Life span: 15 25 years (or more)
- Frequency of charging and discharging (Multiple times daily)
- Low Maintenance vs Generator (fuel costs, parts and maintenance, reliability)

Scalable: 4 Kw hours to 1 Mw with 4 Mw hours of output

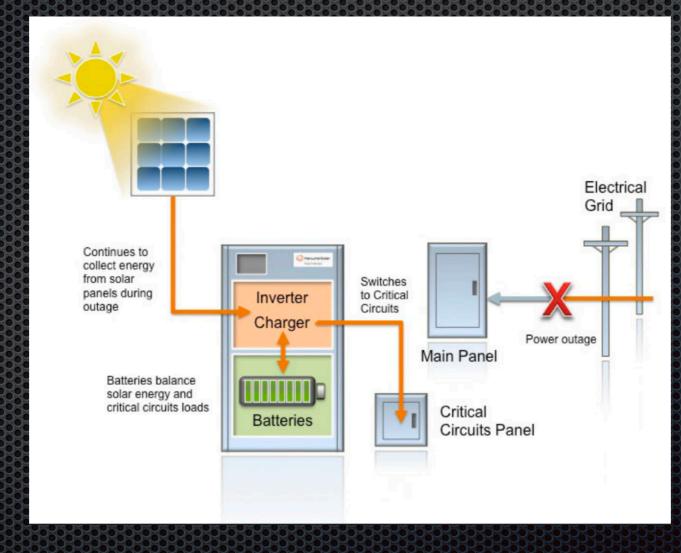
How does solar and storage work through a normal day?



How does it work with solar and the grid?

Do I need solar to have Energy Storage for back-up?

Examples: How it could work for you.



What would Storage support in a power outage Router Server Data Storage AC for IT Data Room Critical Specific lighting Circuits Panel Spare office Printer(s) PC's Phone system(Comms) Items that will allow you to function and support your most essential operations !





- Georgia Based company
- Going on 13 years
- EPC Developer(Engineer, Procure & Construct)Turn-Key
- Over 750 Solar Installations in SE mainly Georgia
- Over 10MW in installations
- 95% work is in-house and Employees of CSUSA
- Scope is 4 kW to 2MW Projects
- 6 NABCEP Certified Professionals on Staff



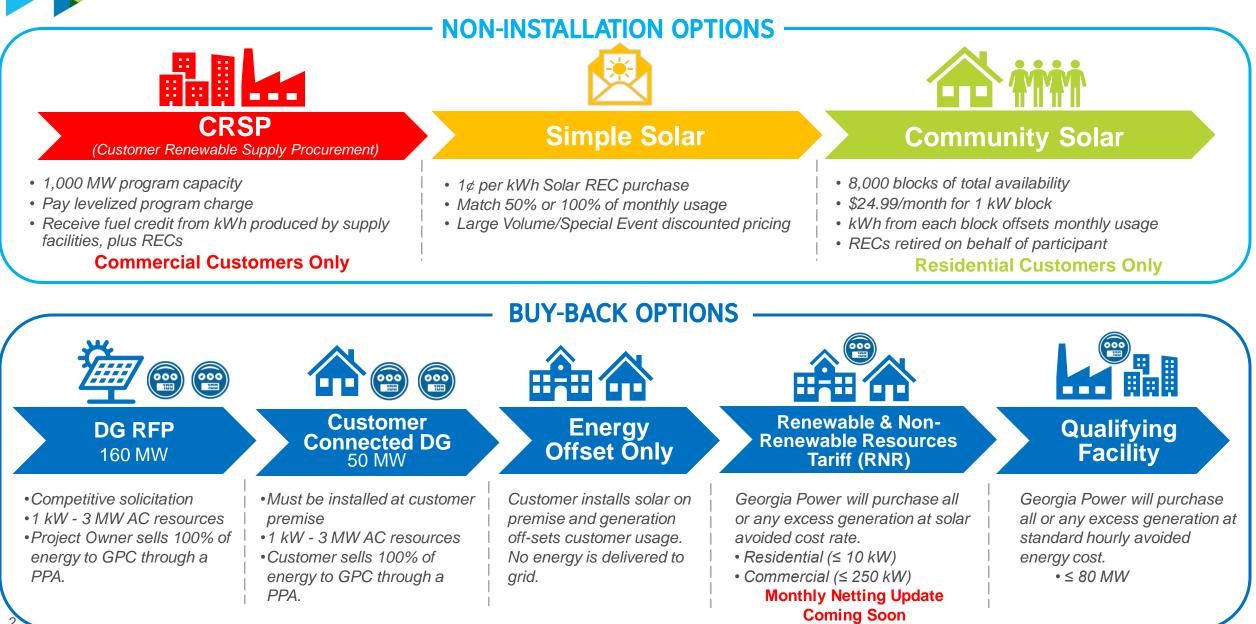


GEFA Webinar – Renewable Programs Overview

Sy Allen & Brooke Haman Renewable Customer Engagement



Current Customer Renewable Options







- Customer interested about solar PV and wants to know more about their options.
- Project Coordinator discusses:
 - Customer's goals/ needs
 - ALL solar options
 - Interconnection process & requirements

ANALYSIS

- Upon request, a customer is provided with a customized solar PV analysis, based on:
 - Energy usage
 - Peak demand (if applicable)
 - Rate
 - Available programs
 - Expectation of savings
 - Other installation factors
 - GPC Energy Services can provide an on-site survey and solar PV installation estimate



- Customer:
 - Establishes PowerClerk profile
 - Submits application (preferably before installation)
 - Installs Solar PV
 - Signs an (IA) Interconnection Agreement
- Georgia Power:
 - Reviews PV specifications (preferably before installation)
 - Executes IA/ setup billing
 - *Verifies equipment installed
 - *Reprograms the meter



Step 1: Go to GPC Solar Buy Back Webpage

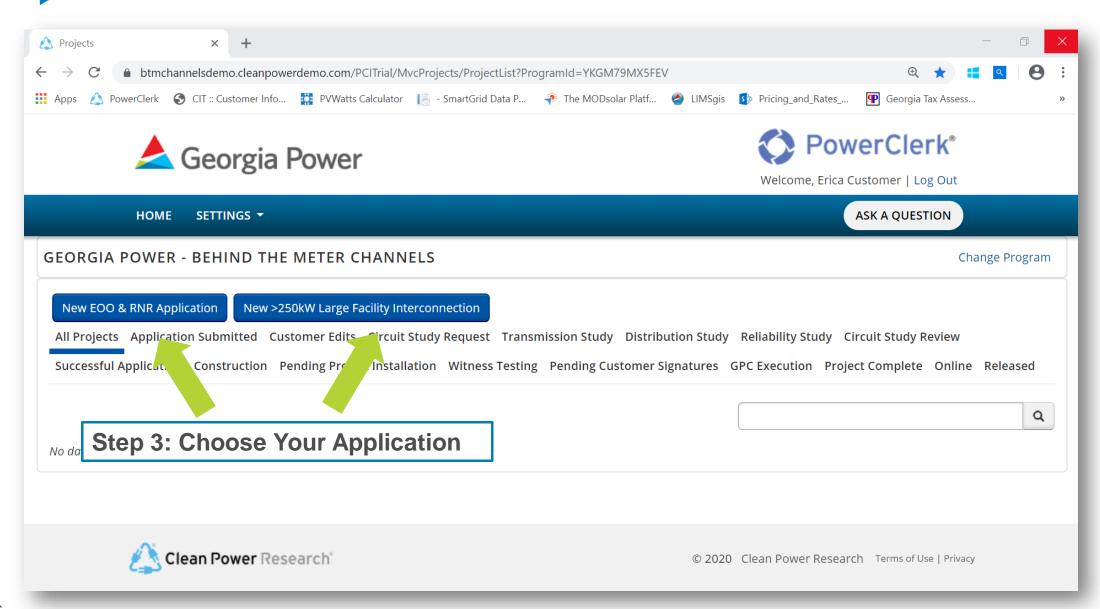
Click Here to Access PowerClerk

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Solar Power Buy Back & Installati	on	
Depending on your circumstances, installing a solar array at your home or b installation, it is very important that you understand your current rate. Gee provide energy savings from solar production differently. Georgia Power is right for you.	orgia Power offers several dif	ferent rate structures, each of which
UPDATED Renewable & Nonrenewable Tariff (Small	generators ≤ 250 k\	N)
A modification to the Renewable and Non-Renewable Resources Tariff the Georgia Public Service Commission issues the written final order ir and Staff to confirm the details and develop a plan to implement the to the Renewable Resources Tariff (TRNF).	n the 2019 Rate Case, Georg	ia Power will work with the Commi
The program limitation on renewable energy resources is limited to 10 combined nameplate rating of the inverter.		
For details on the current program, see the Renewable and Nonrenew	vable Resources (RNR) Tari	π.
Interconnection requirements are defined in the following document:	Operation of Distributed E	nergy Resources (DER) in Parallel
Interconnection requirements are defined in the following document: Distribution System (PDF). Ready to connect to the grid? Customers who desire to connect their solar installation to offset usag here online. Apply Today		
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Distribution System (PDF). Ready to connect to the grid? Customers who desire to connect their solar installation to offset usag here online. Apply Today	e information and hine tool 15 a Solar of further explore the ia Power Solar encry usage to help ake the transition to luding Georgia	ter our available programs should a ter our available programs should a ter our available programs should a should be the state of the should be should be the should be t
Distribution System (PDF). Ready to connect to the grid? Customers who desire to connect their solar installation to offset usage here online. Apply Today Dar Installation Considering a Solar Installation for your Home? As your energy partner for solar, we're committed to providing you th guidance you need to make an informed choice. Use our interactive or installation Right for You?? to see an estimater for solar installation. Densy Experiment on solar system, we encourage you conctat a George Fenergy Expert. Our Solar Fenergy Experts will review your home and er you customize an option that best fits your needs. If you decide to m your customize an option that best fits your needs of you decide to m your parchase your system from a vender of your choice, inc	e information and hine tool '14 s Solar of urther explore the ia Power Solar ency usage to help ake the far solar too.com.	ler our available programs should an East of the state of the state of the state of the state Is a Solar Installation Right for You? Solar energy is a renewable emission-free energy sou Find out if a solar panel installation is a good ener option for your home



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	📥 Georgia Power	PowerClerk [®]
	PowerClerk	
	Georgia Power Company's Application for Interconnection	Log In
	Please visit our website at <u>GeorgiaPower.com/solar</u> to learn more about all of the renewable options Georgia Power has to offer.	Username:
	To get started, please register to create an account. If you are an existing user, please log in.	example@company.com
	What information will be required to complete an application?	Password:
	 Georgia Power customer information, including customer name, account number, and facility address. Facility and technical information, including a one-line drawing and panel and inverter specifications. If battery storage is included, battery specifications must also be provided. Installer information. 	Log In Forgot Password?
	Georgia Power is part of Southern Company. Please review the Southern Company Distribution Interconnection Policy:	Register a new account
	Inverter Based Generators 25 kW and Smaller	
	Operation of Generators in Parallel with Distribution System – up to 10,000 kW	
	Please note: Sto	ep 2: Register New Ac
	Even if customer's installer completes or helps complete customer's online application, the interconnection agreement will be solely between Georgia Power Company and customer. All applications will require the Georgia Power customer's signature.	
	If you have any questions, please contact us at: <u>G2GPCRDI@southernco.com</u>	







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	Email	 Project Service Address
	Phone * (###) ###-####	 Installer Information
	Project's Service Address * New Contact	 Project Information
	Street	Battery Information
	City Zip Code	Metering
	Provider's Mailing Address *	Attachments
	New Contact	Allachiments



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	EOO- Energy Offset Only	RNR- Renewable and Nonrenewable Resources Tariff	RNR (Monthly Netting)- Renewable and Nonrenewable Resources Tariff	QF- Qualifying Facility (Renewable)
AC Size: (Max Aggregate Inverter Rating)	Not restricted	Residential: <10 kW Commercial: <250 kW Limited to 125% of current metered peak demand	Residential: <10 kW Commercial: <250 kW Limited to 125% of current metered peak demand	Small Power: <80 MW Cogeneration: no limit
Customer Credit/ Savings:	 Offset avoided kWh load No credit for kWh received 	 Offset avoided kWh load Credit for kWh received (instantaneous netting) @ solar avoided cost rate 	 Offset avoided kWh load Credit for kWh received (monthly netting) @ solar avoided cost rate 	 Credit for kWh received @ hourly avoided cost rate
Renewable Energy Credits (RECs):	Customer maintains RECs	Customer maintains RECs	Customer maintains RECs	Customer maintains RECs
Witness Testing (one-time) Fee:	Not to exceed \$2,500	\$5 per kW AC	\$5 per kW AC	Not to exceed \$2,500
Metering Fees:	No fee- bidirectional	No fee- bidirectional	No fee- bidirectional	\$210 monthly- 2 meters
Additional Fees:	Site specific distribution or metering costs as applicable	Site specific distribution or metering costs as applicable	Site specific distribution or metering costs as applicable	Site specific distribution or metering costs as applicable
Agreement:	Distributed Generation Service Agreement	Distributed Generation Service Agreement	Distributed Generation Service Agreement	Distributed Generation Service Agreement or PPA





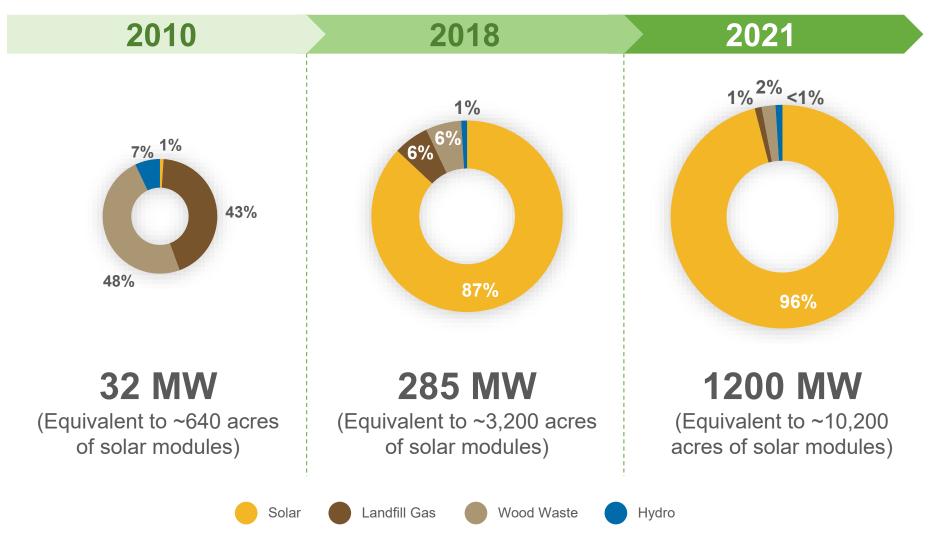
Resiliency Technical Assistance Workshop

April 2, 2020





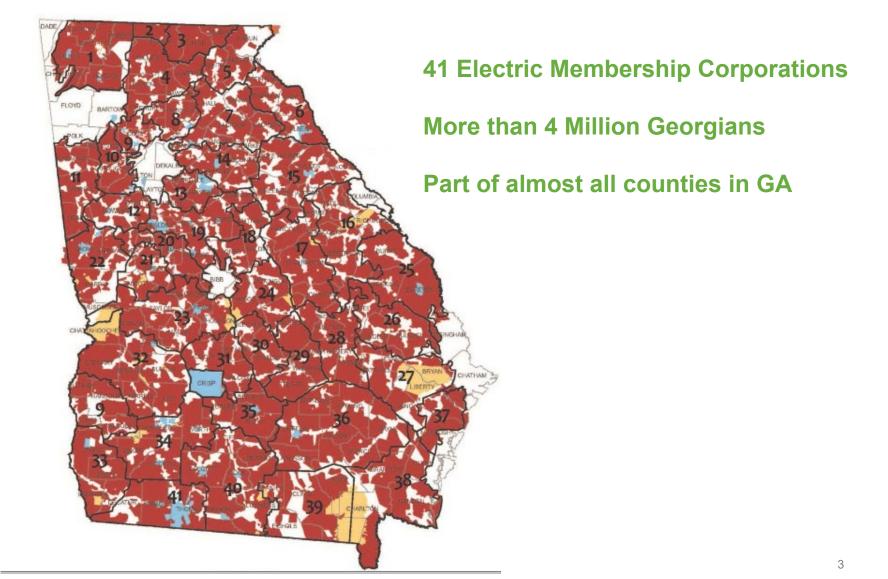
Renewable Generation Mix



Green Power EMC

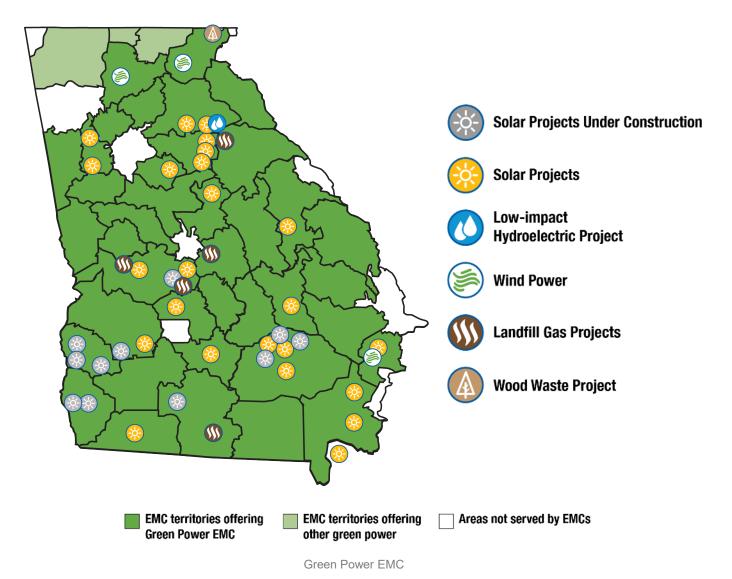


Member EMCs in Georgia





Member EMC Solar Initiative





Solar Project Scale



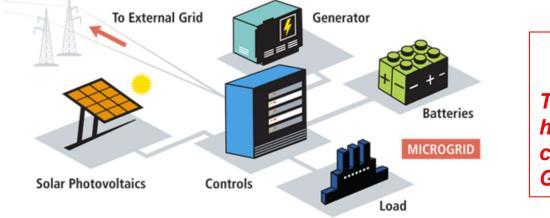
Hazlehurst 52 MW Project, Jeff Davis County



Middle Georgia 1 MW Project, Dooly County



Resiliency



Note:

The Battery/Solar/Generator have to be closely coordinated with the Utility Grid to increase resiliency

Battery/Solar/Generator Can:

Increase Resilience of the "Energy Load/Building"

And

Potentially Increase Resiliency of the "Grid"



Utility Considerations

- Communicate, Communicate, Communicate
- Utility Engagement Can Potentially Unlock Increased
 Value from Microgrid
- Explore electrical load and potential rate considerations
- Plan-up front for utility interconnection requirements
- Enlist the help of your utility to help screen/scope/evaluate the opportunities and benefits of microgrids.



Jeff Pratt

President Green Power EMC

Jeff.Pratt@greenpoweremc.com





Georgia Solar Resiliency Webinar

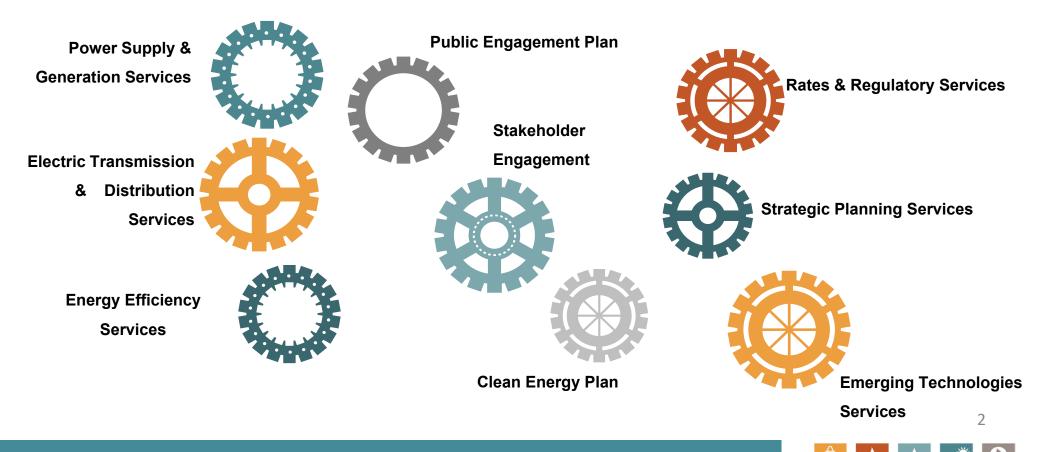
Prepared by GDS Associates, Inc. for Georgia Environmental Finance Authority



April 2, 2020

GDS Associates, Inc.

- GDS is an Atlanta based multi-service consulting and engineering firm established in 1986
- The size and depth of our firm permits us to offer clients multiple sources for assistance, ensuring **complete**, **competent**, and **timely** service.
- GDS strives to develop long-term client relationships
- Our goal is to be a wise investment in consulting services for our clients



<u>Solar Resiliency Feasibility Study</u> will assess the opportunity to utilize solar and battery storage system to enable local government's critical infrastructure systems to continue to operate during utility electrical outages.

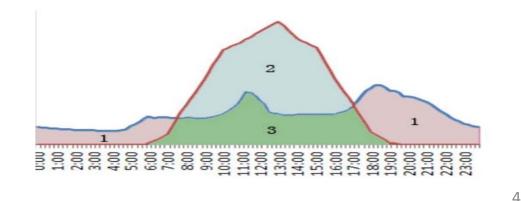
- What is Resiliency?
- Critical Infrastructure and Electric Load
- Outage Duration
- Site Solar Potential
- Electric Load Profile
- Electrical Configuration
- Existing Backup Generation
- Utility Interface





FOCUS: Ensure Feasibility Study provides a realistic assessment of the potential project, estimates project economics and meets the applicant's project needs.

- GDS Consultation with Applicant
- Potential Project Information Gathering
- Site Visit and facility Review (if necessary)
- Preliminary Feasibility Study Results Shared With Applicant
- GDS Feasibility Study Review with Applicant
- Finalize Feasibility Study





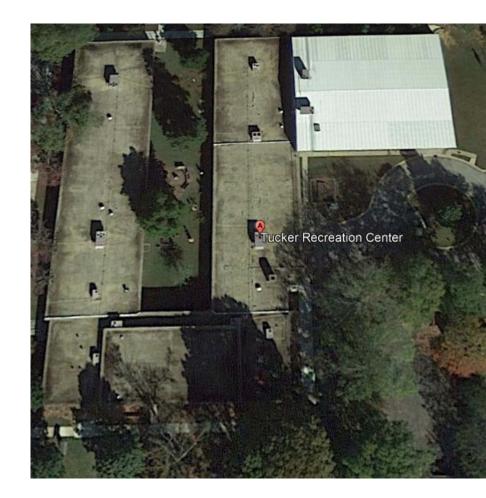
- Projection of critical infrastructure electric requirements during an outage
- Solar and battery storage system sizing
- Projected solar and battery system resiliency performance
- Estimated project costs
- Estimated energy savings from solar system
- Project economic evaluation





Example Solar & Battery Storage Resiliency Project

Tucker, GA Recreation Center





6

Marietta GA (HQ) • Orlando FL • Austin TX • Auburn AL • Augusta ME • Manchester NH • Madison WI • Kirkland WA • Portland OR

- Tucker, GA city owned recreation center which contains critical IT infrastructure.
- Project goal is to maintain power to IT systems during outage.
- Critical IT systems contained in single location with independent cooling.
- Critical load analysis,
 - 5 Servers, 10 firewalls, (1) 2 ton CRAC Unit
 - Outage duration estimated to be 72 hour





7

- Interviewed Tucker to identify critical infrastructure and operation needs.
- Modeled building electric usage patterns based on facility use and hours of operation.
- Modeled electric consumption pattern for critical infrastructure during outage.
- Modeled solar and battery storage systems capable of providing 72 hours of electric service during utility outage.
- Estimated project costs.
- Estimated utility savings.



Solar & Battery Resiliency Key Feasibility Steps

- The initial design phase is the most important.
- Key decisions need to be made early to determine feasibility:
 - Intended operation of the system
 - Critical load analysis, billing data
 - Proper equipment sizing, efficiency opportunities
 - Financials (grants, ITC)
 - Ownership and maintenance
- Site Characteristics Essential to Determining project Potential:
 - Building Design
 - Tree Cover
 - Electrical Configuration
- Serving Utility Requirements





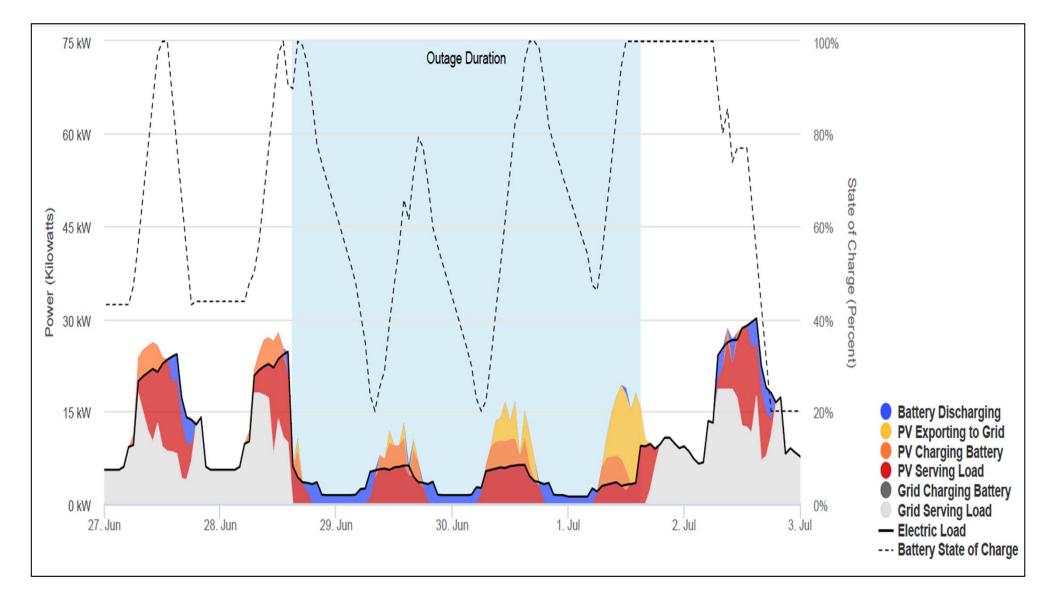
Solar & Battery Storage Project:

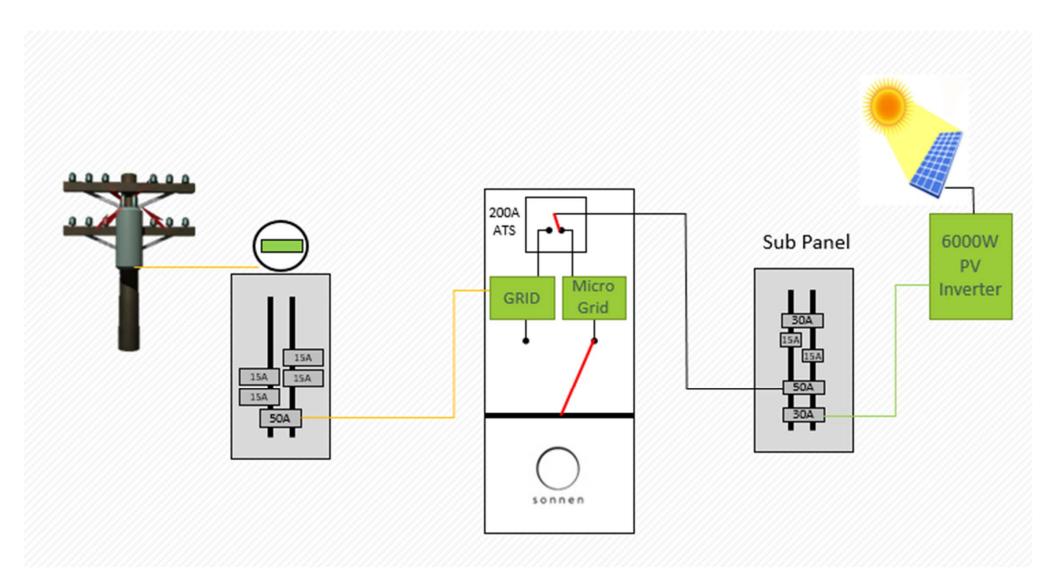
- 30 kW Roof-Mounted Solar System
- 4kW / 40 kWh Battery Storage System
- Estimated Project Cost: \$130,000
- Estimated Utility Savings: \$2,400 annually

Additional Project Infrastructure:

- Separation of critical loads into separate subpanel
- Utility Isolation Device









12

Feasibility Study Application

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Application

Application Requirements:

- Include up to two facilities
- Explain type of critical facility and other facility basics
- Do you have utility bills and architectural/engineering drawings?
- Is there current backup generation?
- Description of overall resiliency goals for the facilities
- Letter of support from high-ranking organization official

Application Due Date:

April 20, 2020



Application

Application is web-based through a Quickbase.com app

https://georgiaenvironmentalfinanceauthority.quickbase.com/db/bqduk3pkr?a=nwr

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Welcome to the Georgia Environmental Finance Authority Solar Resiliency Online Application

Welcome to the Georgia Environmental Finance Authority (GEFA) Solar Resiliency study application.

GEFA is offering this program to increase resiliency and clean energy for local governments in Georgia. This program is offered to local governments and authorities only.

GEFA will pay for a technical consultant to develop a solar plus battery storage resiliency study for up to two critical local government facilities per government entity or authority. The study will help the local government review the proposed critical facilities to help determine if solar plus battery storage can effectively provide backup power for the facilities. While this program will not the development of the solar plus battery storage this time, it is the goal of GEFA to provide funding for the installation of solar plus battery storage for local government facilities in the future, pending funding maxilability from the U.S. Department of Energy (U.S. DOE).

Please note: Applicants must be a Georgia city, county or registered local government authority. Only one study per community/applicant will be funded. The funding is provided by the U.S. DOE. Critical facilities can range from community to community, but examples include public safety buildings, courthouses, emergency management offices, data centers, shelters, and community hubs. The applicant must include a clear description of the facility, and state why it is critical to the community during an emergency.

Instructions

Please make sure to fill out all required (*) fields of the application, upload documents where required and when complete, click the SAVE button at the top of the screen. This will submit your application to GEFA. We will review and process all complete applications in the order received. Applicants will receive notification of approval or denial in writing from GEFA, typically within 10 business days.

If you have any questions about the program or about this form, please contact Kelly Cutts at 404-584-1089 or Kristofor Anderson at 404-584-1031.

Applicant Information

Organization Name *		
Applicant Organization	•	

Investing in Georgia's Energy, Land, and Water Resources

Criteria/Evaluation

Investing in Georgia's Energy, Land, and Water Resources





Scoring Criteria

Scoring Criteria:

Demographics (AMI, Unemployment, Pop Change)	12
Existing Generator	
Yes, good shape	0
Yes, poor shape	2
No Generator	4
County federally declared disaster in Matthew or Michael	2
Critical Facility Justification Application Readiness (has utility bills, critical loads list,	5
etc.)	5
Total	30

Investing in Georgia's Energy, Land, and Water Resources



Next Steps

Evaluation:

• Scoring criteria will be used if we receive more applications than we have funding for.

Notification of Award:

• Notification of selection will occur within two weeks of the application closing.

Next Steps:

- The application link will be posted on our website at <u>www.gefa.ga.gov</u>
- The feasibility studies must be completed by August 31, 2020.

Investing in Georgia's Energy, Land, and Water Resources

Kris Anderson Kelly Cutts

233 Peachtree St NE Ste 900 Atlanta, GA 30303 gefa.georgia.gov







Q&A

