



# RENEWABLE DEVELOPMENT CUSTOMER-CONNECTED SOLAR PROGRAM

July 22, 2020





# AGENDA

Welcome & Safety

Julie Paul, Customer-Connected Solar Supervisor

Opening Remarks

Jamie Barber, Georgia Public Service Commission

Renewable Development Overview

Wilson Mallard, Director of Renewable Development

Program History

Shannon Harris, Manager of Distributed Generation

Customer-Connected Solar Program

Julie Paul, Customer-Connected Solar Supervisor

PowerClerk Application Process

Ashley Chisholm, Customer-Connected Project Manager

Interconnection Overview

Vincent Stewart, DG Interconnection Engineer

Conclusion

Julie Paul, Customer-Connected Solar Supervisor

**WELCOME & SAFETY**



# WELCOME & SAFETY

- ▶ Safety
- ▶ All phone lines are muted
- ▶ Questions during this webinar must be submitted through the Chat Feature of the GoToWebinar platform
- ▶ This Program Conference will be posted on the Customer-Connected Solar Program webpage

[www.georgiapower.com/customerconnectedsolar](http://www.georgiapower.com/customerconnectedsolar)

# **GEORGIA PUBLIC SERVICE COMMISSION - OPENING REMARKS**

# RENEWABLE DEVELOPMENT OVERVIEW



# GEORGIA POWER AT A GLANCE

**Largest of three Southern  
Company electric utilities**



**6,950 employees**

**2.5 million**  
customers

**13k** miles of  
transmission lines

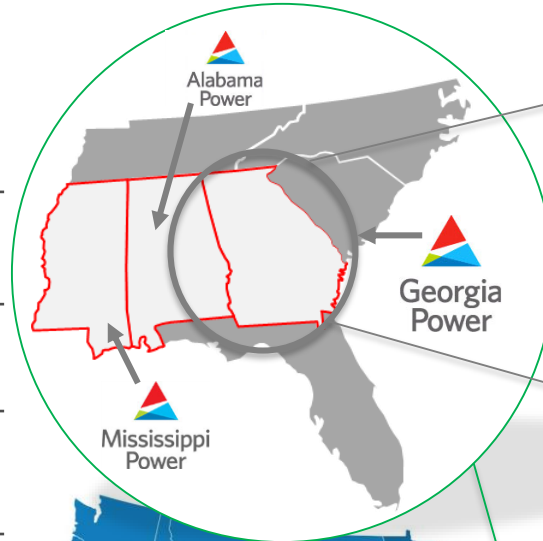


**High customer  
satisfaction**

**14%** Rates below the  
national average

**87k miles**  
of power lines

**45%** of customers  
earning under \$40k

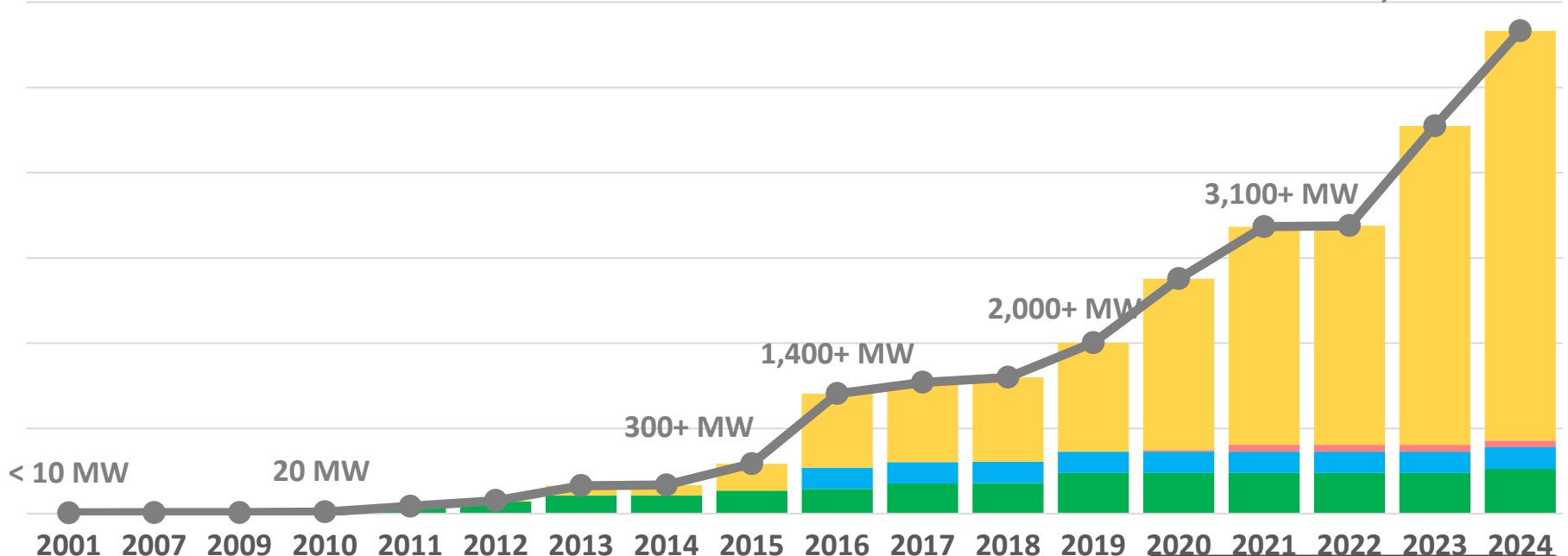




# RENEWABLE RESOURCE GROWTH

Biomass Wind Storage

5,400+ MW...



**Online**

**Projected**

Biomass QFs, Green Energy PPAs

+ LSS, ASI, ASI Prime, & QF PPAs

+ REDI Utility Scale, DG, and C&I PPAs

+ CRSP PPAs, DG PPAs & Biomass PPAs

+ Self-build Projects & Demos

Self-build Projects & Demos

+ Blue Canyon PPAs

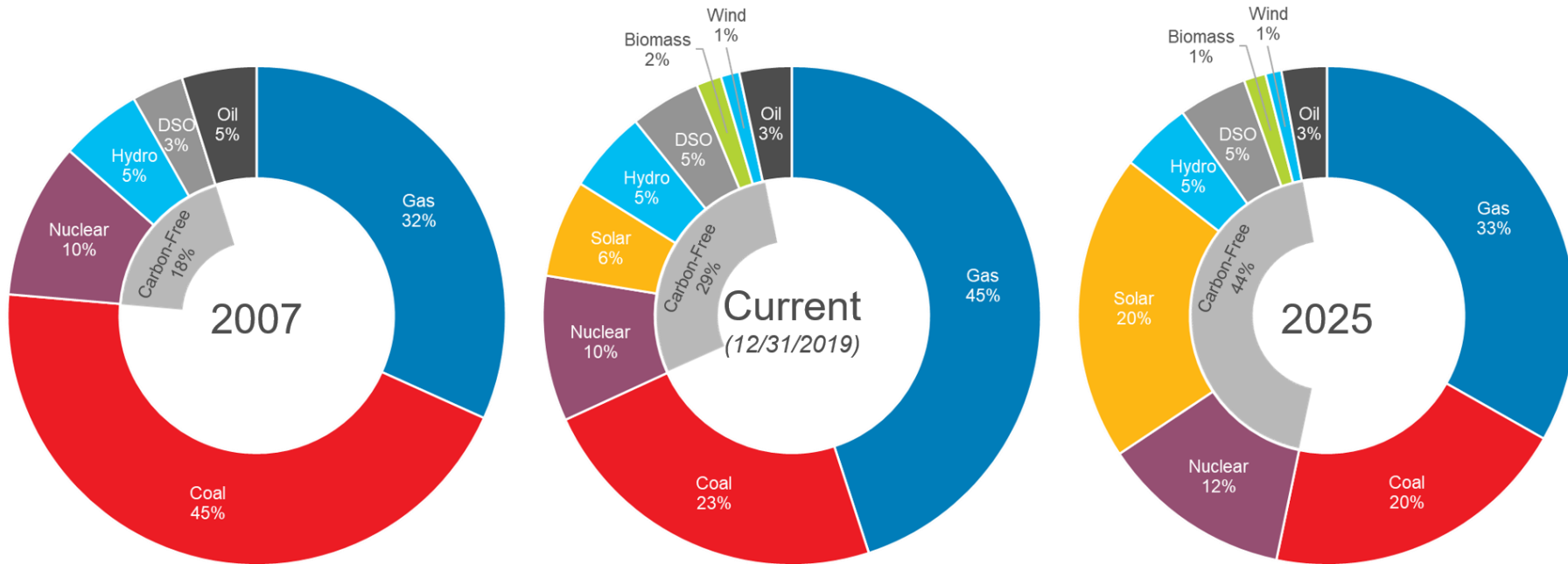
Continuation of BTM Programs: QF, RNR

**NOTE, REC Disclaimer:** A portion of the renewable generation capacity included in this chart includes capacity where the renewable generator retains the related Renewable Energy Credits and the right to use and report them.





# EVOLUTION OF GEORGIA POWER'S RESOURCE MIX



These capacity mixes reflect nameplate capacity for renewable resources, program capacities for demand-side options ("DSOs"), and designated/demonstrated capacity for the remaining fuel types. A portion of the renewable generation capacity included in this chart includes capacity where the renewable generator retains the related Renewable Energy Credits ("RECs").



# INTEGRATED RESOURCE PLAN



## LOAD PLANNING

Load Forecast  
Reserve Margins Impact Risk  
Capacity Worth Factors



## DEMAND SIDE OPTIONS

Energy Efficiency  
Demand Response  
Backup Generation



## POWER DELIVERY

Capital vs. O&M Spending  
Age of Grid vs. Replacement Cycle  
Generating Plant Retirements  
Distributed Energy Resources



## POWER GENERATION

Fuels & Carbon Forecast  
Build, Contract, Buy, Retire  
Coal, Nuclear, Gas, Hydro, Renewables



RELIABILITY  
vs.  
COST



# 2019 IRP RENEWABLES RESULTS

## PROCUREMENT & DEVELOPMENT



**2,260  
MW** =

**1,000 MW**  
**CRSP**  
600 MW for existing  
400 MW for new

**1,000 MW**  
**Utility Scale**  
For All Customers

**210 MW**  
**DG**  
160 MW RFP  
50 MW Customer-Sited

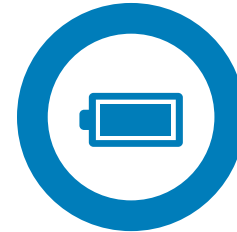
**50 MW**  
**Biomass**

## PROGRAMS



- Customer Renewable Supply Procurement (CRSP) New & Existing
- Simple Solar Large Volume Flexibility

## R&D



- Storage Portfolio – 80 MW
- EV Battery Reuse Pilot - \$250,000



# PROGRAM HISTORY



# OUR PROGRAMS

Program	MW Sought*	MW Procured	# Projects
ASI	90	89.7	272
ASI Prime	100	88.3	189
REDI Customer-Sited	50	47.5	33
REDI RFP	100	86.7	38
2019 IRP DG RFP	160		
Customer-Connected Solar	25		
REDI Customer-Sited II	25		

\*Excludes rollover



Renewable Development





# RESULTS OF GROWING SOLAR RESPONSIBLY



**2013**

SEIA's #7 Top 10 Solar States for solar capacity installed in 2013  
SEIA's "fastest growing solar market in the nation"



**2014**

SEPA's Investor-owned utility of the year



**2015**

SEIA's Top 10 utilities for adding the most solar power to system in 2015  
SEPA's Top 10 utilities for 2015 installations



**2016**

SEPA's Top 10 utilities for 2016 installations



**2017**

SEIA's Top 10 Solar States for cumulative solar



**2018**

SEPA's Top 10 Solar Utilities for cumulative solar & Top 10 Solar States for cumulative solar



**2019**

SEIA's named Georgia as the #5 state in the U.S. for 2019 Solar PV installations

# **CUSTOMER-CONNECTED SOLAR PROGRAM (CCSP)**



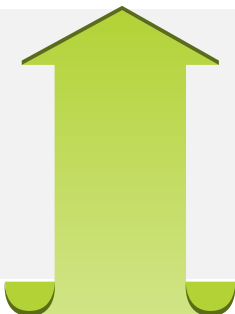
# PROGRAM SCHEDULE

**CCSP Program  
Conference**



**July 22, 2020**

**July 30, 2020**



**Application  
Period Opens**

**Application  
Period Closes**



**January 2022\***  
*\*or until the 25 MW AC  
portfolio is filled*



# PROGRAM WEBSITE



COVID-19 Residential Business Community Company Shop Q

My Account Outages Support

## Customer-Connected Solar Program

Company / Energy Industry / Energy Sources / Solar Energy / Solar Energy Programs

About the Program

FAQs

Contact Us

### Customer-Connected Solar Program

We are pleased to announce the Customer-Connected Solar Program, a 25-megawatt (MW) Distributed Generation customer-sited program. Our new Customer-Connected Solar Program will accept applications on a first-come, first-served basis until the 25 MW Alternating Current (AC) portfolio is filled, or until January 2022, whichever comes first.

This program allows Georgia Power customers to partner with any solar developer to build a solar facility on or adjacent to a customer's property. Georgia Power will purchase 100% of the energy generated and retire the Renewable Energy Credits (RECs) associated with a participant's solar facility on his/her behalf, allowing the customer to claim the renewable benefits of the local solar energy.

Apply Now - Coming Soon

[www.georgiapower.com/customerconnectedsolar](http://www.georgiapower.com/customerconnectedsolar)

Information found on the CCSP website:

- ▶ Overview of program
- ▶ Program schedule
- ▶ Program Documents
- ▶ Link to Interconnection Guidance
- ▶ Link to Apply (PowerClerk)
- ▶ FAQ's
- ▶ Ability to "Contact Us" for program questions

Renewable Development 



# PROGRAM BENEFITS

- ▶ Monthly payments directly to Customer
- ▶ Renewable Energy Credits (RECs)
  - Georgia Power will retire the RECs associated with a participant's solar facility, allowing the customer to claim the renewable benefits of the local solar energy.
- ▶ Available Federal Tax Incentives
  - Federal tax incentive for 2020 = 26%
  - Federal tax incentive for 2021 = 22%
  - Federal tax incentive for 2022 = 10% (non-Residential)

# PROGRAM OVERVIEW

25 MW AC



Customers must **own, lease, or lease the production** of the solar facility from a third party

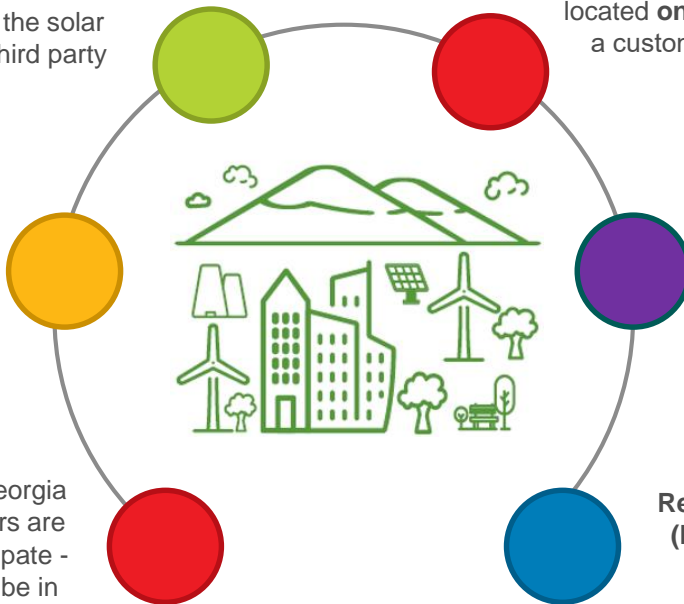
Solar facility must be located **on or adjacent to** a customer's premise

Projects can be sized from **1 kW** up to **3 MW AC**, capped at **125%** of peak demand

Payments will be made **directly to customer**

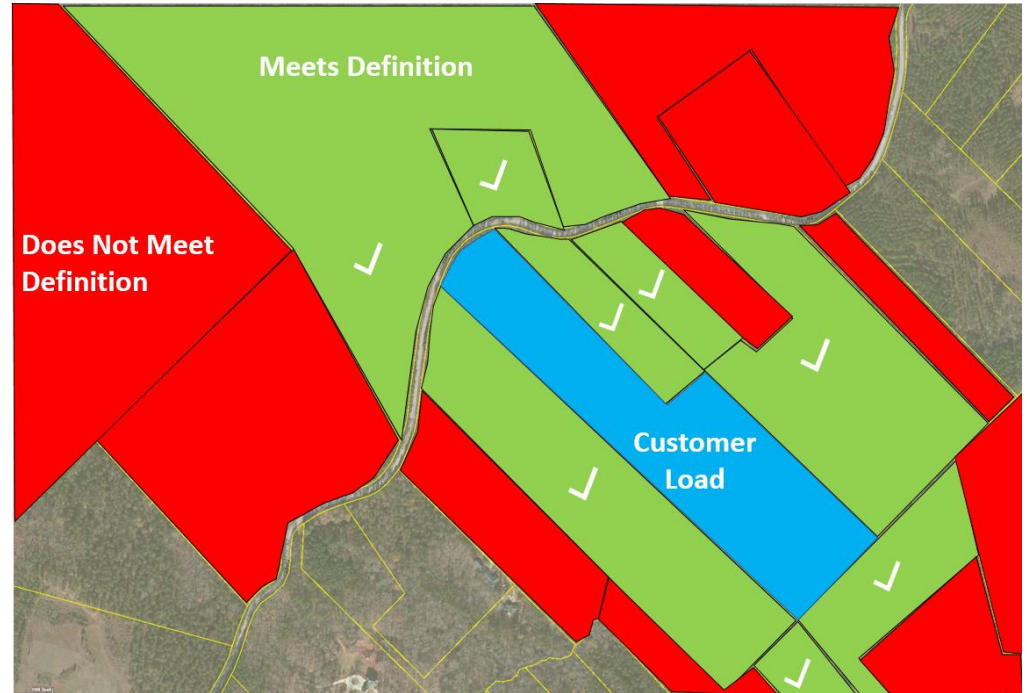
Only existing Georgia Power customers are eligible to participate - contracts must be in the **customer's name**

**Renewable Energy Credits (RECs)** retired by Georgia Power on behalf of participating customers



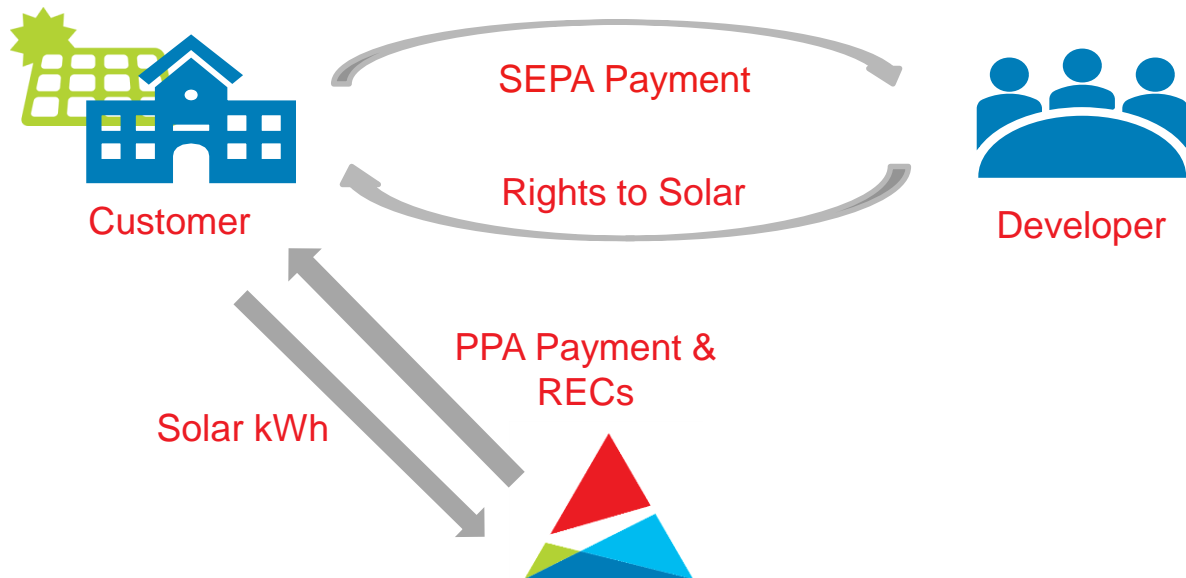
# PROGRAM ELIGIBILITY

- ▶ One application per Customer Account
- ▶ Customer account must be active for at least 6 months prior to application
- ▶ Customer account must not be delinquent
- ▶ Participation in previous GPC DG programs





# WHAT IS A SEPA?



## Customer

- ▶ No upfront money required
- ▶ Makes ongoing SEPA payment to developer
- ▶ Receives ongoing PPA payment and RECs from GPC

## Georgia Power

- ▶ Monthly payments directly to customer
- ▶ Retire REC's on behalf of customer

## Developer

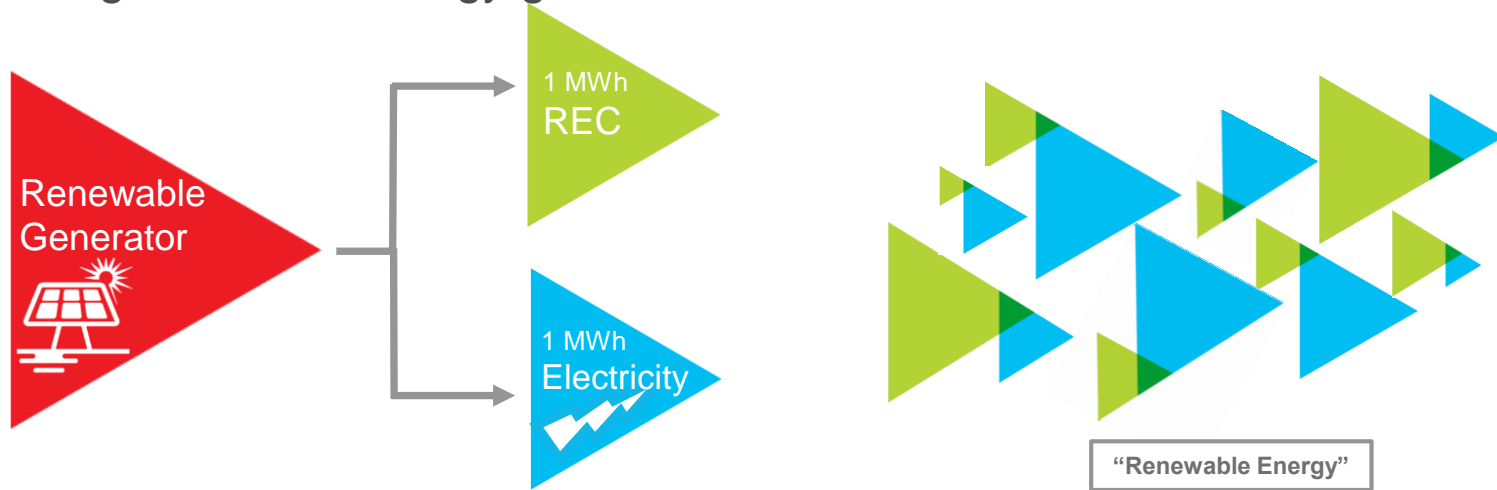
- ▶ Invests in project
- ▶ Earns return through ongoing SEPA payment from customer



# ▶ WHAT IS A REC?

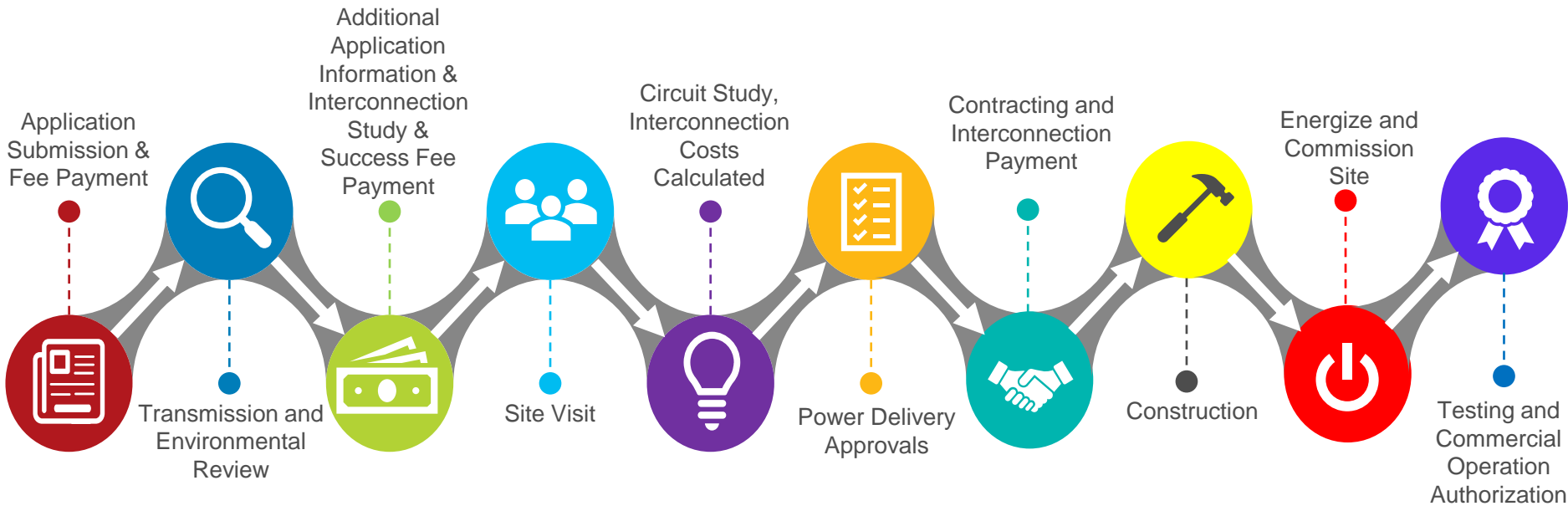
Renewable Energy Certificates/Credits (RECs) are the intangible certifiable environmental attributes created with each megawatt hour of energy generated by a renewable asset.

RECs are a way to capture/track and quantify environmental benefits of replacing or offsetting traditional energy generation with renewable resources.





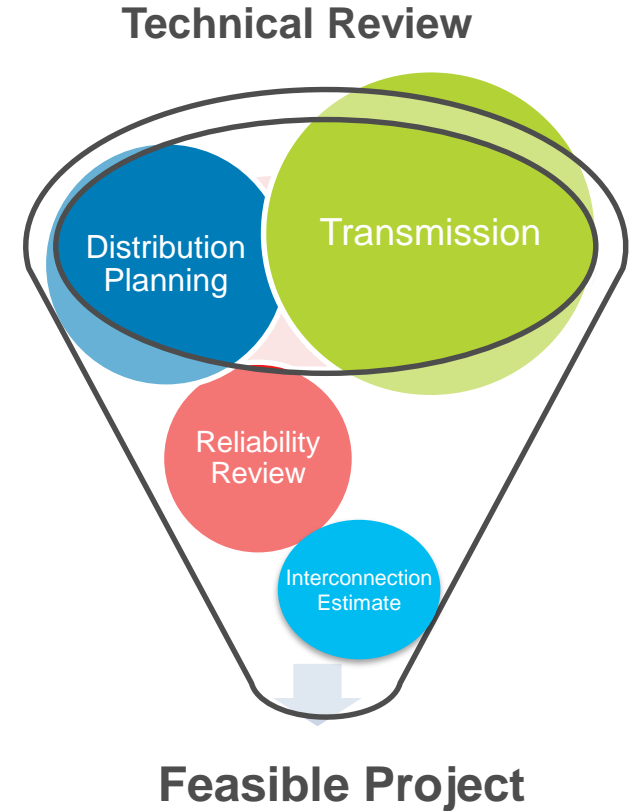
# PROGRAM PROCESS OVERVIEW





# PROJECT EVALUATION

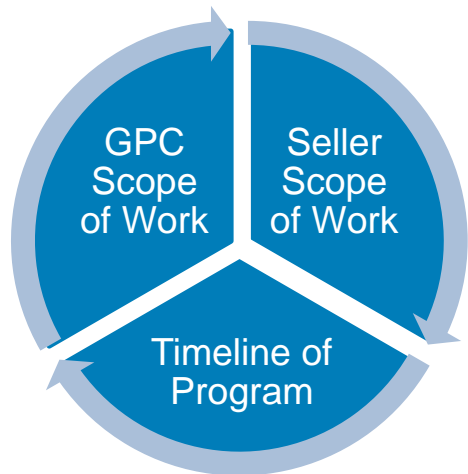
- ▶ Failure to provide all information requested may invalidate the Application
- ▶ Projects will be reviewed for grid impact
- ▶ Project-specific interconnection studies will be conducted
- ▶ If there are multiple facilities in close proximity, project evaluation will be sequenced on the date/time of the Application, as applicable.







# REQUIRED MECHANICAL COMPLETION DATE



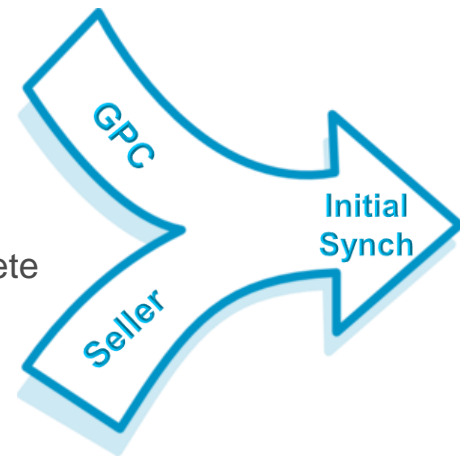
- ▶ The RMCD is the date by which the Facility must achieve Mechanical Completion and the Customer must submit the Mechanical Completion Certificate to Georgia Power.
- ▶ The RMCD is selected by the Customer and included/identified in the Application.
- ▶ The RMCD cannot exceed 210 days and is calculated from the date Georgia Power executes the PPA.

*Once the PPA is fully executed, Seller may not request an amendment to the RMCD.*



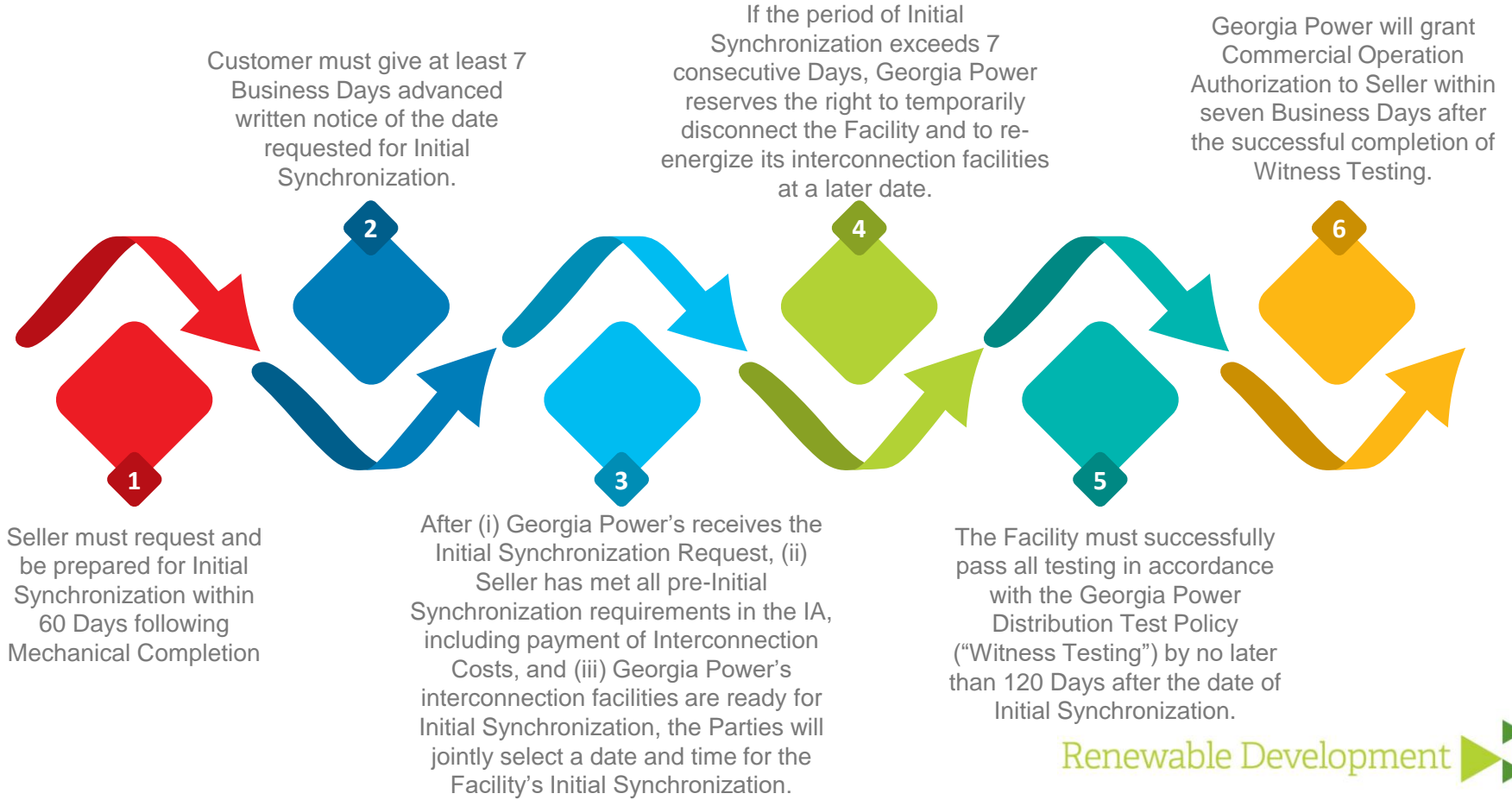
# MECHANICAL COMPLETION

- ▶ Instituted to provide milestones to each Customer based on the specific project construction schedule
- ▶ Mutually agreed-upon between Georgia Power and the Customer's construction obligations
- ▶ Requires Customer to submit Mechanical Completion Certificate and demonstrate that the Facility is Mechanically Complete by the RMCD
  - Customer provided Georgia Power the final Facility documents
  - Customer completed the assembly, construction and installation of the Facility and the Facility is mechanically, electrically and functionally complete and sound
  - Facility passed an electrical inspection (as evidenced by an inspection certificate) by either the appropriate city or county inspection authority
  - Customer obtained any and all other governmental approvals
  - Facility is ready for Initial Synchronization; and
  - Customer submitted the Mechanical Completion Certificate to Georgia Power





# INITIAL SYNCHRONIZATION & WITNESS TESTING



# **POWERCLERK APPLICATION PROCESS**

# ONLINE APPLICATION



PowerClerk

## Georgia Power Company

### Customer-Connected Solar Program

#### Welcome to Georgia Power's Customer-Connected Solar Program Portal

##### *Program Summary*

The Customer-Connected Solar Program (CCSP) is a 25-megawatt (MW) Distributed Generation customer-sited program that allows Georgia Power customers to partner with any solar developer to build a solar facility on or adjacent to a customer's property. Through this portal, applications will be accepted on first-come, first-served basis until the 25 MW AC portfolio is filled, or until January 2022, whichever comes first. For full program details please visit the [program website](#) or read the [Program Guidelines](#).

##### *Questions*

Do you have questions? See our [Frequently Asked Questions](#) or submit a question by using this online [form](#).

*First time here? Click "Register a new account" to the right to create an account.*

**A 'NEW USER VIDEO' is now available - This video guides the viewer through the PowerClerk basics including: registering for an account, resetting passwords, adding additional programs, filling out and submitting forms, viewing project details and status, granting project access, and where to find additional support**

### Log In

Username:

Password:

[Forgot Password?](#)  
[Register a new account](#)

Register a new account, or log-in with existing PowerClerk credentials.

# CREATING A PROFILE



[Log In](#)

## Register

*Note: This page is meant for new users to register for PowerClerk. If you already have a PowerClerk account and would like to register for more programs, please log in and visit the Add Programs page under the Settings menu.*

### User Information

Email Address: \*

Password: \* 

Confirm Password: \*

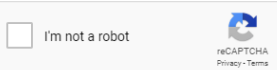
First Name: \*

Last Name: \*

Company (optional):

### Roles And Programs

Role: \*



- ▶ Once an account has been created, you will receive an e-mail with a unique, time-sensitive link to complete account set-up.
- ▶ From there, you will activate your account and have access to the Customer-Connected Solar Program Application portal.



# APPLICATION PROCESS



Welcome, Ashley Chisholm | Log Out

HOME SETTINGS ▾

ASK A QUESTION

GEORGIA POWER - CUSTOMER-CONNECTED SOLAR PROGRAM

New Customer-Connected Solar Program Application



Click here to begin the Application process!

All Projects Application Submitted | Pending Payment Pending Interconnection Study Fee



Welcome, Ashley Chisholm | Log Out

HOME SETTINGS ▾

ASK A QUESTION

Customer-Connected Solar Program Application

1 GPC Customer Information 2 Applicant Information 3 Interconnection Guidance Request 4 Facility Information 5 Project Information >

## HELPFUL TIPS

- All fields indicated with a red \* (asterisk) are REQUIRED.
- Click on each of the blue (?) dots to reveal helpful tips for guiding you through the application.
- Your information is automatically saved.

## GEORGIA POWER CUSTOMER INFORMATION

Please enter the Georgia Power Customer name as listed on the Georgia Power Account

GPC Customer Information ?

Name \*

First Last

Company \*

Company



# SAMPLE APPLICATION INFORMATION

- ▶ Customer information
- ▶ Applicant information
- ▶ Counterparty (Seller) name
- ▶ Basic facility information
  - Address
  - Latitude/Longitude
  - Facility size (kW)
  - Parcel number
  - Project contingencies, if any
- ▶ Required documents:
  - Site Control Affidavit and Landowner Confirmation
  - Customer Contractor Designation Form
  - Preliminary Site Plan
  - Facility Construction Timeline
  - PV & Inverter Specification Sheet
  - Facility One-Line Diagram
  - GPC Customer Bill

***All application information must be submitted, documents uploaded, and fees paid before application is complete.***

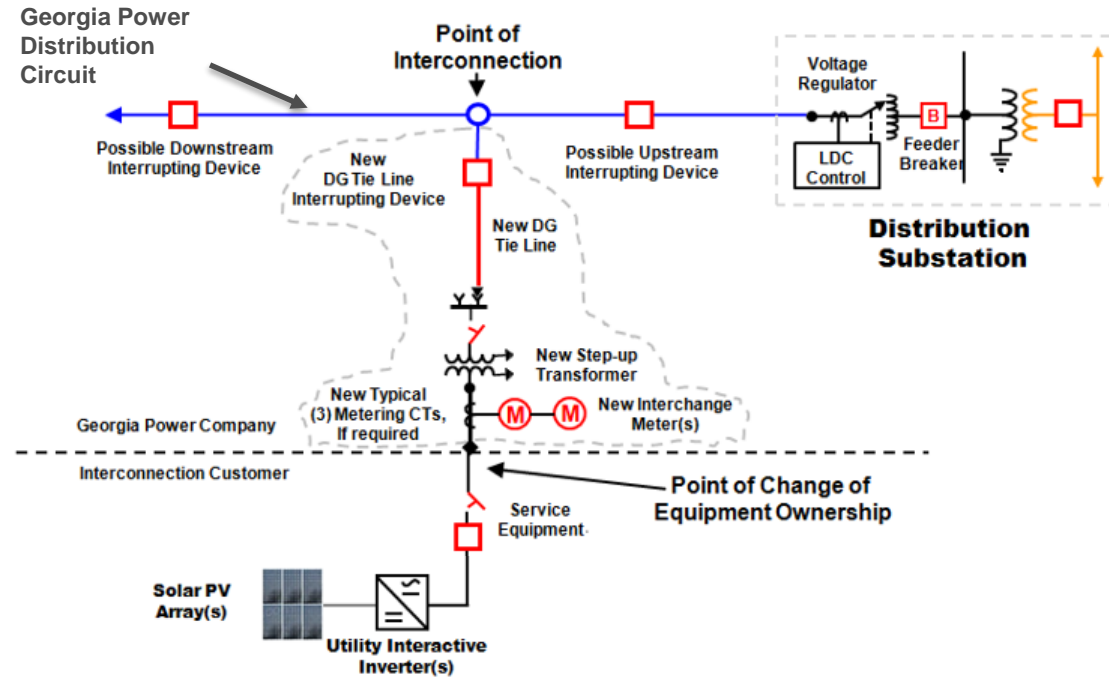


# **DG INTERCONNECTION OVERVIEW**

- **Technical Interconnection Overview**

# DEFINITIONS

- ▶ Georgia Power Distribution Circuit: The Georgia Power owned circuit operating at greater than 1kV but less than 34.5 kV, excluding facilities, equipment or other devices inside a substation.
- ▶ Point of Interconnection (POI): The unique point at which the facility is interconnected to the Georgia Power Distribution Circuit, in accordance with the Interconnection Agreement, where the customer delivers energy and Georgia Power purchases energy generated from the facility.
- ▶ Point of Change of Ownership: The point at which customer's facilities stop and Georgia Power's interconnection facilities start.
- ▶ Interconnection Limit: The maximum power output (kW AC) at which the facility will not export power above



*The POI does not necessarily coincide with the point of change of ownership of equipment.*



# EXAMPLE INTERCONNECTION OPTIONS: TRANSFORMER OWNERSHIP

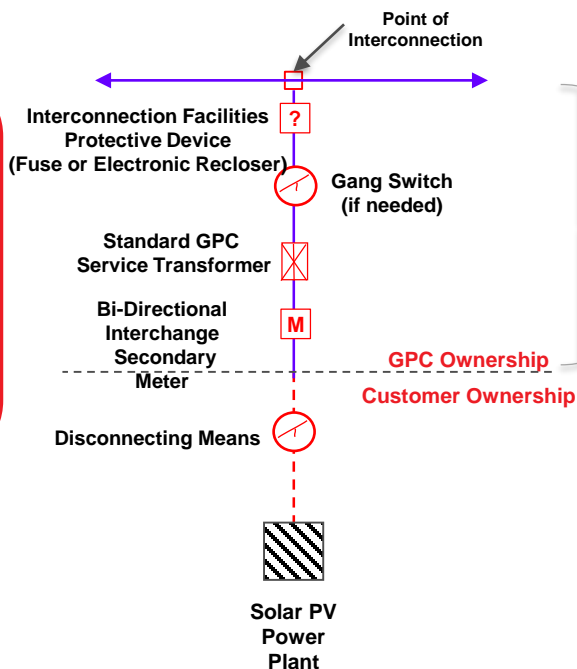
For CCSP, customers may choose to own the transformer or have Georgia Power own the transformer.

## Georgia Power Owned Transformer Standard Service Voltages

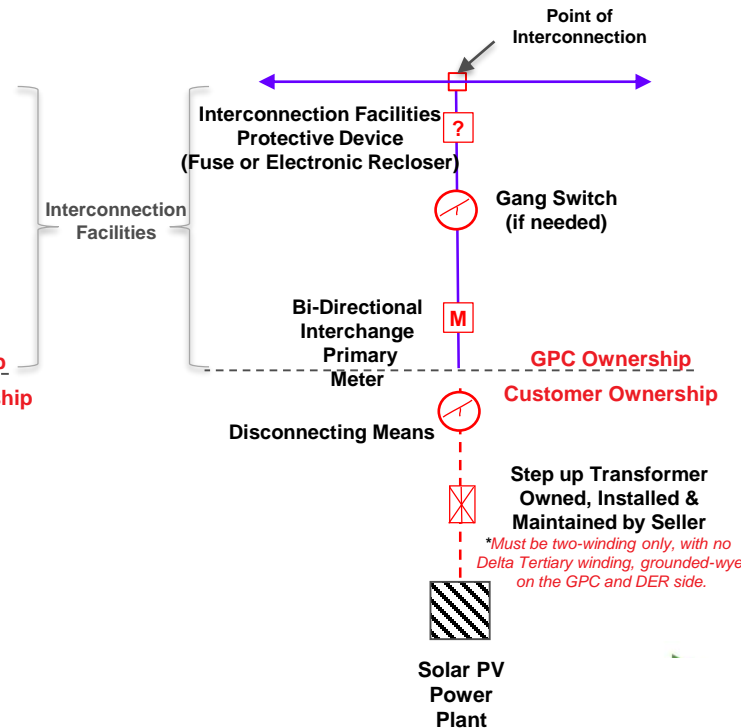
Voltage (V)	Configuration	Size (kVA)
120/240V OH XFMR	Delta, 1 phase	<100
120/208V OH Bank	Wye-Wye, 3 phase	45 - 500
120/208V UD Pad	Wye-Wye, 3 phase	45 - 1000
277/480V UD Pad	Wye-Wye, 3 phase	75 - 3750

GPC reserves the right to approve transformer options.

## Georgia Power Owned Transformer



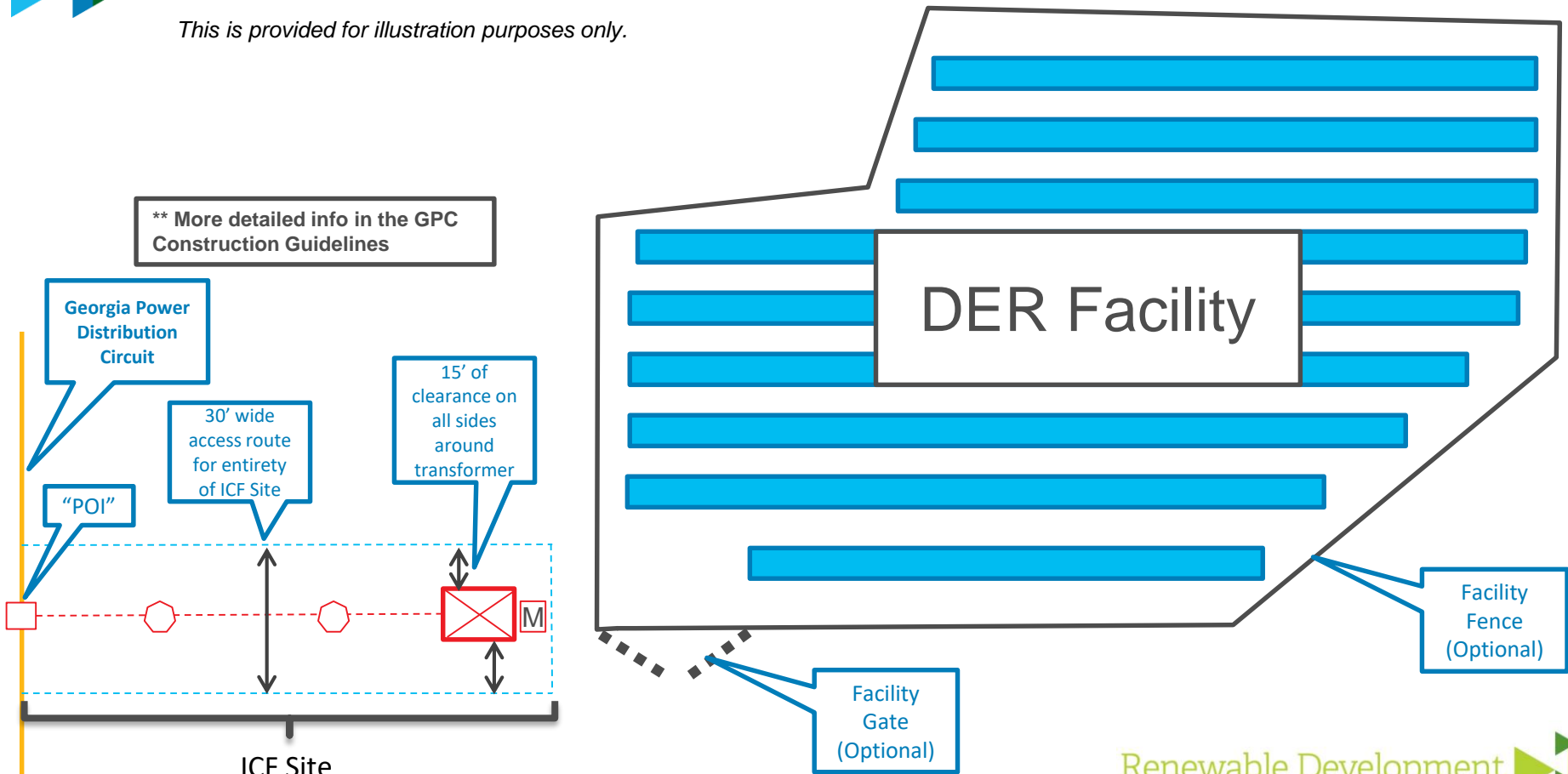
## Customer Owned Transformer





# INTERCONNECTION FACILITIES LOCATION

*This is provided for illustration purposes only.*





# AUXILIARY SERVICE

- ▶ The customer must arrange and purchase Auxiliary Service for the DER facility under standard retail rates. This electric service must be purchased from the electric service provider and will be a separate metered service.
- ▶ The customer is not allowed to “self-serve”, to meet it’s electrical requirements:
  - Lighting
  - Security Systems and equipment
  - Electric Gate
  - Etc.
- ▶ If Georgia Power is the electric service provider for the territory, a separate estimate and design will be created to serve auxiliary equipment at the same time that the interconnection facilities are being estimated. The customer will be required to install applicable metering equipment for auxiliary service, per the GPC Blue Book for Electrical Service.
  - \*GPC Metering Requirements (Blue Book) are available online



# FACILITY TESTING REQUIREMENTS

## Facility <250 kW

### Cease-to-Energize Functionality Test

- ▶ Check the cease-to-energize functionality by operating a GPC interrupting device and verifying that Facility ceases to energize its output terminals and does not restart/reconnect for the required time delay
- ▶ Verify the voltage at the customer side of the meter to make sure it is de-energized

## Facility 250 kW or Above

### Transient Overvoltage Test

- ▶ 3 phase test
- ▶ Check to ensure inverter based DG device overvoltage condition does not compromise the GPC system
- ▶ Each individual inverter must achieve 85% of the maximum capable AC output for testing purposes
- ▶ Facility must shut down within 120 cycles after the three-phase disconnect has been completed

### Single Phase Disconnect Test

- ▶ Facility must shut down within two seconds after single phasing has been initiated
- ▶ 5 minute delay verification

### Inverter Control Mode Test

- ▶ Facility must control the power factor to the pre-determined set point agreed to by GPC
- ▶ Facility must not attempt to actively control the PCC voltage

# **DG INTERCONNECTION OVERVIEW**

- **Distribution Interconnection Information**



# GPC DISTRIBUTION LINES & EQUIPMENT

## Single Phase Lines & Equipment

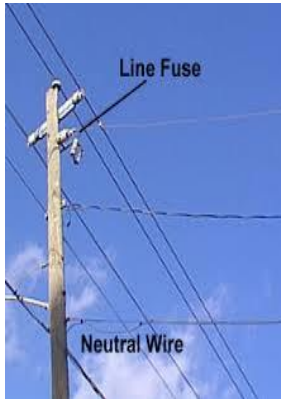
- ▶ <100 kW facility typically is able to interconnect to single phase distribution line

## Three Phase Lines & Equipment

- ▶  $\geq 100$  kW facility required to interconnect to three phase lines
- ▶  $\geq 1$  MW facility requires an electronic recloser & interval metering equipment



Hydraulic recloser – single phase application



Single phase line served from a three phase line



Single phase line & transformer



Three Phase Padmount Transformer



Gang Switch



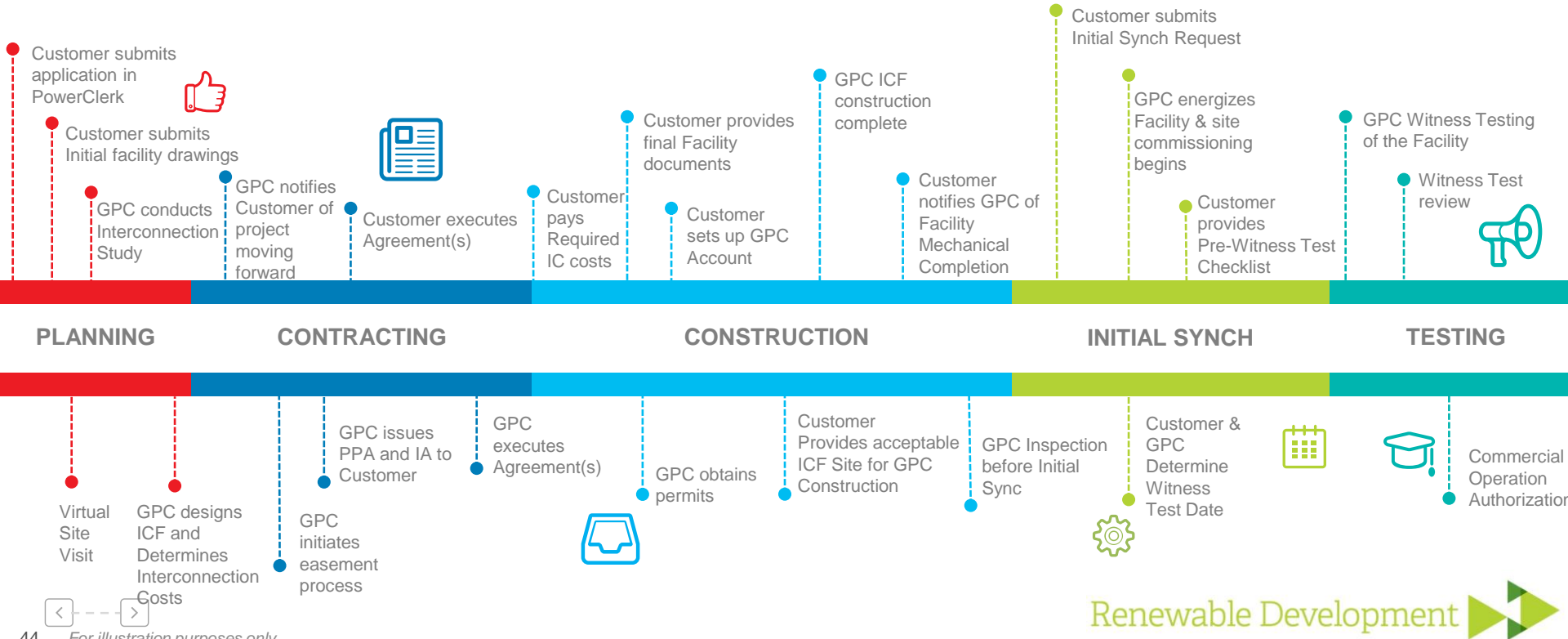
Electronic Recloser





# CCSP INTERCONNECTION PROCESS

Integrating Distributed Generation Solar Resources



# **DG INTERCONNECTION OVERVIEW**

- **Optional Interconnection Guidance Program**



# DG INTERCONNECTION GUIDANCE PROGRAM

To request Interconnection Guidance, please visit <https://georgiapowericg.powerclerk.com>

## Tier 1: \$800

- Substation system one-line diagram
- Substation name, ownership, & circuit
- POI information\* including:
  - Primary operating voltage, number of phases, and conductor size
  - Distance to closest upstream three phase protective device
  - Distance to the substation
- Existing distributed generation on the circuit (total MW)
- Identification of whether transmission upgrades would be required

\*Results will include the closest circuit to the POI indicated in the initial request

## Tier 2: \$2,700

- **All items in Tier 1 analysis**
- Load-rejection Temporary Over-Voltage Analysis (Identification of Direct Transfer Trip)
- Stiffness Analysis
- Recent annual peak load data for the circuit
- Ratio of proposed facility to peak load
  
- Reliability coordination study and identification of upstream device upgrades

## Tier 3: \$9,500

- **All items in Tier 1 and Tier 2 analyses**
- Detailed load flow study (Identification of Facility Power Factor Requirements)



The background consists of several overlapping geometric shapes in various shades of gray. A large, light gray triangle is on the left, pointing towards the center. Another large, light gray triangle is on the right, pointing towards the center. A smaller, medium gray triangle is positioned below the center, pointing upwards. A dark gray triangle is on the bottom right, pointing towards the center. The word "Conclusion" is centered in the white space between the top two large triangles.

Conclusion