

DER INTERCONNECTIONS IN GEORGIA

RELIABILITY/RESILIENCY/SECURITY

12X - LBNL WEBINAR SERIES



Georgia Public Service Commission

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GEORGIA PUBLIC SERVICE COMMISSION (GPSC)

- The GPSC has jurisdiction over the following in Georgia:
 - Investor-owned electric power companies
 - Investor-owned natural gas companies
 - Underground facility protection and natural gas pipeline safety
 - Telecommunications companies



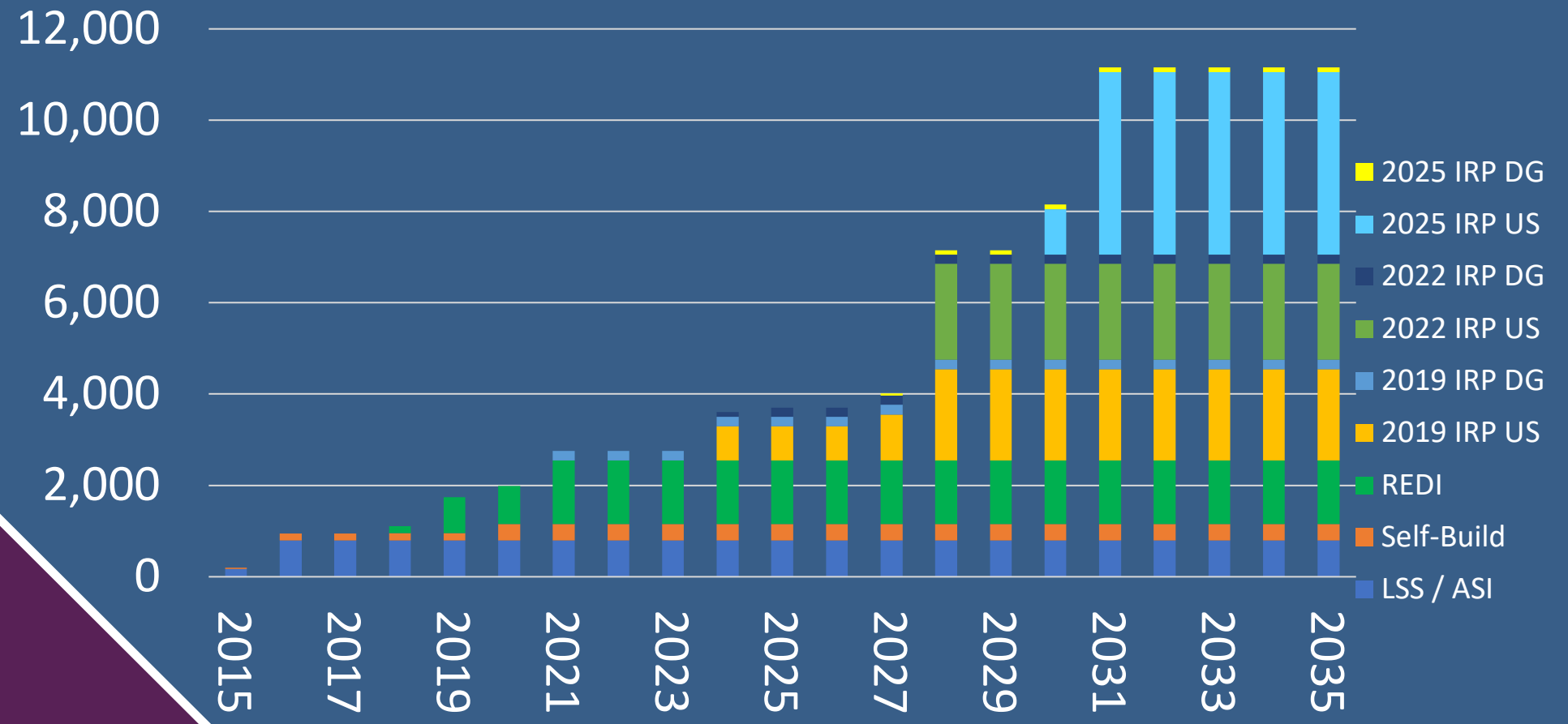
GEORGIA POWER COMPANY

- Georgia Power is the only investor-owned electric utility regulated by the GPSC.
- Part of Southern Company
- Serves 2.8 Million customers
 - ~ 2.4 million Residential
 - ~ 400,000 Commercial and Industrial



GEORGIA POWER COMPANY

INSTALLED / APPROVED SOLAR (MW)



OTHER RENEWABLES (PPA)

- Wind (250 MW)
 - Blue Canyon II & VI Projects (20-year term)
 - Approved in 2014
 - Commercial Operation – January 1, 2016
- Biomass (281 MW)
 - Proxy-price based biomass/biogas projects
 - Up to 20-year term, with 10-year extension
 - Commercial Operation – June 1, 2015 - 2017



FUTURE CONNECTED RESOURCES

In Georgia Power's 2025 IRP, the GPSC approved:

- 100 MW of flexible Distributed Generation procured through an RFP with the potential for more to be procured based on Customer Subscription needs.
- 1,000 MW, up to 4,000 MW, of Utility Scale Renewable Resources procured through an RFP based on Customer Subscription needs
- Customer Identified Resources (CIR) will be allowed to participate during the procurement process if the resource meets the Average Total Net Benefit of the other resources procured during the RFP.
- Solar Plus Storage Pilot Program



DISTRIBUTED ENERGY RESOURCE MANAGEMENT SYSTEM (DERMS)

- In the 2022 IRP, the GPSC approved an initial plan and a limited budget for Georgia Power to develop a **DERMS**.
- Georgia Power is implementing a DERMS to provide visibility, forecasting, control, and optimization of DER devices in coordination with existing grid real-time operations control systems.
- In the 2025 IRP, the GPSC approved the Company's request to continue the implementation and integration of its proposed DERMS for the enhanced control of DER devices, with spending projected for years 2025-2028.
- The enhanced control of DERs through DERMS will support grid reliability and expand potential use cases for DERs that can be reflected in customer program incentive valuations.
- Increased management and deployment of DERs will grow in importance as DER expands, typically without significant investment in physical infrastructure (transmission, distribution), allowing the Company to more fully utilize existing infrastructure capacity.

DERMS CONTROL OF DG

- The Company's future DG RFPs will allow **flexible DG resources** (resources that are paired with a storage device that are either solar-charged or grid-charged).
- To facilitate flexible DG resources, the Company will require **Automatic Generation Control (AGC)** and additional visibility of such facilities through DERMS.
- The Company now uses a **Locational Transmission Value** component as part of its Renewable Cost Benefit Framework in the valuation of DG RFP evaluations.
- Values were calculated for 4 zones: North GA, Metro GA, Central GA, and South GA.
- DG facilities located closer to load centers in north Georgia are given higher values because of their location-specific effects on the needs and timing of transmission upgrades.

OTHER RESILIENCY/RELIABILITY DER PROGRAMS

- In the 2022 IRP, the GPSC approved the DER Customer Pilot Program, implemented through the **Resiliency Asset Service Tariff (RAS)** and **Demand Response Credit Tariff (DRC)**.
- RAS provides resiliency service to participating customers through the installation and operation of a Company-owned DER behind the customer's meter.
- DRC allows for a participating customer in RAS to receive credits on their bill in exchange for a reduction of the customer's electric demand through the Company's control of the DER during periods of extreme supply and demand conditions.
- In the 2023 IRP Update, the GPSC approved two additional DER programs, **DER Customer-Owned (DCO)** and **DER Colocation (DCL)**.
- The DCL Program will use a Georgia Power-owned DER.
- Both programs are supply-side programs where participating customers will have dispatchable DERs with firm fuel supply that can provide energy to the system.
- Participating customers will receive payments equal to 75% of the projected NPV to the system over the life of the asset.

OTHER RESILIENCY/RELIABILITY DER PROGRAMS

- In the 2025 IRP, the GPSC also approved the **Large Customer Owned Resiliency (LCOR)** program.
- LCOR is designed for transmission connected C&I customers who own their DER with a firm fuel supply.
- LCOR will restrict the customer's DER from pushing back to the grid which changes the way such DER is interconnected.
- Rather than being a supply-side option, the program will operate as a demand-side program, such that the customer's DER is behind the meter and reduces the customer's load.

GEORGIA POWER'S SOLAR PLUS STORAGE PILOT

- Designed for Residential and Small Commercial Customers
- Customer and Company Directed Options (50 MW target)
- Will be dispatched to meet System needs, thereby providing reliability and capacity benefits to all customers.
- The resources will be controlled via an aggregator through a grid-edge DERMS, instead of a centralized DERMS.
- Georgia Power's DSM Demand Response Program uses a grid-edge DERMS which will also interface with the Company's centralized DERMS.

Customer Directed

New or Existing BESS

Annual Incentive

Pay for Performance

Company Directed

New BESS and BTM Solar

Large Upfront Incentive

Utility Controlled

VEHICLE-TO-EVERYTHING (“V2X”)

- **V2X Pilot** will enable vehicles to transfer energy stored in batteries to buildings, houses, and the grid.
 - Approved in the 2025 IRP
 - Starts with public school systems
 - Up to 10 chargers
- V2X Pilot will study **V2X technology** and its potential impacts to customers and to the System.
- **V2X Pilot Goals:**
 - Create a smarter, more connected energy ecosystem
 - Deliver more sustainable transportation solutions
 - Enhance System flexibility, resiliency, and economics.



INTERCONNECTIONS OF DER

- Developed as part of the 2022 IRP, Georgia Power maintains a **Hosting Capacity Tool** and conducts **Interconnection Guidance (ICG) Requests** (Tiers 1-3) for determining suitable locations to interconnect solar facilities in Georgia.
- Site suitability is determined based on transmission level screenings and anti-islanding studies.



INTERCONNECTIONS OF DER

- Georgia Power's **Hosting Capacity Tool** identifies distribution capacity and protection/controls capability available on upstream transmission lines/substations, to prevent unintentional islanding and/or Affected System upgrades.
- **Minimum Daylight Loading (MDL)** and **System Coincident Peak (SCP)** are used to assess hosting capacity.
- Georgia Power requires MDL must be at least two times the aggregate maximum DER output.

INTERCONNECTION GUIDANCE REQUESTS

Tier 1: \$1,200

- Substation system one-line diagram
- Substation name, ownership, and 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)
- Recent annual peak load data for the circuit
- Identification of required transmission upgrades

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

Estimated Delivery: **4 - 6 weeks**

Tier 2: \$3,500

- **All items in Tier 1 analysis**
- Load-rejection temporary over-voltage analysis (identification of direct transfer trip)
- Stiffness Analysis
- Reliability coordination study and identification of upstream device upgrades
- Non-binding interconnection estimate

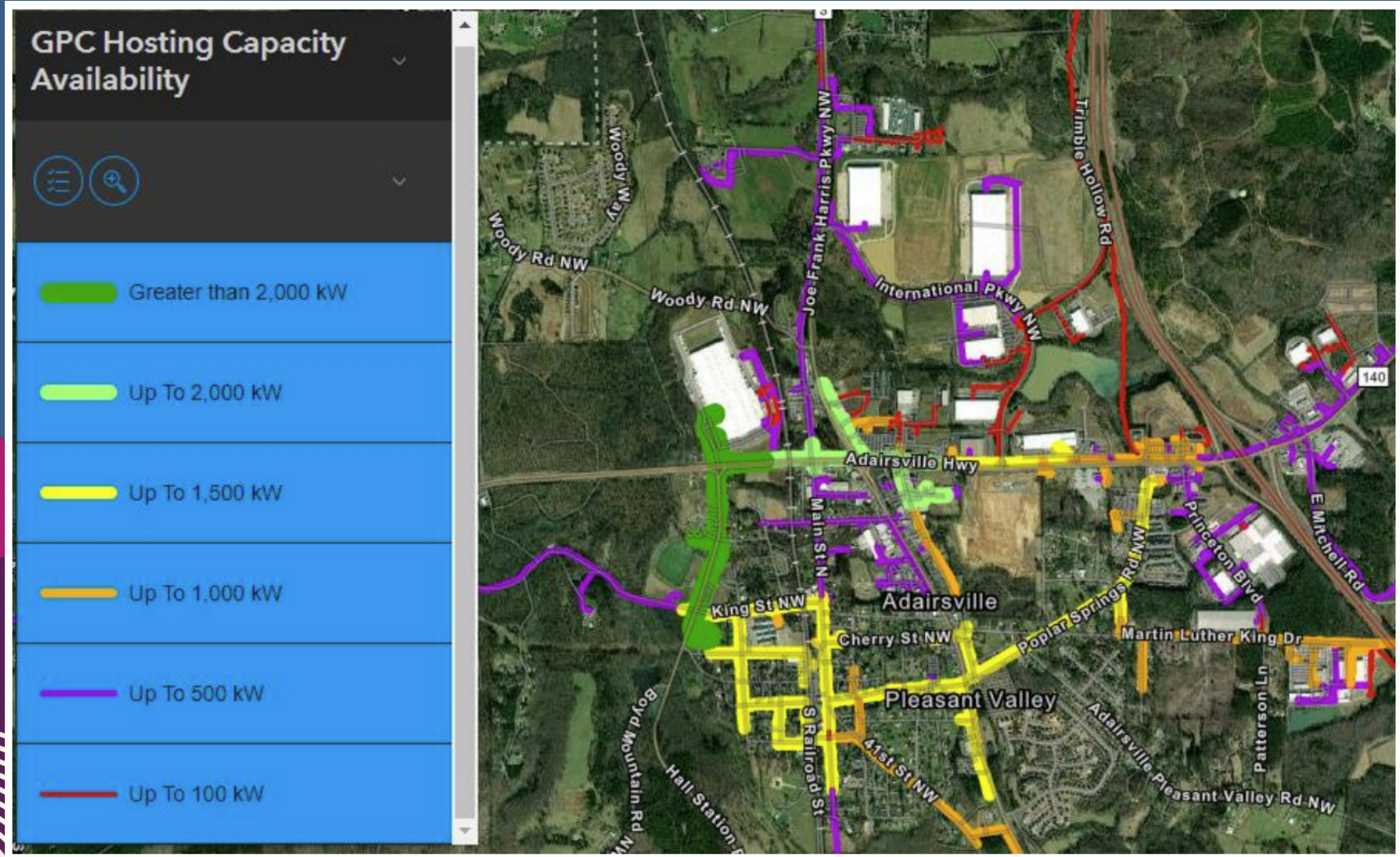
Estimated Delivery: **6 - 8 weeks**

Tier 3: \$9,500

- **All items in Tier 1 and Tier 2 analyses**
- Detailed load flow study (identification of facility power factor requirements)

Estimated Delivery: **10+ weeks**

GEORGIA POWER'S HOSTING CAPACITY TOOL



SECURITY OF DER

- Battery and site controllers cannot be sourced from or manufactured by certain foreign entities of concern (FEOC).
- **Direct Transfer Trip (DTT)** communications must be via fiber to maintain security and reduce latency.
- Inverter-Based Resource interconnection requirements set in Southern Company's Operations of DER in Parallel with the Distribution System Policy (DER Policy)
- Applicable **IEEE 1547** and **UL 1741** standards referenced in the **Southern Company DER Policy**



THANK YOU

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