Georgia Power

Bin 10230
241 Ralph McGill Boulevard NE
Atlanta, GA 30308-3374

PUBLIC DISCLOSURE

May 6, 2025

Ms. Sallie Tanner
Executive Secretary
Georgia Public Service Commission
244 Washington Street, SW
Atlanta, GA 30334-5701

RE: Georgia Power Company's Integrated Hydrogen Microgrid Report, Docket Nos. 44160 and 44161

Dear Ms. Tanner:

In accordance with the Georgia Public Service Commission's (the "Commission") July 29, 2022 Order Adopting Stipulation in Georgia Power Company's ("Georgia Power" or the "Company") 2022 Integrated Resource Plan in Docket Nos. 44160 and 44161, enclosed for filing is Georgia Power Company's Q1 2025 Integrated Hydrogen Microgrid Report ("Report").

The Report contains certain information that is being filed under the trade secret rules of the Commission. As such, a redacted version of this information and the basis for the trade secret assertion are also enclosed for public disclosure.

If you have any questions regarding this filing, please contact Cheryl Johnson at 404-506-6837.

Sincerely,

/s/ Jeremiah Haswell

Jeremiah C. Haswell
Director, Regulatory Affairs
Georgia Power Company
jhaswell@southernco.com

Enclosure

BEFORE THE GEORGIA PUBLIC SERVICE COMMISSION

GEORGIA POWER COMPANY
DOCKET NOS. 44160 and 44161

Basis for the Assertion that Redacted Portions of the Information Submitted are Protected Trade Secrets

In accordance with the Order Adopting Stipulation Agreement issued by Georgia Public Service Commission ("Commission") in Docket Nos. 44160 and 44161, Georgia Power Company ("Georgia Power" or the "Company") is providing to the Commission the Q1 2025 Integrated Hydrogen Microgrid Report (the "Report"). The Report contains confidential information relating to the Company's business plans, forecasted costs, and projected budget (the "Information"). Such Information constitutes trade secret information of Southern Company, Georgia Power, and its affiliates, and is therefore protected from public disclosure under Commission Rule 515-3-1-.11.

The trade secret portions of the Information derive economic value from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from their disclosure or use. Specifically, the Information contains confidential details on the timing and estimated amount of forecasted costs, as well as a sensitive project schedule. The trade secret portions of the Information are considered confidential and proprietary by the Company and its contractors and are not generally known by the public. If the timing and projected costs were disseminated to the public, vendors, and service providers as well as competing projects could use the information to set a floor on pricing thereby arbitrarily increasing costs to Georgia Power's customers. In addition, if the timing of the costs were made public, a competitor or service provider on another project could leverage this information to gain access to equipment, supplies, and services in an already constrained market. Georgia Power's competitors are generally not required to reveal similar information and to require the Company to do so could place it at an economic disadvantage to the detriment of its customers.

The trade secret portions of the Information are subject to substantial procedures to maintain its secrecy. Only select Georgia Power and Southern Company personnel, and their legal counsel, are granted access to this information. Those personnel receive access only on a "need to know" basis. Parties outside Georgia Power and Southern Company and their legal counsel who have been granted access to the Information, if any, have been required to sign confidential agreements with respect to the Information.

Jeffrey R. Grubb, first being duly sworn, deposes and states that he has reviewed the attached document and that the information included in such document is accurate to the best of his knowledge and that the specific information designated as trade secret constitute trade secrets pursuant to Article 27, Chapter 1, Title 10 of the Georgia Code.

Jeffrey R. Grubb
Resource Planning Director

Subscribed and sworn to before me this 5 day of May 2025.

Notary Public

My Commission expires: 11/28/2026

DAVID HALE NOTARY PUBLIC EXPIRES GEORGIA 11/28/2026 HENRY COUNTY



Integrated Hydrogen Microgrid Project

Quarterly Report

Reporting Period End Date: March 31, 2025

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Key Updates (January 1 to March 31, 2025)

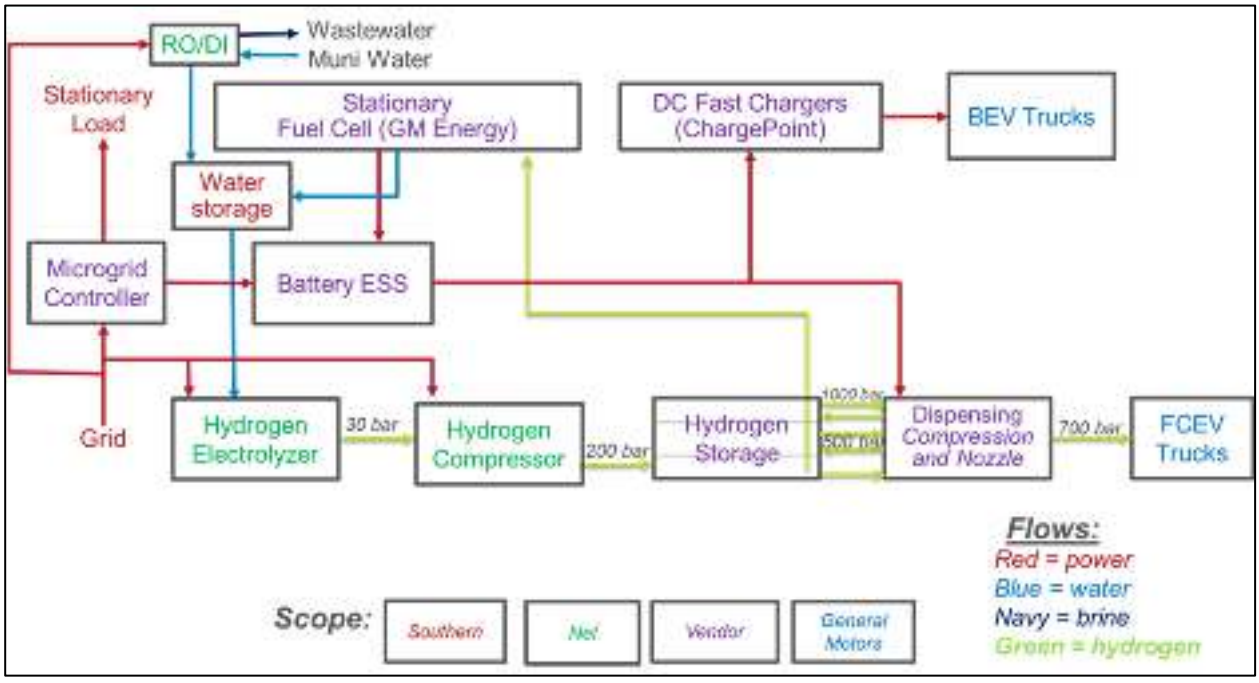
- Executed Subrecipient Agreement with EPRI.
- Detailed work breakdown schedule developed for the temporary refueling system.
- Applied for Fire and Life Safety permit for temporary refueling system with Cobb County Fire Marshall.
- Project Team participated in Pre-Factory Acceptance Test onsite at Air Liquide fabricator (Houston, TX).
- Site Access Agreement initiated with Air Liquide for Temporary Refueler deployment.
- Site work initiated for Temporary Refueler delivery.
- Microgrid request for proposal in process – expected selection in April 2025.

Project Background

Hydrogen is an area that may provide customers with benefits as renewable deployment increases and technology improvements occur. Using a process known as electrolysis, energy providers can create hydrogen using electrical energy and water. The hydrogen created from this process can be utilized for many purposes. For electricity production, hydrogen fuel can offset or eliminate natural gas while reducing carbon emissions. Hydrogen can also be utilized in Distributed Energy Resources ("DER") applications, as a transportation fuel, or even in certain industrial processes. Through stored hydrogen, these energy end uses could be decarbonized, providing additional low-carbon energy to energy users throughout Georgia.

To prepare for this possibility, as approved by the PSC in the 2022 IRP, Southern Company Services ("SCS") and Georgia Power Company ("Georgia Power" or the "Company") are partnering with key stakeholders to develop an integrated hydrogen microgrid as illustrated in Figure 1. This project seeks to create hydrogen from an electrolysis system utilizing grid energy. The hydrogen produced will then be used in a fuel cell microgrid application and for transportation fuel. The fuel cell component will create electricity that can be utilized to charge electric vehicles, provide backup power, or provide peaking services, thus demonstrating the flexible nature of stored energy via hydrogen for both vehicles and stationary power loads.

Figure 1: Hydrogen microgrid energy system



This project will include hydrogen fuel cell Class 4 trucks and battery electric trucks. No production zero emission vehicles are available for Class 4 trucks which are most common fleet vehicles in the utility industry. Based on DOE guidance, the battery electric trucks used in this project may be light-duty pickup trucks rather than Class 4 trucks owing to lack of BEV in the medium-duty classes. This project leverages federal funding[1] and collaboration between General Motors ("GM"), Southern Company Services and Georgia Power Company, Nel Hydrogen, and the Electric Power Research Institute ("EPRI").

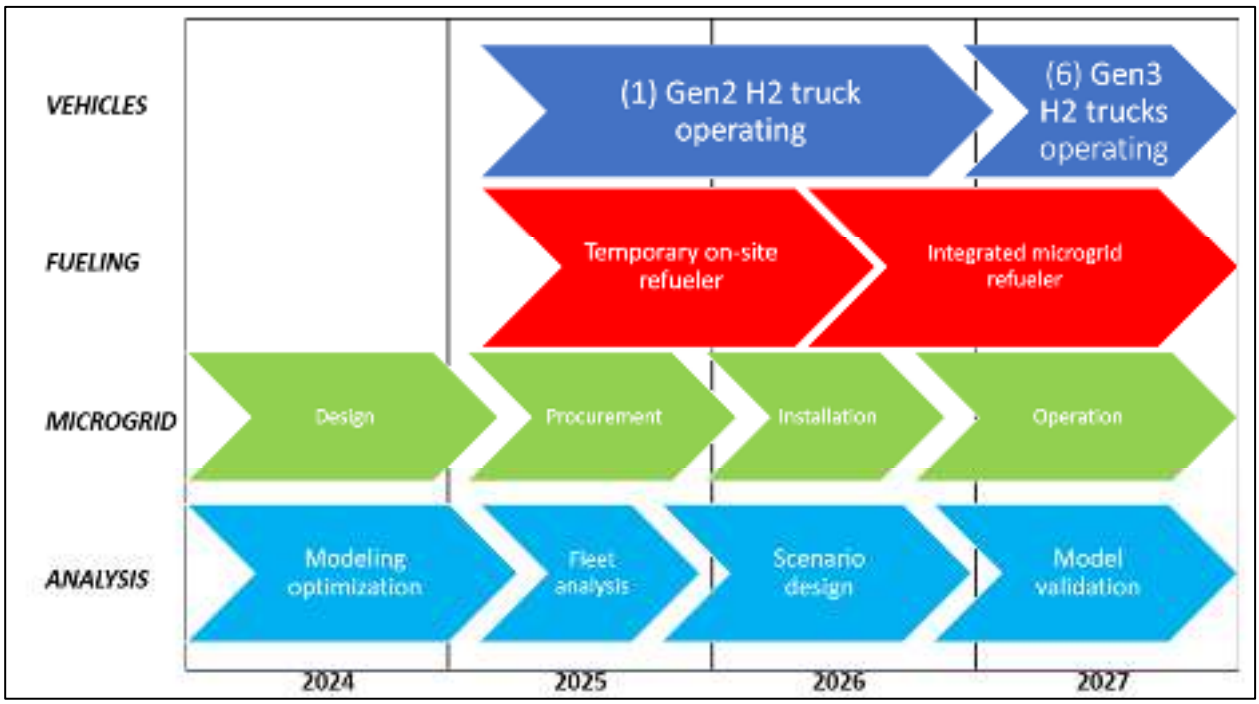
Specific objectives include:

- Demonstrate system benefits to grid and create value through use-case stacking:
  - Electrolyzer and fuel cell as dispatchable loads
  - Fuel cell for peak shaving
  - Fuel cell for back-up power
- Develop path toward deployment of energy storage systems
- Design and demonstrate zero-emission vehicles for utility applications
- Illustrate Green House Gas ("GHG") emissions reductions
- Demonstrate microgrid and zero-emission vehicle integration for customers

The project is executed through four workstreams, with associated high-level activities shown in **Error! Reference source not found.**. Specific updates are provided in the following sections.

[1] Super Truck 3 – DOE Proposal Awarded - https://www.energy.gov/articles/doe-announces-nearly-200-million-reduce-emissions-cars-and-trucks

Figure 2. Overall project timeline organized by workstreams



Vehicles Update

GM is providing a Gen2 hydrogen fuel cell electric vehicle (FCEV) for initial demonstration (3), followed by Gen3 FCEV which will be medium-duty vehicles for vocational service. Battery electric vehicles may be supplied by GM or utilized from existing fleet vehicles. The initial vehicle will be a Class 4 pickup with a shop-service body for use by GPC Fleet Services (Sands Place facility in Marietta) in support of system maintenance. This vehicle has already been constructed by GM using an existing conventional vehicle frame atop a new chassis with two (2) GM Hydrotec fuel cells and with an estimated range of greater than 300 miles at Gross Vehicle Weight, or greater than 100 miles range with 10 hours of export power at a worksite. It is planned for delivery in May 2025. Once it is on-site in Georgia, additional safety and operational training will be provided by GM.

Figure 3 – GM Gen2 FCEV



Gen2 FCEV is like the vehicle to be demonstrated in this project. The GPC vehicle will have conventional cab, not crew cab, and longer toolbox.

Fueling Update

GM has procured a site-based refueling system from Air Liquide, which is under construction in Houston and planned for installation in the 2nd quarter 2025. This system will use hydrogen supplied from a conventional tube trailer and compress it for dispensing into the vehicle. GM will also be procuring the hydrogen supply utilizing local suppliers and supported in this procurement by Southern Company Supply Chain. This conventional tube trailer is the same

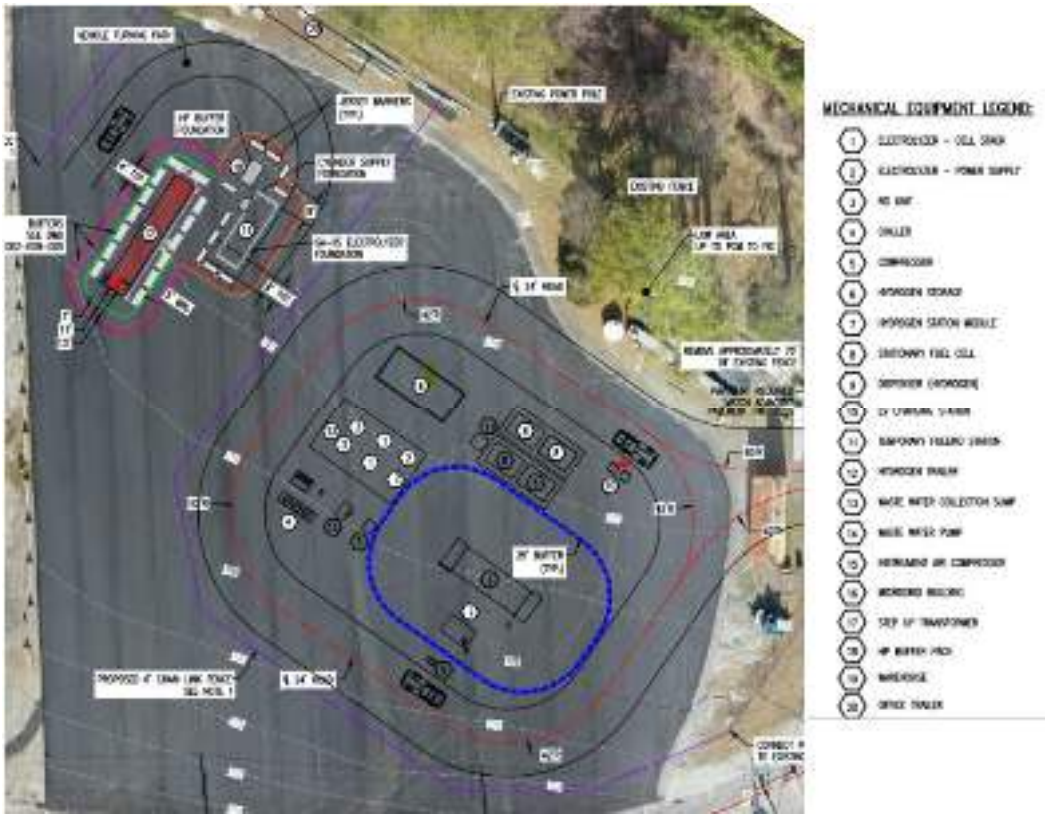
type used at Plant McDonough to supply hydrogen for generator cooling. Purchase orders for on-site contractors for foundation and mechanical work were issued in this quarter, and a bid process for electrical contractors to connect the temporary system was completed with PO to be issued very early in Q2.

Microgrid Update

Conceptual design and layout are complete for the integrated hydrogen microgrid at the site. Figure 4 Site Layout shows the layout for the project. Piping and instrumentation diagrams as well as detailed civil design are underway. The preliminary electrical load list was created to size electrical infrastructure needed to power the project.

Following the detailed mechanical design, a hazard identification (HAZID) process will take place. Hydrogen will be produced (approximately 160 kg/day) at the site using up to 400 kW electrolyzer supplied by Nel (two C30 units) installed in a small building. Hydrogen compression, compressed gas storage, and a stationary fuel cell are also designed, as is a 350-kW fast charger. The stationary fuel cell will provide the energy for the fast charger, thus avoiding any impacts to the local power distribution system. The stationary fuel cell will also provide resilient power to a nearby warehouse at Plant McDonough site. A battery energy storage system will be designed and added to site to help stabilize the microgrid in islanded operations and maximize economic dispatch in grid-connected operations. An RFP has been issued through SCS Supply Chain Management for the microgrid controller, battery energy storage system, and associated electrical connection equipment and installation, to qualified bidders and responses were received in Q1 2025. After meetings with bidders, final updates to their bids are expected in early Q2.

Figure 4 Site Layout



Analysis Update

Preliminary operational simulation has been completed, and it has been shown that most of the stored hydrogen would be used in support of peaking or resilient power. SCS awarded a Subrecipient Agreement to EPRI, pursuant to which EPRI will analyze impacts of broad deployment of the hydrogen microgrid approach, including an assessment of fleets and scenarios for providing infrastructure as those fleets convert to ZEV. EPRI is providing cost-share to this project by doing the work in the Low Carbon Resources Initiative program, and by doing so, provides additional opportunities to highlight the entire project to electric and/or gas utilities.

Southern Company Accomplishments During Previous Reporting Period

Task	Accomplishments
Task 1: Simulation & Analysis	See detail in Tasks below for Southern Company scope
Task 1.2: Fleet identification, baselining, and planning	**Complete**
Task 1.2.1: Identification of vocational fleet vehicles for the demonstration	**Complete**
Task 1.2.2: Collection of baseline fueling and performance data	**Complete** • MPG ranges from 5.5 to 9.4 and average of ~8,000 miles (about 12874.75 km) per year • Additional telematics provided to GM for drive train optimization • Trucks from Sands Place facility
Task 1.2.3: Simulation and analysis for charging and electrolysis scenarios for GHG and price optimization	**Ongoing with expected complete by end of BP4** • Operational model completed to calculate maximum price and GHG from primary power (typical grid ~0.4 kgCO2/kWh) • Most of the stored hydrogen needed to support resilient power
Task 1.2.4: Model impacts of utility scale adoption	**Moved to BP3 and BP4** • EPRI is being added as a subrecipient with plans to complete this scope over next 2 years. The overall subtasks within this Task are: • Assessment of medium duty vehicles in the utility sector • Cost and GHG estimation for refueling and recharging if all MD utility vehicles were ZEV • Cost and GHG estimation for nationwide deployment of integrated hydrogen microgrids for vehicles in utility sector
Task 2: Design	See detail of Tasks below for Southern Company scope
Task 2.4.: Site planning and design at the fleet site	**Ongoing** • Site design completed (civil and electrical) for the temporary refueling system • Foundation and mechanical PO issued for installing temporary refueling system • Preliminary site design for microgrid finalized • Completed P&IDs for microgrid site • Initial bids evaluated for microgrid integration scope and met with bidders to finalize bids

Southern Company Plans for Next Reporting Period

Task 1.2.4

- EPRI to begin assessment of utility vehicles, especially medium duty trucks

Task 2.4

- Evaluate finalized bids for microgrid integration (controller and associated scope) and issue contract
- Issue RFP for hydrogen compressor, hydrogen storage and refueler, and fast charger
- Install and support commissioning of temporary refueling system (Air Liquide)

Task 4

- Complete training for Fleet Services group for first truck from GM

The resource-loaded schedule has been updated and contract modification for BP3 has been executed with GM, including the authorization to proceed with major equipment procurement. The risk register will be updated to refine the cost estimates once proposals for the major equipment are received.

Southern Company Budget and Schedule

Table 1. Revised actual and forecasted costs per calendar year.

Year	**2023**	**2024**	**2025**	**2026**	**2027**	**Total**
Federal Cost ($)	$14,062	$153,131	**REDACTED**	**REDACTED**	**REDACTED**	**REDACTED**
Company Cost ($)	$27,298	$297,109	**REDACTED**	**REDACTED**	**REDACTED**	**REDACTED**
Total Cost ($)	$41,360	$450,240	**REDACTED**	**REDACTED**	**REDACTED**	**REDACTED**

Contains actuals through March 2025 and forecast for the remainder. The budgeted cost is based on the current understanding of the project which is being reviewed. Additional refinements are expected as the project matures.

The Project schedule is included on the next page.

This schdule is fully redacted.