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A clear statement designating one category for which the applicant seeks funding for the capital improvement project (i.e., improving grid resiliency, improving dam safety, or environmental improvements), as well as a subcategory (if within improving grid resiliency or environment improvements), for which the applicant seeks funding, as described in Section IX of this Guidance. The statement must include a written narrative documenting how the capital improvement(s) are consistent with the designated category and subcategory.

Georgia Power Company (GPC) is requesting funding for this project in the **category** of **grid resiliency**. Specifically, GPC is requesting funding within the grid resiliency category for **subcategory** (1)(a)(1), **adapting more quickly to changing grid conditions**.

GPC is upgrading the four generating units in the Tugalo powerhouse. This upgrade includes replacing the turbine runners, generators and intake trash racks. Powerhouse work began in 2023, and new generator/turbine units will be replaced in 2023, 2024, and 2025. The current Federal Energy Regulatory Commission (FERC) license was issued October 3, 1996, and expires September 30, 2036.

Upgrading the existing, vintage generators and associated equipment with more modern, efficient generators and equipment is expected to extend the life of the Tugalo turbine and generating units for another 40 to 50 years. Following these upgrades, the total nameplate capacity of the development will increase from 45 megawatts (MW) to 64 MW. Work has already begun on Units 1 through 3, and the entire project is expected to be completed by the end of 2025. The Tugalo Unit 1 through 4 turbine upgrade capital improvement project will result in an estimated expected combined unit efficiency improvement of over 11%. Installing such upgrades should also allow for less restrained operation of the generating units without having to accommodate the same of degree of maintenance and normal wear and tear considerations that had to be accommodated with respect to the older, more vintage turbines. Therefore, performing these upgrades and replacements is expected to enable such generating units to provide more reliable, efficient, and significant contributions to respond to long-term and near-term changes in grid conditions.

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Documentation relating to the existing conditions and the capital improvement

1. Detailed, written narrative describing the capital improvement project at the hydroelectric generation facility, the need or rationale for the project, and the expected outcomes or benefits of the project:

Baseline (Existing) Configuration, Conditions, and Operations

Georgia Power Company's (Georgia Power or "GPC") Tugalo Development, a part of the North Georgia Project (FERC Project No. 2354), is in Oconee County, South Carolina and Rabun County, Georgia on Tugalo Lake which sits northeast of Clarkesville, Georgia. The dam itself is located at river mile (RM) 343 just downstream of the confluence of the Tallulah and Chattooga Rivers into the Tugalo River. The existing FERC license was issued on October 3, 1996, with a term of 40 years at which the license will expire on September 30, 2036. The powerhouse contains four vertical Francis units with each operating at a gross head of 147-ft and rated at 11.25-megawatts (MW) at 143 ft head.

The development includes an east embankment, spillway, intake section, and west non-overflow section. The dam is an 840-foot (ft) long, 160-feet (ft) high concrete gravity dam with a 73-ft long overflow section, a 357-ft long gated spillway section, a 20-ft long center non-overflow section, a 165-ft long intake section, and a 225-ft long right non-overflow section. The crest elevations of the non-overflow sections and spillway are approximately 905-ft mean-sea-level (msl) and 885-ft msl., respectively. The dam impounds Lake Tugalo, a 597-acre (ac) reservoir with a gross storage capacity of 43,000-acre-feet (ac-ft) (14,000-ac-ft of which are usable storage) operating at a full pond elevation of 891.5-ft msl Four steel-lined, concrete-encased penstocks, each measuring approximately 308-ft long and 13-ft in diameter, transfer water from the intake section through the dam into a substation located between the dam and powerhouse before terminating into the generating units. Water exits the facility and is discharged directly into the downstream Lake Yonah by way of a 200-ft long, 150-ft wide tailrace which separates the flow path from the main channel by left and right concrete walls measuring about 70-ft and 200-ft in length.

Scope of the Capital Improvement Project(s)

GPC will replace and refurbish components of the four turbine-generator units at Tugalo, yielding greater reliability and rated capacity increases from 11.25 MW to 16 MW at each of the four units. Overall, the rated capacity of the facility will increase from 45 MW to 64 MW (a 42 percent increase). These upgrades will include runner replacement, generator replacement, and trashrack and headgate refurbishment. GPC will also upgrade the unit and facility control and communications systems to provide remote operation capability and enhanced coordination with power and river system operations. It will also upgrade balance of plant systems, including station service, fire protection, service and potable water, lubrication systems, compressed air, HVAC, unwatering and sump systems, switchgear and transformers, maintenance facilities, and switchyard. Work on the upgrades began in 2022 and will continue through 2025.

These upgrades are motivated by GPC's experiences with chronic maintenance issues and increasing failures within its hydropower fleet, including Tugalo. Decreasing reliability and increasing maintenance demands are consistent with components and systems nearing the end of service life as estimated by industry standards. GPC has initiated a comprehensive program for the rehabilitation and modernization of 15 generating stations, including Tugalo. GPC expects these upgrades to extend the life of the Bartletts Ferry units and associated systems, enabling them to provide reliable and affordable renewable energy, enhanced power system reliability and resilience, and effective stewardship of natural resources and local habitats for another 50-years. The upgrade effort will contribute to local and national economies and communities by creating skilled jobs in the manufacturing and construction industries, and will advance diversity, equity, inclusion, and accessibility and contribute to the Justice40 Initiative.

GPC has developed a Community Benefits Plan (CBP) for the capital improvement project and has already begun the community engagement effort. See CBP included in the Identifier Community Benefits Plan section of this application. GPC's CBP Team will further evaluate the impacted communities that will enjoy the benefits and bear any concerns associated with the project. The assessment will seek to understand how these benefits and any concerns are likely to interact with cumulative burdens borne by these communities.

2. If the hydroelectric facility is not in compliance with all applicable Federal, State, and/or Tribal requirements, include a short narrative explaining why the facility is out of compliance.

The Tugalo facility complies with all applicable Federal, State and Tribal requirements.

3. A written narrative describing and, where possible, identifying potential areas of risk in the project work plan or other sources of risk associated with the capital improvement (e.g., project completion schedule, procuring materials and equipment, deployment of new technologies).

Potential Areas of Risk

GPC has identified potential areas of risk that could impact the project completion schedule and the cost of the project, which are set forth below. These risks are acceptable and manageable.

- Risk associated with road to Tugalo Dam, presenting a challenge for heavy loads
- Risk associated with transportation and installation of new generators
- Risk associated with embedded components for new generators
- Risk associated with Startup strategy
- Risk associated with change control with plant involvement
- Risk associated with potential FERC reviews causing schedule delays
- Potential risk of damaging clay tile in turbine deck

- Potential risk associated with defining spillway gate scope
- Risk associated with RUS contractor
- Risk associated with spillway gate design and inclement weather plans and drawdown schedule
- Potential risk associated with Scroll case
- Potential risk of access issues during construction
- Potential risk associated with using Plant labor for support
- Potential risk associated with Outage plans
- Potential risk with supply chain and procuring materials and equipment
- Risk associated with Unit 4 sole plate, draft tube, and wheel pit repairs
- Risk from issues related to the Enterprise Foundations task conversion causing delays in accounts payable/ paying contractor invoices
- Potential risk associated with Teams to review Alignment
- Potential risk to schedule resulting from longer contractor bid schedules
- Risk associated with turbine and generator shipping delays

4. A project timeline summarizing the major steps/milestones described in the capital improvement project work plan and Community Benefits Plan.

Project Timeline

Southern Company and GPC project managers' experience with hydroelectric upgrades conducted during the previous decade provides a tested methodology and optimal schedule for expediting generator unit upgrades. The results of this experience support the proposed project schedule completion within the project period. See detailed Project schedule for the capital improvement project included herein in **Appendix A – Exhibit A.**

Tugalo Hydroelectric Development
Generator Upgrade Milestones

Description	Milestone Date
Community Benefit Plan Mobilization	2021, Q2
Capital Improvement Project Mobilization	2022, Q3
Complete Unit 1	2023, Q4
Complete Unit 2	2024, Q3

Complete Unit 3	2025, Q1
Complete Unit 3	2025, Q3
Demobilization	2025, Q3

5. Any monitoring plans, required through the FERC regulatory process or otherwise, that will document the effectiveness of the capital improvement project.

Monitoring Plan

GPC understands that efficient project management, capable leadership, and effective oversight and monitoring are necessary requirements for the successful implementation of the generator upgrades capital improvement project and the associated Community Benefits Plan (CBP). Senior management fully supports the goals and objectives of the generator upgrades as described in this application. A letter of support from Mr. Brandon Dillard, SVP & SPO West, Southern Company, is included in the Identifier Executive Authorization section of this application.

To ensure and achieve the effectiveness of the technical and system-wide objectives set forth in this application, GPC has designated Tyrone Rouse, Project Manager with Southern Company, as the project manager for the project. As the project manager, Mr. Rouse will have overall accountability for the safety, scope, schedule, cost, risk, and quality associated with this scope of work, and to ensure that project delivery process requirements and associated procedures, standards, and guidelines are followed. He will also oversee development and maintenance of the Project Implementation Plan.

Mr. Rouse is a proven leader with strong technical and project management experience and will be supported by GPC Project Managers Shawn Dunne and Amber Sullivan and GPC and Southern Company subject matter experts with relevant experience and expertise, with most of their time spent at Georgia Power. This dedicated project leadership, along with its existing engineering and construction expertise, will ensure the project is managed on budget and completed on schedule, and completed in a safe and efficient manner.

After the generator upgrades are complete GPC Project Managers and Southern Company Management will develop and submit a Quality Control and Inspection Plan (or QCIP) for approval by FERC. This is done to document that the project is performed in accordance with the plans and specifications approved by FERC.

To achieve the effectiveness of the CBP objectives set forth in this application, Southern Company has a designated individual (the Community Benefits and Justice 40 Project Manager) responsible for ensuring that CBPs and similar requirements are implemented appropriately. In addition, GPC has existing

resources dedicated to engagement within its service territory. For the proposed project location, the project team includes Division Vice Presidents (VPs), Area Managers, and Community Relations Representatives that will assist in carrying out the community benefits plans requirements for this project. The Division VP and Area Managers have regular engagements with city and county officials and other community leaders and will engage with the local community leaders on behalf of the CBP team.

6. **A project budget summarizing: a. The total cost of the capital of the capital improvement(s); b. The major cost categories of the capital improvement(s); c. The total amount of incentive payment requested; and d. Any other federal funding sources used to support the project.**

   See project budget included herein in **Appendix A – Exhibit B.**

7. **A detailed itemized list of expected or actual capital costs for the capital improvement and documentation of the stated costs including but not limited to, as applicable, price estimates, vendor quotes, statements, invoices, or bills of sale for the capital improvement being applied for.**

   See itemized list of expected costs included herein in **Appendix A- Exhibit B.**

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8. If applicable, documentation of FERC authorization of the capital improvement project, or if an amendment to the license is required, proof that a final application for authorization has been filed with FERC.

GPC filed a license amendment application seeking authorization of this capital improvement project with FERC on September 23, 2021. FERC issued an Environmental Assessment (EA) for this capital improvement project on December 1, 2022. On February 16, 2023, FERC issued an order amending GPC's license and authorizing this capital improvement project.

See copies of GPC's license amendment application, FERC's EA, and FERC's February 16, 2023, Order amending GPC's license and authorizing the capital improvement project included herein in **Appendix A - Exhibit C.**

9. If applicable, a request for a DOE NEPA determination as described in Section VII of DOE's Guidance.

GPC has complied with the National Environmental Policy Act of 1969 (NEPA). See copies of GPC's license amendment application, FERC's EA, and FERC's February 16, 2023, Order amending GPC's license and authorizing the capital improvement project included herein in **Appendix A - Exhibit C.**

10. If applicable, documentation demonstrating compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) has been completed or is currently ongoing as described in Section VII of DOE's Guidance.

GPC has complied with Section 106 of NHPA. See copies of GPC's license amendment application, FERC's EA, and FERC's February 16, 2023, Order amending GPC's license and authorizing the capital improvement project included herein in **Appendix A - Exhibit C.**

11. If the project affects Indian Tribes, evidence to support that the project does not disturb, desecrate, or otherwise impair the integrity of a sacred site or Tribal cultural property of an Indian Tribe. Supporting documentation from an Indian Tribe potentially impacted by the capital improvement project is encouraged.

On July 20, 2021, GPC sent a section 106 consultation package for review and comment to the Eastern Band of Cherokee Indians, Muscogee (Creek) Nation, United Keetoowah Band of Cherokee Indians, Catawba Indian Nation, and the Cherokee Nation. On August 27, 2021, the Catawba Indian Nation stated that it had no immediate concerns regarding traditional cultural properties, sacred sites, or

Native American archaeological sites within the boundaries of the proposed project area. The Catawba Indian Nation requested to be notified if Native American artifacts and/or human remains are located during the ground disturbance phase of this project.

The original generating units that GPC is replacing as part of this capital improvement project are considered "character-defining features." so replacing them is considered an adverse effect. Pursuant to a Memorandum of Agreement (MOA) with FERC, the Georgia SHPO and the South Carolina SHPO, GPC is doing Historic American Engineering Record (HAER) documentation and interpretative signage to mitigate for the adverse effect. GPC has completed Level II HAER documentation, which includes large format archival photography, high-res copies of original drawings/plans, and a written historical narrative. All the actual work has been done and has passed Georgia and South Carolina SHPO review. The National Park Service (NPS) administers the program, and so they have provided a few comments that GPC's consultant is addressing. Once that is complete and the NPS signs off on the documentation, it will be curated in the Library of Congress, as well as at the Georgia and South Carolina SHPO.

See copies of GPC's MOA relating to this capital improvement project included herein in **Appendix A - Exhibit D.**

12. With respect to the funding restrictions outlined in Section XIII of this Guidance:

- **A statement on whether Build America, Buy America requirements apply to the project and the impact, if any, this requirement may have on the project's budget. If an applicant is seeking a waiver of the Build America, Buy America requirements, a written waiver request that includes all the information outlined in Section XIII(a) of this Guidance.**

According to FAQ guidance on the Section 247 program, the Build American, Buy American requirements "only apply to a State, local government, territory, Indian Tribe, institution of Higher Education or nonprofit organization". As a for-profit, investor-owned utility, the requirements therefore do not apply to Georgia Power Company or its proposed project.

- **Acknowledgment that the applicant will comply with all of the Davis-Bacon Act requirements as outlined in Section XIII(b) of this Guidance.**

Georgia Power Company (GPC) acknowledges that it will comply with all the Davis-Bacon Act (DBA) requirements, and it has already begun taking necessary steps with vendors and internally towards compliance. The DBA requires that laborers and mechanics who perform construction, alteration, or repair work, at the site of work, be paid no less than the prevailing wages and fringe benefits in the applicable wage determination. For this project, the "site of work" shall be 5233 Tugalo Plant Road, Clarkesville, GA 30523, where the upgraded generator equipment will remain.

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(1) GPC will ensure that the wage determination(s) and appropriate DBA clauses and requirements are flowed down to and incorporated into any applicable subcontracts or subrecipient awards.
(2) GPC will ensure that if wage determination(s) and appropriate DBA clauses and requirements are improperly omitted from contracts and subrecipient awards, the applicable wage determination(s) and clauses are retroactively incorporated to the start of performance. However, this is an ongoing project that began prior to the program being finalized and this application being submitted. While GPC is confident that prevailing wages have been paid to date, GPC agrees to audit prior payrolls for any laborers and mechanics who performed construction work at the site of work to ensure that prevailing wages and fringe benefits were in fact paid. GPC agrees to pay back wages to any such laborer or mechanic who performed construction work at the site of work who was not paid prevailing wages and fringe benefits. GPC agrees that it and its subcontractors will comply with all DBA requirements from the date the grant is effective forward.
(3) GPC agrees to be responsible for compliance by any subcontractor or subrecipient with the DBA labor standards.
(4) GPC will receive and review certified weekly payrolls for all work performed by laborers and mechanics on the site of work submitted by all subcontractors and subrecipients for accuracy and to identify potential compliance issues.
(5) GPC will maintain original certified weekly payrolls for 3 years after the completion of the project and will make those payrolls available to the Department of Energy (DOE) or the Department of Labor (DOL) upon request, as required by 29 CFR 5.6(a)(2).
(6) GPC will conduct payroll and job-site reviews for construction work, including interviews with employees, with such frequency as may be necessary to assure compliance by its subcontractors and subrecipients and as requested or directed by the DOE.
(7) GPC will cooperate with any authorized representative of the DOL in their inspection of records, interviews with employees, and other actions undertaken as part of a DOL investigation.
(8) GPC will post in a prominent and accessible place the wage determination(s) and DOL Publication: WH-1321, Notice to Employees Working on Federal or Federally Assisted Construction Projects.
(9) GPC will notify the DOE Grid Deployment Office's Hydroelectric Incentive Program Section 243 of all labor standards issues, including all complaints regarding incorrect payment of prevailing wages and/or fringe benefits, received from the recipient, subrecipient, contractor, or subcontractor employees; significant labor standards violations, as defined in 29 CFR 5.7; disputes concerning labor standards pursuant to 29 CFR Parts 4, 6, and 8 and as defined in FAR 52.222-14; disputed labor standards determinations; DOL investigations; or legal or judicial proceedings related to the labor standards under a contract, a subcontract, or subrecipient award.
(10) GPC will prepare and submit to the Contracting Officer, the Office of Management and Budget Control Number 1910-5165, Davis Bacon Semi-Annual Labor Compliance Report, by April 21 and October 21 of each year through the iBenefits system (https://doeibenefits2.energy.gov), its successor system, or other manner of compliance as directed by the Contracting Officer.

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GPC will undergo Davis-Bacon Act compliance training and will maintain competency in Davis-Bacon Act compliance. GPC currently contracts with a third-party Davis-Bacon Act electronic payroll compliance software application – eMars. **Accordingly, GPC specifically requests waiver of the use of DOE's Davis-Bacon compliance software application, and requests approval of its continued use of this third-party vendor for electronic submission of DBA weekly payrolls and other DBA requirements.**

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IX(1)(b)(2)(i). Stamped drawings, calculation sheets, or other appropriate documentation that clearly describes current conditions, the approach, and the expected or quantified outcome made through the capital improvement project.

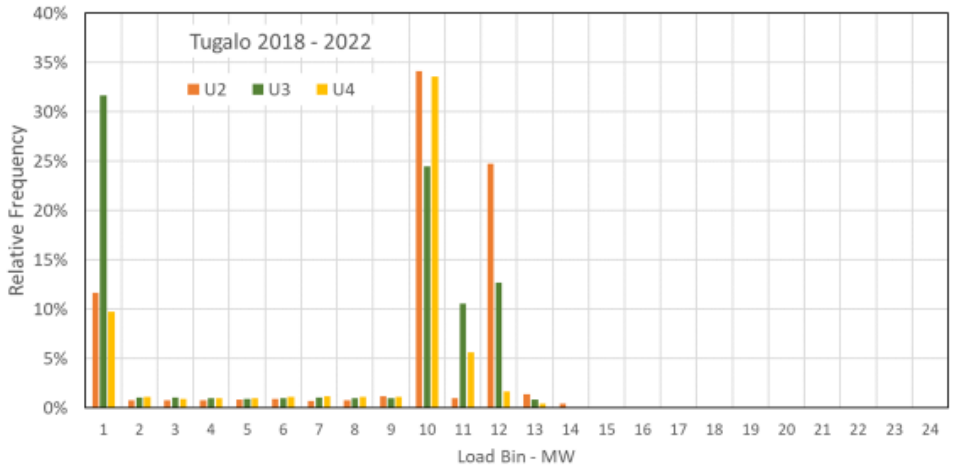
The Applicant's self-scoring of this application is as follows:

Criterion		Scoring
Operating Range		4 of 4 points
Flexibility	Ramp rates	4 of 4 points
	Start/stops per day	2 of 2 points
	Automation and advanced controls	2 of 2 points
Firm Capacity		4 of 4 points
Grid Reliability		4 of 4 points
Total		**20 of 20 points**

Upgrades of Units 1 through 4 at Tugalo will improve the capabilities of the facility as follows:

Operating Range: DOE guidance for Section 247 applications does not define operating range. The Applicant assumes for the case turbine-generator unit upgrade applications to DOE that *operating range* is quantified as the difference between the minimum and maximum power outputs that a unit can sustain in normal operations.

While GPC does not explicitly require that upgrades increase operating range in its specifications, a comparison of historical unit operations to the proposed post-upgrade capabilities of the units does reveal an increase in operating range. GPC does not have original equipment manufacturer (OEM) guidance for the minimum and maximum power outputs for the existing units at Tugalo. However, an examination of historical hourly unit power output data for Tugalo (the same data GPC submitted within the DOE Efficiency Spreadsheet Tool for its Section 243 application) reveals the normal minimum and maximum of unit power output. Minimum and maximum thresholds are evident for Units 2 through 4 in the histogram plot below. Unit 1 data are not available due to extended outages, but Unit 1 may be assumed to have similar operating limits.



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GPC also has proposed capabilities, in the form of power versus flow and head relationships (Hill charts) and statements of minimum and maximum operating limits from the selected upgrade OEM. GPC is prohibited from disclosing details of these proposed capabilities due to nondisclosure/confidentiality requirements with the OEM, but is reporting the quantifications of the proposed operating ranges for Units 1 through 4. These values are included in the operating range summary tables below.

Unit	Proposed Rated Capacity	Historical Outputs - MW			Proposed Output Range Width - MW	Increase in Range Width
		Min	Max	Range Width		
1	16	8.5	13.5	5.0	9.33	86.5%
2	16	8.5	13.5	5.0	9.33	86.5%
3	16	8.5	13.5	5.0	9.33	86.5%
4	16	8.5	13.5	5.0	9.33	86.5%
Facility Increase in Operating Range Width (capacity weighted)						**86.5% (+4 points)**

Ramp Rate: The upgraded units will be capable of increasing or decreasing output between condensing to generating at full power as quickly as existing units. Upgraded units will thus be capable of adding more power (at best efficiency or maximum output) than the existing units to the grid in the same amount of time. Accordingly, the percentage increase in ramp rate may be assumed equal to the percentage increase in rated capacity, to wit:

Unit	Rated Capacity – MW			Ramp Rate increase
	Existing	Proposed	Increase	
1	11.25	16	42%	
2	11.25	16	42%	
3	11.25	16	42%	
4	11.25	16	42%	
Facility Increase in Ramp Rate (capacity weighted)			**42% (+4 points)**	

Start/Stops: Upgraded units will maintain and/or improve capability to run continuously in either condensing or generating mode, with no limitation on the number of transitions between modes **(+2 points)**.

Automation and Advanced Controls: The applicant's modernization plan documents call for remote operation capability. The applicant's technical specifications for equipment bidders require proposed equipment capability for remote start operation, regulation, tripping, and annunciation **(+2 points)**.

Firm Capacity: The Applicant's Section 243 efficiency application provided the DOE Facility Efficiency Increase Tool analysis for the proposed modification of Units 1-4, indicating baseline and improved energy production of 634,720 MWh and 735,378 MWh, respectively—a 15.9% increase in energy production for the 5 year period of historical data. **(+4 points)**.

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Grid Reliability: Appendix A of the *2022-2023 SERC Regional Risk Report* identifies the following Major Risk to Engineering Reliability: *There has been an increase in the SERC renewable energy resource portfolio, wind energy in the west and solar in the south and southeast. Integration of VERs raises the risk of voltage regulation, dynamic response, and sudden change in dispatch patterns. The changing characteristic of the grid with the growth of VERs will affect how the grid is operated in future. Since VERs are weather dependent, planning for backup resources in the absence of generation becomes essential to maintaining the reliability of the system.*

The Applicant asserts that the increases in rated capacity of units at Tugalo may contribute to "backup resources in the absence of [VER] generation", and that the improvement in operational reliability of and services from the upgraded units at Tugalo may be useful in mitigating "risk of voltage regulation, dynamic response, and sudden change in dispatch patterns" associated with VERs **(+4 points)**.