FINAL ENVIRONMENTAL IMPACT STATEMENT

FINANCING ASSISTANCE FOR PROPOSED BIOMASS POWER PLANT

RURAL UTILITIES SERVICE

OGLETHORPE POWER CORPORATION

Prepared by

URS Corporation
St. Louis, Missouri

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Final Environmental Impact Statement (EIS)

Oglethorpe Power Corporation

Financing Assistance for Proposed Biomass Plant

Warren County, Georgia

Submitted by the Department of Agriculture (USDA), Rural Utilities Service (RUS)

ABSTRACT: Oglethorpe Power Corporation (Oglethorpe) has applied for financing assistance from RUS to construct a 100-megawatt (MW) net biomass-fired electric generating plant and related facilities at a site in Warren County, Georgia (the Proposal). The purpose of the Proposal is to provide a reliable, long-term supply of renewable and sustainable energy at a reasonable cost to meet part of Oglethorpe's contractual obligations to provide electric energy to its Members. This EIS considers other alternatives to meet the identified purpose and need for action. Alternatives were evaluated in terms of cost-effectiveness, technical feasibility, and environmental soundness. Alternatives evaluated in detail in the EIS include the Proposal, a similar facility at a different site (Alternate) and the no action alternative. Adverse impacts of the Proposal include those on air, soils, surface water, farmland, Waters of the United States, wildlife, and noise. This EIS identifies measures incorporated into the Proposal to minimize these impacts and considers additional potential mitigation measures that would further reduce adverse impacts. RUS has identified the Proposal as described in this final EIS as its preferred alternative.

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Introduction

Oglethorpe Power Cooperative (Oglethorpe) has applied for financing assistance from the U.S. Department of Agriculture, Rural Utilities Service (RUS) to construct a 100-megawatt (MW) net biomass-fired electricity generating plant and related facilities at a site in Warren County, Georgia (the Proposal). Oglethorpe had initially applied for financing assistance for two plants at two different sites in Georgia, one in Warren County and one in Appling County. Currently Oglethorpe has specific plans to proceed with only one plant (the Proposal), while the plant at the Appling site has been deferred for the foreseeable future. In this EIS the Appling site is evaluated as an alternative to the Proposal (Alternate).

RUS is the agency that administers the U.S. Department of Agriculture's (USDA) Rural Development Utilities Programs. To fulfill its obligations under the National Environmental Policy Act (NEPA), RUS is completing this Environmental Impact Statement (EIS).

This final EIS discusses Oglethorpe's Proposal and alternatives and analyzes the potential effects of the Proposal and the Alternate on the environment.

As an electric generation cooperative, Oglethorpe, headquartered in Tucker, Georgia, is a non-profit utility owned by its members. As such, it provides wholesale electricity and related services to 39 Electric Member Corporations (EMCs), which collectively provide electricity to more than 4.1 million Georgia citizens. Oglethorpe's EMCs serve most of Georgia outside of urban areas. After considering various ways to meet part of its future electricity needs with renewable energy, Oglethorpe identified the construction of a new biomass-fired unit in Warren County as its best course of action.

RUS has established procedures for determining if a proposed project for which a loan or loan guarantee is sought is both technically and financially feasible. Following RUS' procedures, Oglethorpe prepared several studies prior to this EIS, including an Alternatives Report that was subject to RUS' review and approval. This report and RUS' notice of intent to prepare an EIS are available to the public on RUS' website at: http://www.usda.gov/rus/water/ees/eis.htm. The information and analyses from the Alternatives Report and a number of other reports Oglethorpe prepared are incorporated into this final EIS. Reports prepared by Oglethorpe consultants specifically for the Proposal are referenced in this final EIS and included as appendices when appropriate. The public and agencies have had opportunity to provide input and comment on the purpose and need and other Proposal elements through the scoping process. These activities were summarized in a scoping report, which is included as Appendix B of this EIS.

Purpose and Need for the Proposed Action

The purpose of the Proposal is to provide a reliable, long-term supply of renewable and sustainable energy at a reasonable cost to meet part of Oglethorpe's contractual obligations to provide electric energy to its Members. RUS' need is to fulfill its mission to carry out the USDA electric loan program. Providing feasible and environmentally acceptable renewable energy is consistent with the policy of the federal government, including the Department of Energy (DOE), which implements federal energy policy, and the USDA, of which RUS is an agency. RUS is currently pursuing options for eligible organizations to develop renewable energy, and has financed biomass, photovoltaic, and wind powered renewable energy projects developed by current borrowers.

Alternatives Eliminated from Detailed Consideration

RUS and Oglethorpe evaluated and eliminated from detailed consideration eight alternatives for renewable generation, one other generation alternative and demand side management; three alternative sites; two alternatives for cooling; and two alternatives for water supply (one of the water supply alternatives, gray water, will supply part of the Proposal needs). Results are summarized in Table ES-1.

Table ES-1. Alternatives Considered but Not Studied in Detail.

Alternative	Reasons for Not Studying in Detail
Fuel Source/Generation Technology	
Biomass – landfill gas	Green Power EMC, a cooperative formed by EMCs in Georgia is already developing landfill gas as feasible for a source of electricity for Oglethorpe's Members and it appears the total developable potential is less than 50 MW.
Biomass – municipal solid waste (MSW) biogenic	• The potential capacity of MSW waste to energy (WTE) plants is small. • Capital costs are high relative to woody biomass technology. • Nearly half the energy produced by MSW WTE plants is from fossil fuels, not renewable sources.
Biomass – other (agricultural byproducts/crops, sludge waste, and other biomass solids, liquids and gasses).	Agricultural byproducts/crops and woody debris may be used as fuel for the Proposal. The remaining "other biomass" sources are in the category of sources that Green Power EMC may evaluate; however, they are too small for Oglethorpe's purposes.

Table ES-1. Alternatives Considered but Not Studied in Detail.

Alternative	Reasons for Not Studying in Detail
Geothermal	Geothermal energy was eliminated as a potential energy source for the needed renewable energy because there are no resources available near Oglethorpe's service area.
Hydroelectric	• The history of dam building over the last 40 years in the U.S. indicates large risks related to delays and capital costs. Construction of new facilities is unlikely to be feasible in the foreseeable future. • Utility-scale hydroelectric projects generally create negative environmental impacts. • Because of increased demands for water resources aggravated by persistent and long-term drought, even Georgia's current hydropower resources have limited availability.
Solar - thermal	• Suitable solar resources are not available in Oglethorpe's service area. • The cost would be substantially higher than other available energy sources, including renewable sources.
Solar - photovoltaic	Photovoltaic power generation was eliminated as a potential source for the needed energy because the cost is substantially higher than other available energy sources, including other renewable sources.
Wind	Land-based wind was eliminated as a potential source of renewable energy because Oglethorpe's service area does not have adequate wind resources for utility-scale development. Offshore wind was eliminated because of cost and the inability of current turbines to withstand hurricane winds.
Distributed power generation	Because of the loss of economy of scale involved with locating, permitting and constructing a large number of individual units, distributed power generation was not considered a feasible alternative.
Demand side management (DSM)	DSM measures can help reduce future energy needs; however, they fall far short of having the potential to eliminate the need for generating facilities. Also, the projections that the EMCs make for future power needs have already taken the savings from DSM into account.

Table ES-1. Alternatives Considered but Not Studied in Detail.

Alternative	Reasons for Not Studying in Detail
Alternative sites	
Washington County No. 1	• Smaller site than Proposal site. • Not as close to large sawmills as Proposal site. • Does not have direct access to 230- or 115-kilovolt (kV) transmission line. • Particulate matter less than 2.5 microns ($PM_{2.5}$) close to National Ambient Air Quality Standard (NAAQS). • Not adjacent to industrial area.
Washington County No. 2	• Smaller site than Proposal site. • Not as close to large sawmills as Proposal site. • Does not have direct access to 230- or 115-kilovolt (kV) transmission line. • Particulate matter less than 2.5 microns ($PM_{2.5}$) close to National Ambient Air Quality Standard (NAAQS). • Not adjacent to industrial area.
Echols	• Not close to large sawmill or major fuel area. • Closest to Class I area (consideration for air impacts). • Highest potential for unavoidable impacts to Waters of the U.S. • Not adjacent to industrial area.
Alternative cooling methods	
Once-through	• Requires large water supply. • Not allowed under current regulations for facilities that withdraw more than 2 million gallons per day.
Dry cooling	• Has a high energy penalty, estimated at 9 to 16 percent. • More than twice the cost of a wet recirculating system.
Alternative cooling water sources	
Gray water	Proposal will use gray water to the extent practicable; however, there is an insufficient supply for the full water needs.
Groundwater	Insufficient supply available.

Note: This table provides only a general summary of reasons for elimination. Refer to Section 2.2, Alternatives Considered but Not Studied in Detail*, for detailed explanations.*

Alternatives Assessed in Detail

Proposal

The 100-MW biomass-fired plant would be constructed on a 343-acre site in Warren County, Georgia, just east of the City of Warrenton. The Proposal would generate electricity by burning a woody biomass fuel blend, using a technology called bubbling fluidized bed (BFB). The plant would require approximately 2 million gallons of water per day (MGD). The water supply would consist of a combination of potable water, gray water and untreated surface water. Water delivery would require installation of the following lines:

- 10-mile long, approximately 8-inch diameter potable water line (0.5 MGD maximum); and an adjacent approximately 12-inch diameter gray water line (0.7 MGD maximum), both from Thomson-McDuffie County.
- One-half-mile long approximately 10-inch diameter water line (0.5 MGD maximum) from the City of Warrenton.
- Four-mile long, approximately 10-inch diameter untreated surface water line (0.3 MGD maximum) from Warren County.
- Water line located entirely within the Proposal site for 0.2 MGD (maximum) gray water from the City of Warrenton.

Wastewater will be discharged to the planned City of Warrenton wastewater treatment plant, to be constructed adjacent to the Proposal site.

The Proposal includes an approximately 3,000-foot long 115-kilovolt (kV) transmission line and substation entirely on-site. In addition, approximately 3.5 miles of the existing off-site Evans Primary – Fury's Ferry 115-kV transmission line would require reconductoring (replacement of the cable with a larger cable), with no structure replacement. Approximately 13.3 miles of the Union Point – Maxeys line would also require reconductoring, with replacement of structures. All work would be done within existing utility right-of-ways.

Alternate

The Alternate is a similar, 100-MW plant on a different site. The Alternate site covers approximately 345 acres and is located in Appling County, Georgia just east of the City of Baxley. The Alternate site overlies a large aquifer, which could serve as the water supply. The water supply could also be supplemented with gray water from the City of Baxley. The Alternate would require approximately 38 miles of upgraded transmission line on new alignment.

No Action Alternative

The no action alternative would result in no impacts to the environment at the Warren County and Appling County site or their surroundings. The Proposal and Alternate site would not be constructed or operated, and therefore, under the no action alternative, there would be no effects on environmental resources such as air quality, geology and soils, groundwater, surface water, floodplains, farmland, etc. at these sites.

However, because neither the Proposal nor the Alternate would be constructed, the power demand would likely be met by construction of some other non-renewable power generation facility, such as coal, nuclear or natural gas.

Impact Analysis

Table ES-2 summaries the impacts of the three alternatives evaluated in detail.

Table ES-2. Summary of Impacts by Alternative.

Proposal	Alternate	No-Action
Air		
• Proposed plant would operate under an air emission permit from the Georgia Environmental Protection Division (EPD) and would comply with NAAQS and prevention of significant deterioration (PSD) increments. • Short-term construction impacts from increased vehicle emissions and dust would be localized. • Estimated maximum mercury emissions would be approximately 0.3 percent (11 lb/yr) of the 2008 Georgia utility mercury air releases. • Local mercury deposition is expected to be less than 1 lb/yr within a 75-mile radius of the area surrounding the site. • Yearly maximum emissions from idling trucks on site and truck deliveries are low compared to overall emissions from operation of the plant. • Compared to other combustion options, greenhouse gas (GHG) emissions are minimized by selection of biomass as the fuel.		Power would likely be generated from non-renewable sources, with potentially higher mercury and GHG emissions.

Table ES-2. Summary of Impacts by Alternative.

<table>
<tr><th>Proposal</th><th>Alternate</th><th>No-Action</th></tr>
<tr><td colspan="3">Surface Water</td></tr>
<tr><td colspan="2">• Short-term impacts to water quality could result from spills, leaks, or improper disposal of construction materials or sediment and other contaminants carried in downstream runoff, but would be avoided by implementation of spill prevention, control and countermeasure (SPCC) Plan.
• Potential sedimentation impacts during construction from erosion, would be avoided through storm water controls, best management practices, and required storm water permit.
• Minimize wastewater discharge through maximum reuse of plant wastewater.
• Reuse stormwater runoff from wood pile and wastewater from plant drains as makeup water for cooling tower.</td><td rowspan="2">Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
<tr><td>• Surface water withdrawals will reduce flows in Rocky Comfort Creek system.
• Will require EPD approval of additional withdrawals by the City of Warrenton (permit pending).</td><td>• Use of reclaimed wastewater from Baxley wastewater treatment plant would reduce pollutant load in Altamaha River.</td></tr>
<tr><td>• Use of reclaimed wastewater will reduce pollutant loading to Whites Creek and Rocky Comfort Creek.
• Reduce surface water withdrawal by 0.9 million gallons per day (MGD) through use of reclaimed water from Thomson-McDuffie and City of Warrenton
• Use of surface water from multiple watersheds will reduce the impact on any given watershed.</td><td>• Use of reclaimed wastewater from Baxley wastewater treatment plant would reduce pollutant load in Altamaha River.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
<tr><td colspan="3">Geology and Soils</td></tr>
<tr><td colspan="2">• No unique geologic features.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
</table>

Table ES-2. Summary of Impacts by Alternative.

<table>
<tr><th>Proposal</th><th>Alternate</th><th>No-Action</th></tr>
<tr><td colspan="3">Land Use</td></tr>
<tr><td>• Permanent prime farmland impacts of 94 acres and 12 acres of farmland of statewide importance.</td><td>• No prime farmland impacts and permanent impacts of 80.4 acres of farmland of statewide importance.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
<tr><td colspan="3">Groundwater</td></tr>
<tr><td colspan="2">• Construction dewatering of deep excavation for truck unloading system may result in short-term, highly localized depression of groundwater levels at the proposed site.</td><td rowspan="2">Power would likely be generated from non-renewable sources, with potentially similar impacts.</td></tr>
<tr><td>No long-term groundwater impacts expected.</td><td>• Withdrawal of approximately 0.8 MGD from Floridan aquifer, which has abundant supply – requires GAEPD permit with potential special conditions.</td></tr>
<tr><td colspan="3">Noise</td></tr>
<tr><td colspan="2">• Noise levels would increase during construction; short term steam blow event.
• Oglethorpe will analyze and implement noise mitigation to ensure that noise levels will be below 65 dBA at the nearest residential receptor.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
<tr><td>• Predicted day night noise levels are expected to be approximately 50-60 A-weighted decibels (dBA) at the property boundary during operations, and within a range that is consistent with 65 dBA during operations near a small area along eastern property boundary only during the limited hours of intermittent use of the mobile chipper, however no residences are near this area.</td><td>• Numerous residences to the north, northeast, southwest, and west could be impacted by the increased noise levels.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
<tr><td colspan="3">Forests and Forest Industry</td></tr>
<tr><td>• Permanent removal of 0.7 acres bottomland forest.</td><td>• Permanent removal of 61.7 acres upland forest and 39.2 acres of harvested forest.</td><td>Probable similar impacts.</td></tr>
</table>

Table ES-2. Summary of Impacts by Alternative.

<table>
<tr><th>Proposal</th><th>Alternate</th><th>No-Action</th></tr>
<tr><td colspan="3">Biological</td></tr>
<tr><td colspan="3">Vegetation</td></tr>
<tr><td>• Existing site is pasture, upland forest and recently harvested pine forests.
• Permanent vegetation removal from 105.6 acres; short term impacts to 144.9 acres.
• Permanent impact to 0.7 acres bottomland forest for road construction.</td><td>• Existing site is pasture and recently harvested pine forests.
• Permanent vegetation removal from 105 acres; short term impacts to 154.4 acres.
• Permanent impact to 61.7 acres upland forest and 39.2 acres of harvested forest.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
<tr><td colspan="3">Wetlands, Riparian Areas, and Waters of the U.S.</td></tr>
<tr><td colspan="2">• Implementation of BMPs would minimize impacts to wetlands or riparian areas resulting from construction and operation activities</td><td rowspan="2">Power would likely be generated from non-renewable sources, with potentially similar impacts.</td></tr>
<tr><td>• Based on wetland delineation, 0.02 acre impact to one open water pond; no loss of riparian areas, 0.3 acre wetland impact from widening East Warrenton Road.
• Impacts from water line installation not yet determined; total estimated area from National Wetland Inventory (NWI) maps is 1.6 acres.</td><td>• Based on wetland delineation, 640 linear feet of stream impact; no loss of riparian areas, no degradation or loss of any Federal- or State-protected wetlands as defined by Section 404 of the CWA or other applicable regulations.
• The replacement Hatch – Offerman transmission line would cross approximately 65 acres of wooded wetland, which would need to be cleared.</td></tr>
<tr><td colspan="3">Floodplains</td></tr>
<tr><td>• No floodplains on proposed sites.</td><td>• Very small floodplain area at edge of site; will not be impacted.</td><td>Impacts not known.</td></tr>
<tr><td colspan="3">Wildlife</td></tr>
<tr><td>• Habitat loss at site for common species.
• Recent removal by previous owner of portions of forested areas by clear-cut logging previously decreased the available wildlife habitat on the proposed site.</td><td>• Habitat loss at site for common species.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
</table>

Table ES-2. Summary of Impacts by Alternative.

<table>
<tr><th>Proposal</th><th>Alternate</th><th>No-Action</th></tr>
<tr><td colspan="3">Sensitive Species and Areas</td></tr>
<tr><td colspan="2">• No known or expected state- or federally-listed species or critical habitat on sites.</td><td rowspan="2">Power would likely be generated from non-renewable sources, with potentially similar impacts.</td></tr>
<tr><td>• Reconductoring of Evans Primary-Fury's Ferry could potentially impact the state-listed Georgia aster or relict trillium, and installation of the Thomson-McDuffie water line could potentially impact the Georgia aster. Field studies may be needed when the responsible party does the work.</td><td>• Potential for impact to protected species has not been assessed for the Hatch – Offerman transmission line.</td></tr>
<tr><td colspan="3">Land Resources</td></tr>
<tr><td>• Conversion of pastureland and recently harvested forestland to industrial land use.
• Proposed site is consistent with existing land use and development goals of Joint Warren County Comprehensive Plan.
• Property will be annexed by the City of Warrenton.
• Property site would require a land use district map change from forestry-agriculture to industrial.</td><td>• Conversion of pastureland and forestland to industrial land use.
• Proposed site is consistent with existing land use and development goals of the Appling County Comprehensive Plan.
• Property site would be annexed by the City of Baxley.
• Impacts to adjacent and nearby residential areas along Hundreds Rd west of project site from increase in industrial land use and traffic.</td><td>Power would likely be generated from non-renewable sources, with potentially similar impacts.</td></tr>
<tr><td colspan="2">• No impacts to federal, state, or local recreational facilities.</td><td>Potential impact not known.</td></tr>
<tr><td colspan="3">Visual</td></tr>
<tr><td colspan="2">• Landscape buffer would be planted along property boundary to provide additional screening to lessen visual impact on residences.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
</table>

Table ES-2. Summary of Impacts by Alternative.

Proposal	Alternate	No-Action
• Project has limited visibility and would mix in with other industrial lands uses nearby. • Few residents with visual impacts; only stack visible from nearby golf course.	• Project has limited ground level visibility, but the stack and taller structures may be visible above the tree line. • Multiple residences to the north, northeast, southwest, and one residence to the west would have visual impacts.	
Transportation		
• Level of service on GA12 and at GA12 and VFW road intersection would worsen during peak hour traffic period at peak construction (2012) to level of service (LOS) of D. • Proposed installation of temporary traffic signal at SR12 and VFW road intersection during construction to lessen peak hour traffic impacts. • Safety improvements to East Warrenton Road, including widening and repaving of existing roadway. • Traffic to plant has many options, and no need to pass directly through Warrenton.	• Level of service at U.S. 341 and Industrial Park Drive intersection would drop to LOS of F during peak morning hour traffic period at peak construction (2012). • Staggered start times would be implemented to evenly distribute arriving vehicles over a period of 2 hours. • Recommended construction of northbound right-turn lane on the Hundreds Road approach to allow for heavy volume of right turning vehicles to exit the site during peak evening hour. • Recommended widening of Hundreds Road to handle large volume of vehicles during construction and deliveries of biomass products. • Traffic to plant has fewer options and most routes pass through the middle of Baxley.	Power would likely be generated from non-renewable sources, with similar impacts.
Cultural		
• No impacts to National Register of Historic Places (NRHP) eligible properties.		No impact
Public Health and Safety		
• Ash would be stored in enclosed silos and disposed in an off-site permitted landfill.		Power would likely be generated from non-renewable sources, with similar impacts.

Table ES-2. Summary of Impacts by Alternative.

<table>
<tr><th>Proposal</th><th>Alternate</th><th>No-Action</th></tr>
<tr><td colspan="3">Socioeconomic Resources</td></tr>
<tr><td colspan="2">• Direct and indirect economic benefits would occur from construction-related expenditures to the surrounding region.
• Creation of a maximum of 600 temporary construction and 44 permanent jobs would be a beneficial impact.
• Local government services are adequate for worker influx.
• Positive benefits from property taxes and fees.
• No residential displacements.</td><td>Power would likely be generated from non-renewable sources, with similar impacts.</td></tr>
<tr><td colspan="3">Environmental Justice</td></tr>
<tr><td colspan="2">• No environmental justice impact (no high adverse impacts) as defined by Executive Order 12898.</td><td rowspan="2">Power would likely be generated from non-renewable sources, with potentially similar impacts.</td></tr>
<tr><td>• The percent of minority population in the census blocks at and immediately adjacent to the site are all 0 to 20 percent, except for one at 40 to 60 percent (Figure 3-43); however, this block has more residents than the other adjacent blocks. By comparison, the minority population of the State of Georgia is 28.7%, Warren County is 59.5% and the City of Warrenton is 69.4%.
• Poverty rate for the affected area is also higher than the State of Georgia (13%), but lower than Warren County (27%) and the City of Warrenton (36%).</td><td>• The percent of minority population in the census blocks at and immediately adjacent to the site are mostly 0 to 10 percent, however one is 10-20 percent and one is 40-100 percent. By comparison, the minority population of the State of Georgia is 28.7%, Appling County is 19.6% and the City of Baxley is 37.9%.
• Poverty rate for the affected area is also higher than the State of Georgia (13%) and Appling County (18.6%), but comparable to the City of Baxley (24.4%).</td></tr>
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