DOE/EIS-0289

Draft
ENVIRONMENTAL IMPACT STATEMENT FOR THE JEA CIRCULATING FLUIDIZED BED COMBUSTOR PROJECT

JACKSONVILLE, FLORIDA

August 1999

U.S. DEPARTMENT OF ENERGY

COVER SHEET

August 1999

RESPONSIBLE AGENCY

U.S. Department of Energy (DOE)

TITLE

Draft Environmental Impact Statement for the JEA Circulating Fluidized Bed Combustor Project; Jacksonville, Duval County, Florida

CONTACT

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ABSTRACT

This EIS assesses environmental issues associated with constructing and demonstrating a project that would be cost-shared by DOE and JEA (formerly the Jacksonville Electric Authority) under the Clean Coal Technology Program. The project would demonstrate circulating fluidized bed (CFB) combustion technology at JEA's existing Northside Generating Station in Jacksonville, Florida, which occupies a 400-acre industrial site along the north shore of the St. Johns River about 9 miles northeast of the downtown area of Jacksonville. The new CFB combustor would use coal and petroleum coke to generate nearly 300 MW of electricity by repowering the existing Unit 2 steam turbine, a 297.5-MW unit that has been out of service since 1983. The proposed project is expected to demonstrate emission levels of sulfur dioxide (SO_2), oxides of nitrogen (NO_x), and particulate matter that would be lower than Clean Air Act limits while at the same time producing power more efficiently and at less cost than conventional coal utilization technologies. JEA has indicated that construction may begin without DOE funding prior to the completion of the NEPA process in February 2000 and would continue until December 2001. Demonstration of the proposed project would be conducted during a 2-year period from March 2002 until March 2004. In addition, JEA plans to repower the currently operating Unit 1 steam turbine about 6 to 12 months after the Unit 2 repowering without cost-shared funding from DOE. Although the proposed project consists of only the Unit 2 repowering, this EIS analyzes the Unit 1 repowering as a related action. The EIS also considers three reasonably foreseeable scenarios that could result from the no-action alternative in which DOE would not provide cost-shared funding for the proposed project. The proposed action, in which DOE would provide cost-shared funding for the proposed project, is DOE's preferred alternative.

The EIS evaluates the principal environmental issues, including air quality, traffic, noise, and ecological resources, that could result from construction and operation of the proposed project. Key findings include that maximum modeled increases in ground-level concentrations of SO_2, nitrogen dioxide (NO_2), and particulate matter (for the proposed project alone or in conjunction with the related action) would always be

less than 10% of their corresponding standards for increases in pollutants. For potential cumulative air quality impacts, results of modeling regional sources and the proposed project indicate that the maximum 24-hour average SO_2 concentration would closely approach (i.e., 97%) but not exceed the corresponding Florida standard. During the transition period before the Unit 1 repowering, JEA has committed to reduce maximum hourly SO_2 emissions from the existing Unit 1 by nearly 93% using a blend of natural gas and fuel oil. After the Unit 1 repowering, a decrease in ground-level concentrations of SO_2, NO_2, and particulate matter would be expected most of the time at most locations in the surrounding area (the overall effect would be beneficial). Results indicate that the 24-hour average SO_2 concentration for regional sources and the proposed project in conjunction with the related action would be 91% of the Florida standard. Concentrations for other averaging periods and pollutants would be lower percentages of their standards. Regarding toxic air pollutants from the proposed project, the maximum annual cancer risk to a member of the public would be approximately 1 in 1 million; given the conservative assumptions in the estimate, the risk would probably be less. With regard to threatened and endangered species, impacts to manatees, gopher tortoises, and other species would be negligible or non-existent. Construction-induced traffic could result in substantial congestion. In the unlikely event that all coal were transported by rail, up to 3 additional trains per week would exacerbate impacts associated with noise, vibration, and blocked roads at on-grade rail crossings. Additional train traffic could be minimized by relying more heavily on barges and ships for coal transport, which is likely to be a more economic fuel delivery mode. During construction of the proposed project, noise levels would increase from the current operational levels. Except during steam blowouts, and possibly during operation of equipment used to construct a nearby segment of a conveyor, construction noise should not appreciably affect the background noise of nearby residences or exceed local noise limitations. The preferred alternative for management of the combustion ash would be to sell it as a by-product to offsite customers. If more than approximately 70% of the ash could be sold over the 30-year lifetime of Northside Generating Station, the 40-acre storage site would be sufficient for complete containment.

AVAILABILITY

This draft EIS is available for public inspection in the following public reading rooms.

- U.S. Department of Energy, Freedom of Information Reading Room, Room 1E-190, Forrestal Building, 1000 Independence Avenue SW, Washington, DC 20585
- U.S. Department of Energy, Federal Energy Technology Center, 3610 Collins Ferry Road, P. O. Box 880, Morgantown, WV 26507-0880
- Highlands Branch Library, 1826 Dunn Avenue, Jacksonville, FL 32218

PUBLIC PARTICIPATION

DOE encourages public participation in the NEPA process. Accordingly, a public scoping meeting was held in Jacksonville, Florida, on December 3, 1997. The public was encouraged to provide oral comments at the scoping meeting and to submit written comments to DOE by the close of the scoping period on December 31, 1997. In preparing this draft EIS, DOE considered both oral and written comments.

Comments are invited on this draft EIS and should be received by no later than October 15, 1999. DOE will consider late comments to the extent practicable. Comments should be addressed to Ms. Lisa K. Hollingsworth at the address provided above.

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ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
amsl	above mean sea level
Btu	British thermal unit
CAA	Clean Air Act
$CaCO_3$	calcium carbonate (limestone)
CaO	calcium oxide
$CaSO_4$	calcium sulfate
CDD	chlorinated dibenzo-*p*-dioxin
CDF	chlorinated dibenzofuran
CCT	Clean Coal Technology
CEQ	Council on Environmental Quality
CFB	circulating fluidized bed
CFR	*Code of Federal Regulations*
cm	centimeter
CO	carbon monoxide
CO_2	carbon dioxide
COE	U.S. Army Corps of Engineers
CWA	Clean Water Act
d	day
dB(A)	decibels as measured on the A-weighted scale
DOE	U.S. Department of Energy
EIS	environmental impact statement
EP Tox	extraction procedure toxicity test
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESCP	erosion and sedimentation control plan
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FAARC	Florida Ambient Air Reference Concentration
FAC	Florida Administrative Code
FCMP	Florida Coastal Management Program
FDEP	Florida Department of Environmental Protection
FR	*Federal Register*
ft	feet
ft^3	cubic feet
g	acceleration of gravity
gal	gallon
gpd	gallons per day
gpm	gallons per minute
Hz	Hertz
in.	inch
IRP	integrated resource planning
ISCST	Industrial Source Complex Short-Term (an air dispersion model)
JEA	formerly the Jacksonville Electric Authority
kg	kilogram
km	kilometer
lb	pound

LC_{50}	median lethal concentration (lethal concentration for 50% of a given population)
LOS	level of service
m	meter
m^3	cubic meter
μg	microgram
μm	micrometer
μmho	micromho (a unit of conductance equal to the reciprocal of the ohm)
μrem	microroentgen equivalent man
MBtu	million British thermal units
mCi	millicurie
mg	milligram
Mgd	million gallons per day
Mgal	million gallons
mg/L	milligrams per liter
$mile^2$	square mile
min	minute
MMI	modified Mercalli intensity
mph	miles per hour
MSL	mean sea level
MW	megawatt
MWh	megawatt hour
NAAQS	National Ambient Air Quality Standards
NaBr	sodium bromide
NaOCl	sodium hypochlorite
NEPA	National Environmental Policy Act
ng	nanogram
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NTU	nephelometric turbidity units
O_3	ozone
ORNL	Oak Ridge National Laboratory
OSHA	Occupational Safety and Health Administration
Pb	lead
PEIS	programmatic environmental impact statement
pg	picogram
PGA	peak ground acceleration
pH	hydrogen-ion concentration notation
PM-2.5	particulate matter less than 2.5 μm in aerodynamic diameter
PM-10	particulate matter less than 10 μm in aerodynamic diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
Pub. L.	Public Law
R&D	research and development
s	second
SHPO	State Historic Preservation Officer
SJRWMD	St. Johns River Water Management District
SLERP	Submerged Lands & Environmental Resource Permit

SLOSH	Sea, Lake, and Overland Surges from Hurricanes (model)
SO_2	sulfur dioxide
SPCCP	spill prevention, control, and countermeasures plan
SPLP	synthetic precipitation leaching procedure
TCLP	toxic characteristic leaching procedure
TEF	toxicity equivalency factor
TEQ	toxic equivalency
TRC	total residual chlorine
UBC	Uniform Building Code
UFA	Upper Floridan Aquifer
USC	*United States Code*
VOCs	volatile organic compounds
yd	yard
yd^2	square yard
yd^3	cubic yard

GLOSSARY

Aerodynamic diameter—A term used to describe particles with common aerodynamic properties: it avoids the complications associated with varying particle sizes, shapes, and densities. For example, PM-10 is defined in 40 CFR 50 as consisting of particles 10 micrometers or less in aerodynamic diameter, meaning particles that behave aerodynamically like spherical particles of unit mass (1 gram per cubic centimeter) having diameters of 10 micrometers or less.

Air dispersion model—computer program that incorporates a series of mathematical equations used to predict the ground-level concentrations resulting from emissions of a pollutant. Inputs to a dispersion model include the emission rate; characteristics of the emission release such as stack height, exhaust temperature, and flow rate; and atmospheric dispersion parameters such as wind speed and direction, air temperature, atmospheric stability, and mixing height.

Aquifer—a body of rock that can conduct groundwater and can yield significant quantities of groundwater to wells and springs.

Ash—The mineral content of a product remaining after complete combustion.

Baghouse—An air pollution control device that filters particulate emissions, consisting of a bank of bags that function like the bag of a vacuum cleaner; it intercepts particles that are mostly larger than 10 micrometers in diameter.

Baseline conditions—existing environmental conditions against which the potential impacts of a proposed action and its alternatives can be compared.

Benthic—of, relating to, or occurring at the bottom of a body of water.

Biocide—a substance (e.g., chlorine) that is toxic or lethal to many organisms and is used to treat water.

Blowdown—The portion of steam or water removed from a boiler at regular intervals to prevent excessive accumulation of dissolved and suspended materials.

Bottom ash—Non-airborne combustion residue that falls to the bottom of a boiler unit from where it can be physically removed.

Capacity factor—the percentage of electricity actually generated by a power plant during a year compared with the plant's maximum capacity.

Casing—undersized hollow steel tubing that is centered in a well hole and cemented in place. When a well is abandoned, the casing interior is plugged with cement to the surface to prevent further hydraulic communication between deep and shallow aquifers.

Circulating fluidized bed—a combustor in which coal or other fuels, air, and crushed limestone or other sorbents are injected into the lower portion of the combustor for initial burning of the fuel. The combustion occurs in a bed consisting of fuel, sorbent, and ash. The bed is fluidized by air nozzles in the bottom of the combustor. The air expands the bed, creates turbulence for enhanced mixing, and

provides most of the air necessary for combustion of the fuel in the bed. As the fuel particles decrease in size through combustion and breakage, they are transported higher in the combustor where additional air is injected. As the particles continue to decrease in size, unreacted fuel, ash, and fine limestone particles are swept out of the combustor, collected in a particle separator, and recycled to the lower portion of the combustor. Drains in the bottom of the combustor remove a fraction of the bed composed primarily of ash while new fuel and sorbent are added.

Cold shock—depression of an animal's vital processes caused by a sudden drop in temperature (e.g., a decrease in water temperature by 5°F or more can kill some fish species).

Combustor—equipment in which coal or other fuel is burned at high temperatures.

Cooling water—water that is heated as a result of being used to cool steam and condense it to water.

Downwash—The downward movement of an elevated plume toward the area of low pressure created in the wake of a structure around which the air flows.

Electrostatic precipitator—A device that removes particles from a stream of exhaust gas; it imparts an electrical charge to the particles which causes them to adhere to metal plates that can be rapped to cause the particles to fall into a hopper for disposal.

Entrainment—an action in which organisms are inadvertently pulled through a water intake structure and through a water use facility.

Fabric filter—A cloth device that intercepts particulate emissions. The simplest example is a vacuum cleaner bag; more complicated mechanisms are used to capture particulate matter from large-scale industrial operations.

Floodplain—the strip of relatively level land adjacent to a river channel that will be covered with water if the river overflows its banks.

Flue gas—Residual gases after combustion, being vented to the atmosphere through a flue, or chimney.

Fly ash—fine solid particles of ashes, dust, and soot carried out from burning fuel (as coal or oil) by the draft.

Formation—the primary unit of formal geological mapping of an area. Formations possess distinctive geologic features and can be combined into "groups" or subdivided into "members."

Hydraulic gradient—refers to the flow of groundwater or surface water. Water flows from areas of higher energy (or hydraulic head) to areas of lower hydraulic head. The change in hydraulic head per unit distance is the hydraulic gradient. Upgradient areas are areas of higher hydraulic head and downgradient areas are areas of lower hydraulic head. Therefore, groundwater (and any contaminants moving with it) would flow from upgradient to downgradient areas. These terms are analogous to "upstream" and "downstream" flow of surface water.

Ichthyoplankton—fish eggs and larvae.

Impingement—an action in which organisms are trapped inadvertently on the screens of a water intake structure.

Laydown area—material and equipment storage area for the construction phase of a project.

Leachate—solution or product produced by leaching.

Mixing height—the height within the lower atmosphere within which relatively vigorous mixing of pollutant emissions occurs.

Outfall—the outlet point for discharged or runoff water to a body of water or land area.

Plankton—the passively floating or weakly swimming animal and plant life of a body of water consisting chiefly of minute plants and animals but including also larger forms that have only weak powers of locomotion.

Potentiometric surface—(a) the surface to which the water from an aquifer will rise under its full head; (b) an imaginary surface that everywhere coincides with the static level of water in an aquifer.

Repower—the process of installing new steam generating equipment at a power plant site or industrial facility (as opposed to modifying or refurbishing existing equipment); repowering often involves installing an entirely different technology and may increase the electricity generating capacity by the plant.

Retrofit—the process of installing new equipment at an existing power plant or industrial facility to improve efficiency or pollution control without replacing the basic unit.

Rip-rap—Rocks or similar objects of various sizes placed over an area of soil for the purpose of preventing erosion.

Selective non-catalytic reduction—a system to reduce NO_x emissions by injecting a reagent such as urea into exhaust gas to convert NO_x emissions to nitrogen gas and water via a chemical reduction reaction.

Sorbent—Material that absorbs other substances, used to intercept pollutants before they would otherwise enter the air or water.

Superheat—(1) to heat a vapor not in contact with its own liquid so as to cause it to remain free from suspended liquid droplets (e.g., superheated steam); (2) to heat a liquid above its boiling point without converting it into vapor.

Supernatant—the usually clear liquid overlying material deposited by settling, precipitation, or centrifugation.

Thermal plume—area of a water body with elevated temperature as a result of discharged heated water.

Transmission corridor—area used to provide separation between the transmission lines and the general public and to provide access to the transmission link for construction and maintenance.

Wetland—areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas (e.g., sloughs, potholes, wet meadows, river overflow areas, mudflats, natural ponds). "Jurisdictional wetlands" are those wetlands protected by the Clean Water Act. They must have a minimum of one positive wetland indicator from each parameter (i.e., vegetation, soil, and hydrology). The U.S. Army Corps of Engineers requires a permit to fill or dredge jurisdictional wetlands.

Wind rose—A graph in which the frequency of wind blowing from each direction is plotted as a bar that extends from the center of the diagram. Wind speeds are denoted by bar widths and shading; the frequency of wind speed within each wind direction is depicted according to the length of that section of the bar.

Zooplankton—The animal component of plankton (see *Plankton*).

SUMMARY

This environmental impact statement (EIS) has been prepared by the U.S. Department of Energy (DOE), in compliance with the National Environmental Policy Act of 1969 (NEPA) as amended (42 USC 4321 *et seq.*), Council on Environmental Quality regulations for implementing NEPA (40 CFR Parts 1500-1508), and DOE NEPA regulations (10 CFR Part 1021). The EIS evaluates the potential environmental impacts associated with constructing and operating a project proposed by JEA (formerly the Jacksonville Electric Authority). The project would demonstrate circulating fluidized bed (CFB) combustion technology under the Clean Coal Technology (CCT) Program. The primary goal of the CCT Program is to make available to the U.S. energy marketplace a number of advanced, more efficient, economically advantageous, and environmentally responsive technologies for expanded coal utilization. The purpose of the proposed project is to generate technical, environmental, and financial data from the design, construction, and operation of facilities at a scale large enough to allow the power industry to assess the potential of CFB combustion technology for commercial application. In doing so, the proposed project would address the Congressional mandate in Pub. L. 99-190 for demonstrating environmentally sound technologies for the utilization of coal. The EIS will be used by DOE in making a decision on whether or not to provide approximately $73 million (about 24% of the total cost of approximately $309 million) in cost-shared funding to design, construct, and demonstrate the CFB technology proposed by JEA at their existing Northside Generating Station in Jacksonville, Florida. The proposed action is for DOE to provide the cost-shared funding.

Northside Generating Station occupies a 400-acre industrial site along the north shore of the St. Johns River about 9 miles northeast of the downtown area of Jacksonville. The local terrain is flat and there is a mix of industrial, commercial, residential, and agricultural land use in the vicinity. The property contains a number of wetland areas, especially in the perimeter areas. The industrial 1,650-acre St. Johns River Power Park borders Northside Generating Station to the northeast, and the 46,000-acre Timucuan Ecological and Historic Preserve borders the site to the east. Blount Island, located immediately to the southeast in the St. Johns River, is a major port with facilities for docking, loading, and unloading large ocean-going vessels. The proposed project would occupy a total of about 75 acres of land on the Northside Generating Station and St. Johns River Power Park property.

The proposed new CFB combustor would use bituminous coal and petroleum coke to generate nearly 300 MW of electricity by repowering the existing Unit 2 steam turbine, a 297.5-MW unit that has been out of service since 1983. Piping and related infrastructure would be constructed to link the new CFB combustor with the existing Unit 2 steam turbine. CFB technology is an advanced method for burning coal and other fuels efficiently while removing air emissions inside the sophisticated combustor system. CFB technology provides flexibility in utility operations because a wide variety of solid fuels can be used, including high-sulfur, high-ash coal and petroleum coke. The proposed project is expected to demonstrate emission levels of sulfur dioxide (SO_2), oxides of nitrogen (NO_x), and particulate matter

that would be lower than Clean Air Act limits while at the same time producing power more efficiently and at less cost than conventional coal utilization technologies.

JEA has indicated that construction may begin without DOE funding prior to the completion of the NEPA process in February 2000 and would continue for more than 2 years until December 2001. Demonstration of the proposed project would be conducted during a 2-year period from March 2002 until March 2004. During the demonstration, Unit 2 would be operated on several different types and blends of coal and petroleum coke to explore the flexibility of the CFB technology. The coal would be transported by ship (from areas such as Columbia and Venezuela), by train (primarily from the central Appalachian region such as West Virginia and eastern Kentucky), and by a combination of train and ship (train from West Virginia and eastern Kentucky to Newport News, Virginia, and ship from Newport News to Jacksonville). The petroleum coke would be transported by ship from oil refineries in Venezuela and the Caribbean region. Limestone for the CFB combustor probably would be transported by ship from the Caribbean region and the Yucatan Peninsula of Mexico.

In addition to the proposed project, JEA plans to repower the currently operating Unit 1 steam turbine without cost-shared funding from DOE. The Unit 1 steam turbine would be essentially identical to the turbine for Unit 2 and would be repowered about 6 to 12 months after the Unit 2 repowering. Although the proposed project consists of only the Unit 2 repowering (because DOE would provide no funding for the Unit 1 repowering), this EIS evaluates the Unit 1 repowering as a related action.

JEA's management has established a target of a 10% reduction in annual stack emissions of each of 3 pollutants (SO_2, NO_x, and particulate matter) from Northside Generating Station (Units 1, 2, and 3), as compared to emissions during a recent typical 2-year operating period (1994–95) of the station (Units 1 and 3). Also targeted for a 10% reduction is the total annual groundwater consumption of Northside Generating Station, as compared to 1996 levels. These reductions are to be accomplished while increasing the total annual energy output of the station.

JEA, the project participant, plans to enter into a contract with Foster Wheeler Corporation, who would perform the design, engineering, procurement, and construction of the CFB combustor and air emissions control equipment.

DOE determined that providing cost-shared funding for the proposed CFB combustor project constitutes a major federal action that may significantly affect the quality of the human environment. Therefore, DOE has prepared this EIS to assess the potential impacts on the human and natural environment of the proposed action and reasonable alternatives. The EIS considers the proposed action (funding the demonstration) and the no-action alternative (not funding the demonstration), including scenarios reasonably expected to result as a consequence of the no-action alternative. Other alternatives to the proposed action have been examined and found not to be reasonable alternatives under NEPA.

Potential impacts that could result from construction and operation of the proposed project were evaluated for resource areas including air quality, surface water, groundwater, floodplains and wetlands, ecological resources, noise, transportation, solid waste, and cultural and socioeconomic resources. The following summary provides key findings for areas of potential concern.

Air Quality

A computer-based air dispersion model was used to estimate maximum increases in ground-level concentrations of SO_2, nitrogen dioxide (NO_2), and particulate matter that would occur at any location as a result of emissions from the CFB combustor and limestone dryers for the proposed project (the Unit 2 repowering). Results indicate that maximum modeled increases are always less than 15% of their corresponding Prevention of Significant Deterioration (PSD) Class II increments (standards in the ambient air for increases in pollutant concentrations). One set of allowable increments exists for Class II areas, which cover most of the United States, and a much more stringent set of allowable increments exists for Class I areas, which include many national parks, monuments, and wilderness areas. Maximum concentrations generally occur at locations along, or very close to, the site boundary, often within 0.6 mile of the proposed CFB combustor stack. Dispersion of pollutants would reduce atmospheric concentrations at the nearest PSD Class I areas (more than 30 miles from the proposed facility) to only a small fraction of the maximum modeled increases near the site. The increases in pollutant concentrations at the nearest PSD Class I areas would be expected to be only small fractions of the corresponding Class I increments.

The combination of the proposed project and related action would result in emissions from the new 495-ft twin-flued stack that would be twice those considered in the analysis of the proposed project alone. However, the elimination of emissions from the existing 250-ft stack serving Unit 1 would more than compensate for the added emissions. Compared to existing emissions at Northside Generating Station, a net decrease in maximum hourly emissions of SO_2, NO_x, and particulate matter would result from the addition of the repowered Unit 2 and the limestone dryers and the replacement of the existing Unit 1 with the repowered Unit 1. Therefore, a decrease in ground-level concentrations of these pollutants would be expected most of the time at most locations in the surrounding area (the overall effect would be beneficial). However, pollutant concentrations would not decrease for all averaging times at all locations; maximum ground-level concentrations at some locations could increase because the characteristics and location of the proposed new stack would be different from those of the stack currently serving Unit 1. The net impacts could be positive or negative on any particular day at any particular location.

Air dispersion modeling was used to evaluate maximum adverse impacts possible from the proposed project in conjunction with the related action. Maximum modeled increases in ground-level concentrations are very similar to those for the proposed project alone. Maximum increases are always less than 15% of their corresponding Class II increments. Because the nearest PSD Class I areas are more than 30 miles away, pollutants from Northside Generating Station would be well mixed in the atmosphere, and stack characteristics would have little effect on ground-level pollutant concentrations in these areas. Therefore, a net decrease in pollutant emissions resulting from the proposed project in conjunction with the related action would be expected to improve air quality, albeit by a very small amount, at the nearest PSD Class I areas.

Regarding potential cumulative air quality impacts, results of modeling regional sources and the proposed project indicate that no exceedances of national or state ambient air quality standards would be expected if the proposed project were implemented. Florida standards are the same as the National Ambient Air Quality Standards (NAAQS) except for annual and 24-hour standards for SO_2, for which the Florida standards are more stringent. However, during the 6- to 12-month transition period before the Unit 1 repowering, the 24-hour average SO_2 concentration is predicted to be as high as 97% of the corresponding Florida standard. This large concentration results from aerodynamic downwash effects caused by the proposed 200-ft tall combustor structure that would induce downward motion on the exhaust gas emitted from the 250-ft stack serving the existing Unit 1 and the 350-ft stack serving the existing Unit 3 (exhaust gas from the proposed 495-ft CFB combustor stack would not be subjected to appreciable downwash because the stack is taller). During the 6- to 12-month transition period before the Unit 1 repowering, JEA has committed to reduce maximum hourly SO_2 emissions from the existing Unit 1 by nearly 93% when operations commence for the proposed project. This reduction, which would be accomplished by using natural gas and fuel oil with an SO_2 emission rate averaging no more than 0.143 lb/MBtu (effectively, a blend with a sulfur content averaging no more than 0.13%), would assure that the maximum 24-hour average SO_2 concentration would not exceed the Florida standard.

Estimated SO_2 concentrations for other averaging periods are less than 60% of their respective standards. The annual average NO_2 concentration is less than 40% of its NAAQS. The 24-hour and annual averages of particulate matter are less than 65% of the NAAQS, even though ambient background particulate concentrations for both averaging periods are over 40% of the NAAQS.

Results of modeling regional sources and the proposed project in conjunction with the related action of repowering the existing Unit 1 indicate that maximum concentrations are always less than corresponding concentrations without the related action. For example, the 24-hour average SO_2 concentration for regional sources and the proposed project in conjunction with the related action is 91% of the Florida standard, compared to 97% for regional sources and the proposed project without the related action.

The 1-hour NAAQS no longer applies to ozone (O_3) concentrations in Florida. However, because 3 years of monitoring data are not yet available for comparison with the new 8-hour standard, the 1-hour standard is still useful for comparisons until sufficient data become available for comparison with the 8-hour standard. O_3 concentrations during 1993–97 at the nearest monitor located about 5 miles north-northwest of Northside Generating Station were always less than 90% of the 1-hour NAAQS; because changes in NO_x and volatile organic compound (VOC) emissions from the proposed project alone or in conjunction with the related action would be less than 1% of emissions in Duval County, they would not be expected to lead to any exceedances of the 1-hour NAAQS for O_3 at that monitoring location.

DOE is required to decide whether a conformity determination (40 CFR Part 93, Subpart B) is needed if the location of the proposed project is in a nonattainment or maintenance area for one or more criteria pollutants. A maintenance area is an area that previously was a nonattainment area for a

pollutant and which is striving to maintain attainment with the standard(s) for the pollutant and comply with the state implementation plan. Currently, no portion of Duval County is designated as a nonattainment area for any NAAQS or Florida standard, but Duval County is a maintenance area for O_3 and the downtown area of Jacksonville is a maintenance area for particulate matter. However, a conformity determination is not required [40 CFR Part 93.153(d)] because particulate matter and the precursors of O_3 (VOCs and NO_x) are evaluated in the PSD permit application.

Regarding toxic air pollutants, findings indicate that the proposed project alone or in conjunction with the related action would not lead to any exceedances of, or close approaches to, guideline values for noncarcinogenic effects from toxic materials. When including both the inhalation and ingestion pathways, the maximum annual cancer risk to a member of the public resulting from dioxins, furans, and other carcinogenic substances emitted during operations was calculated to be approximately 1 in 1 million; given the upper-bound assumptions in the estimate, the risk would probably be less.

Water Resources

With regard to surface water resources, no change in the existing utilization or consumption of surface water would occur during the construction phase of the proposed project. All construction would be performed in accordance with an erosion and sedimentation control plan. Impacts attributable to construction-related runoff, turbidity-causing agents, erosion, and sedimentation would be negligible. Because Unit 2 has not operated since 1983, the proposed project (the repowering of Unit 2) would increase the demand for noncontact cooling water. After Unit 2 is repowered, the demand by the entire 3-unit plant would be approximately the same as when the three units operated together from approximately 1978 until 1980. The sustained flow of the back channel of the St. Johns River would not be depleted by this diversion because nearly all of the withdrawn cooling water would be returned to the river after passing through the condensers. The amount of heat discharged to the St. Johns River would also increase as a consequence of the proposed project. However, the size of the thermal plume would not increase because simultaneous operation of all three units would increase the discharge velocity and enhance mixing.

Operation of the proposed project would reduce groundwater consumption by Northside Generating Station by 10% from the upper Floridan aquifer, which would decrease the rate of decline of the potentiometric surface of that aquifer. As a result, more groundwater would be available to local users, and water quality of the aquifer would be stabilized because of reduced influx of brackish or saline groundwater from deeper aquifers.

Floodplains and Wetlands

No impacts from flooding would be expected to occur, and proposed activities would have a negligible effect on floodplain encroachment. A category 3, 4, or 5 hurricane in Jacksonville is a low-probability event that, if it occurred, would have serious consequences for Northside Generating Station. Although the inland location of Northside Generating Station, the presence of the beach ridge

along the dune line, and Blount Island would partially mitigate the effects of storm surge and waves that would occur along the beaches, the first floor of the station could be inundated by this unlikely event.

Ecological impacts to wetlands from the proposed project would be minor because no more than 1.8 acres of isolated hardwood wetland habitat would be lost during construction of the ash storage area and disturbance of salt marsh habitats during construction of the solid fuel delivery system would be negligible. Wetlands associated with the upper salt marsh communities would not be measurably affected because nearly all of the conveyor system for solid fuel delivery would span these habitats using existing structures and would involve no clearing or earthmoving activities. Although some pilings could need to be installed at the upper fringes of the salt marsh and in San Carlos Creek, any impacts resulting from piling installation would be very localized and temporary and should not measurably affect the normal structural and functional dynamics of the salt marsh and nearby estuarine ecosystems.

As a mitigation measure to offset the loss of 1.8 acres of wetlands, JEA would purchase slightly greater than 3 acres of wetlands from an offsite mitigation bank and would restore 1 acre of salt marsh, which together would result in a net gain in the amount of wetlands. In addition, JEA plans to set aside and preserve 15 acres of undisturbed, uplands maritime oak hammock along the west bank of San Carlos Creek. By preserving the land, JEA would maintain habitat for wildlife, help protect the water quality of the creek, and leave a high-quality forested buffer area in a developing industrial area.

Ecological Resources

With regard to threatened and endangered species, manatees are of the most concern. Because no submerged vegetation is available in the vicinity, manatees would not frequent the dock area and impacts on this species from construction of a new fuel and limestone unloading dock are unlikely. Potential impacts resulting from operational activities such as docking of vessels would also be unlikely. The potential for manatees to be trapped and pinned between the dock and a vessel are minimal because the dock would be supported by widely spaced support pilings rather than consisting of one long continuous structure. Because manatees generally avoid swift currents and prefer slow-moving or stagnant water, they would not frequent the main discharge area in the back channel of the St. Johns River where currents are relatively swift. In addition, it is very unlikely that all units for both the St. Johns River Power Park and Northside Generating Station would be shut down simultaneously, thereby minimizing the probability that a cold shock event would occur. Moreover, the maximum size of the thermal discharge zone is relatively small (36 acres) for the 4°F temperature elevation (compared with ambient temperature). In summary, impacts to manatees from the proposed project would be minimal or non-existent because of a lack of preferred habitat and feeding areas near the site, the construction design of the docking facilities, and the maintenance of a relatively small but continuous thermally enhanced area during cooler periods of the year.

Construction activities would be unlikely to occur where burrows of gopher tortoises have recently been observed. Because a large population of this species exists in Florida (including the site vicinity) and because any dislocation of individuals from their burrows as a result of construction activities would be temporary, re-population would be expected to occur relatively rapidly. A permit would be required from the Florida Game and Freshwater Fish Commission for relocation of gopher tortoises from any impacted areas. Prior to construction, a gopher tortoise survey would be conducted to identify burrows that must be manually excavated, and the animals would be relocated according to conditions of the collecting permit.

Four or five juvenile loggerhead, Kemps Ridley, and/or green sea turtles were sighted in the Northside Generating Station intake basin on one occasion during summer 1997. In order to prevent any further occurrences of juvenile turtles entering the intake structure and subsequently becoming trapped, JEA installed on the intake trash rakes a finer grid of mesh bars (welded wire screen on 6-in. centers contrasted to the old 12-in. centers). The denser grid should help to exclude turtles of sizes similar to those observed from entering the intake basin and becoming trapped. One potential problem with this change is that the finer grid could become more easily clogged with trash and attached marine organisms (e.g., barnacles), effectively reducing the cross-sectional area and increasing the water velocity at the intake. In turn, this would increase the vulnerability of free-swimming organisms to entrainment and/or impingement.

Cultural Resources

Because the area in the vicinity of the proposed project is rich in archaeological resources, it is likely that undiscovered sites of cultural significance could be located at the Northside facility. Accordingly, the excavation of undisturbed land could affect important archaeological artifacts. To prevent the inadvertent destruction of such resources, JEA has agreed to undertake an archaeological survey of the construction area prior to initiating any earthwork. Under the terms of the Submerged Lands & Environmental Resource Permit (SLERP) that would be issued by the Florida Department of Environmental Protection (FDEP), JEA would be required to notify the appropriate agencies [the St. Johns River Water Management District (SJRWMD), the FDEP, and the State Historic Preservation Officer (SHPO)] immediately upon discovery of any archaeological artifacts on the project site [Rule 62-330.200(2)(c), Florida Administrative Code].

Socioeconomic Resources and Environmental Justice

Construction and operation of the proposed project would not result in major impacts to population, employment, income, housing, local government revenues, or public services in Duval County. The percentage of Blacks and Asians in Duval County is greater than for Florida as a whole. Because there are relatively few people in poverty or Blacks and Asians living in the census tracts surrounding the proposed site, no disproportionately high and adverse impacts to low income or minority populations would occur. In particular, because of the relatively low number of minority and low-income residents in the vicinity of the proposed project, very few members of these groups would experience the adverse effects associated with increased road and rail traffic and related noise.

Transportation

Construction-induced traffic during the peak traffic hour would not exceed available capacity except for the section of Heckscher Drive from State Route 9A to Drummond Point (just west of Eastport Road). This segment currently has an available capacity of 89 trips per hour during its peak period. A recent traffic impact analysis performed for JEA predicts that 19% of peak hour project-related traffic would use this road segment during the construction period. Using the conservative assumption that all 600 workers would drive themselves and would all leave the plant during the peak traffic hour, an additional 115 vehicles would use this segment during its time of highest use, thereby exceeding its remaining capacity. The congestion experienced on this segment would represent a significant impact. Also, the lack of a traffic light at the main entrance to Northside Generating Station could result in severe congestion at shift-change time. Accordingly, JEA has agreed to encourage carpooling and suggest alternate routes to and from the site. JEA has also agreed to monitor traffic at the main entrance to the site and pursue installation of a temporary traffic signal if deemed necessary.

Based on current projections, marine transportation would be the most economic means of delivering solid fuel and limestone for the proposed project. Consequently, no more than one 90-car unit train per week would be required to transport coal for the proposed project, and this could be offset by decreased rail deliveries and corresponding increased waterborne deliveries for operations at the St. Johns River Power Park. However, in the less likely event that all necessary coal would be transported by rail, up to 3 additional trains per week would be required for a total of 6 new one-way trips by 90-car unit trains. If all coal were transported by train, the six new one-way train trips per week would exacerbate impacts associated with noise, vibration, and blocked roads at on-grade rail crossings resulting from existing train traffic. These impacts are a source of concern for residents of Panama Park, North Shore, and San Mateo. Project-induced train traffic would increase total movement on the CSX line paralleling U.S. 17 by about 5% and would increase traffic on the spur line from U.S. 17 to the St. John River Power Park and Blount Island by approximately 8%. Additional train traffic could be minimized by relying more heavily on barges and ships for coal transport. As mentioned earlier, economic projections indicate that this fuel delivery mode is more likely.

Noise

During construction of the proposed project, noise levels would increase from the present operational levels. Construction would primarily occur adjacent to the existing turbine building. The noisiest periods of construction would be during steam blowouts and during the operation of a pile driver and other construction equipment. Except during steam blowouts, and possibly during operation of equipment used to construct a nearby segment of a conveyor, construction noise should not appreciably affect the background noise of nearby residences, interfere with outside voice communications, or exceed the limitations of Rule 4, Noise Pollution Control, promulgated by the Jacksonville Environmental Protection Board (1995). This rule limits daytime construction noise levels to 65 dB(A) at residential property.

Because of the noise associated with steam blowouts, JEA has historically implemented a public awareness program prior to implementation of steam blowouts and would do so during the proposed project. JEA would notify beforehand all residences within 0.5 mile of the high-velocity steam cleaning operation. This advisory would alert people to go inside to reduce the effects of the noise. As a mitigation measure, only daytime steam blowouts would be permitted. No Sunday steam blowouts would be allowed.

The project-induced increased movement of trains through the local area (discussed in the transportation section) would be accompanied by high-decibel train whistles and rattling rail cars. Train noise is a source of concern for residents of Panama Park, North Shore, and San Mateo. One local resident has reported the level of train whistles as being 108 dB(A) and the level of rattling rail cars as being up to 85 dB(A). As mentioned in the transportation section, additional train noise could be minimized by relying more heavily on barges and ships for coal transport.

Waste Management

The preferred alternative for management of the combustion ash would be to sell it as a by-product to offsite customers. An aggressive marketing program would be implemented to maximize the quantity sold. If more than approximately 70% of the ash could be sold over the 30-year lifetime of Northside Generating Station, the 40-acre storage site would be sufficient for complete containment, and disposal of the material would not be an issue. Additional permanent disposal space would be required if JEA cannot sell over 70% of the ash. In the unlikely event that none can be sold, an additional 80 to 100 acres of disposal space would be required over the 30-year operating life of the facility. If additional disposal space were required, the property directly north of the Northside property could be an option. Other alternatives include use of additional landfill capacity available at the St. Johns River Power Park or acquisition of other land that would be dedicated to disposing of the material. As a last resort, existing offsite landfills could be used to dispose of the ash. Four large landfill sites that are permitted to dispose of nonhazardous industrial waste have been identified in northeastern Florida and southeastern Georgia.

No-Action Alternative

Under the no-action alternative, DOE would not provide cost-shared funding for the proposed CFB combustor project. Consequently, three reasonably foreseeable scenarios could result. First, JEA could repower the existing Unit 2 steam turbine without DOE funding, thereby accepting more of the risk associated with demonstrating the CFB combustor. Construction materials and activities and project operations would be the same as for the proposed project. The same amount of electricity would be generated and environmental impacts would generally be very similar to those of the proposed project. Fuel requirements would be similar except that the blend of coal to petroleum coke might be slightly different, particularly during the first 2 years of operation. Under this scenario, more of the solid fuel used each year throughout the lifetime of the facility could be petroleum coke, which would be brought to the site by waterborne transport. If current projections about the economic advantages of marine transportation change and rail transport is the primary means of moving coal to the project site, the increased use of petroleum coke under this scenario would result in less train traffic and more ship traffic to deliver the fuel. As a result, there would be fewer train trips through the neighborhoods in the vicinity of Northside Generating Station, which would reduce potential problems with noise, vibration, and blocked roads at on-grade rail crossings.

Under the second scenario, rather than repowering Unit 2, JEA could construct and operate a new gas-fired combined cycle facility at Northside Generating Station or at one of their other existing power plants. The natural gas would drive a gas combustion turbine, and the heat from combustion would be used to produce steam to drive a steam turbine. The facility would be expected to generate approximately 230 MW of electricity.

Construction activities and operations would be similar to the proposed project but with notable differences related to fuel, sorbent, and ash handling and storage facilities. Under this scenario, no coal, petroleum coke, limestone, or lime would be used. Because the natural gas would be delivered by pipeline and no sorbent would be used, there would be no train, ship, or truck traffic associated with fuel and sorbent delivery. No combustion ash would be generated and there would be no truck traffic to remove ash from the site. Consequently, impacts related to traffic noise and disruptions would be minimized.

Air emissions would be expected to increase compared with historical levels because of the operation of the combined cycle facility in addition to the existing Northside units operating at the same or higher capacity factors. Therefore, air emissions under this scenario would generally be greater than those for the proposed project. Changes in concentrations of pollutants in the ambient air would depend on the location and project-specific nature of the facility (e.g., stack height and exit temperature and velocity).

Impacts to cultural resources could be less if there were less disruption to construct conveyors and other facilities on previously undisturbed land; conversely, impacts could be greater if more onsite and/or offsite land were disturbed because of a need to construct or upgrade a pipeline supplying natural gas to the facility.

Under the third scenario, rather than repowering Unit 2, JEA could purchase electricity from other utilities to meet JEA's projected demand. Consequently, no construction activities or changes in operations would be expected to occur within the JEA system of power plants, including Northside Generating Station. There would be no change in current environmental conditions at the site, and the impacts would remain unchanged from the baseline conditions. It is possible that existing Units 1 and 3 would operate at capacity factors greater than historical levels if JEA were unable to purchase sufficient electricity from other utilities. Consequently, annual air emissions and groundwater consumption would increase.

There could be construction activities or changes in operations at the other utilities providing electricity to JEA if the electricity were not readily available. Some impacts to resources could result in the geographical area of the other utilities, particularly if a new facility were built to meet the JEA demand or if additional fuel were transported to the other site or sites to generate additional electricity. The level of any such impacts would depend on the project-specific characteristics of any facility construction, the fuel required by the facility, and the affected resources in the area.

Table S.1 presents a comparison of key potential impacts between the proposed project and the three scenarios under the no-action alternative for resource areas of most concern (a more detailed comparison table is included in the body of the EIS).

Table S.1. A comparison of key potential impacts between the proposed project and the no-action alternative

		Impacts of the no-action alternative		
Resource	Impacts of the proposed project	Repower Unit 2 steam turbine without DOE funding	Construct new gas-fired combined cycle facility	Purchase electricity from other utilities
Atmospheric resources and air quality	During construction, temporary and localized increases in gaseous pollutants and fugitive dust would result from exhaust emissions, excavation, and earthwork. During operations, no major impacts would be expected relative to Prevention of Significant Deterioration increments, National Ambient Air Quality Standards, visibility, acidic deposition, and global climate change. No detectable change in ozone concentrations would be expected from the proposed project. For other criteria pollutants, some slight degradations in air quality at some locations and times would be offset by corresponding beneficial impacts at other locations and times (associated with JEA management's target of a 10% reduction in annual emissions of sulfur dioxide, oxides of nitrogen, and particulate matter at Northside Generating Station). The cancer risk of dioxins, furans, and other carcinogenic substances emitted during operation of the proposed project was calculated to be approximately 1 in 1 million per year; given the upper-bound assumptions in the estimate, the risk would probably be less.	Impacts would be similar to those resulting from the proposed project.	Changes in air quality would depend on the project-specific nature and location of the facility. Even though air emissions of most pollutants from the combined cycle facility alone would be less than corresponding emissions from a CFB combustor alone, the cumulative effects from adding a new gas-fired combined cycle facility to the existing oil-fired units at Northside Generating Station would result in greater overall emissions.	Impacts would remain essentially unchanged from existing conditions. Existing Units 1 and 3 might be required to operate at capacity factors greater than historical levels if JEA were unable to purchase sufficient electricity from other utilities. Under those circumstances, annual air emissions would increase.

Table S.1. Continued

Resource	Impacts of the proposed project	Impacts of the no-action alternative		
		Repower Unit 2 steam turbine without DOE funding	Construct new gas-fired combined cycle facility	Purchase electricity from other utilities
Surface water resources	During construction, no surface water would be used and no measurable impacts to surface water bodies would be expected. During operations, the proposed project would increase the station's demand for noncontact cooling water obtained from the St. Johns River and heat discharged to the St. Johns River; however, the size of the thermal plume created by the station would not increase because simultaneous operation of all three units would increase the discharge velocity and enhance mixing. Runoff, stormwater discharges, and potential failures of power plant piping would not be expected to cause major impacts. Adverse impacts on water quality would be unlikely, although temporary and localized increases in turbidity and fine suspended sediment would result from dredging activities for the new fuel and limestone unloading dock (under Option 2 for handling the waterborne delivery of solid fuel and limestone).	Impacts would be similar to those resulting from the proposed project.	Impacts would be similar to those resulting from the proposed project. There would be no dredging activities to deepen the channel for a new dock, which could temporarily affect water quality; however, the frequency of dredging required to maintain the existing channel would be greater than the frequency required for the proposed project's new dock.	Impacts would remain essentially unchanged from existing conditions.

Table S.1. Continued

Resource	Proposed project	No-action alternative		
		Repower Unit 2 steam turbine without DOE funding	Construct new gas-fired combined cycle facility	Purchase electricity from other utilities
Groundwater	Operation of the proposed project would reduce the Northside Generating Station's usage of groundwater from the upper Floridan aquifer by 10% —a reduction that would decrease the rate of decline of the potentiometric surface of that aquifer. As a result, more groundwater would be available to the station and other local users, and water quality of the aquifer would be stabilized because of reduced influx of brackish or saline groundwater from deeper aquifers.	Impacts would be similar to those resulting from the proposed project.	Impacts would be expected to be minor.	Impacts would remain essentially unchanged from existing conditions.
Floodplains and wetlands	No impacts from flooding would be expected, and proposed activities would have minimal effect on floodplain encroachment. Impacts to wetlands from the proposed project would be minor, mitigation would result in a net gain in the amount of wetlands.	Impacts would be similar to those resulting from the proposed project.	Impacts would be similar to those resulting from the proposed project. Depending on the site, impacts to wetlands likely would be negligible.	Impacts would remain essentially unchanged from existing conditions.
Ecological resources, terrestrial	Disturbance or removal of pine and hardwood acreage for the ash storage area would not have major impacts.	Impacts would be similar to those resulting from the proposed project.	Depending on the site, impacts probably would be negligible. However, impacts might result from construction of an offsite pipeline for natural gas.	Impacts would remain essentially unchanged from existing conditions.

Table S.1. Continued

Resource	Proposed project	No-action alternative		
		Repower Unit 2 steam turbine without DOE funding	Construct new gas-fired combined cycle facility	Purchase electricity from other utilities
Ecological resources, threatened and endangered species	No measurable impacts to threatened or endangered species are expected. Impacts to manatees would be very small or non-existent. Biodiversity in the site vicinity would not be measurably affected by the proposed project.	Impacts would be similar to those resulting from the proposed project.	Impacts would be dependent on the project location, but probably would be similar to those of the proposed project.	Impacts would remain essentially unchanged from existing conditions.
Cultural resources	Sites of cultural significance could be located in the vicinity of the proposed project. JEA would be required to notify the appropriate agencies immediately upon discovery of any archaeological artifacts on the project site.	Impacts would be similar to those resulting from the proposed project.	Impacts could be less if there were fewer land disturbances for support facilities but could be greater if more land were disturbed for an offsite natural gas pipeline.	Impacts would remain essentially unchanged from existing conditions.
Socioeconomic resources and environmental justice	Construction and operation would not result in appreciable impacts to population, employment, income, housing, local government revenues, or public services. No disproportionately high and adverse impacts to low income or minority populations would occur. Community concerns could arise as a result of increased rail or road traffic.	Impacts would be similar to those resulting from the proposed project.	The size of the construction and operations workforce would likely be similar or somewhat smaller. Potential community concerns would be diminished or eliminated because rail and road traffic to deliver solid fuel and limestone and remove ash would not be required.	Impacts would remain essentially unchanged from existing conditions.

Table S.1. Continued

Resource	Proposed project	No-action alternative		
		Repower Unit 2 steam turbine without DOE funding	Construct new gas-fired combined cycle facility	Purchase electricity from other utilities
Transportation and traffic	Traffic congestion probably would occur during the peak construction period. During operations, increased rail traffic is not expected; but if it occurs, it would exacerbate current community concerns regarding vibration, noise, and blocked road crossings. The increased use of waterborne transport would not result in major impacts and would mitigate impacts from rail traffic.	Traffic congestion during construction would be similar to that of the proposed project. Because fewer train trips would be expected, the potential impacts from noise, vibration, and blocked crossings would be reduced.	Congestion could be reduced at Northside if a smaller workforce were required. Because there would be no fuel and sorbent delivery or ash removal, the potential impacts from noise, vibration, and blocked crossings would be reduced.	Impacts would remain essentially unchanged from existing conditions.

Table S.1. Continued

Resource	Proposed project	No-action alternative		
		Repower Unit 2 steam turbine without DOE funding	Construct new gas-fired combined cycle facility	Purchase electricity from other utilities
Noise	Except during steam blowouts and possibly during conveyor construction associated with Option 2, construction noise should not appreciably affect the background noise of nearby residences or exceed Jacksonville Environmental Protection Board rules. Operational noise levels would not be significantly different from current levels and are expected to comply with the city's noise ordinance level of 60 dB(A) at any residence. The increased movement of trains through the local area would be accompanied by high-decibel train whistles and rattling rail cars—reported by one local resident as being 108 dB(A) and up to 85 dB(A) respectively. Additional train noise could be minimized by relying more heavily on barges and ships for coal transport.	Impacts would be similar to those resulting from the proposed project, except that less train trips and related train noise would be expected (assuming less coal and more petroleum coke were used).	Impacts from construction noise would probably be less because no conveyor would be constructed. However, additional noise could be generated during construction of an offsite pipeline to deliver natural gas. Because there would be no train, ship, or truck traffic associated with fuel and sorbent delivery or ash removal, noise levels during operations would be similar to or slightly less than those resulting from the proposed project.	Impacts would remain essentially unchanged from existing conditions.

Table S.1. Concluded

Resource	Proposed project	No-action alternative		
		Repower Unit 2 steam turbine without DOE funding	Construct new gas-fired combined cycle facility	Purchase electricity from other utilities
Waste management	Combustion ash would be stored on the site in a double-lined storage area or sold, although its marketability has not yet been fully determined. If stored on the site, major impacts are unlikely to occur from leaks or leachate. Sufficient capacity is available from a variety of onsite and offsite locations to dispose of combustion ash during the 30-year lifetime of the project. No major impacts would be expected from the various liquid waste streams associated with the proposed project.	Impacts would be similar to those resulting from the proposed project.	Impacts would remain essentially unchanged from existing conditions.	Impacts would remain essentially unchanged from existing conditions.