

7.0 ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

Construction and operation of GREC will result in beneficial economic and social effects. This chapter describes the socioeco-

nommic benefits and costs associated with the construction and operation of GREC.

7.1 ECONOMIC AND SOCIAL BENEFITS

The primary benefit to the region as a result of GREC will be the availability of a new, reliable, and renewable energy source at a reasonable cost. GREC will provide other benefits to the City of Gainesville, Alachua County, the north-central Florida region, and the state of Florida in terms of employment and revenues. Major positive impacts will result from increases in the local economy to support project construction and operation. The addition of new jobs, increased tax revenues, and the purchase of various goods and services will all provide the opportunity for significant positive benefits within the local community. Note that all monetary figures in the following subsections are in 2009 dollars unless otherwise indicated.

7.1.1 TAX REVENUES

The construction and operation of GREC will create both direct and indirect tax benefits. Local and regional revenues will be generated from property taxes levied on the new plant facilities. State taxes will be generated through sales taxes on all nonexempt construction materials and supplies required for the construction and operation of the plant.

Property taxes will be a primary revenue benefit for the City of Gainesville, Alachua County, and other taxing authorities. Based on the estimated assessed taxable value of GREC and using the final 2009 millage rates, the ad valorem property taxes for the GREC facilities are estimated to be approximately \$7.6 million in 2014, which is the first year of commercial operation. Of these ad valorem tax revenues, Gainesville would receive approximately \$1.4 million, and Alachua County would receive approximately

\$2.6 million. The other taxing authorities, Alachua County School District, SRWMD, and the library system, would receive revenues of approximately \$3.0 million, \$140,000, and \$439,000, respectively. Under the PPA, GREC LLC will be reimbursed by GRU for ad valorem taxes.

Significant revenues are also expected to be generated through sales tax assessments on goods and materials purchased for the plant construction. GREC LLC estimates that construction material purchases in the local and north-central Florida region will be approximately \$20 million, which will result in approximately \$1.2 million in sales tax revenues.

Construction workers can be expected to purchase goods and services, particularly from local retail businesses and restaurants. Where applicable, such sales will result in increased retail sales tax collection.

Retail sales taxes will also apply to purchases of materials, supplies, and selected services required during operation. Based on an estimate of \$3.6 million per year for such operational purchases, the retail sales tax revenue, with a sales tax rate of 6.25 percent, is estimated to be approximately \$225,000 annually.

7.1.2 INDIRECT REVENUES

Indirect revenues such as increased levels of spending in the site area by both the construction and operational workforce will also benefit the state and local economies. GREC is expected to have a significant, positive impact on local businesses and the local economy as a whole during construction. Numerous local businesses will benefit by servicing the needs of contractors and workers during construction, as well as during operation. Local restaurants and retail and service businesses will also benefit. Additional indirect state and local revenues will be generated from the purchases previously described through corporate income taxes, as well as retail sales taxes paid by the businesses and their employees.

7.1.3 TEMPORARY AND PERMANENT NEW JOBS

7.1.3.1 Construction Employment

Additional employment during construction of GREC, even though temporary, will be a positive socioeconomic benefit to the area. As outlined in Section 5.1, construction is scheduled to begin in December 2010, and total construction employment will average approximately 168 workers for the overall 34-month construction period. The more labor-intensive period of construction will occur between 25 and 27 months after the start of construction. A peak of approximately 426 workers will be needed onsite for approximately 3 months in the December 2012 to February 2013 time frame.

Construction payroll for GREC is expected to total approximately \$48.8 million. It is likely that approximately 50 percent of the construction wages will be paid to workers residing in Gainesville, Alachua County, and the north-central Florida region. Another economic benefit from construction will be the use of local subcontractors and vendors to provide services, goods, and materials. Although included in the construction workforce estimates, use of local subcontractors and vendors will contribute to the local economy.

To analyze the wider economic benefits of the construction of GREC to Gainesville, Alachua County, and the region, the Regional Input-Output Modeling System (RIMS II) developed by the U.S. Department of Commerce Bureau of Economic Analysis (BEA) was used. RIMS II is widely used in both the public and private sectors to estimate regional impacts for a variety of projects. The modeling system accounts for the inter-industry relationships within a region, in this case Alachua County, because these relationships largely determine how regional economics are likely to respond to project development. The outputs of RIMS II are region-specific multipliers that can be used to estimate the total impact of a project on earnings and jobs. The direct-effect multipliers are used in this instance since the initial change in employment and earnings are known.

Table 7.1.3-1 shows the estimates of the impacts of construction based on:

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|------------------------------|--------------|
| • Construction payroll: | \$48,800,000 |
| • Average number of workers: | 168 |

Table 7.1.3-1. RIMS II Construction Impacts Based on Initial Changes in Earnings and Employment

Initial Change		
• Earnings		\$48,800,000
• Employment		168
Direct-effect multiplier		
• Earnings		1.4674
• Employment		2.3644
Total impact on		
• Earnings		\$71,600,000
• Employment		397

Note: Earnings based on 2009 dollars.

Source: BEA, 2009.

- Direct-effect multiplier for construction earnings: 1.4674
- Direct-effect multiplier for construction employment: 2.3644

RIMS II estimates that the additional impact in Alachua County due to construction of GREC is an additional \$22.8 million in earnings (the difference between the initial construction earnings and the multiplier impact on construction earnings) and 229 jobs (the difference between the initial construction employment and the multiplier impact of those jobs).

7.1.3.2 Operation Employment

GREC will employ approximately 44 fulltime employees. All of these employees will likely reside in Alachua County and nearby counties within an approximate 40-mile radius of the Site. The annual operations labor payroll for the Project will total approximately \$4 million at the start of operations. Since it is presumed that the operations work force will reside locally, they will pay taxes and purchase housing and/or other goods and services locally, providing further positive benefits to the local economy.

Table 7.1.3-2 presents the RIMS II estimates for the regional impact of GREC in Alachua County during the initial phase of operation and for continuing operation based on the regional multiplier for the power generation and supply industry. The direct-effect multipliers for this industry can be calculated for Gainesville and Alachua County because of the presence of the existing DGS units.

RIMS II estimates that the additional impact in Alachua County during operation of GREC is an additional \$1,869,600 in earnings per year (the difference between the operation earnings and the multiplier impact of the operation earnings) and a yearly increase of 60 jobs (the difference between the operation employment and the multiplier impact of those jobs).

In addition to the indirect benefit of the operation of a power plant, there is expected to be a multiplier effect on jobs in the local area related to supplying fuel to the biomass-fueled plant. According to a National Renewable Energy Laboratory (NREL) study, there is a

Table 7.1.3-2. RIMS II Operation Impacts

Operation	
• Earnings	\$4,000,000
• Employment	44
Direct-effect multiplier	
• Earnings	1.4674
• Employment	2.3644
Total impact on	
• Earnings	\$5,869,600
• Employment	104

Note: Earnings based on 2009 dollars.

Source: BEA, 2009.

multiplier effect of 4.9 fulltime jobs per each megawatt of net electric generating capacity produced by a biomass-fueled plant (NREL, 1999). The majority of these jobs are workers in fuel production and supplying activities. Subtracting the direct and indirect job benefits attributable to any type of power generation facility, fuel supply activities will result in an additional 350 to 400 jobs in the north Florida region.

7.1.3.3 Expenditures

Based on estimates prepared by GREC LLC, approximately \$160 million of construction expenditures for nonengineered, major equipment will occur during the construction period. GREC LLC estimates that approximately \$20 million of these expenditures will occur in the local and regional area. Also, based on estimates prepared by GREC LLC, annual expenditures for materials during operation will be approximately \$3.3 million. These expenditures will primarily occur locally for such items as chemicals, pumps, motors, valves, piping, equipment, and supplies. Local subcontractors will be required to maintain the plant, as well as to repair equipment and machinery. Vendor services for yard maintenance, mowing, waste removal, and equipment rental will be required. Mechanical, chemical, and environmental consultants will be required during operation. These services, consultants, and subcontractors will cost approximately \$265,000 annually. Most of these expenditures are also expected to occur locally.

7.2 ECONOMIC AND SOCIAL COSTS

Socioeconomic impacts to the area, including impacts on community services, associated with GREC construction and operation are expected to be minimal. Construction and operation of the facilities will not negatively affect essential community services or facilities. Since, in all likelihood, the projected workforce will primarily commute from existing residences or temporary housing such as motels and apartments (with few permanent relocations anticipated), project-associated increases in spending are expected to benefit the local and regional economies, while not creating new demands on public services and facilities or housing.

7.2.1 TEMPORARY EXTERNAL COSTS

The temporary external costs associated with GREC deal primarily with short-term traffic impacts during construction. Construction traffic may result in increased wear on existing roadways and cause some traffic congestion during peak hours. This potential for short-term congestion at arrival and departure times will be mitigated by transportation demand management techniques such as carpooling and off-peak travel. As discussed in Subsection 5.7.3, the potential traffic impacts during construction are expected to be minimal.

Residential areas are expected to experience minimal impacts from GREC due to distance from the Site and adequacy of the setback of plant facilities from U.S. 441. Most onsite activities will not be visible to residences in the area.

As discussed in Section 5.6, noise during construction will be attenuated by distance and the buffer area that separates the construction site area from the surrounding residential communities. Given the community service infrastructure in the area and the likelihood that much of the construction workforce will come from the local area, potential impacts on facilities such as schools and hospitals are expected to be minimal during construction. The same can be said of housing resources.

Construction of GREC is expected to generate some construction debris and municipal solid waste. However, attempts will be made to minimize the amount of construction waste generated and a program will be established to segregate and recycle as much waste material as possible. Certain construction wastes, such as scrap steel, aluminum, copper, lumber, and cardboard, etc., will be segregated for recycling, providing there is sufficient interest from local recycling firms. Authorized and licensed waste-handling contractors will remove all other construction waste materials from the Site for proper disposal at approved facilities. Given the size, capacity, and life expectancy of the New River Regional Landfill used by the City, the wastes generated temporarily during construction will not adversely impact that facility.

7.2.2 LONG-TERM EXTERNAL COSTS

The socioeconomic costs resulting from the long-term operation of GREC are expected to be minimal and localized. The following summarizes some of these potential impacts.

7.2.2.1 Land Use

GREC will be constructed on a Site that has long been used for power generation. Furthermore, the property to the west is primarily developed with Alachua County Public Works Department facilities. Residential uses are not located close to the new plant. As GREC will be located on the existing DGS property, the facility is consistent with existing land uses and zoning designations.

The long-term utility use of the Site will mean that GREC will cause no negative land use conversion in the vicinity. No residents will be displaced or risk an economic loss as a result of the proposed facilities being constructed. Vegetated buffers and setback distances are expected to eliminate detrimental impacts to real estate values to areas surrounding the Site. The use of an existing power plant site will result in no displacement of any scenic or recreational lands, or other public lands, nor cause conversion of agricultural lands to nonagricultural uses. As discussed in Section 3.2.2, the construction and operation of GREC is consistent with current zoning. In addition, a permanent conservation easement will be established in the northwest portion of the GREC Site to preserve the wetland and upland habitat in this area.

7.2.2.2 Aesthetics

GREC is not located near any scenic viewsheds. Although GREC's tallest structure will be the stack at 230 ft tall, the buffer provided by the distance and the heavily wooded areas between the GREC facilities and the nearest residential properties will minimize aesthetic impacts. The unit's tallest structures (i.e., stack and boiler structure) will be visible from selected offsite area vantage points, but the view will not be incongruous with the existing DGS plant facilities. Therefore, impacts to aesthetic quality resulting from new structures will be negligible. Figure 7.2.2-1 shows a conceptual rendering view of the GREC facilities in a photograph taken at the proposed main access road entrance on



FIGURE 7.2.2-1.
CONCEPTUAL RENDERING VIEW OF GREC FACILITIES
FROM MAIN ACCESS ROAD ENTRANCE

Source: Zachry, 2009; ECT, 2009.

U.S. 441, and Figure 7.2.2-2 shows the view in a photograph taken at the main entrance to the Turkey Creek residential community.

7.2.2.3 Public Services/Facilities

Operation of the proposed generating unit will not negatively affect essential services or facilities. While GREC will rely on local police and fire protection, GREC will be equipped with its own fire protection and other safety-related systems and will be secured with controlled, fenced access. Similarly, domestic wastewater treatment and natural gas will be provided through the extension of GRU utilities from the existing DGS facilities. Thus, any impacts on community services will be minimal. Approximately 44 fulltime, permanent employees will work at GREC when it becomes operational. These employees are not expected to materially affect local services, including transportation, because the adjacent roadways are operating at acceptable LOS. The medical facilities in the surrounding area are sufficient to handle most emergencies involving either the larger construction workforce or the relatively few additional permanent employees for operations.



FIGURE 7.2.2-2.
CONCEPTUAL RENDERING VIEW OF GREC FACILITIES
FROM ENTRANCE TO TURKEY CREEK

Source: Zachry, 2009; ECT, 2009.

REFERENCES

- National Renewable Energy Laboratory (NREL). 1999. The Value of the Benefits of U.S. Biomass Power. Subcontractor Report, G. Morris, Green Power Institute, Berkeley, California. Contract No. DE-AC36-99-GO10337.
- U.S. Department of Commerce, Bureau of Economic Analysis (BEA). 2009. BEA's 1997 National Benchmark Input-Output Accounts and BEA's 2006 Regional Economic Accounts.