

7.0 ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

The purpose of this chapter is to identify the direct and indirect economic, social and environmental effects of the Project based on both short-term (construction) and long-term (operation) time periods, with emphasis on effects not directly concerned primarily with the use of electricity. This analysis assumes an operating life for Units 6 & 7 of 40 years for the purposes of estimating Project life cycle benefits.

Socioeconomic impacts of construction and operation of the Project may occur when a project directly or indirectly changes a population, housing stock, or economic activities within a given area.

Direct effects are those that are the direct result of a project's construction or operation, such as wages and direct purchases of material and equipment. Indirect effects are those that are the result of changes in the livelihood of the people and business interests in the vicinity of a project who, because of their proximity to the site, may experience changes in their local environment, such as increased spending by the project construction and operational personnel. Indirect effects upon areas affected by a project could result from changes involving land use/neighborhood character, traffic, and noise. Many of these effects are difficult to directly measure and qualitative assumptions are often made to assess the relative values of anticipated impacts and benefits.

This chapter is divided into two parts: benefits and costs. Section 7.1 addresses the economic, social and environmental benefits, including an analysis of the direct and indirect effects of construction and operation of the Project. Section 7.2 addresses the economic and social costs and impacts of the Project and includes an analysis of the temporary and long-term indirect costs and impacts of construction and operational aspects. All costs and benefits are based on 2007 dollar values with annual escalation of 2.5 percent (unless otherwise noted).

7.1 Economic and Social Benefits

7.1.1 Direct Economic and Social Benefits

Construction and operation of the Project will significantly benefit the economy of Miami-Dade County and the State of Florida during construction and operation. Direct benefits from construction will include employment and payroll for an average monthly employment of approximately 2,430 workers, as well as the sales of equipment and materials. Direct operational benefits from the Project

include employment for an estimated 806 employees; property tax revenues, and operational and maintenance expenditures.

FPL estimates that the total Project costs will range from about \$12.1 to \$17.8 billion. Total Project costs include about \$8.6 to \$12.5 billion for the power plant and supporting construction, owners' costs, and transmission integration.

Construction is anticipated to begin in 2011 and conclude in 2020. The peak monthly workforce during construction is anticipated to be approximately 3,650 workers in 2016. The average monthly construction workforce is estimated at about 2,430. The approximate percentage of workers by category anticipated over the construction period of the Project is presented in Table 7.1.1-1 by category. The construction payroll for the Project is estimated to be about \$1,596 million from the beginning of 2011 through 2020.

Table 7.1.1-1. Construction Workers Anticipated Over 10-year Period (by Category)

Category	Percent	Category	Percent
Mechanical	3-4	Piping &	
Electrical	10-12	Instrumentation	14-20
Concrete	10-15	Site Support	25-30
Steel	2-4	Specialty Labor	7-13
Civil (other)	2-5	Non-Manual	25-30

Unit 6 is targeted to be operational in 2018, while Unit 7 is targeted to be operational in 2020. The total direct employment from Units 6 & 7 is estimated to be 806 full-time employees. The annual operational payroll of Units 6 & 7 will be approximately \$73 million in 2020. Other fixed operational expenses of Units 6 & 7, excluding fuel costs, are estimated at \$500,000 annually.

During operation, each nuclear unit has a refueling cycle of 18 months. These cycles are typically scheduled during the spring and winter to ensure that these refueling outages do not overlap, and that they occur only once each year. For each unit, approximately every five years, an extended outage occurs. During normal refueling outages, about 600 additional workers are required over a 30-day period with an estimated salary of about \$5.4 million (2020\$). During extended outages, about 1,000 workers are required over a 45-day period with an estimated salary of about \$13.6 million (2020\$).

Due to the proximity of the Site to the large labor markets in the Miami-Dade Metropolitan Area, the labor demand for both construction and operation is anticipated to be met by workers in this area and

skilled labor from outside the area. Population, housing and education impacts from construction and operation are not expected to have an adverse impact on Miami-Dade County (see Subsections 5.7.1 and 5.7.3).

During the construction period, area suppliers could also benefit by supplying concrete, stone, drainage piping, and other building materials that are normally manufactured or produced in the region. In addition, construction equipment could be rented locally.

The operation of Turkey Point Units 6 & 7 is expected to generate between \$2.5 to 3.6 billion in property taxes over the expected life of the Plant. This is comprised of \$1.3 to 1.9 billion to Miami-Dade County, \$1.0 to 1.5 billion to the school district, and \$0.15 to 0.20 billion to other taxing authorities.

7.1.2 Indirect Economic Benefits

Project construction activities will require skilled labor. It is anticipated that the majority of construction wages paid by the Project will be spent within Miami-Dade County and the surrounding region, and create additional demands for goods and services. As this money is spent, it will create a multiplier effect within the area, thereby generating additional jobs and earnings. These earnings are indirect or secondary benefits of the Project, which will be enjoyed by other companies whose payroll will increase as a result of the Project. For example, sales should increase for commercial services such as gas stations, grocery stores, and restaurants. Using an economic multiplier for this effect based on RIMS II multipliers from the U.S. Bureau of Economic Analysis, the wages paid directly to workers during the construction period plus the indirect employment is estimated to average \$221 million annually during construction. The total direct and indirect economic benefit is estimated to range from about \$650 to 850 million annually for the construction period. With Turkey Point Units 6 & 7 in operation, the average annual direct and indirect wages during operation are estimated to be about \$196 million. The anticipated direct and indirect economic output is expected to average approximately \$600 million annually during operation, with the total direct and indirect economic output during operation expected to be \$22 billion.

7.1.3 Net Fiscal Benefits

The net economic impact of the Project on Miami-Dade County and other governmental entities, for the life of the Project, is the difference between the total benefits and costs. Operating revenues to government entities include *ad valorem* taxes, occupational licenses, building inspection fees, utility taxes and charges for services (e.g., reclaimed water and potable water) paid by FPL. Services are

required for all residents who are working in the County. As a result, Miami-Dade County will incur costs for these services related to the Project and its workers and their families. To estimate these costs, a weighting procedure was used based on the full-time equivalent population of Miami-Dade County.

Operating costs to government entities include costs for services, such as financial and administrative expenses, emergency and disaster relief, legislative and executive expenses, and comprehensive planning. The total cost of these services over the life of the Project for workers and their families is estimated to be about \$14 million to Miami-Dade County.

The County government also earns capital revenues and pays capital expenses. Capital revenues are based on impact fees, and capital expenses are costs related to purchases for roads, fire rescue, law enforcement, etc. For the Project, the annual property taxes will accrue to Miami-Dade County, the school district, and other taxing authorities. These funds are then distributed to the various entities within the governmental jurisdictions. The total fiscal benefit to Miami-Dade County from the Project is estimated to range from \$1.3 to 1.9 billion.

Together, the total benefits and total costs result in a net benefit of the Project. The net fiscal benefit of the Project to Miami-Dade County is estimated to be more than \$1.0 billion over the life of the Project.

7.1.4 Overall Economic Benefits

The Project will have significant economic benefits to Miami-Dade County. During construction the average annual economic benefit from direct and indirect wages will be about \$221 million with a total annual average economic benefit ranging from about \$650 to \$850 million. During operation, the average annual direct and indirect wages are estimated to be about \$196 million. The total direct and indirect benefits from operations are expected to be about \$22 billion over the life of the Project.

7.1.5 Environmental Benefits

In addition to providing clean, safe, and reliable power for FPL's customers, the Project will result in significant environmental benefits. The Project will enable the beneficial reuse of existing land within an industrial wastewater facility for the construction of a modern, efficient, non-emission next generation nuclear plant using the latest technology. Adding new nuclear generating capacity will help FPL maintain fuel diversity in its generation mix, and this Project will avoid at least 266 million tons of carbon dioxide (CO₂) emissions over the first 40 years of operation, an average of about seven

million tons of CO₂ emissions yearly. That is equivalent to taking approximately 1.3 million cars off the road every year. The Turkey Point 6 & 7 Project will also minimize air pollutant emissions by avoiding emissions of particulate matter (PM), sulfur dioxide (SO₂), nitrous oxide (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs). The large magnitude of the air emissions avoided by Turkey Point Units 6 & 7 is a significant environmental benefit for Florida's future air quality. In addition, the nuclear administration and training buildings may feature rooftop solar panels, and the buildings will be certified under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system (see Appendix 10.10).

The primary source of cooling water makeup for Units 6 & 7 will be reclaimed water from MDWASD. The potable water source will also be MDWASD. The Project will include an off-site FPL reclaimed water treatment facility and associated pipelines. This reclaimed water use is a beneficial and cost-effective means of increasing the use of reclaimed water in Miami-Dade County and helps the County meet its reclaimed water compliance requirements. In the absence of reuse opportunities, this treated domestic wastewater would likely continue to be discharged to the ocean or deep injection wells. Miami-Dade County is required to eliminate ocean outfalls and increase the amount of water that is reclaimed for environmental benefit and other beneficial uses. Units 6 & 7 will use reclaimed water 24 hrs per day, 365 days per year when operating and water is available in sufficient quality and quantity. This use of reclaimed wastewater will enable the County to meet approximately half of its wastewater reuse goals and will provide environmental benefits by reducing the volume of wastewater discharged by the County.

~~FPL proposes to obtain fill required for the Project from a fill source on FPL-owned property located northwest of the Site and from other regional sources. The FPL-owned fill source would result in a water management feature that will be designed to complement and enhance regional wetland rehydration projects.~~

The existing Turkey Point Plant has been a refuge for the American crocodile since the 1970s. With the addition of Turkey Point Units 6 & 7, the Turkey Point Plant will continue to serve as a refuge for this important Florida species long into the future. FPL's proposed mitigation plan includes development of additional habitat for the American crocodile. FPL will continue its conservation and monitoring efforts to enhance the use of the Turkey Point Plant Property as a nesting area and refuge for the American crocodile.

7.2 Economic and Social Costs

7.2.1 Temporary External Costs

It is anticipated that about 1,820 workers would migrate into Miami-Dade County to support the construction of Units 6 & 7. The population increases from in-migrating workers represents a very small percentage (about 0.1 percent) of Miami-Dade County's projected population during the construction peak. Therefore, the construction of Turkey Point Units 6 & 7 will not have an adverse population impact to Miami-Dade County.

Labor demands associated with the construction and operation of Units 6 & 7 are not anticipated to create any labor shortages since the construction and operation labor are a small percentage of the employment in Miami-Dade County. Construction employment in Miami-Dade County was 90,402 in 2007 with total private employment of 1,287,164 (BEA, 2009). Expenditures for field materials and consumption by newly hired workers will boost incomes in Miami-Dade County and surrounding counties. Population, housing and education impacts associated with the Project will be slight due to the estimated in-migration to the area (see Subsection 5.6).

Temporary external costs include the generation of traffic and noise from construction worker traffic, and trucks delivering fill and other materials to the Site. Project construction will last approximately ten years, with a peak of over 3,000 workers for about three years (from 2015 through 2017).

The roadway system utilized for the construction traffic associated with the Project will be improved as needed. The roadway improvements are uniquely required to support the safe and efficient construction of the facility, but are not necessary post-construction. FPL will work with appropriate agencies and stakeholders to determine and create the optimal disposition of the improved public rights-of-way (see Subsections 5.7.2 and 6.9.1).

The construction of the Project will not significantly impact residential, commercial, or recreational values. The nearest permanent private residence is about four miles from the Site and residents will not have a clear view of the construction activities. Commercial and recreational boating traffic in southern Biscayne Bay may have views of construction activities. However, the views of the construction activities will blend with the industrial nature of the existing Turkey Point Units 1 through 5.

Although the local community may experience some temporary adverse socioeconomic impacts during the construction period, such as localized traffic and noise, the overall socioeconomic impacts associated with the construction and operation of the Project will be favorable. Units 6 & 7 will provide about 2,200 MW of needed generation capacity in southeastern Florida using efficient nuclear technology from an existing power plant site. The Project will enhance the reliability of FPL's system by reducing reliance on fossil fuels and increasing fuel diversity.

7.2.2 Long-Term External Costs

The Project's long-term external cost impacts will be minimal and localized. The Site is located near existing FPL transmission systems and transmission corridors, to minimize impacts to the greatest extent possible to allow interconnection to FPL's electric transmission and distribution system. There will be no adverse impacts to public or private recreational facilities. The operation of Turkey Point Units 6 & 7 will not cause any impairment to recreational values, result in any deterioration of aesthetic and scenic values, or restrict access to areas of scenic value.

Adverse impacts from the operation of Units 6 & 7 upon local services (e.g., schools, police, and transportation) are not anticipated. The capital investment made for Units 6 & 7 will result in increased *ad valorem* tax revenues. These long-term taxes paid to Miami-Dade County, the school district, and other taxing authorities will be significantly greater than current allocations. As described in Subsection 7.1.3, the Project will have a net fiscal benefit, with long-term cost to Miami-Dade County at a fraction (less than one percent) of the long-term benefits. As a result, there will not be a net increase of costs upon the local government for the public facilities or services associated with the Project.

Roadway improvements will provide long-term benefits to the region. The level of service afforded by roadway improvements will be more than adequate to serve operational personnel, including additional traffic during refueling and extended outages. The employee numbers, deliveries, and service requirements, in combination with the roadway improvements, will result in minimal transportation impacts to the local roadways during operation.

FPL will minimize the Project's impacts on the environment and the community, and the Project incorporates design features that will reduce impacts to the local community. Due to the location of the Site, noise and visual impacts will not adversely impact the local community. Predicted noise levels for the operation of Units 6 & 7 are not predicted to change existing noise levels in the community. The viewsapes of Turkey Point Units 6 & 7 will blend with the industrial nature of the

existing Turkey Point Units 1 through 5. The Site is located within an existing industrial wastewater facility. As a result of these attributes, and considering the potential impacts associated with the Project as described in Chapter 6, no adverse impairment of recreational values, deterioration of aesthetic and scenic values, or restrictions on access of scenic, historic cultural, natural or archaeological values are anticipated.