



November 27, 2013

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Florida Southeast Connection, LLC, Docket No. PF14-2-000

Dear Ms. Bose:

On October 16, 2013, the Director of the Office of Energy Projects issued a letter in the above captioned docket approving the request of Florida Southeast Connection, LLC ("FSC") to commence the Federal Energy Regulatory Commission's ("Commission") Pre-filing Review Process of its proposed FSC Project ("Project"). On November 15, 2013, FSC filed its initial draft Resource Report 10. Attached herein is an updated draft Resource Report 10 that contains the attached tables populated with data and other related revisions regarding route alternatives and deviations.

Please contact Jena Mier at 561-691-2209 if you have any questions regarding this submission.

Sincerely

/s/ William Lavarco
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Cc: Jessica Harris
John Peconom

Attachment



**FLORIDA SOUTHEAST CONNECTION
PROJECT**

DRAFT RESOURCE REPORT 10
Alternatives

FERC Docket No. PF14-2-000

November 2013

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RESOURCE REPORT 10—ALTERNATIVES	
Filing Requirement	Location in Environmental Report
<input checked="" type="checkbox"/> Address the “no action” alternative. For large projects, address the effect of energy conservation or energy alternatives to the project.	Section 10.3, p 10-2
<input checked="" type="checkbox"/> Identify system alternatives considered during the identification of the project and provide the rationale for rejecting each alternative.	Section 10.4, p. 10-5
<input checked="" type="checkbox"/> Identify major and minor route alternatives considered to avoid impact on sensitive environmental areas (e.g., wetlands, parks, or residences) and provide sufficient comparative data to justify the selection of the proposed route.	Section 10.5, p. 10-7
<input type="checkbox"/> Identify alternative sites considered for the location of major new aboveground facilities and provide sufficient comparative data to justify the selection of the proposed site.	NA Section 10.7, p 10-10

LIST OF ACRONYMS AND ABBREVIATIONS

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFH	Central Florida Hub
CFR	Code of Federal Regulations
CWA	Clean Water Act
E & E	Ecology and Environment, Inc.
EIA	Energy Information Administration
EPAct	Energy Policy Act of 2005
ESRI	Environmental Systems Research Institute, Inc.
F.A.C.	Florida Administrative Code
F.S.	Florida Statutes
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FERC	Federal Energy Regulatory Commission
FGT	Florida Gas Transmission Company, LLC
FLUCCS	Florida Land Use, Cover and Forms Classification System
FPL	Florida Power & Light Company
FPLNG	FPL Natural Gas, LLC
FWC	(Florida) Fish and Wildlife Conservation (Commission)
GIS	Geographic Information System
Gulfstream pipeline	Gulfstream Natural Gas System, LLC
GWh	Gigawatt hour
kV	Kilovolt
MAOP	Maximum allowable operating pressure
MLV	Mainline valve
MM cf/d	Million cubic feet per day
MP	Milepost
MW	Megawatts
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PSC	Public Service Commission
psig	Pounds per square inch gauge
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-way
ROWs	Rights-of-ways
SCA	Site Certification Application
SFWMD	South Florida Water Management District
SR	State Route
STA	Stormwater Treatment Area
SWFWMD	Southwest Florida Water Management District
U.S.	United States
USACE	United States Army Corps of Engineers
USDOE	United States Department of Energy
USDOT	United States Department of Transportation



USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USGS NHD	United States Geological Survey National Hydrography Dataset

10.0 RESOURCE REPORT 10 – ALTERNATIVES

10.1 INTRODUCTION

Florida Southeast Connection, LLC (“FSC”), a subsidiary of NextEra Energy, Inc., is seeking a certificate of public convenience and necessity (“Certificate”) from the Federal Energy Regulatory Commission (“FERC”) pursuant to Section 7(c) of the Natural Gas Act (“NGA”) authorizing the construction and operation of an approximately 126 mile natural gas pipeline known as the Florida Southeast Connection Project (“FSC Project”). The FSC Project is designed to meet the growing demand for natural gas by the electric generation, distribution and end use markets in Florida. It will also provide additional source diversity through a connection to the Sabal Trail Transmission, LLC Project (“Sabal Trail”) via a new interconnection hub in central Florida (“Central Florida Hub”) to be constructed as part of Sabal Trail. The Sabal Trail Project is the subject of a separate, but related, certificate filing to the FERC.

The FSC Project involves the construction and operation of approximately 126 miles of 36-inch-diameter pipeline. The FSC Project starts in Osceola County, Florida at Sabal Trail’s Central Florida Hub and traverses Polk, Osceola, Okeechobee, St. Lucie, and Martin Counties, terminating at Florida Power & Light Company’s (“FPL”) Martin Clean Energy Center in Indiantown, Martin County, Florida.

The FSC Project consists of the following facilities:

- Approximately 126 miles of 36-inch-diameter pipeline;
- One meter station located at the Martin Clean Energy Center;
- Main line valves, number to be determined by class study, along the entire length of the pipeline;
- One pig launcher at the start of the pipeline and one pig receiver at the end of the pipeline;
- Contractor yards; and
- Access roads.

The location of the FSC Project facilities is shown in Figure 1.2-1 of Resource Report 1 – General Project Description.

This resource report contains a discussion of the various alternatives to the FSC Project that could achieve a portion of the FSC Project objectives. The range of alternatives considered includes the no action alternative, energy conservation alternative, energy alternatives, system alternatives, route alternatives, minor route variations, and above ground facility alternatives.

The FSC Project was designed to provide new firm transportation of up to 600 MM cf/d while meeting each of the objectives listed below:

- To address the growing natural gas fuel supply needs of electric generators and other natural gas users in Florida;
- To add a new natural gas transmission pipeline to enhance the reliability and security of the pipeline system serving Florida; and
- To increase the competition for gas supply as well as gas transportation into Florida.

10.2 PURPOSE AND NEED

The purpose of the FSC Project is to (i) meet the growing natural gas fuel supply needs of electric generators and other natural gas users in Florida; (ii) add a new natural gas transmission pipeline to enhance the reliability to the existing pipeline system serving Florida; and (iii) satisfy the anchor shipper's (FPL) RFP requirement to create new pipeline infrastructure to allow for additional generation sites to be directly served with minimal need for additional facilities. For example, FSC's anchor shipper, FPL, has identified a site called Okeechobee in its 10-year site plan filed with the Florida Public Service Commission ("FPSC") that is in very close proximity to the proposed FSC route. The FSC Project may also permit natural gas Local Distribution Companies ("LDCs") to expand natural gas service to parts of Florida that currently not served given the absence of gas infrastructure, thus permitting industrial and commercial customers the benefits of natural gas. In conjunction with the Sabal Trail Project, FSC will allow diversified access to growing natural gas supplies for natural gas users in Florida, increase the overall reliability of the region's natural gas transmission grid, reduce reliance on offshore supply sources and lessen the vulnerability to supply disruptions that can result from severe weather in the Gulf of Mexico.

10.3 NO ACTION ALTERNATIVE

If the FSC Project is not authorized by the FERC, the short-term and long-term environmental impacts resulting from FSC Project activities, discussed in other Resource Reports, will not occur. However, in this case, the objectives of the FSC Project would not be met, and FSC would not provide the proposed transportation capacity for FPL's needed electric generation. Assuming the means of providing transportation for the gas required for the additional generation is not developed, a demand reduction would have to be achieved by either energy conservation or increased utilization of the energy sources and energy alternatives described below.

10.3.1 Energy Demand Projections

Florida's net energy load for electric generation is expected to grow by approximately 13 percent between 2013 and 2022 (FRCC, 2013). The load profile of Florida is heavily influenced by residential customers, and as such, Florida's generation capacity must be sufficient to meet the changing needs of the residential, industrial, and commercial consumers. Florida currently has 56,725 MW (winter ratings) of installed capacity (FRCC, 2013).

Florida's installed electric generating capacity is based on a variety of fuels: 64 percent natural gas, 19 percent coal, 8 percent nuclear, one percent non-utility generator, one percent renewables, four percent from inter-regional interchange, and two percent from other sources (FRCC, 2013). The last Florida Energy Plan (2006) forecasted future new natural gas generation capacity to reach 80 percent of net generation, and actual growth in natural gas fired generation has already gone from 25 percent to 64 percent of net generation between 2002 and 2012 (PUSC 2013). As a result, natural gas will represent an even larger percentage of the future generation fuel mix.

10.3.2 Energy Conservation

Cost-effective energy conservation programs promoted by electric utilities reduce the growth in peak demand (thus reducing the number of new generating units that need to be built) and lower overall energy usage, all while minimizing the impact on electric rates for all customers. In addition, mandated building codes and appliance standards are providing additional reduction of peak demand and energy outside of utility programs. The Florida Energy Efficiency and Conservation Act (FEECA), established in 1980, places emphasis on reducing weather-

sensitive peak electric demand growth rates, reducing and controlling electricity consumption growth rates, and reducing fossil-fuel consumption. The Florida Public Service Commission encourages energy conservation and other demand-side management programs. The Commission sets numeric peak demand and energy savings goals for the seven large electric utilities subject to FEECA and monitors their conservation achievements.

As of 2012, the seven FEECA utilities' demand side management (DSM) programs, in total, have reduced winter peak demand by an estimated 7,095 MW and summer peak demand by an estimated 7,164 MW. These programs have also reduced total energy consumption by an estimated 8,518 GWh, which lowers fuel consumption at electric generators (FPSC, 2013). The demand savings from these programs have resulted in the deferral or avoidance of a substantial fleet of base load, intermediate and peak power plants. Since 1981, Florida's investor-owned electric utilities have recovered over \$5.7 billion of conservation expenditures through the Energy Conservation Cost Recovery (ECCR) clause, with approximately \$2.9 billion of conservation program expenditures in the last ten years. The Public Service Commission's Approved demand side management/energy conservation goal for 2010 to 2019 is to save 7,425 GWh, annually (FPSC, 2012).

It is possible that the development and implementation of additional cost-effective energy conservation measures could have some effect on the demand for natural gas; however, substantial new technology development would be needed before the magnitude of cost-effective energy conservation necessary to equal the electricity generated by natural gas delivered from the proposed FSC Project could be implemented.

10.3.3 Energy Alternatives

Use of certain alternative fuels to supply the needs of the market potentially could result in adverse environmental impacts, due to increased air pollutant emissions that otherwise would be minimized through the use of natural gas. In general, alternative energy sources to the FSC Project include oil, coal, biomass, and nuclear fuels. State and federal air pollution control regulations promote the use of clean fuels to minimize adverse air quality impacts, given that alternative hydrocarbon energy sources would unnecessarily increase adverse air quality impacts, and these increased impacts may conflict with federal and state long-term energy environmental policies aimed toward improving air quality in non-attainment areas.

In 2010, renewable energy sources contributed 8,049 trillion British thermal units (BTUs) to the United States' power supply (EIA 2011c). This amount accounted for an 8 percent share of the total energy consumption in the United States (EIA 2011c). However, none of these renewable energy sources have been fully developed in the United States or in the FSC Project area for large-scale application or to the point where they would be viable energy alternatives to the proposed FSC Project (ACEEE 2003). Conversely, smaller-scale, or individual, renewable energy sources could be combined to meet the energy needs for the proposed FSC Project; however, the number of such individual projects would be numerous, and land requirements will likely substantially increase. Because the combination of these resources would require development of coordinated efforts, which would take time and would not provide the energy in time to meet the FSC Project's market needs, it is evident that these energy alternatives are not viable options when compared to natural gas.

10.3.3.1 Wind

Wind power currently is not an option for providing the existing or projected power needs in the market. Wind energy is not available in the vicinity of the FSC Project presently nor is it likely to be so consistent with the FSC Project timeframe. Wind power also cannot be precisely scheduled based on demand. The proposed FSC Project would provide 600,000 dekatherms

per day (“Dth/d”) of additional energy (by 2020), which, converted to megawatt hours (“MWh”) is approximately 175,842.40 MWh. To compare the energy provided by the proposed FSC Project to that of other renewable energy sources, such as wind or solar, a unit of power must be calculated. 175,842.40 MWh equate to 14,653 MW of power, assuming 12 hours of operation/day. Based on the fact that individual wind turbine capacity can range from 1.8 MW up to 5 MW (AWEA 2012) a total of 4884 turbines (using an estimated 3 MW/turbine) would be needed to produce the same amount of energy as the proposed Project. Therefore, wind energy would not provide the reliable quantity of energy that could be provided by natural gas due to the vast number of wind turbines needed and the area required for their operation. Wind turbines would also require permanent access roads and electric transmission facilities to be constructed. Placing this large number of wind turbines, access roads and electric transmission facilities will likely cause significant impacts to the visual resources and aesthetics of the region. Therefore, wind power would not be a viable option when compared to natural gas.

10.3.3.2 Hydroelectric

The region where the FSC Project is located does not have a potential for hydroelectric power generation, even using low head/low power technologies. As a result, hydroelectric power would not be available for development in the region as an alternative to the natural gas supplied by the FSC Project.

10.3.3.3 Solar Power

Solar power is not a viable alternative to natural gas in the FSC Project region due to climactic conditions, developmental costs, reliability issues, the need for large expanses of land, and the uncertainty of solar power availability at times of system peak demand. Some of the largest completed solar photovoltaic power plants, also called solar parks or fields, have area efficiency of about 4.5 to 13.5 acres per MW (*Solar by the Watt 2009*). Therefore, we estimate that the land requirements for a solar project that could produce 14,653 MW of power would range from more than 65,000 to almost 200,000 acres, or about 100-300 square miles. As a result of these extensive land requirements, solar power is not being developed at a pace that would provide for the projected energy needs of the market. While some minimal solar development is underway in Florida, the land requirements needed to generate the amount of energy equivalent to that to be transported by the proposed FSC Project would be prohibitive. Due to the relative land impacts required for solar compared to natural gas, solar is not a viable option.

10.3.3.4 Geothermal Power

Geothermal energy is available only at tectonic plate boundaries or at volcanic hotspots. Due to a lack of these features in the FSC Project area, geothermal energy would not be available for development as an alternative to natural gas.

10.3.3.5 Coal

Although a viable alternative to natural gas for power generation, coal is not as clean-burning as natural gas. Coal emits greater regulated pollutants (e.g., sulfur dioxide and nitrogen dioxide), unregulated greenhouse gases (e.g., carbon dioxide), and particulate matter, which require the installation of costly air pollution controls. Coal is associated with significant mine pollution control problems and reclamation issues, as well as storage problems, and costly pollution controls at the burner. Coal consumption in the United States totaled 1,048.3 million short tons for 2009 (EIA2011b). This amounts to 21 percent of the total energy used in the United States (EIA2011c). Energy generated from the burning of coal is considered a major contributor to acid rain, which continues to be an international ecological and economic problem. Coal also contributes more greenhouse gas emissions than natural gas and petroleum fuels. Further, emissions from coal-burning power plants are the primary source of airborne mercury deposition

in the United States, accounting for over 50 percent of all domestic human-caused mercury emissions (EPA 2005). The mining and transportation of coal to end users have additional and more complex adverse environmental impacts. While coal remains a viable option for serving the energy needs of certain customers, it may result in greater environmental impacts than the production and transport of natural gas via transmission pipelines. The relative environmental benefits and efficiency of natural gas make the fuel an attractive alternative to oil and coal-fired generation. Compared to the average air emissions from coal-fired power generation, natural gas produces half as much carbon dioxide, less than a third as much nitrogen oxides, and one percent as much sulfur dioxides at the power plant, thereby reducing global warming impacts relative to coal-based sources (EPA 2007). Therefore, coal does not represent a preferred alternative for replacing the natural gas to be supplied by the proposed FSC Project.

10.3.3.6 Oil

Oil is not a viable alternative energy source for meeting future power generation needs in the market. The use of oil supplies to meet existing or future energy demands could increase reliance on overseas crude petroleum and petroleum products. Though the construction of an oil transmission pipeline has no advantage over natural gas pipeline transmission in regards to area requirements, oil typically necessitates transportation overseas, requires tank distribution and increases air pollutant emissions when burned. These aspects of oil use create the potential for increased adverse environmental impacts, including the increased risk of oil spills, air quality degradation, and potential impacts associated with land use development required for the construction of new, or expansion of existing, refineries to process the oil. Florida utilities have increasingly converted power plants from oil to natural gas because oil is more expensive than natural gas and produces more emissions than natural gas. Therefore, oil does not represent a viable alternative for replacing the natural gas to be supplied by the proposed FSC Project.

10.3.3.7 Nuclear

Nuclear energy development is an option that is considered environmentally viable, especially in terms of limiting pollutant air emissions. Extensive regulatory requirements need to be met in the planning and building of new nuclear facilities, as well as significant public concern. There is significant uncertainty as to the timing and cost of bringing new nuclear facilities into service. Moreover, the time required to design, permit, and construct a nuclear generation facility is measured in years and would be significantly greater than the amount of time required to design, permit, and construct a natural gas fired generation plant as well as the proposed FSC Project. Since the nuclear energy alternative would not be available to meet the required short-term energy demands by the market, use of nuclear energy is not a viable alternative to the proposed FSC Project.

10.3.3.8 Fuel Cells

Fuel cells are a developing alternative for generating electricity more directly and cleanly from fossil fuels or hydrogen. Small-scale fuel cell research and development is active, but reliable fuel cell systems representing a magnitude of energy supply equivalent to the proposed FSC Project are not expected to be available or cost-effective in the near future.

10.4 SYSTEM ALTERNATIVES

System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed pipeline systems to meet the stated objectives of the FSC Project. A system alternative would make it unnecessary to construct all or part of the FSC Project, although some modifications or additions to the alternative systems may be required to increase their capacity or provide receipt and delivery capability consistent with that of the FSC

Project. These modifications or additions would result in environmental impacts that may be less than, comparable to, or greater than those associated with construction of the FSC Project. System alternatives that would result in significantly less environmental impact might be preferable to the FSC Project. However, a viable system alternative must also be technically and economically feasible and practicable, and must satisfy necessary contractual commitments made with shippers supporting the development of the FSC Project.

A viable system alternative to the FSC Project would have to meet the following FSC Project objectives while resulting in less of an environmental effect than the FSC Project:

- Provide a total of up to 600 MM cf/d of firm transportation capacity;
- Provide a connection to the new Sabal Trail Project or other new pipeline at a central Florida location;
- Provide a new independent route that enhances diversity and reliability and can serve future planned generation sites;
- Provide a connection to FPL's Martin Clean Energy Center; and
- Be operational in time to meet the in-service date of May 2017.

Any viable alternative must be compatible with the contractual requirements relating to location and capacity of receipt points, delivery interconnections, and in-service date set forth in these agreements.

FSC considered several system alternatives to the FSC Project as follows:

10.4.1 FGT Pipeline

FGT is an approximately 5,500-mile gas pipeline system that transports natural gas from south Texas to south Florida. FGT is owned by Florida Gas Transmission Company, LLC, a 100 percent owned subsidiary of Citrus Corp. Citrus Corp is a 50/50 joint venture between Kinder Morgan, Inc. and Energy Transfer (Florida Gas Transmission Company, 2013). The pipeline has a capacity of nearly 3 billion Bcf/day of natural gas, which is delivered to a diverse customer base in Florida including electric utilities, independent power producers, industrials, and local distribution companies. The pipeline services over 250 delivery points with connections to over 50 natural gas fired electric generation plants. Although the FGT pipeline route will interconnect with Sabal Trail in central Florida and passes along the east coast of Florida and provides a connection to FPL's Martin Clean Energy Center, it does not have existing sufficient capacity to address FSC Project requirements at this time without construction of considerable additional gas delivery infrastructure. FGT also would not provide a new pipeline system that increases the reliability and route diversity of the existing pipeline system and introduces competition into the Florida market. As this alternative is not available at present, it does not meet the purpose and need of the FSC Project.

10.4.2 Gulfstream Pipeline

The Gulfstream Pipeline is approximately 745 miles long (294 miles in Florida; 15 miles in Alabama & Mississippi; 17 miles offshore processing; 419 miles offshore to Florida) and delivers 1.3 billion cubic feet per day of natural gas from the Mobile Bay, East Louisiana & Mississippi supply area across the Gulf of Mexico to off take locations in Hardee, Polk, Osceola, Manatee, Pinellas, and Palm Beach Counties in Florida (Gulfstream, 2013). The diameter of the pipeline ranges from 16 to 36 inches. Gulf Stream pipeline currently has contracts with nine different entities that total Gulfstream's entire capacity of 1.3 million Dth/d. Thus while the Gulfstream

Pipeline provides a connection point to Martin Clean Energy Center, it has no unsubscribed capacity (Gulfstream, 2013) and is not able to transport additional gas to meet the Project's demands without the addition of new capacity through a larger diameter line. Gulfstream also would not provide a new pipeline system that increases the reliability and route diversity of the existing pipeline system and introduces competition into the Florida market. As this alternative is not available at this time, it does not meet the purpose and need of the FSC Project.

10.5 PROPOSED ROUTE AND ROUTE ALTERNATIVES

Several alternatives to the proposed pipeline alignment were evaluated as part of the planning and design process for this FSC Project. The analysis for the alternative pipeline routes was based on environmental and land use impacts, as well as permanent easement acquisitions and overall FSC Project costs.

The selection of the major route alternatives discussed in Section 10.5.1 was dictated by several factors.

- Determination of the most cost-effective technical solution;
- Development of routing criteria;
- Identification of potential routing alternatives;
- Collection of data relative to each alternative;
- Evaluation of potential environmental and land use impacts; and
- Evaluation of routing alternatives against routing criteria.

Sources of existing information, such as field reconnaissance, aerial photography, topographic maps from the United States Geological Survey, and National Wetland Inventory maps, were used during the route identification and evaluation processes.

The factors used to select the Proposed Route over the alternative routes and deviations focused on landowner concerns, minimizing the number of affected landowners, minimizing adverse environmental impacts, ensuring constructability, and promoting safety. Route Alternatives were based on information collected since January 2012 through consultation with stakeholders; civil, environmental, and cultural field surveys; assessments of construction feasibility and safety; and assessments of operational safety. Stakeholders consulted included landowners; local, state and federal government agencies; and advocacy groups. FSC utilized existing sources of information, such as Google Earth[™]; Geographic Information Systems (GIS) databases from county, state, and federal sources; aerial photography; United States Geological Survey (USGS) topographic maps; National Wetlands Inventory (NWI) maps; and SFWMD FLUCCS maps, to make preliminary assessments prior to creating an alignment or when survey permissions were not granted by the landowner.

When evaluating routing options for the FSC Project, FSC has attempted to co-locate with existing utility right-of-ways and roadway corridors to the greatest extent possible and consistent with the purpose and need of the project. Co-location is defined by FSC as either sited within an existing right-of-way or easement or abutting an existing right-of-way or easement.

The use of co-location as a principal design element by FSC was necessitated not only by Commission guidelines, which stress the corridor concept, but also the existing land use characteristics in the FSC Project area. Siting pipeline facilities along existing corridors and right-of-way reduces the establishment of new corridors in previously undisturbed areas and may limit the number of affected landowners. FSC also attempted to place the pipeline alignment in previously disturbed areas to promote avoidance of potentially sensitive areas,

such as water supply watersheds, dense population areas, cultural resources, and forest interior (i.e., areas 300 feet or greater from the forest edge), where possible.

FSC conducted an analysis of route alternatives between the origination and termination point of the FSC Project based on environmental and land use constraints. The Origination Point was identified as the tie in with the Sabal Trail Project in Osceola County. The Termination Point was identified as the existing gas yard at FPL's Martin Clean Energy Center.

A two-tier siting criteria approach was applied to first identify corridor alternatives within the study area and then compare the attributes of each corridor alternative. The Tier 1 siting criteria included key constraints to the siting of a natural gas pipeline that were utilized to develop corridor alternatives within the study area. Table 10-1 details the Tier 1 and Tier 2 siting criteria developed and applied for the FSC Project.

Utilizing the study area shown on Figure 10-1 and the Tier 1 siting criteria, provided in Table 10-1, three potentially viable corridor alternatives were identified. These alternatives are illustrated on Figure 10-2. In addition to desktop review, FSC conducted aerial and ground reconnaissance of the alternatives, as well as additional reconnaissance of the Proposed Route in order to identify any local variations that should be considered further.

The analysis includes a Proposed Route, two major route alternatives, and three deviations. The major factors differentiating these route alternatives are presented in Table 10-2, which provides a comparison of the identified alternatives and route deviations with the Proposed Route.

10.5.1 Proposed Route

The Proposed Route is 126 miles long and will begin at the interconnection with the proposed Sabal Trail pipeline. From its starting point, the Proposed Route runs in a southward direction and follows an existing Progress electrical transmission line and Kinder Morgan products pipeline for approximately 18 miles. The Proposed Route then continues south along a non-collocated corridor to State Road 60. At this point the Proposed Route is largely collocated with State Road 60 to Yeehaw Junction, where the alternative turns south along State Highway 441 where it is largely collocated for approximately 10 miles, and then begins a southeastern tract along a non-collocated corridor, consisting of pasture with some interspersed forested areas, for approximately 41 miles to the Termination Point at FPL's existing gas yard on the Martin Clean Energy Center Property.

10.5.2 Major Route Alternatives and Deviations

The following information provides descriptions of the Major Route Alternatives and deviations. A Major Route Alternative is an alignment that has the potential to meet the FSC Project objective but would deviate significantly from the Proposed Route. Deviations are smaller alignment/route changes that were considered with respect to the Proposed Route.

Major Route Alternative 1

Major Route Alternative 1 is approximately 144.3 miles in length, of which 91.6 miles (63.5 percent) are collocated with existing linear facilities. Beginning at the CFH, this alternative is collocated with the existing FGT pipeline route as it traverses to the northeast around Kissimmee, Florida, before turning south toward St. Cloud, Florida. This alternative then continues to follow the FGT pipeline route to the east before intersecting with FPL's 500-kV Transmission Line, which it follows south to the Termination Point at FPL's existing gas yard at the Martin Clean Energy Center.

Major Route Alternative 2

Major Route Alternative 2 is approximately 146.1 miles in length. The route begins at the interconnection with Sabal Trail, and proceeds approximately 18 miles southward along a route collocated with an existing Progress electrical transmission line and Kinder Morgan products pipeline. The Route extends southward off the Proposed Route for approximately seven additional miles to a point approximately one mile northeast of Lake Wales, where it jogs westward to the FGT) pipeline. It then follows this pipeline route, until north of Avon Park, where it turns eastward. At this point, the alternative follows the Gulfstream pipeline to the Termination Point at FPL's existing gas yard at the Martin Clean Energy Center.

Route Deviation 1

Deviation 1 turns off the Proposed Route approximately 10.5 miles south of Yeehaw Junction and traverses in an eastward direction until it joins FPL's 500-kilovolt (kV) Transmission Line. It then follows FPL's 500 kV Transmission Line southward and terminates at FPL's existing gas yard at the Martin Clean Energy Center Property. Deviation 1 is approximately 51 miles long, and if used as a deviation to the Proposed Route, would result in the overall length of the Proposed Route being 135 miles long.

Route Deviation 2

Deviation 2 turns off the Proposed Route approximately 10.5 miles south of Yeehaw Junction and heads southward along State Highway 441 until it reaches a point north of Okeechobee, Florida, where it then begins to follow the Gulfstream pipeline to the Termination Point at the Martin Clean Energy Center Property. Deviation 2 is approximately 42 miles long, and if used as a deviation to the Proposed Route, would result in the overall length of the Proposed Route being 129 miles long.

Route Deviation 3

Deviation 3 turns off the Proposed Route approximately 12.7 miles north of the Martin Clean Energy Center, then runs eastward for approximately 4.6 miles until it reaches the FPL's 500-kV Transmission Line. From here it follows FPL's 500-kV Transmission line until it reaches the Martin Clean Energy Center property. Deviation 3 is approximately 19 miles long, and if used as a deviation to the Proposed Route, would result in the overall length of the Proposed Route being approximately 131 miles long.

10.5.3 Findings and Selection of Proposed Pipeline Route

Impacts associated with these routes are shown in Table 10-2.

The Proposed Route is shorter than the major route alternatives and route deviations, and it crosses fewer miles of state lands, National Wetland Inventory (NWI) wetlands, and Wood Stork Core Foraging Area, than the two major route alternatives and route deviations (Table 10-2). In addition, the Proposed Route also crosses fewer miles of county lands compared to the two major route alternatives (it does cross the same amount of county land as the route deviations). Finally, the Proposed Route avoids crossing within 0.25 miles of any known Red-Cockaded Woodpecker habitat, and avoids sensitive receptors (e.g. it is only within 0.25 miles of one sensitive receptor, a school, compared to Major Route Alternatives Nos. 1 and 2, which are within 0.25 miles of 14 and 3 sensitive receptors, respectively).

The Proposed Route was developed to avoid the environmental resources discussed herein and it minimizes such impacts compared to other practicable route alternatives and route deviations available. The Proposed Route also fully meets the purpose of the project to add a new natural gas transmission pipeline to enhance the reliability to the existing pipeline system

servicing Florida; and satisfy the anchor shipper's (FPL) RFP requirement to create new pipeline infrastructure to allow for additional generation sites to be directly served with minimal need for additional facilities. The length of the Proposed Route is also shorter than the major route alternatives and route deviations, and as the Proposed Route crosses the fewest number of major roadways, this minimizes project cost, duration of construction, and construction impacts.

10.6 MINOR ROUTE VARIATIONS

Once the Proposed Route was determined in the initial siting study completed in July 2012, it was further refined in several areas, including:

- The avoidance of Lake Wales Ridge National Wildlife Refuge in Polk County by utilizing the western side of an existing transmission and natural gas pipeline right-of-way.
- At the intersection with State Road 60, it was determined that the FSC Project can be routed to the south side of State Road 60 in order to avoid Saddlebag Lake and the associated residential community.
- The routing of the corridor along the southern boundary of the Lake Wales Ridge State Forest. The initial routing within the State Forest was done in order to avoid higher quality forested habitat located within the privately owned lands along State Road 60 and utilize the agricultural lands within the State Forest. Subsequently, utilizing the southern boundary of the State Forest was done pursuant to feedback from the Florida Forest Service.
- The route was relocated at milepost (MP) 1.8 around the Providence development to avoid potential impacts.
- The route was altered to avoid existing and future development along State Route (SR) 60 in several areas and to avoid future development build outs in the area.
- Numerous other smaller expansions or narrowing of the corridor were made to avoid land use or environmental constraints or to accommodate certain landowner requests.

10.7 ABOVEGROUND FACILITY ALTERNATIVES

All aboveground facilities associated with the FSC Project will be co-located with other FSC Project or pipeline-related facilities. The disturbance associated with the FSC Project facilities will be the same for the aboveground facilities. Therefore, no alternative locations for the aboveground facilities were developed for evaluation. The only aboveground facility that may not be co-located with other FSC Project pipeline-related facilities for all occurrences would be blow down valves associated with main line valves (MLV) that occur in areas adjacent to electric transmission lines. The owners of these lines typically require that the blow down valves be placed in an area where the electric transmission lines would not be affected by the operation of the valves. Since the blow down valve is part of the MLV facility, the location of the blow down valve is relatively fixed, in that it must be located in close proximity to the MLV but outside the area where its operation could potentially affect the electric transmission line. Consequently, no alternative locations were evaluated.

10.8 REFERENCES

American Council for an Energy-Efficient Economy (ACEEE). 2003. Natural Gas Price Effects of Energy Efficiency and Renewable Energy Practices and Policies. Report Number E032.

Available online at http://www.ef.org/documents/Nat_Gas_ACEEE.pdf. Website accessed on December 20, 2011. <http://www.aceee.org/research-report/e032>

American Wind Energy Association. 2012. Wind Energy Basics. Available online at: http://archive.awea.org/faq/wwt_basics.html. Accessed January 5, 2012.

EIA. 2011b. U.S. Coal Supply and Demand: 2010 Review. Available online at: <http://205.254.135.7/coal/review/pdf/feature10.pdf>. Website accessed on January 3, 2012.

EIA. 2011c. Annual Energy Review 2010. Available online at: <http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf>, website accessed December 20, 2011.

Florida Gas Transmission Company. 2013. http://www.panhandleenergy.com/comp_fld.asp. Website Accessed on November 1, 2013.

Florida Public Service Commission (FPSC). Annual Report on Activities Pursuant to the Florida Energy Efficiency and Conservation Act. 2013. <http://www.floridapsc.com/publications/pdf/general/annualreports/2012.pdf>

Florida Public Service Commission (FPSC). Ten Year Site Plans for Florida's Electric Utilities. 2013. <http://www.psc.state.fl.us/publications/pdf/electricgas/TYSP2013.pdf> Accessed November 1, 2013.

Florida Reliability Coordinating Council, Inc. 2013 Regional Load and Resource Plan. (2013). http://www.psc.state.fl.us/utilities/electricgas/docs/FRCC_2013_Load_Resource_Plan.pdf.

Gulfstream Gas. 2013. <http://www.1line.gulfstreamgas.com/GulfStream/index.html>. Accessed October 31, 2013.

Solar by the Watt. 2009. Solar Energy Land Area Efficiency or How Many Acres per WM, KWP Per Acre. March, 9, 2009. Available online at: <http://solarbythewatt.com/2009/03/09/solar-energy-land-area-efficiency-or-how-much-acres-per-mw-kwp-per-acre/>, website accessed on January 4, 2012.

U.S. Department of Energy's (USDOE) Energy Information Administration (EIA) (2010).

United States Environmental Protection Agency. 2005. 2005 National Emissions Inventory Data & Documentation. Last updated on November 9, 2011. Available at: <http://www.epa.gov/ttn/chief/net/2005inventory.html>, website accessed on December 29, 2011.

United States Environmental Protection Agency. 2007. Natural Gas: Electricity from Natural Gas. Last updated December 28, 2007. Available at <http://www.epa.gov/cleanenergy/energy-and-you/affect/natural-gas.html>, website accessed on December 29, 2011.

TABLES

TABLE 10-2a
Comparison of Major Route Alternative No. 1 with the Proposed Route

Criteria	Major Route Alternative 1		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
Total Length	144.4	-	126.9	-	17.5
Existing Linear Facility Corridors					
Adjacent to Existing Utility Corridors	136.0	94.2	15.9	12.0	120.7
Adjacent to Existing Non-Utility Corridors (i.e., roads)	-	-	86.0	67.0	(86.0)
Total	136.0	94.2	101.9	79.0	34.1
State Owned Land Crossing					
Allapattah Flats	1.7	1.2	0.5	0.4	1.2
C-23/C-24 STA	1.0	0.7	-	-	1.0
Escape Ranch Conservation Easement	1.7	1.2	-	-	1.7
Fort Drum Marsh Conservation Area	6.2	4.3	-	-	6.2
Jane Green Creek Less-Than-Fee Easement Additions	0.5	0.4	-	-	0.5
Kissimmee Chain of Lakes	-	-	0.7	0.5	(0.7)
Kissimmee River	-	-	<0.1	-	(<0.1)
KICCO Wildlife Management Area	-	-	1.2	0.9	(1.2)
Kissimmee River Public Use Area	-	-	0.7	0.5	(0.7)
Lake Wales Ridge State Forest	-	-	4.6	3.6	(4.6)
Mills Ranch Conservation Easement	2.8	1.9	-	-	2.8
Tiger Lake Ranch Conservation Easement	-	-	0.6	0.5	(0.6)
Upper Lake Marion Creek Watershed	-	-	0.5	0.4	(0.5)
Upper Lakes Basin Watershed	-	-	0.7	0.5	(0.7)
Total	13.9	9.7	9.5	7.3	4.9
County and Municipal Owned Land Crossing					
North/Walk-in- Water Creek	-	-	0.1	0.1	(0.1)
Padgett Branch Conservation Easement	1.2	0.8	-	-	1.2
Shingle Creek Regional Park	0.5	0.4	-	-	0.5
Teague Hammock Preserve	0.5	0.3	-	-	0.5
Total	2.2	1.5	0.1	0.1	2.1
Land Use/Land Cover (FLUCCS Land Use/Land Cover)					
Agriculture, Barren Land, and Upland Non-Forested	60.5	44.9	91.5	72.1	(31.0)
Urban and Built-Up	4.1	3.4	7.9	6.2	(3.8)
Upland and Wetland Forested	13.8	9.5	19.6	15.5	(5.8)
Wetland Non-Forested	11.5	8.0	7.4	5.8	4.1
Transportation, Communication, and Utilities	53.0	36.7	0.3	0.2	52.7
Scenic Trails ⁽²⁾	0	-	1	-	(1)

TABLE 10-2a
Comparison of Major Route Alternative No. 1 with the Proposed Route

Criteria	Major Route Alternative 1		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
NWI Wetlands					
Forested	8.8	6.1	6.6	5.2	2.2
Non-Forested	10.4	7.2	5.0	4.0	5.4
Total	19.2	13.3	11.6	9.2	7.6
Biological Resources					
USFWS Designated Critical Habitat	0.0	0.0	0.0	0.0	0.0
Wood Stork Core Foraging Area	127.6	88.4	104.6	82.5	23.0
	Within 0.25 miles		Within 0.25 miles		Within 0.25 miles
Red-Cockaded Woodpecker Locations	3		0		3
Florida Scrub Jay Locations	0		4		(4)
Waterbodies					
	Number Crossed		Number Crossed		Number Crossed
Major Waterbodies	1		1		0
USGS NHD Streams	32		26		6
USGS NHD Canal/Ditch	281		94		187
USGS NHD Lake/Pond	26		10		16
USGS NHD Reservoir	0		0		0
USGS NHD Springs	0		0		0
SFWMD-Owned Canals	8		2		6
Wild and Scenic Rivers	0		0		0
Outstanding Florida Waters	0		0		0
Cultural Resources					
	Within 0.25 miles		Within 0.25 miles		Within 0.25 miles
NRHP Sites	0		0		0
Environmentally Regulated Sites					
	Within 0.25 miles		Within 0.25 miles		Within 0.25 miles
Brownfield Sites	1		0		1
FDEP Identified Contaminated Property	0		0		0
Sensitive Infrastructure					
	Within 0.25 miles		Within 0.25 miles		Within 0.25 miles
Schools	14		1		13
Hospitals	1		0		1
Churches	0		0		0
Total	15		1		14
Engineering Considerations					
	Number Crossed		Number Crossed		Number Crossed
Major Road Crossings	55		20		35

Notes:

*Numbers in parentheses in the "Difference in Impacts Column" mean the value of the data for the Route Alternative No. 1 was less than for the Preferred Route.

Preferred Route, Alternative Routes, and Route Deviations do not cross Federal Lands.

TABLE 10-2b
Comparison of Major Route Alternative No. 2 with the Proposed Route

Criteria	Major Route Alternative 2		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
Total Length	146.1	-	126.9	-	19.2
Existing Linear Facility Corridors					
Adjacent to Existing Utility Corridors	131.4	89.9	15.9	12.0	115.5
Adjacent to Existing Non-Utility Corridors (i.e., roads)	0.0	0.0	86.0	67.0	(86.0)
Total	131.4	89.9	101.9	79.0	29.5
State Owned Land Crossing					
Allapattah Flats	-	-	0.5	0.4	(0.5)
Lake Okeechobee Water Retention Phosphorus Removal Project	0.9	0.6	-	-	0.9
Lake Wales Ridge Wildlife and Environmental Area	0.3	0.2	-	-	0.3
Lakeside Ranch STA	0.9	0.6	-	-	0.9
Kissimmee Chain of Lakes			0.7	0.5	(0.7)
Kissimmee River	0.1	0.07	<0.1	-	0.1
KICCO Wildlife Management Area	-	-	1.2	0.9	(1.2)
Kissimmee River Public Use Area	3.4	2.3	0.7	0.5	2.7
Lake Wales Ridge State Forest	-	-	4.6	3.6	(4.6)
Tiger Lake Ranch Conservation Easement	-	-	0.6	0.5	(0.6)
Upper Lake Marion Creek Watershed	0.5	0.3	0.5	0.4	0.0
Upper Lakes Basin Watershed	1.3	0.9	0.7	0.5	0.6
Total	7.4	5.0	9.5	7.3	(2.1)
County and Municipal Owned Land Crossing					
North/Walk-in-Water Creek			0.1	0.1	(0.1)
Crooked Lake West – Britt Tract	0.3	0.2	-	-	0.3
Crooked Lake West – Stuart Tract	1.3	0.9	-	-	1.3
Total	1.6	1.1	0.1	0.1	1.4
Land Use/Land Cover (FLUCCS Land Use/Land Cover)					
Agriculture, Barren Land, and Upland Non-Forested	100.5	68.8	91.5	72.1	9.0
Urban and Built-Up	12.5	8.6	7.9	6.2	4.6
Upland and Wetland Forested	18.7	12.8	19.6	15.5	(0.9)
Wetland Non-Forested	9.4	6.4	7.4	5.8	2.0

TABLE 10-2b
Comparison of Major Route Alternative No. 2 with the Proposed Route

Criteria	Major Route Alternative 2		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
Transportation, Communication, and Utilities	1.9	1.3	0.3	0.2	1.6
Scenic Trails ⁽²⁾	2	-	2	-	1
NWI Wetlands					
Forested	6.0	4.1	6.6	5.2	(0.6)
Non-Forested	7.2	4.9	5.0	4.0	2.2
Total	13.3	9.0	11.6	9.2	1.7
Biological Resources					
USFWS Designated Critical Habitat	0.0	0.0	0.0	0.0	0.0
Wood Stork Core Foraging Area	117.3	80.3	104.7	82.5	12.6
	Within 0.25 miles		Within 0.25 miles		Within 0.25 miles
Red-Cockaded Woodpecker Locations	0		0		0
Florida Scrub Jay Locations	10		4		6
Waterbodies	Number Crossed		Number Crossed		Number Crossed
Major Waterbodies	0		1		(1)
USGS NHD Streams	38		26		12
USGS NHD Canal/Ditch	187		94		93
USGS NHD Lake/Pond	18		10		8
USGS NHD Reservoir	5		0		5
USGS NHD Springs	0		0		0
SFWMD-Owned Canals	11		2		9
Wild and Scenic Rivers	0		0		0
Outstanding Florida Waters	0		0		0
Cultural Resources	Within 0.25 miles		Within 0.25 miles		Within 0.25 miles
NRHP Sites	1		0		1
Environmentally Regulated Sites	Within 0.25 miles		Within 0.25 miles		Within 0.25 miles
	Within 0.25 miles		Within 0.25 miles		
Brownfield Sites	0		0		0
FDEP Identified Contaminated Property	0		0		0
Sensitive Infrastructure	Within 0.25 miles		Within 0.25 miles		Within 0.25 miles
Schools	3		1		2
Hospitals	0		0		0
Churches	0		0		0
Total	3		1		2
Engineering Considerations	Number Crossed		Number Crossed		Number Crossed
Major Road Crossings	29		20		9

Notes:

*Numbers in parentheses in the "Difference in Impacts Column" mean the value of the data for Route Alternative No. 2 was less than for the Preferred Route.

Preferred Route, Alternative Routes, and Route Deviations do not cross Federal Lands.

TABLE 10-2c
Comparison of Major Route Deviation No. 1 with the Proposed Route

Criteria	Route Deviation 1		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
Total Length	135.4	-	126.9	-	8.5
Existing Linear Facility Corridors					
Adjacent to Existing Utility Corridors	61.2	45.1	15.9	12.0	45.3
Adjacent to Existing Non-Utility Corridors (i.e., roads)	43.5	32.1	86.0	67.0	(42.5)
Total	104.7	-	101.9	79.0	2.8
State Owned Land Crossing					
Allapattah Flats	1.7	1.3	0.5	0.4	1.2
C-23/C-24 Stormwater Treatment Area	1.0	0.7	-	-	1.0
Fort Drum Marsh Conservation Area	5.5	4.1	-	-	5.5
Lakeside Ranch STA	-	-	-	-	-
Kissimmee Chain of Lakes	0.6	0.4	0.7	0.5	0.1
Kissimmee River	-	-	<0.1	-	(<0.1)
KICCO Wildlife Management Area	1.2	0.9	1.2	0.9	0.0
Kissimmee River Public Use Area	0.7	0.5	0.7	0.5	0.0
Lake Wales Ridge State Forest	4.6	3.4	4.6	3.6	0.0
Tiger Lake Ranch Conservation Easement	0.6	0.4	0.6	0.5	0.0
Upper Lake Marion Creek Watershed	0.5	0.4	0.5	0.4	0.0
Upper Lakes Basin Watershed	0.7	0.5	0.7	0.5	0.0
Total	17.1	12.6	9.5	7.3	7.6
County and Municipal Owned Land Crossing					
North/Walk-in-Water Creek	0.1	0.1	0.1	0.1	0.0
Teague Hammock Preserve	0.5	1.4	-	-	0.5
Total	0.6	1.5	0.1	0.1	0.5
Land Use/Land Cover (FLUCCS Land Use/Land Cover)					
Agriculture, Barren Land, and Upland Non-Forested	84.6	62.5	91.5	72.1	(6.9)
Urban and Built-Up	6.2	4.6	7.9	6.2	(1.4)
Upland and Wetland Forested	16.5	12.2	19.6	15.5	(3.1)
Wetland Non-Forested	10.9	8.1	7.4	5.8	3.5
Transportation, Communication, and Utilities	16.4	12.1	0.3	0.2	16.1
Scenic Trails ⁽²⁾	1	-	1	-	0

TABLE 10-2c
Comparison of Major Route Deviation No. 1 with the Proposed Route

Criteria	Route Deviation 1		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
NWI Wetlands					
Forested	6.1	4.5	6.6	5.2	(0.5)
Non-Forested	6.3	4.7	5.0	4.0	1.3
Total	12.4	9.2	11.6	9.2	0.8
Biological Resources					
USFWS Designated Critical Habitat	0.0	0.0	0.0	0.0	0.0
Wood Stork Core Foraging Area	113.1	83.5	104.7	82.5	8.4
	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Red-Cockaded Woodpecker Locations	0		0		0
Florida Scrub Jay Locations	4		4		0
Waterbodies	Number Crossed		Number Crossed		Number Crossed
Major Waterbodies	1		1		0
USGS NHD Streams	19		26		(7)
USGS NHD Canal/Ditch	250		94		156
USGS NHD Lake/Pond	14		10		4
USGS NHD Reservoir	0		0		0
USGS NHD Springs	0		0		0
SFWMD-Owned Canals	6		2		4
Wild and Scenic Rivers	0		0		0
Outstanding Florida Waters	0		0		0
Cultural Resources	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
NRHP Sites	0		0		0
Environmentally Regulated Sites	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Brownfield Sites	0		0		0
FDEP Identified Contaminated Property	0		0		0
Sensitive Infrastructure	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Schools	1		1		0
Hospitals	0		0		0
Churches	0		0		0
Total	1		1		0
Engineering Considerations	Number Crossed		Number Crossed		Number Crossed
Major Road Crossings	27		20		7

Notes:

*Numbers in parentheses in the "Difference in Impacts Column" mean the value of the data for Route Deviation No. 1 was less than for the Preferred Route.

Preferred Route, Alternative Routes, and Route Deviations do not cross Federal Lands.

TABLE 10-2d
Comparison of Major Route Deviation No. 2 with the Proposed Route

Criteria	Route Deviation 2		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
Total Length	129.4	-	126.9	-	2.5
Existing Linear Facility Corridors					
Adjacent to Existing Utility Corridors	47.1	36.4	15.9	12.0	31.2
Adjacent to Existing Non-Utility Corridors (i.e., roads)	61.1	47.2	86.0	67.0	(24.9)
Total	108.2	83.6	101.9	79.0	6.3
State Owned Land Crossing					
Allapattah Flats	-	-	0.5	0.4	(0.5)
Lakeside Ranch Station	0.1	0.1	-	-	0.1
Kissimmee Chain of Lakes	0.6	0.5	0.7	0.5	(0.1)
Kissimmee River	-	-	<0.1	-	(<0.1)
KICCO Wildlife Management Area	1.2	0.9	1.2	0.9	0.0
Kissimmee River Public Use Area	0.7	0.5	0.7	0.5	0.0
Lake Wales Ridge State Forest	4.6	3.6	4.6	3.6	0.0
Lake Okeechobee Water Retention Phosphorus Removal Project	0.9	0.7	-	-	0.9
Tiger Lake Ranch Conservation Easement	0.6	0.5	0.6	0.5	0.0
Upper Lake Marion Creek Watershed	0.5	0.4	0.5	0.4	0.0
Upper Lakes Basin Watershed	0.7	0.5	0.7	0.5	0.0
Total	9.9	7.7	9.5	7.3	0.4
County and Municipal Owned Land Crossing					
North/Walk-in-Water Creek	0.1	0.1	0.1	0.1	0.0
Total	0.1	0.1	0.1	0.1	0.0
Land Use/Land Cover (FLUCCS Land Use/Land Cover)					
Agriculture, Barren Land, and Upland Non-Forested	89.6	69.2	91.5	72.1	(1.9)
Urban and Built-Up	7.7	6.0	7.9	6.2	(0.2)
Upland and Wetland Forested	20.3	15.7	19.6	15.5	0.7
Wetland Non-Forested	8.5	6.7	7.4	5.8	1.1
Transportation, Communication, and Utilities	0.5	0.4	0.3	0.2	0.2
Scenic Trails ⁽²⁾	1	-	1	-	0
NWI Wetlands					
Forested	6.4	4.9	6.6	5.2	(0.2)
Non-Forested	5.7	4.4	5.0	4.0	0.7
Total	12.1	9.3	11.6	9.2	0.5

TABLE 10-2d
Comparison of Major Route Deviation No. 2 with the Proposed Route

Criteria	Route Deviation 2		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
Biological Resources					
USFWS Designated Critical Habitat	0.0	0.0	0.0	0.0	0.0
Wood Stork Core Foraging Area	107.2	82.8	104.7	82.5	2.5
	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Red-Cockaded Woodpecker Locations	0		0		0
Florida Scrub Jay Locations	4		4		0
Waterbodies	Number Crossed		Number Crossed		Number Crossed
Major Waterbodies	1		1		0
USGS NHD Streams	25		26		(1)
USGS NHD Canal / Ditch	117		94		23
USGS NHD Lake/Pond	13		10		3
USGS NHD Reservoir	5		0		5
USGS NHD Springs	0		0		0
SFWMD-Owned Canals	8		2		6
Wild and Scenic Rivers	0		0		0
Outstanding Florida Waters	0		0		0
Cultural Resources	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
NRHP Sites	0		0		0
Environmentally Regulated Sites	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Brownfield Sites	0		0		0
FDEP Identified Contaminated Property	0		0		0
Sensitive Infrastructure	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Schools	1		1		0
Hospitals	0		0		0
Churches	0		0		0
Total	1		1		0
Engineering Considerations	Number Crossed		Number Crossed		Number Crossed
Major Road Crossings	20		20		0

Notes:

*Numbers in parentheses in the "Difference in Impacts Column" mean the value of the data for Route Deviation No. 2 was less than for the Preferred Route.

Preferred Route, Alternative Routes, and Route Deviations do not cross Federal Lands.

TABLE 10-2e
Comparison of Route Deviation No. 3 with the Proposed Route

Criteria	Route Deviation 3		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
Total Length	131.3	-	126.9	-	4.4
Existing Linear Facility Corridors					
Adjacent to Existing Utility Corridors	37.9	28.9	15.9	12.0	22.0
Adjacent to Existing Non-Utility Corridors (i.e., roads)	46.6	35.5	86.0	67.0	(39.4)
Total	84.5	64.4	101.9	79.0	(17.4)
State Owned Land Crossing					
Allapattah Flats	-	-	0.5	0.4	(0.5)
Lakeside Ranch Station	0.1	0.1	-	-	0.1
Kissimmee Chain of Lakes	0.6	0.5	0.7	0.5	(0.1)
Kissimmee River	-	-	<0.1	-	(<0.1)
KICCO Wildlife Management Area	1.2	0.9	1.2	0.9	0.0
Kissimmee River Public Use Area	0.7	0.5	0.7	0.5	0.0
Lake Wales Ridge State Forest	4.6	3.5	4.6	3.6	0.0
Lake Okeechobee Water Retention Phosphorus Removal Project	0.9	0.7	-	-	0.9
Tiger Lake Ranch Conservation Easement	0.6	0.5	0.6	0.5	0.0
Upper Lake Marion Creek Watershed	0.5	0.4	0.5	0.4	0.0
Upper Lakes Basin Watershed	0.7	0.5	0.7	0.5	0.0
Total	9.9	7.6	9.5	7.3	0.4
County and Municipal Owned Land Crossing					
North/Walk-in-Water Creek	0.1	0.1	0.1	0.1	0.0
Total	0.1	0.1	0.1	0.1	0.0
Land Use/Land Cover (FLUCCS Land Use/Land Cover)					
Agriculture, Barren Land, and Upland Non-Forested	92.5	70.4	91.5	72.1	1.0
Urban and Built-Up	7.5	5.7	7.9	6.2	(0.4)
Upland and Wetland Forested	18.8	14.3	19.6	15.5	(1.2)
Wetland Non-Forested	8.0	6.1	7.4	5.8	0.6
Transportation, Communication, and Utilities	4.1	3.1	0.3	0.2	3.8
Scenic Trails ⁽²⁾	1	-	1	-	0
NWI Wetlands					
Forested	6.6	5.0	6.6	5.2	0.0
Non-Forested	5.3	4.0	5.0	4.0	0.3
Total	11.9	9.0	11.6	9.2	0.3

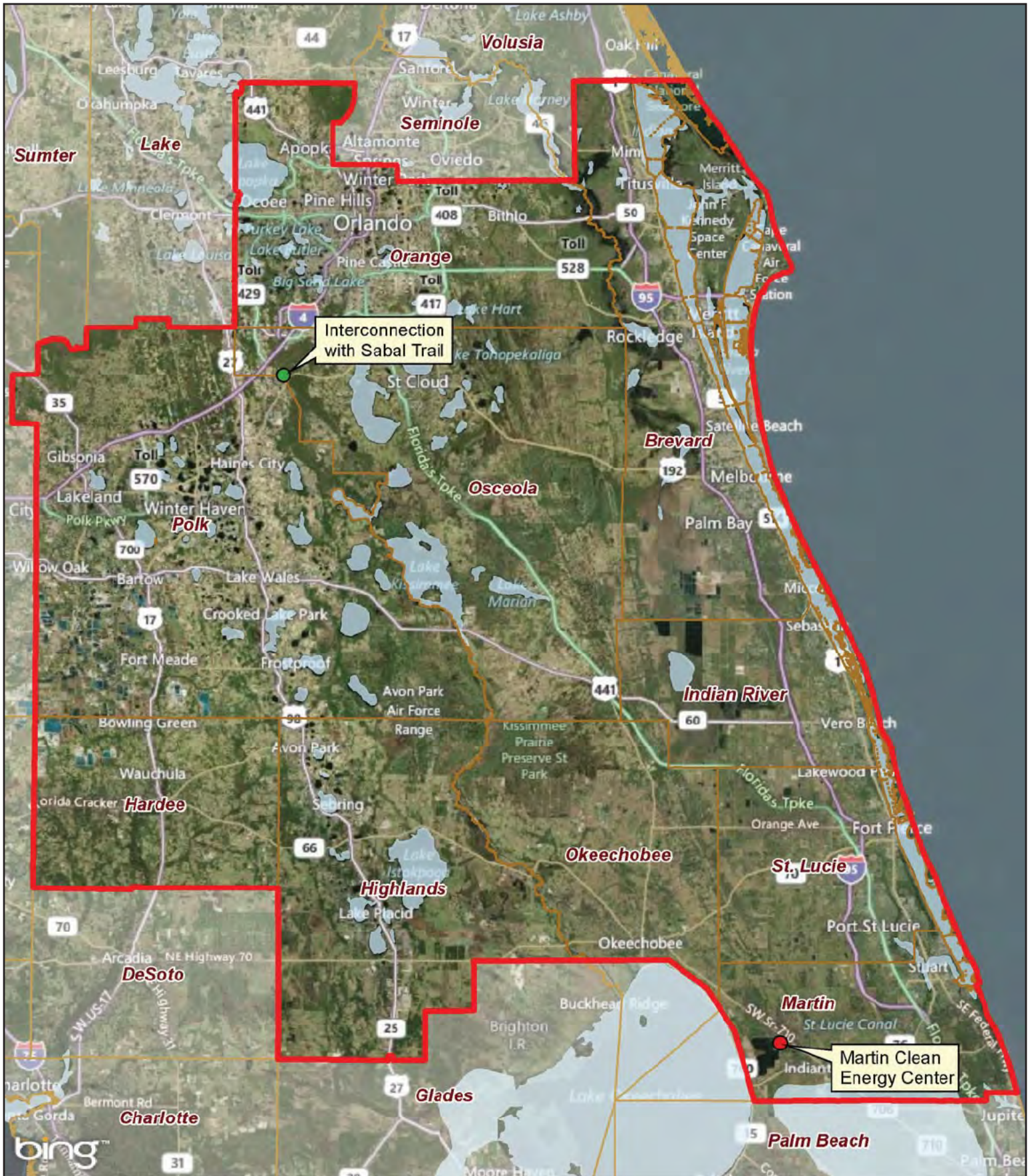
TABLE 10-2e
Comparison of Route Deviation No. 3 with the Proposed Route

Criteria	Route Deviation 3		Proposed Route		Difference in Impacts*
	Length (Miles)	Percent	Length (Miles)	Percent	Length (Miles)
Biological Resources					
USFWS Designated Critical Habitat	0.0	0.0	0.0	0.0	0.0
Wood Stork Core Foraging Area	109.0	83.0	104.7	82.5	4.3
	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Red-Cockaded Woodpecker Locations	0		0		0
Florida Scrub Jay Locations	4		4		0
Waterbodies	Number Crossed		Number Crossed		Number Crossed
Major Waterbodies	1		1		0
USGS NHD Streams	22		26		(4)
USGS NHD Canal/Ditch	111		94		17
USGS NHD Lake/Pond	10		10		0
USGS NHD Reservoir	0		0		0
USGS NHD Springs	0		0		0
SFWMD-Owned Canals	4		2		2
Wild and Scenic Rivers	0		0		0
Outstanding Florida Waters	0		0		0
Cultural Resources	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
NRHP Sites	0		0		0
Environmentally Regulated Sites	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Brownfield Sites	0		0		0
FDEP Identified Contaminated Property	0		0		0
Sensitive Infrastructure	Within 0.25 Miles		Within 0.25 Miles		Within 0.25 Miles
Schools	1		1		0
Hospitals	0		0		0
Churches	0		0		0
Total	1		1		0
Engineering Considerations	Number Crossed		Number Crossed		Number Crossed
Major Road Crossings	22		20		0

Notes:

*Numbers in parentheses in the "Difference in Impacts Column" mean the value of the data for Route Deviation No. 3 was less than for the Preferred Route.

Preferred Route, Alternative Routes, and Route Deviations do not cross Federal Lands.



- Legend**
- Interconnection with Sabal Trail
 - Martin Clean Energy Center
 - Study Area

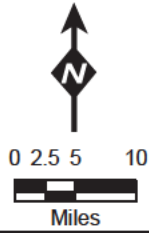
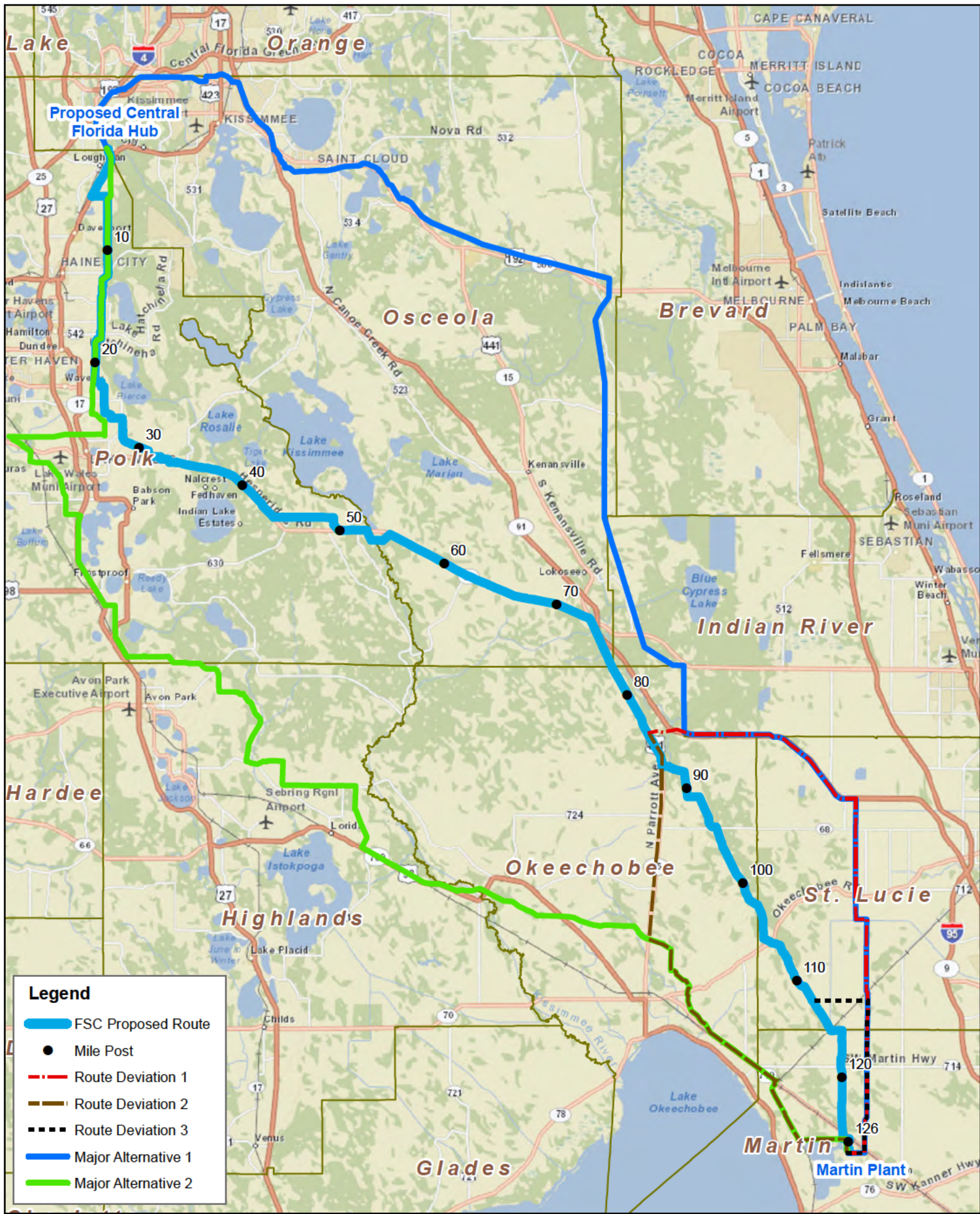


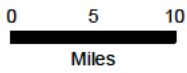
Figure 10-1
Study Area



Legend

- FSC Proposed Route
- Mile Post
- - - Route Deviation 1
- - - Route Deviation 2
- - - Route Deviation 3
- Major Alternative 1
- Major Alternative 2

Date: 11/20/2013



Major Route Alternatives and Deviations

