STRATEGIC INVESTMENT TOOL

State of Florida Department of Transportation
Systems Planning Office

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Chapter 1 – SIS Overview and SIT Process

With the update of the Florida Transportation Plan in 2000, the need for a new system encompassing all modes was recognized. In response to this need, Florida's Strategic Intermodal System (SIS) was established in 2003 by Florida's Legislature and Governor. The SIS is composed of a statewide network of high priority transportation facilities and services including the State's largest and most significant commercial service airports, spaceport, deepwater seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways and highways. The SIS is intended to enhance Florida's economic competitiveness by focusing limited state resources on those transportation facilities that are critical to Florida's economy and quality of life.

By 2015, the Florida Department of Transportation's (FDOT's) state investment policy will allocate 75 percent of state discretionary transportation capacity funding to the SIS. This is an increase as compared to the approximately 62 percent allocated to SIS facilities prior to designation of the SIS. All designated SIS and emerging SIS facilities, including those owned by local government, independent authorities and private sector partners are eligible to receive state funding. This discretionary funding is expected to total about $2 billion for SIS and emerging SIS improvement projects including $100 million per year targeted specifically for the SIS.

In Section 339.61, Florida Statutes, the Legislature describes its intent in establishing the SIS, by stating:

> *… the Legislature declares that the designation of a strategic intermodal system, composed of facilities and services of statewide and interregional significance, will efficiently serve the mobility needs of Florida's citizens, businesses, and visitors and will help Florida become a worldwide economic leader, enhance economic prosperity and competitiveness, enrich quality of life, and reflect responsible environmental stewardship. To that end, it is the intent of the Legislature that the Strategic Intermodal System consist of transportation facilities and services that meet a strategic and essential state interest and that limited resources available for the implementation of statewide and interregional transportation priorities be focused on that system."*

On January 20, 2005, the Secretary of Transportation for FDOT adopted *Florida's Strategic Intermodal System Plan* and a supporting document, *Guidance for Implementing the SIS Strategic Plan.* The Plan designated SIS facilities, preliminary investment needs, a process for setting priorities and a finance strategy. The Guidance documents what needs to be accomplished to successfully and fully implement Florida's SIS. Both are available from FDOT or on the web at www.dot.state.fl.us/planning/sis .

The *SIS Strategic Plan* and the *Guidance* document both required FDOT to develop a project prioritization process to guide investment decisions. That process is to be driven by policy and supported by data. To this end, FDOT developed the SIS Investment Tool.

Purpose

This document explains the FDOT Strategic Investment Tool (SIT) and how it is used as one of the tools in the project selection process. The SIT calculates and reports performance measures relating to each of the five SIS goals and prioritizes each specific capacity improvement project competing for the dedicated, discretionary transportation capacity funds. It provides an overview of the applicable SIS financial policies, procedures, protocols and prioritization measures that will be applied to each modal project to determine their eligibility and priority.

It is the intent of FDOT that the SIT and the related process for determining project eligibility and project priorities be transparent so that all stakeholders can understand how and why these priorities are recommended. Partners and stakeholders will have an opportunity to participate in the process by providing additional information and data regarding investment needs and impacts, adopting policies and resolutions demonstrating local support for the project, or contributing funding to a project.

SIS Development

The SIS was developed in three phases:

Phase 1: Designation of System Components - In February 2002, a 41-member Steering Committee was formed to develop the policy framework for the SIS and determine which transportation facilities and services should comprise the SIS.

Phase 2: Strategic Plan Development - On January 20, 2005, the Secretary of Transportation for FDOT adopted *Florida's Strategic Intermodal System Plan*. The Plan was developed pursuant to Section 339.64, Florida Statutes, and includes a map of SIS facilities, an assessment of investment needs for maintaining and improving these facilities, a process for setting priorities among potential improvements to the system, and a finance plan for future investment in the SIS, including both 10- and 20-year cost-feasible components. The Plan is published under separate cover.

Phase 3: Strategic Plan Enhancement and Implementation - This phase began in early 2005, and is being led by FDOT in partnership with the Florida Transportation Commission, the SITAC, the Metropolitan Planning Organization Advisory Council and other statewide, regional and local partners. The objective of Phase 3 is to expand and refine the SIS Strategic Plan, including needs assessment, project identification and priority-setting activities as necessary to develop a comprehensive 10- and 20-year cost-feasible plan for the SIS, as mandated by the Legislature.

SIS Goals

FDOT and its partners have developed goals and policy guidance that reflect and support the goals of the Florida Transportation Plan and other federal, state and local efforts to implement multimodal transportation planning processes. The SIS Strategic Plan includes five goals:

Goal 1: A safer and more secure transportation system for residents, businesses and visitors - The first goal of the SIS reflects FDOT's highest priority, safety. Recognizing today's global environment, this goal also explicitly acknowledges the importance of enhancing the security of the transportation[1] system for both passengers and freight.[2]

Goal 2: Effective preservation and management of Florida's transportation facilities and services - The second SIS goal is consistent with FDOT's established commitment to preserve and efficiently manage the State Highway System before expanding the system, so that it protects the public's investment for the future. FDOT will encourage other SIS facility owners and operators to preserve existing infrastructure before considering new capacity as well. The goal applies to preservation of infrastructure as well as preservation of strategic interregional, interstate and international transportation services.

Goal 3: Increased mobility for people and for freight and efficient operations of Florida's transportation system - The third goal emphasizes improvements in the mobility of passenger and freight trips on Florida's transportation system from beginning to end. The quality of travel can be improved by:

- Ensuring smooth and efficient transfers between modes of transportation;
- Relieving bottlenecks and congestion that cause delays;
- Increasing the reliability of travel time;
- Increasing the number of high-speed, high-capacity transportation options available for people and freight trips; and
- Increasing the efficiency of SIS facilities and services using appropriate technologies and operational strategies.

Goal 4: Enhanced economic competitiveness and economic diversification - The fourth goal of the SIS will support implementation of Florida's Strategic Plan for Economic Development by enabling interregional, interstate and international transportation that:

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[1] For more information regarding the access from the SIS to military installations, refer to the technical memorandum, *Access from the Strategic Intermodal System to Military Bases*, available on the SIS website at: http://www.dot.state.fl.us/planning/sis/resources/baseaccess_final.pdf.

[2] For more information regarding the relationship between the SIS and emergency evacuation networks, refer to the technical memorandum, *Access from the Strategic Intermodal System to Emergency Evacuation Routes*, available on the SIS website at: http://www.dot.state.fl.us/planning/sis/resources/evacrouteaccess_final.pdf.

- Helps increase the efficiency and competitiveness of Florida's existing businesses;
- Assists in the diversification of the economy towards high-wage jobs and promotes growth in key targeted industries;
- Supports development of economic clusters and activity centers of statewide significance;
- Facilitates commerce of goods, services and visitors to existing and new domestic and international markets; and
- Expands economic opportunities in Rural Areas of Critical Economic Concern.

Goal 5: Enriched quality of life and responsible environmental stewardship - The fifth and final goal relates to initiatives to support quality of life goals and minimize the impacts of the transportation system on the environment. FDOT is committed to working with other state agencies and its local and regional partners to ensure that the transportation system treads lightly on the built and natural environment.

SIS Funding Process Overview

The process for determining which SIS investments will be funded by FDOT and its partners can be broken into three stages.

1. FDOT will work with its partners to determine investment ***needs*** based on the performance of the transportation system relative to the goals and objectives of the SIS. The resulting product will be a long-term SIS Unfunded Needs Plan that identifies all future needs without regard to available funding.

2. FDOT and partners will gather detailed information about each proposed investment to help determine which should be the highest ***priorities*** for the limited funding that is likely to be available. One example of this process is that the resulting project priorities will comprise the *SIS Cost Feasible Plan* and will be constrained by available forecasts of SIS funding from FDOT and its partners.

3. From the prioritized list of projects, FDOT will select ***projects*** for funding. FDOT will encourage the financial participation of partners in projects to leverage state resources and thereby raise the priority of individual projects.

SIT is One of the Tools for Determining Project Priorities

The Strategic Investment Tool (SIT) was developed to help determine the ***priorities*** as discussed above in Step 2 of the "SIS Funding Process." The SIT is a unique methodology for determining project priority and is ***applicable only*** to evaluating and setting priorities ***for highway capacity expansion projects***. It has been developed for the

Strategic Intermodal System (SIS) by the Department and a Modal Outreach Team made up of various transportation experts. The methodology incorporates project priority criteria that are currently used by operators of Florida's highway system.

The SIT includes five categories of prioritization criteria, each corresponding to the five SIS goals. Priorities will also be guided by the SIS Strategic Plan goals, objectives, and other high-level guidance for setting priorities and selecting projects from identified SIS and Emerging SIS needs.

SIT Prioritization Process

The SIT prioritization process, as described by this document, is a formal, transparent, multimodal process that is driven by policy objectives and supported by data. FDOT has established project priorities from a statewide perspective, with an emphasis on interregional, interstate and international travel. The source for projects to be evaluated using the SIT is the *Long-term SIS Needs Plan.* The product of the prioritization process will be included as part of the SIS *Cost Feasible Plan*, which will balance the estimated cost of projects to reasonable estimates of future funding for the SIS from FDOT and its partners.

SIT Eligible Projects

Projects currently eligible to be evaluated by the SIT include all highway capacity projects and connector projects currently eligible for SIS funding. Highway capacity and connector projects that are to be evaluated and prioritized through the SIT are defined as those projects that provide additional travel lanes, additional throughput for passenger trips, or operational improvements that will provide for the accommodation of additional vehicles. A capacity project does NOT include projects such as: routine highway maintenance or repair, replacement or repair of rolling stock, basic maintenance facilities such as garages, operating expenses, fare subsidies, and other routine expenses related to existing or expanded service.

Highway capacity improvements to SIS/Emerging SIS corridors and connectors will be eligible for SIS funding. State funding will be available for projects that streamline movement of interregional, interstate, and international passengers and goods and provide substantial public benefit, such as ground transportation and terminal connections between the hubs and the SIS connectors.

Changes to Scoring Process and Public Comment

New measures and changes to any prioritization measures, how they are calculated or measured or the statistical breaks, will be considered throughout the year. Changes to existing or new criteria will be publicized. Written comments on new measures or changes to existing measures will be accepted and considered.

Project Selection for SIS Funding

The *SIS Cost Feasible Plan* will be one of the primary sources of SIS projects that are selected for the work program. SIS projects will be selected for funding based on:

- The extent to which the project meets SIS goals and objectives;
- The project's cost and availability of partner financial contributions;
- The "readiness" of the project (e.g., partners have agreed for the project to advance to the next phase of the project planning and delivery process);
- A balance of quick fix, operational improvements and longer-term capacity investments; and
- A reasonable distribution of investments between SIS and Emerging SIS facilities and among regions of the state.

Public-Private Partnerships

FDOT owns and operates the State Highway System, which includes the vast majority of SIS highways, but does not own or operate any of the other facilities that make up the SIS. A large and diverse group of stakeholders is involved in planning and funding transportation improvements on SIS facilities. As SIS implementation continues, FDOT must strengthen existing relationships and form new partnerships with organizations that traditionally have not had a large role in planning improvements to the transportation system. These partnerships will offer new and enhanced opportunities to coordinate transportation planning and jointly fund transportation improvement projects.

Chapter 2 – SIT Overview and Components

The SIT is intended to be used as one of the tools in the project selection process. The tool is needed to help partners gauge their projects' ability to address SIS goals and to help the Department select and prioritize those projects that meet these goals. The process for determining SIT scores is intended to be transparent, so that stakeholders can understand how and why these projects receive the scores they do. These scores are one of the tools intended to help in the project selection process. Partners and stakeholders continue to have the opportunity to influence the process by providing additional information and data regarding investment needs and impacts, adopting policies and resolutions demonstrating local support for the project, and contributing local funding to the project.

SIT Components

The SIT includes three main components: System Viewer, Analyzer, and Reporter. Each component was developed to provide specific functions and operate through a web interface. The web interface gives the FDOT Central Office the ability to keep data and information in the SIT up-to-date and permits FDOT staff located throughout the State access to the most recent updates.

System Viewer

- Provides the user the ability to observe and identify background data on all SIS highway segments statewide.
- Provides the opportunity to view SIS projects included in the existing Work Program, 2nd Five-Year Plan, Long Term Plan, and Unfunded Needs Plan.
- Includes the SIT Document Library, which allows users to view and download historical studies and reports for SIS highways.

Analyzer

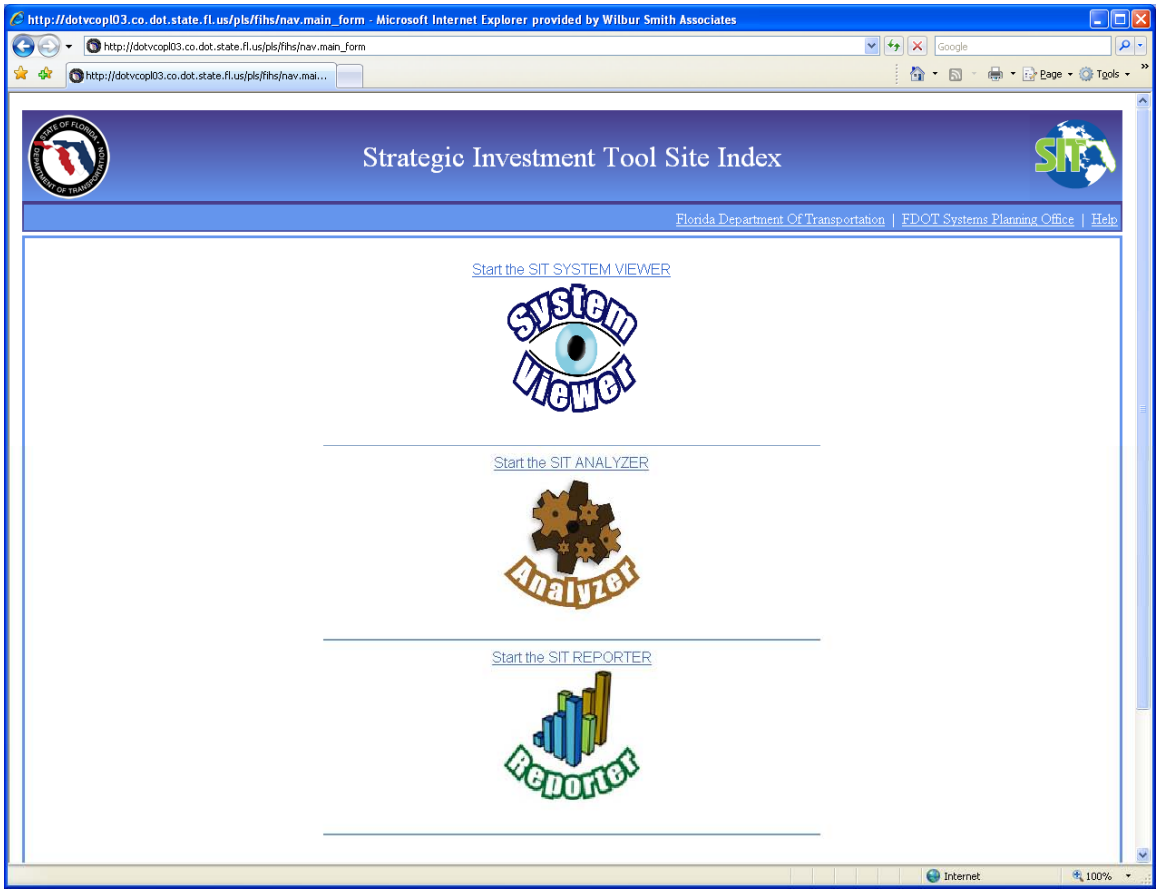
- 24 different measures are used to evaluate and score projects with respect to the five SIS goals.
- The Analyzer calculates scores for each project by both individual measures and overall SIS goals.
- Each measure was evaluated to ensure that it was linked to SIS goals, is accountable, clear, logical, unambiguous, based on available data, and its calculation can be duplicated.

Reporter

- Provides the user with Analyzer results displayed in various tabular formats for each scenario or grouping of proposed projects.
- Measure Mapper tool provides the user a graphical interface to map and view specific results of the Analyzer.
- Allows user to view various project grouping scenarios and change the SIS goal weighting factors instantly.

SIT Access

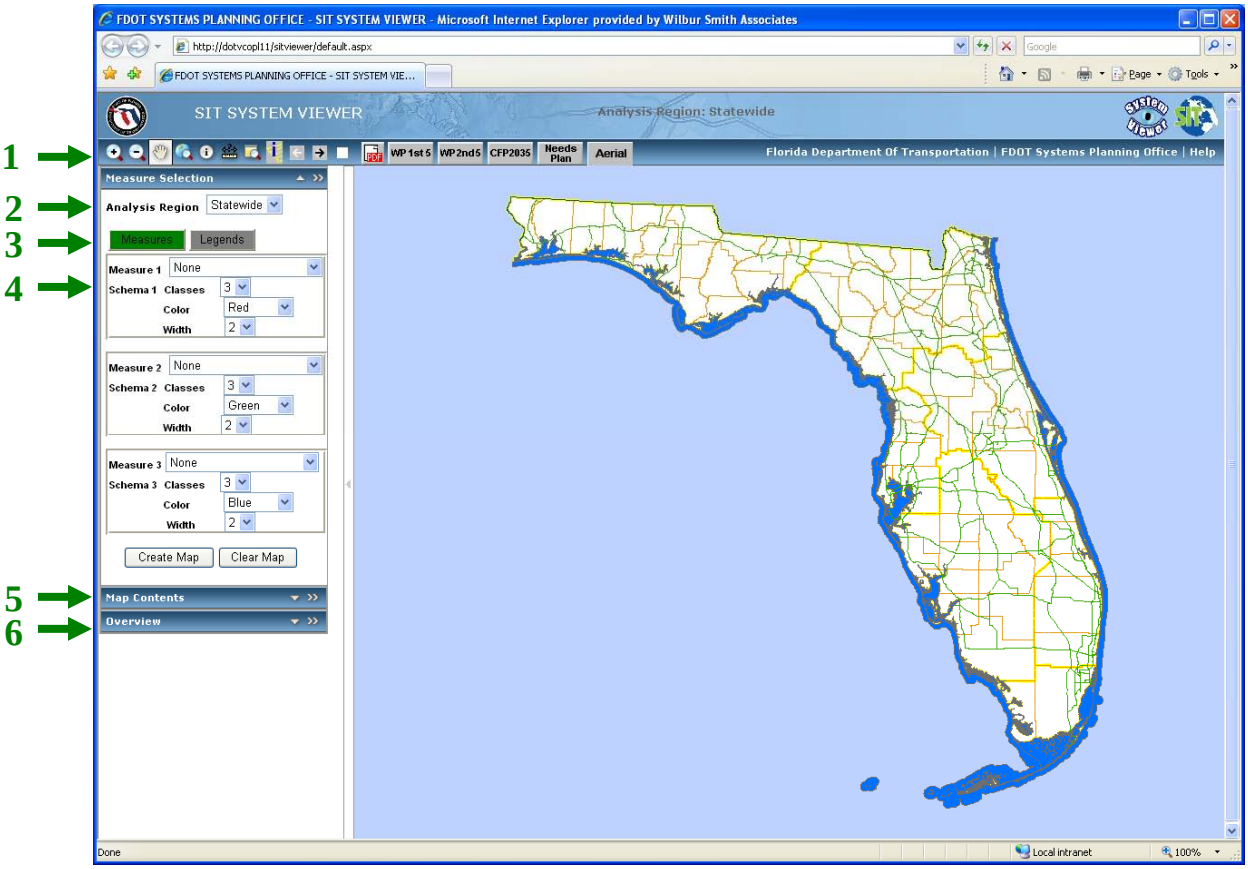
The SIT is housed at FDOT Central Office within the Systems Planning Office in Tallahassee. Users can access the SIT through the SIS Portal located on the FDOT infonet central office planning page. Users must have access to the FDOT network in order to use SIT. Once a user is logged into the SIS Portal and selects SIT, the user will see the following screen:



This screen provides access to all three of the SIT components.

System Viewer

The System Viewer is an ArcServer GIS web-based tool that provides users the ability to view data on any SIS facility statewide. The main screen provides access to all of the various functions of the System Viewer through a series of toolbars and drop down menus.



The major functions available to users within the System Viewer include the following:

1 – Main Toolbar – The main toolbar in the System Viewer provides access to many standard GIS functions, such as zoom in/out, pan, view full extent, measure, magnify, forward, and backward. In addition, the main toolbar provides access to additional functions as described below.

> **Identify Button –** Provides access to detailed system data for a particular SIS roadway segment, such as roadway segment number, AADT, crash ratio, and truck percentage. Also identifies future improvement projects planned for the selected SIS roadway segment from the Work Program, 2nd Five Year Plan, Long-Range Plan, and Unfunded Needs Plan.

SIT Library Button – Provides access to available studies and reports in pdf format on a selected segment of a SIS facility. Click on the SIT Library button and then select the segment of a SIS facility where you want to view available documents. You can then either download a report or view it on the screen.

PDF Button – Creates a pdf file of the current map view. The user has the option of opening the pdf file or saving it on their computer. The map is formatted to use the measure color and weighting scheme selected by the user. A standardized title block and legend will be included in the created pdf file.

WP 1st 5 **WP 1st 5 Button** – Displays projects included in the First Five-Year Plan component of the Cost Feasible Plan. These projects are pulled from the latest adopted Work Program.

WP 2nd 5 **WP 2nd 5 Button** – Displays projects included in the Second Five-Year Plan component of the Cost Feasible Plan.

CFP2035 **CFP Button** – Displays projects included in the latest version of the Long-Range Plan component of the Cost Feasible Plan.

Needs Plan **Needs Button** – Displays projects included in the Unfunded Multimodal Needs Plan.

Aerial **Aerial Button** – Displays an aerial photo in the background of the current map view. The aerial photo will not display until the user zooms to a scale of 1:250,000 feet or smaller.

2 – Analysis Region – The analysis region selection allows the user to set the map view to either the statewide view or an individual district view.

3 – Legend Tabs – The legend tabs allow the user to switch between the measure selection area and the legend for the current map view. The default view shows the measure selection area, and, once a map is created with selected measures, the view automatically switches to show the legend for the current map view.

4 – Measure Selection Area – The measure selection area allows the user to select up to three measures to view on the map, such as AADT, crash ratio, and truck percentage. The three measures are displayed on the map along each SIS roadway segment and are offset from each other so that they are viewed side by side. The user can change the color and width of the lines, as well as the number of classes in which to split the data.

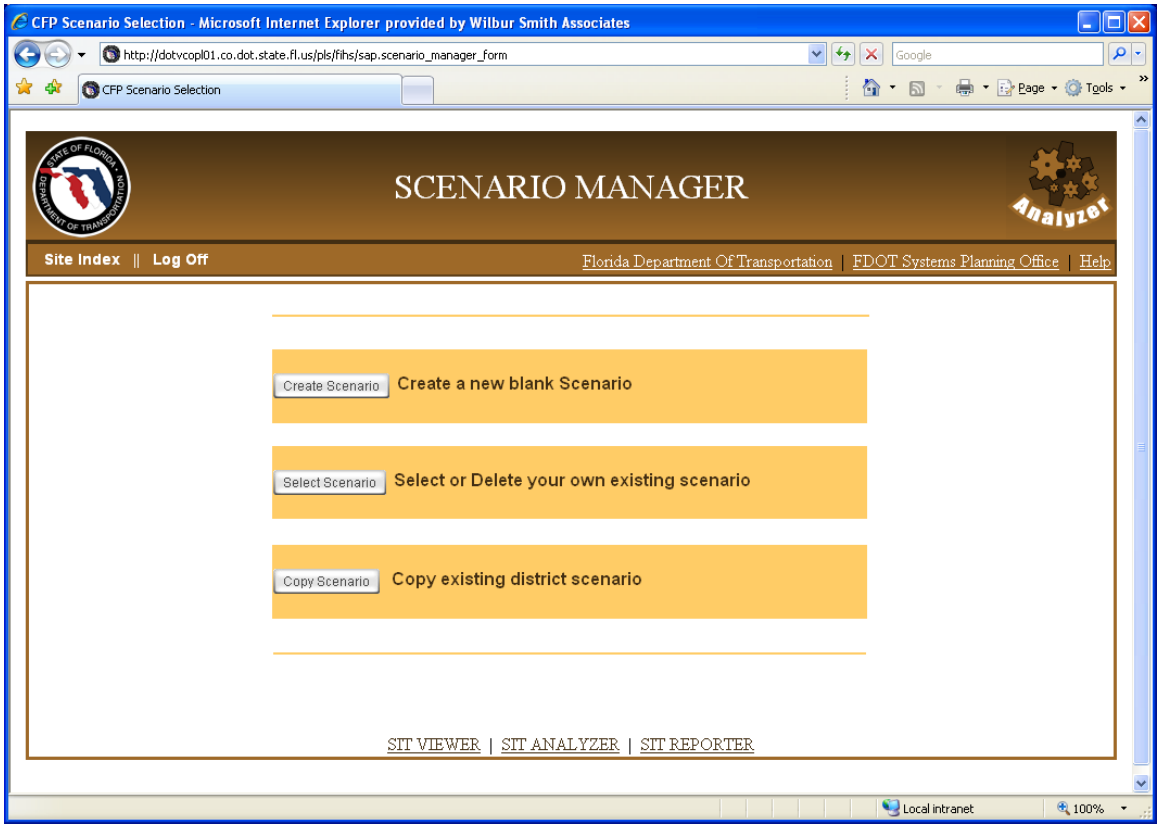
5 – Map Contents – The map contents area allows the user to select features to display on the map, such as water features and county boundaries.

6 – Overview – The overview section provides the user with map location information, including where the current map view is in relation to the State of Florida.

Analyzer

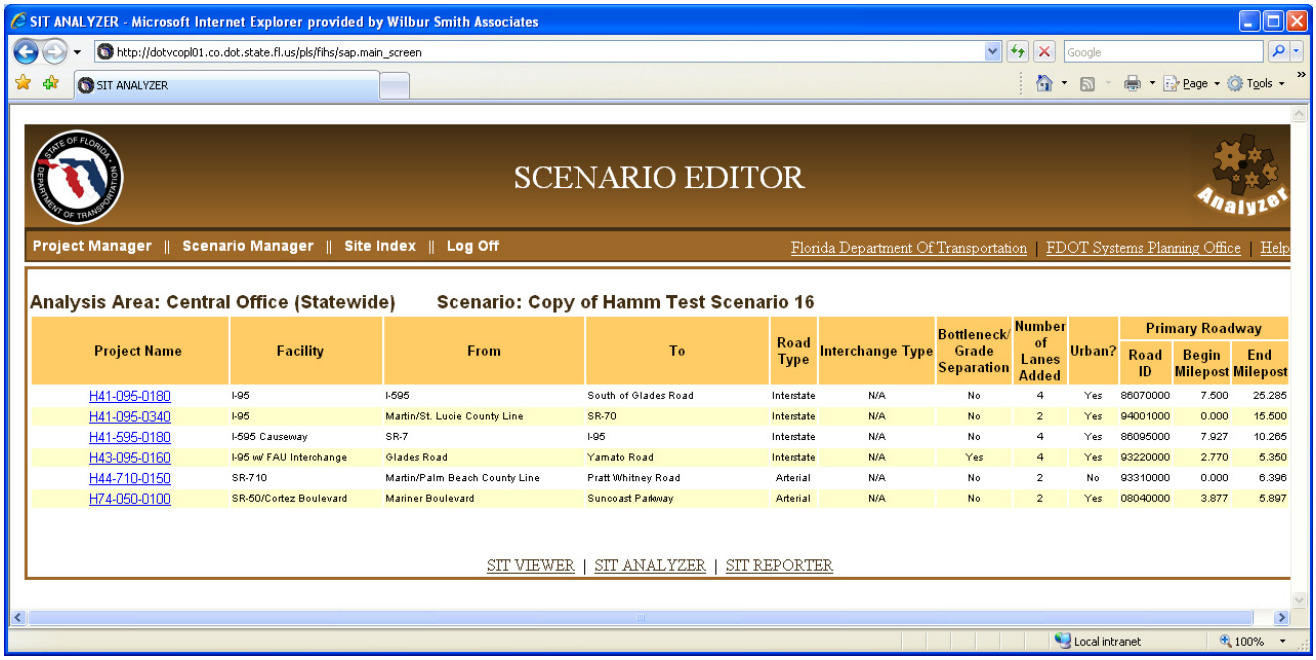
The SIT Analyzer provides a web-based interface for users to input proposed project information, create scenarios of various proposed projects, and then submit the projects for scoring. A total of 24 measures are used in the scoring process to determine overall scores for each project for each of the five SIS goals. Each of the 24 measures are described in detail in Chapter 3 and the Appendices of this report, including identifying the data sources and the calculation and scoring process. The data is stored in an Oracle database and accessed by the analyzer to score each submitted project.

The first analyzer screen, shown below, is the scenario manager. The scenario manager allows the user to create new scenarios, delete a scenario, select a different scenario, or copy a scenario to modify. The copy function allows users to modify scenarios and test different groupings of projects without having to reenter all the project information.



Once a scenario is selected, the user can start the scenario editor to add, delete, or modify projects within a scenario. The scenario editor identifies the projects that are included in the scenario, along with information about each project. Information displayed for each project includes:

- Project name;
- Facility;
- Roadway ID and begin/end mileposts;
- Project limits (from/to);
- Roadway classification/type;
- Interchange type;
- Bottleneck/grade separation;
- Number of lanes added; and,
- Urban/rural classification.



Project Name	Facility	From	To	Road Type	Interchange Type	Bottleneck/ Grade Separation	Number of Lanes Added	Urban?	Primary Roadway		
									Road ID	Begin Milepost	End Milepost
H41-095-0180	I-95	I-595	South of Glades Road	Interstate	N/A	No	4	Yes	86070000	7.500	25.285
H41-095-0340	I-95	Martin/St. Lucie County Line	SR-70	Interstate	N/A	No	2	Yes	94001000	0.000	15.500
H41-595-0180	I-595 Causeway	SR-7	I-95	Interstate	N/A	No	4	Yes	86095000	7.927	10.265
H43-095-0160	I-95 w/ FAU Interchange	Glades Road	Yamato Road	Interstate	N/A	Yes	4	Yes	93220000	2.770	5.350
H44-710-0150	SR-710	Martin/Palm Beach County Line	Pratt Whitney Road	Arterial	N/A	No	2	No	93310000	0.000	6.396
H74-050-0100	SR-50/Cortez Boulevard	Mariner Boulevard	Suncoast Parkway	Arterial	N/A	No	2	Yes	08040000	3.877	5.897

The user can click on each project to open the project editor screen and change information on the project or to delete the project from the scenario. A single improvement project can include up to five segments with different roadway IDs and begin/end milepost points. In addition, the user must make choices for the following five items:

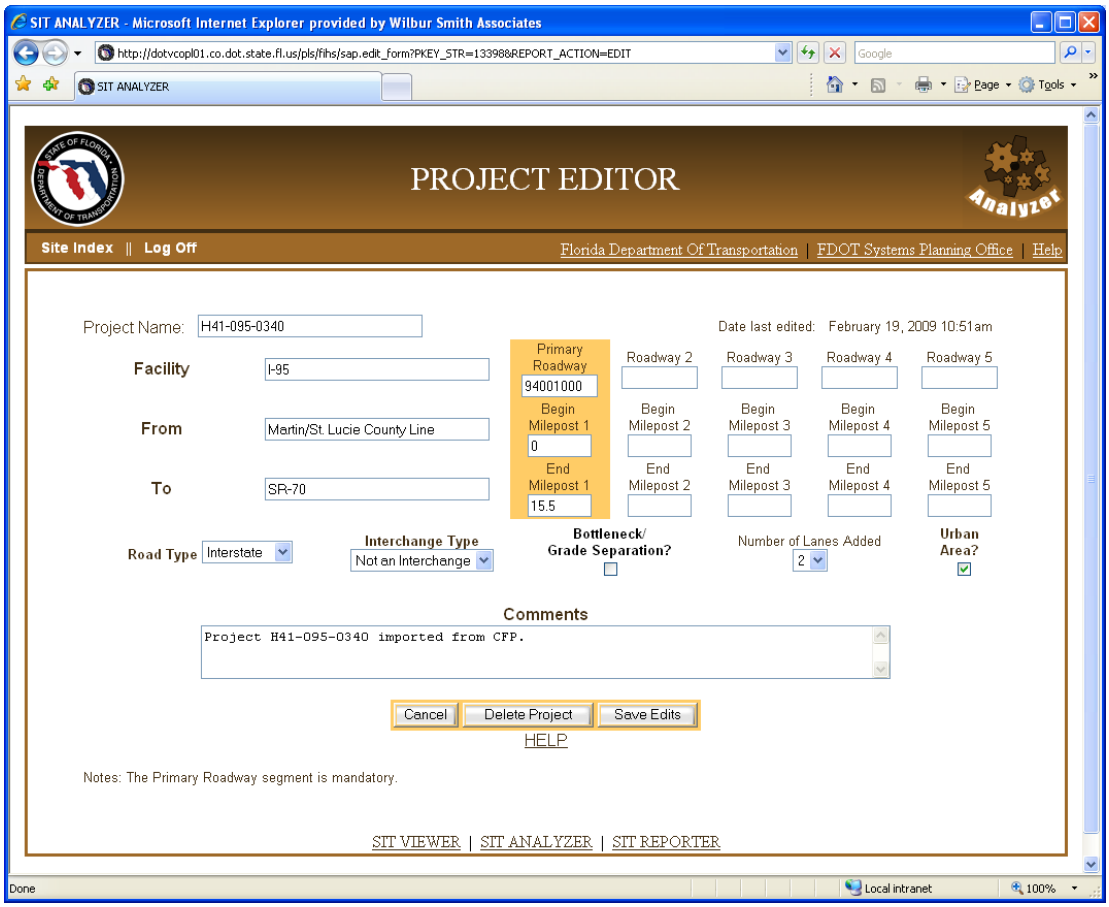
- **Road Type** – Is the SIS facility for this project an Interstate or Arterial roadway classification?

- **Interchange Type** – Is the project located on a SIS to SIS interchange, a SIS to Non-SIS interchange, or not located on an interchange. A roadway widening project that only affects the mainline and does not make improvements to the interchange should be classified as Not an Interchange.

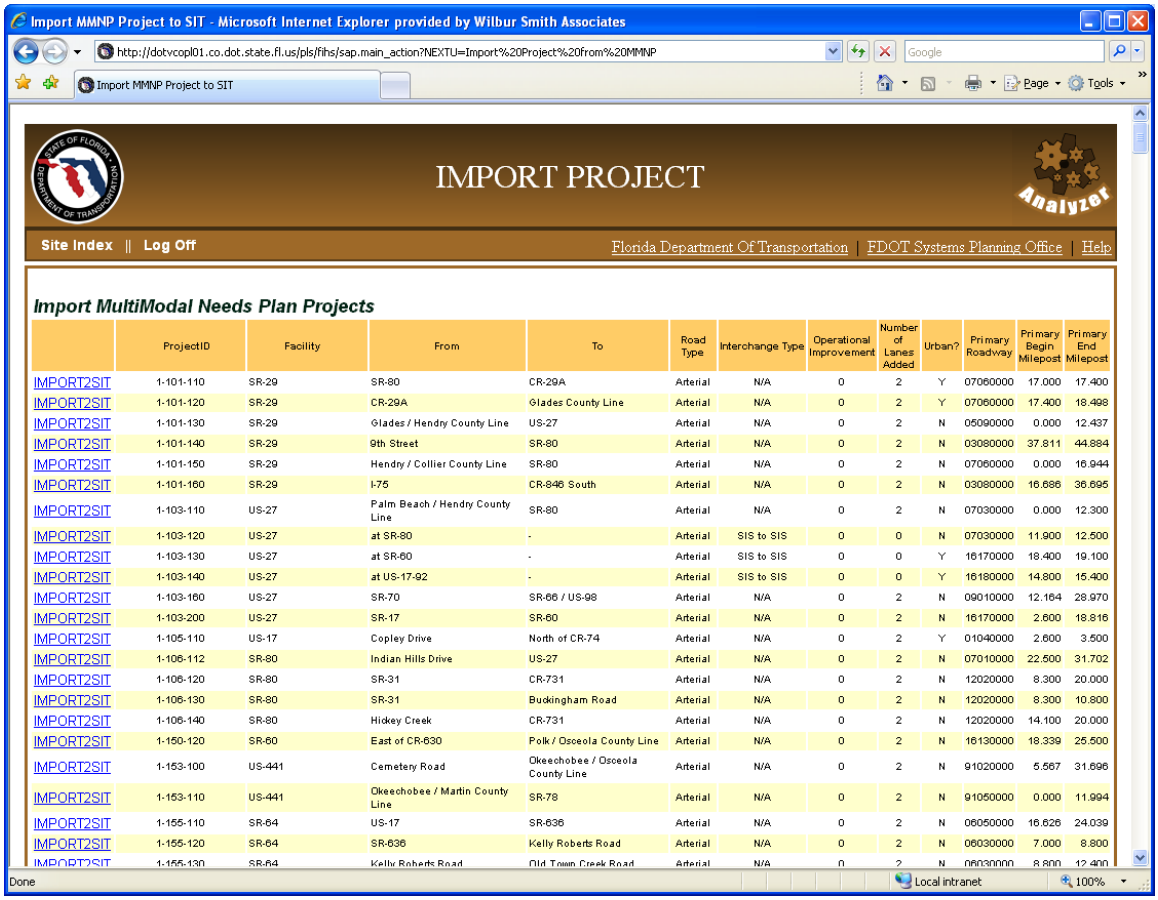
- **Bottleneck/Grade Separation** – Is the project a grade separation project or improve a traffic operations bottleneck? If yes, then check the box.

- **Number of Lanes Added** – How many travel lanes are added to the roadway?

- **Urban Area?** – Is the project located in an urban area? If yes, then check the box. If the project is in a rural area, do not check the box.



The user can also import projects from the latest adopted Cost Feasible Plan, Work Program, or Multimodal Needs Plan. The Import Project screen displays the projects available to import. The user simply clicks the IMPORT2SIT link next to the project they wish to import, and the analyzer will open the project editor screen so the user can verify project information before adding it to the current scenario.



Import MultiModal Needs Plan Projects

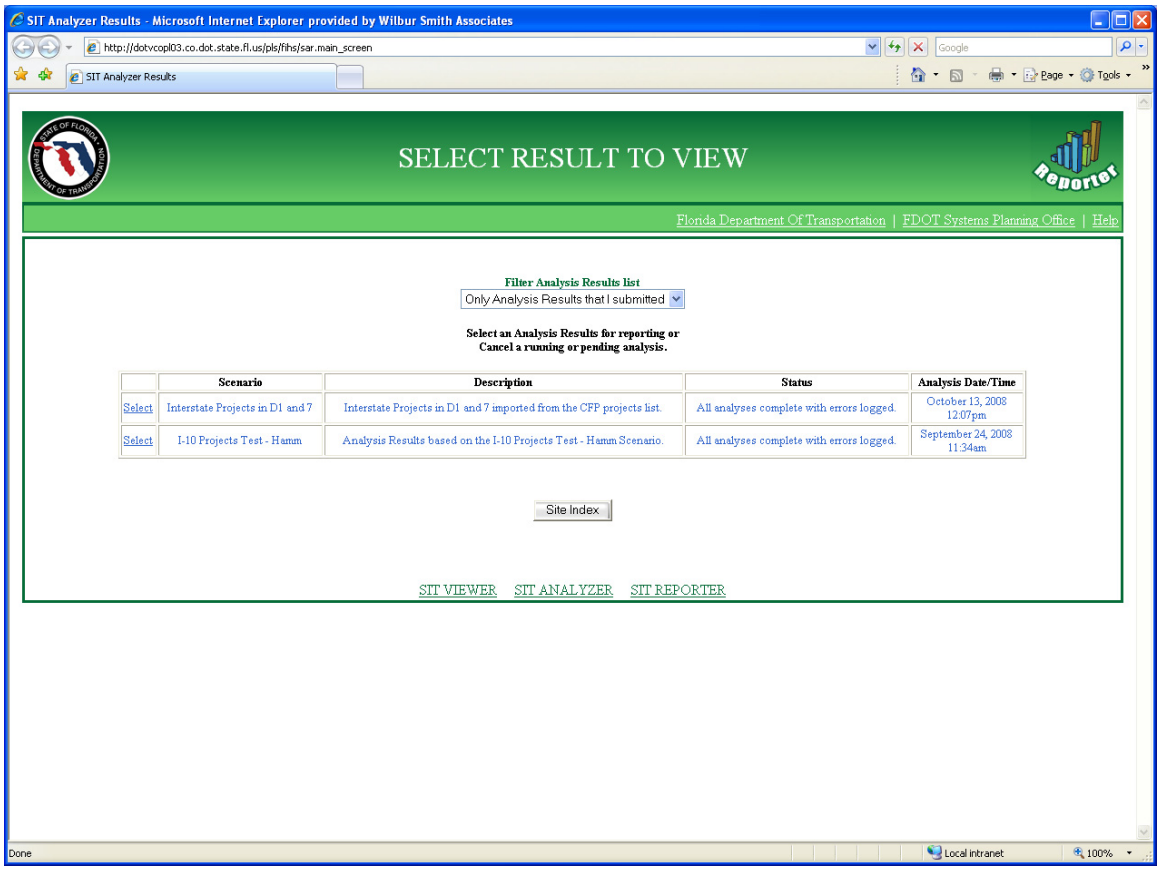
	ProjectID	Facility	From	To	Road Type	Interchange Type	Operational Improvement	Number of Lanes Added	Urban?	Primary Roadway	Primary Begin Milepost	Primary End Milepost
IMPORT2SIT	1-101-110	SR-29	SR-80	CR-29A	Arterial	N/A	0	2	Y	07060000	17.000	17.400
IMPORT2SIT	1-101-120	SR-29	CR-29A	Glades County Line	Arterial	N/A	0	2	Y	07060000	17.400	18.498
IMPORT2SIT	1-101-130	SR-29	Glades / Hendry County Line	US-27	Arterial	N/A	0	2	N	05090000	0.000	12.437
IMPORT2SIT	1-101-140	SR-29	9th Street	SR-80	Arterial	N/A	0	2	N	03080000	37.811	44.884
IMPORT2SIT	1-101-150	SR-29	Hendry / Collier County Line	SR-80	Arterial	N/A	0	2	N	07060000	0.000	16.944
IMPORT2SIT	1-101-160	SR-29	I-75	CR-846 South	Arterial	N/A	0	2	N	03080000	16.686	36.695
IMPORT2SIT	1-103-110	US-27	Palm Beach / Hendry County Line	SR-80	Arterial	N/A	0	2	N	07030000	0.000	12.300
IMPORT2SIT	1-103-120	US-27	at SR-80	-	Arterial	SIS to SIS	0	0	N	07030000	11.900	12.500
IMPORT2SIT	1-103-130	US-27	at SR-60	-	Arterial	SIS to SIS	0	0	Y	16170000	18.400	19.100
IMPORT2SIT	1-103-140	US-27	at US-17-92	-	Arterial	SIS to SIS	0	0	Y	16180000	14.800	15.400
IMPORT2SIT	1-103-160	US-27	SR-70	SR-66 / US-98	Arterial	N/A	0	2	N	09010000	12.164	28.970
IMPORT2SIT	1-103-200	US-27	SR-17	SR-60	Arterial	N/A	0	2	N	16170000	2.600	18.816
IMPORT2SIT	1-105-110	US-17	Copley Drive	North of CR-74	Arterial	N/A	0	2	Y	01040000	2.600	3.500
IMPORT2SIT	1-106-112	SR-80	Indian Hills Drive	US-27	Arterial	N/A	0	2	N	07010000	22.500	31.702
IMPORT2SIT	1-106-120	SR-80	SR-31	CR-731	Arterial	N/A	0	2	N	12020000	8.300	20.000
IMPORT2SIT	1-106-130	SR-80	SR-31	Buckingham Road	Arterial	N/A	0	2	N	12020000	8.300	10.800
IMPORT2SIT	1-106-140	SR-80	Hickey Creek	CR-731	Arterial	N/A	0	2	N	12020000	14.100	20.000
IMPORT2SIT	1-150-120	SR-60	East of CR-630	Polk / Osceola County Line	Arterial	N/A	0	2	N	16130000	18.339	25.500
IMPORT2SIT	1-153-100	US-441	Cemetery Road	Okeechobee / Osceola County Line	Arterial	N/A	0	2	N	91020000	5.567	31.696
IMPORT2SIT	1-153-110	US-441	Okeechobee / Martin County Line	SR-78	Arterial	N/A	0	2	N	91050000	0.000	11.994
IMPORT2SIT	1-155-110	SR-64	US-17	SR-636	Arterial	N/A	0	2	N	06050000	16.626	24.039
IMPORT2SIT	1-155-120	SR-64	SR-636	Kelly Roberts Road	Arterial	N/A	0	2	N	06030000	7.000	8.800
IMPORT2SIT	1-155-130	SR-64	Kelly Roberts Road	Old Town Creek Road	Arterial	N/A	0	2	N	06030000	8.800	12.400

Once the user has completed adding projects to a scenario, the user can submit the scenario to the analyzer to compute the scores. Use the Submit Scenario screen to submit the projects to the analyzer. Before submitting the scenario, the user can provide a description of the scenario as well as select the security level of the scenario. The security level identifies whether the scenario is private to the user only, available to all users within the same district, available to other district users, or available to all others.

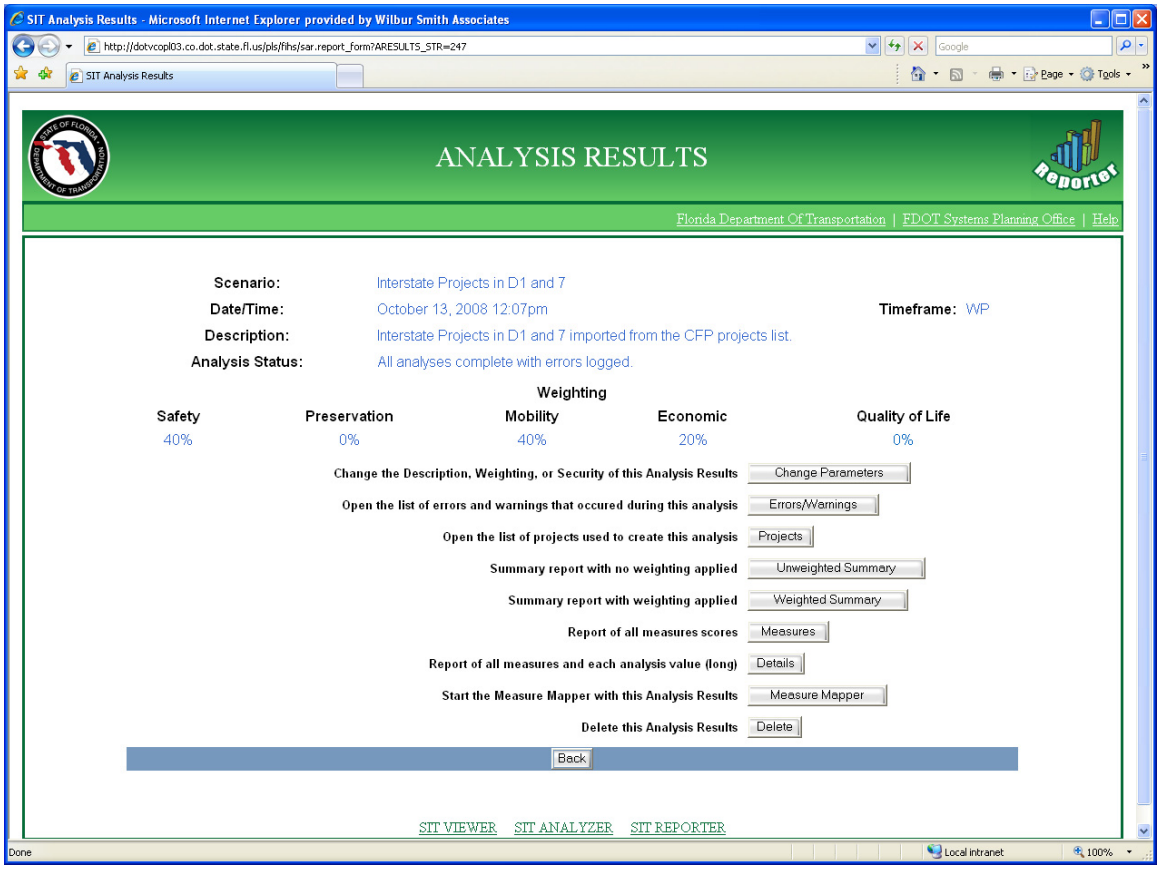
Reporter

The SIT Reporter provides a web-based interface for users to review the results of the analyzer for each scenario. The first Reporter screen allows the user to view the current status of each scenario submitted in the Analyzer, as well as the date and time the analysis was completed. The default view includes only projects that were submitted by the user. Additional scenario results can be viewed by clicking on the drop down menu and selecting from one of the following choices:

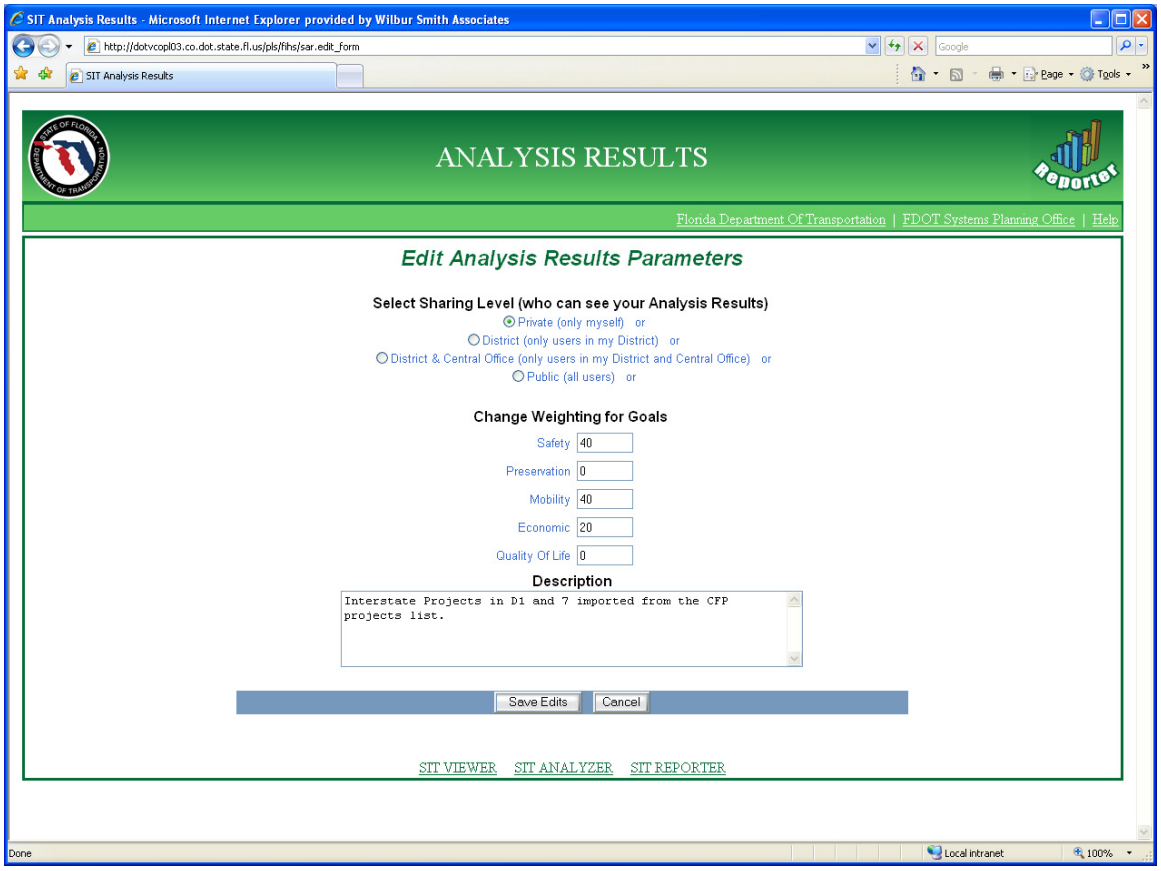
- Only analysis results that I submitted;
- All analysis results for my district;
- All public analysis results for other districts; and,
- All public analysis results.



Once the user selects a scenario to view, the Analysis Results screen is displayed. Here the user can choose from a variety of reports, initiate the Measure Mapper to map the results, or make changes to the parameters. The reports include various detailed and summary reports of the data and scores for each project. The user should always check the error report to make sure there are no fatal errors which would cause the results of the analyzer to be invalid.

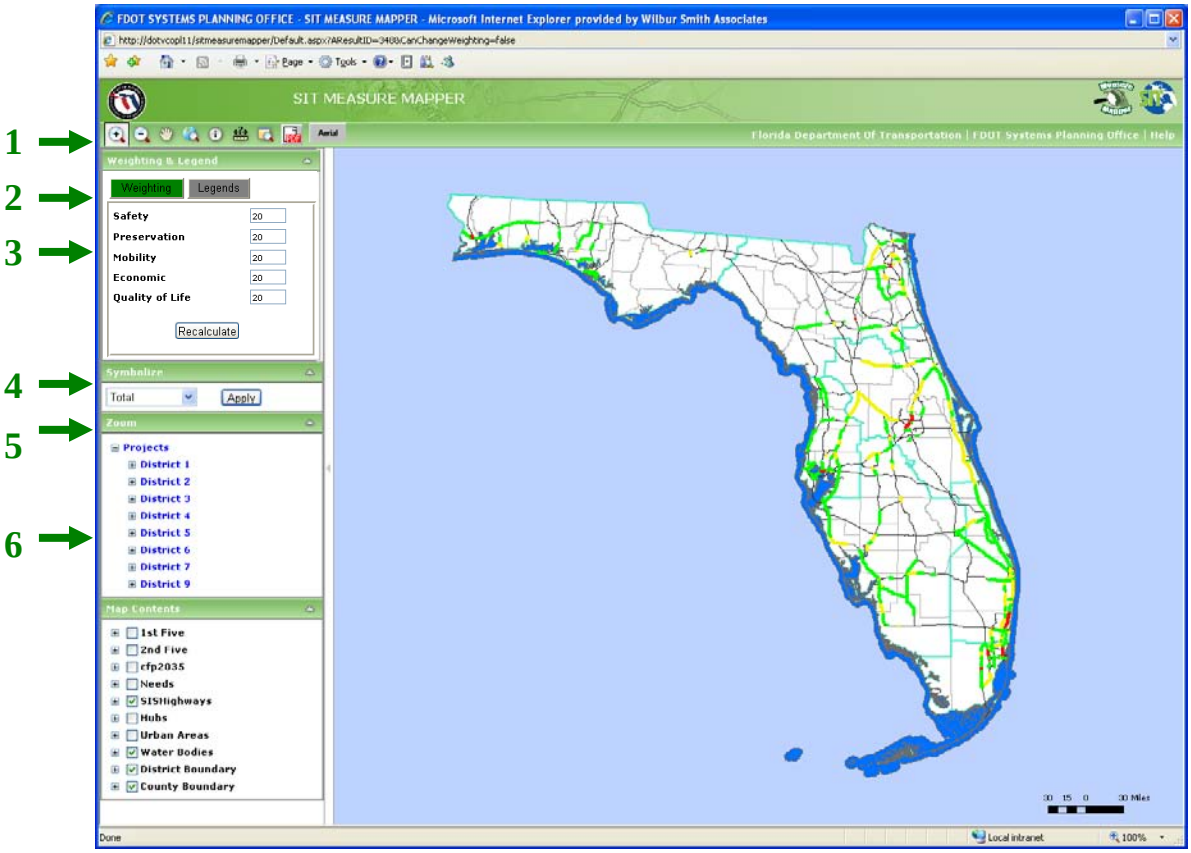


When the user selects the Change Parameters option, the screen below is displayed. Here the user can change the sharing level and allow other users to see their analysis results. In addition, the user can change the description of the scenario and change the weighting of the results by SIS goal. The user can select any weighting combination, but the weighting must always add up to 100 percent. It is important to note that changes to the weighting will replace the previous weighting combinations and all reports will now reflect the new weighting scheme for this scenario (with the exception of the unweighted default scenario of 20, 20, 20, 20, 20 which is always available in summary form).



Measure Mapper

The Measure Mapper provides the ability for the user to display the results of the SIT Analyzer on a map. The Measure Mapper is similar in layout to the System Viewer and provides many of the same basic features. The main screen provides access to all of the various functions of the Measure Mapper through a series of toolbars and drop down menus.



The major functions available to users within the Measure Mapper include the following:

1 – Main Toolbar – The main toolbar in the System Viewer provides access to many standard GIS functions, such as zoom in/out, pan, view full extent, measure, and magnify. In addition, the main toolbar provides access to additional functions as described below.

- **Identify Button –** Provides access to scores for a selected project broken down by SIS goal.

PDF Button – Creates a pdf file of the current map view. The user has the option of opening the pdf file or saving it on their computer. The map is produced with a standardized format including title block and legend.

Aerial Button – Displays an aerial photo in the background of the current map view. The aerial photo will not display until the user zooms to a scale of 1:250,000 feet or smaller.

2 – Legend Tabs – The legend tabs allow the user to switch between the measure weighting area and the legend for the current map view. The default view shows the current scenario weighting by SIS goal, and, once the weighting is modified, the view automatically switches to show the legend for the current map view.

3 – Measure Weighting Area – The measure weighting area allows the user to modify the weighting of each of the five SIS goals. The total percentage weight given to each of the goals must sum to a total of 100 percent. Weighting changes that are made in the Measure Mapper are automatically sent back to the SIT Reporter and the tabular reports are updated to reflect the new weighting scheme.

4 – Symbolize – The symbolize section allows the user to create maps where projects are color coded based on only one of the SIS goals. For example, if the user selected "safety" from the drop down menu, the map would be redrawn to color code projects into high, medium, and low categories based only on safety scores. The default view is "total" which includes all five SIS goals.

5 – Zoom – The zoom section allows the user to zoom the map view to a specific project by simply clicking on the project description listed in this section.

6 – Map Contents – The map contents area allows the user to select features to display on the map, such as water features and county boundaries.

Chapter 3 – Highway and Connector Measures

FDOT developed the Strategic Investment Tool (SIT) to evaluate and prioritize potential highway capacity and connector improvement projects using a series of performance measures linked to the five SIS goals. The SIS goals are presented in Chapter 1. This chapter describes the performance measures used to evaluate and score potential highway corridor and connector projects for funding. The performance measure criteria used for scoring, why each was selected, and how the weighting of each measure was determined is also discussed. This chapter also discusses measures that are not used and why.

Characteristics of Good Performance Measures

FDOT has a long and successful history of using performance measures to establish bench marks, monitor improvement, and make resource and project investment decisions for their transportation system. In fact, in 1984, FDOT was one of the first state DOTs to use performance measures. It was not until the late 1990's that other state DOTs began using performance measures. Today, their use is considered a standard practice by most state DOTs. The number of measures used by state DOTs varies from 10 to over 100. Typically state DOTs calculate an average of 30 measures. FDOT uses 24 different measures in the SIT.

There is considerable national research regarding performance measures. FDOT reviewed this research, as well as findings from a peer review of other state DOTs, to guide their selection of SIT performance measures.[1] Following is a summary of some of the national research findings and conclusions that FDOT considered in developing the SIT performance measures.

Characteristics of good performance measures include measures that are:

- Simple, understandable, unambiguous, clear, logical, repeatable, and they can be presented in charts, graphs, and through calculations;
- Linked to agency goals, measure how well goals are being met, and match what's important to decision makers and stakeholders;
- Meaningful to customers, but are not limited to customer focus or survey results;
- Have reasonable reporting cycles, show trends, and are timely (can be produced at reasonable intervals at reasonable cost);
- Based on quantitative data that is existing and easily available, with an analysis that is simple and easy to understand; and
- Matched to their purpose and are not in conflict with other measures.

[1] References of publications and peer states are provided at the end of this chapter.

Guiding principles to follow in developing performance measures include:

- No one set of measures fits all states or DOT agencies;
- There are no perfect measures that are applicable in all situations;
- If the wrong condition is measured, that condition is what the DOT will be held accountable for and other important considerations may be overlooked;
- If too much is measured, costs will soar while focus fades; and,
- Lasting measures have deep rooted support. They are developed involving stakeholders, can be used to tell a story, focus on opportunities not allocating blame, and are continuously improved.

SIT Highway and Connector Measures

Twenty-four prioritization measures are used to evaluate and prioritize eligible SIS Highway and Connector Projects. The measures are summarized in **Table 3-1**. The weighted value for each measure varies depending on how directly it relates to the SIS goal and the comparative priority of the goal it represents.

In selecting the highway performance measures, FDOT made considerable effort to verify and validate that the measures selected and used are valid and reliable. As stated, FDOT conducted a national literature search and review of peer state DOTs to identify, compare and evaluate the measures and the weighting factors. FDOT, with the assistance of an independent transportation consultant, evaluated each measure to make certain it was: linked to the goals; matches the purpose of the goal; is accountable (can demonstrate how the goal is being met); is clear, logical and unambiguous; can be based on quantitative data; is easy to understand; its calculation can be duplicated (repeated); is not in conflict with other goals, and is timely.

A number of measures were not used. Several reasons for not using certain measures include: lack of available data; high cost or excessive time required collecting data needed for the measure; measure may not have the correct focus and would result in focusing the program in the wrong direction; measure duplicated another, better measure; or measure may result in bias. Some examples of these include giving points solely based on if the project is in an urban area – this would result in bias against rural Florida. Each of the following sections identifies measures not used and explains why they were not used.

Table 3-1: SIT Highway and Connector Measures

Goal Measured	Measure	Maximum Score
Safety and Security	Crash Ratio	10
	Fatal Crash	4
	Bridge Appraisal Rating	3
	Link to Military Base	3
	Possible Subtotal	***20 points***
System Preservation	Volume /Capacity (v/c) Ratio	10
	Truck Volume (AADTT)	6
	Vehicular Volume (AADT)	2
	Bridge Condition Rating	2
	Possible Subtotal	***20 points***
Mobility	Connector Location	1
	Volume /Capacity (v/c) Ratio	4
	Truck Volume (% Trucks)	2
	Vehicular Volume (AADT)	2
	System Gap	2
	Change in v/c -LOS (for Mainline segments only) Interchange Operations (for Interchanges only)	3
	Bottleneck/Grade Separation	2
	Delay	4
	Possible Subtotal	***20 points***
Economics	Demographic Preparedness	5
	Private Sector Robustness	5
	Tourism Intensity	5
	Supporting Facilities	5
	Possible Subtotal	***20 points***
Quality of Life	Land and Social Criteria	4
	Geology Criteria	4
	Habitat Criteria	4
	Water Criteria	8
	Possible Subtotal	***20 points***
	Total Maximum Score	**100 points**

Goal 1 – Safety and Security

A total of four measures are used to evaluate a project's impact to satisfying SIS Goal 1, Safety and Security, as identified in the table below:

Goal Measured	Measure	Maximum Score
Safety and Security	Crash Ratio	10
	Fatal Crash	4
	Bridge Appraisal Rating	3
	Link to Military Base	3
	Maximum Subtotal	***20 points***

More detailed information regarding each performance measure for Goal 1, including the importance to Safety and Security, data sources and characteristics, measure categorization and scoring, and applicability to project segments is included in **Appendix A**.

Performance Measure – Crash Ratio

Crash ratio is the actual crash rate for a roadway segment divided by the average crash rate for that type of roadway for the entire system. Crash ratio is a simple, quantitative, and logical indication of a safe or unsafe location or facility. The rate of crashes can easily be reported and compared throughout the system with the worst sites given the highest priority points.

> **Weighting Factor -** FDOT routinely collects crash data by roadway segment. The crash ratio is a comparative score to remove bias based on segment length. Crash ratio is an industry wide standard measure which quantitatively identifies crash experience and safety along a facility. Therefore, fifty percent of the total maximum score for this Goal comes from this measure.

Performance Measure – Fatal Crash

Fatal crashes are those crashes resulting in a fatality. Using fatal crashes to measure safety in addition to crash ratio provides the ability to apply an additional priority to segments where fatal / more severe crashes occur. Fatal crash rates are used nationally as a safety performance measure.

> **Weighting Factor -** Fatal crashes are weighted based on the number per mile with locations having the highest rates receiving the most points. Twenty percent of the total score for this Goal comes from this measure, emphasizing the importance of safe transportation facilities.

Performance Measure – Bridge Appraisal Rating

FDOT routinely inspects and rates bridges for safety as measured by their obsolescence and deficiencies. This measure makes up the Bridge Appraisal Rating. Obsolete bridges such as those that are too narrow or have too low a clearance create unsafe driving conditions. Other bridge structural deficiencies may create an unsafe condition.

> **Weighting Factor -** Priority points are given to potential projects including bridges with the lowest rating. In other words, the lower the bridge rating, the more points it gets with projects including more than one deficient or obsolete bridge getting the most points.

Performance Measure – Link to Military Base

The Link to a Military Base measure identifies facilities that connect to or are near a US military facility. For the US military to secure the nation and Florida, the highway system must connect to military bases and link to the STRAHNET. This will allow for a quick deployment of personnel and equipment.

> **Weighting Factor -** Points are assigned to this measure if the project is within 10 miles of a military base. This measure satisfies the "security" aspect of the SIS goal, and generates a maximum of 15 percent of the total score for this goal.

Measures Not Used

Another measure that correlates to safety that was considered but not used is congestion. Transportation studies have shown that highly congested locations have a higher frequency of crashes. Congestion was not used as a measure of safety and security for several reasons. It is already included as a measure for both mobility and system preservation and it was felt to be redundant given the number of crashes is already being measured. Most of the crashes in congested locations are minor such as: fender-benders rear-end, side- swipes, weather related incidents types and not fatalities.

Goal 2 – System Preservation

A total of four measures are used to evaluate a project's impact to satisfying SIS Goal 2, System Preservation, as identified in the table below:

Goal Measured	Measure	Maximum Score
System Preservation	Volume /Capacity (v/c) Ratio	10
	Truck Volume (AADTT)	6
	Vehicular Volume (AADT)	2
	Bridge Condition Rating	2
	Possible Subtotal	***20 points***

More detailed information regarding each performance measure for Goal 2, including the importance to System Preservation, data sources and characteristics, measure categorization and scoring, and applicability to project segments is included in **Appendix B**.

Performance Measure – Volume/Capacity (v/c) Ratio

The Volume to Capacity or v/c ratio is a measure of the amount of traffic compared to the carrying capacity of a roadway. It is a measure of congestion. It stands to reason that the more traffic on a segment of roadway, the more wear and tear on the surface and greater the decrease in the pavement life. FDOT staff confirms that roadways with the heaviest traffic congestion generally require more frequent maintenance.

> **Weighting Factor -** Traffic counts are routinely collected and the v/c ratio is regularly calculated by FDOT. The v/c ratio is a measure of intensity and, therefore, is suitable to be used to compare and prioritize between highway segments. Approximately half the total points for the category can be assigned based on v/c ratio.

Performance Measure – Truck Volume (AADTT)

AADTT is the average annual daily truck traffic (AADTT). It is the measure of trucks traveling in both directions during an average day. Because trucks weigh more than passengers cars, the more trucks on the roadway the quicker the roadway may degrade. In fact, some studies have shown that the wear and tear caused by a truck on a roadway is equal to or greater than 1,000 passenger cars. Roadways with the heaviest truck volumes will require more maintenance.

> **Weighting Factor -** The number of trucks is routinely collected and AADTT routinely calculated by FDOT. The scoring for this measure is based on the

roadway type (such as urban or rural, etc.) with more points given to roadways with the higher than average number of trucks for the type road. Thirty percent of the total score for the System Preservation measures is based on Truck Volume.

Performance Measure – Vehicular Volume (AADT)

The average annual daily traffic (AADT) is a measure of the volume of traffic on a roadway. According to FDOT highway maintenance professionals, the higher the volume of overall traffic, the greater the stress and wear on the roadway.

Weighting Factor - AADT differs from v/c in that it identifies locations with significant traffic as compared to other similar facilities and is not tied to capacity. While this measure helps in identifying areas in which more frequent maintenance is required, it is not as important in terms of maintenance as truck volume and congestion levels (v/c ratio). Thus, the vehicular volume measure contributes only ten percent to the total system preservation score.

Performance Measure – Bridge Condition Rating

Bridge Condition Rating measures the overall condition of the deck, superstructure, substructure and culverts. Bridges deteriorate and are traditionally evaluated based on different standards than roadways. Bridges are in important component of every roadway and including a specific measure for them is reasonable and realistic.

Weighting Factor - FDOT bridge professionals routinely evaluate Bridge Conditions throughout the FDOT system. The priority points are allocated based on a worst first ranking. The bridge condition rating measure contributes ten percent to the total system preservation score.

Measures Not Used

Staff considered including a measure relating to the maintenance history of roadway segments including what has been done that is a “preservation” activity. However, this would require developing a new and separate rating or ranking system beyond what is currently and routinely collected by FDOT. The proposed measure was neither simple nor direct and would not contribute new information to use in measuring or prioritizing the current roadway condition.

Goal 3 – Mobility

A total of eight measures are used to evaluate a project's impact to satisfying SIS Goal 3, Mobility, as identified in the table below:

Goal Measured	Measure	Maximum Score
Mobility	Connector Location	1
	Volume /Capacity (v/c) Ratio	4
	Truck Volume (% Trucks)	2
	Vehicular Volume (AADT)	2
	System Gap	2
	Change in v/c – LOS (for Mainline segments only) Interchange Operations (for Interchanges only)	3
	Bottleneck/Grade Separation	2
	Delay	4
	Maximum Subtotal	***20 points***

More detailed information regarding each performance measure for Goal 3, including the importance to Mobility, data sources and characteristics, measure categorization and scoring, and applicability to project segments is included in **Appendix C**.

Performance Measure – Connector Location

Connector location is a feature used to describe a connection between SIS corridors or between a SIS Hub and a SIS corridor. It includes and applies to emerging SIS hubs and corridors as well as connections to economic regions outside Florida. For Florida's intermodal system to function efficiently there must be linkages and connections between different modes. For example: trucks and rail cars must have access to ocean ports to be able to access container cargo and move it to destinations away from the water. For people to be able to have access to an airport, either a roadway or public transit service must connect to it. Intermodal connectors play a critical role in creating smooth and seamless connectivity and system mobility. It is therefore an important and needed performance measure.

> **Weighting Factor -** The weighting factor used for this provides points if the proposed project includes a SIS connector, with five percent of the total Mobility score coming from this measure.

Performance Measure – Volume/Capacity (v/c) Ratio

The volume to capacity or v/c ratio is a measure of the amount of traffic compared to the carrying capacity of a roadway. The v/c ratio is a standard measure of congestion used

by DOTs throughout the U.S. to compare a variety of types or classifications of roadways. This number is simple, allows for easy comparisons between roadway segments and is routinely collected by FDOT. Transportation professionals agree that one of the best ways to evaluate if a highway is operating properly is to measure its v/c ratio. Congestion is a three dimensional condition or problem. It can be described and measured by looking at its duration, intensity, and length or geography. For example: do congestion problems only occur during rush hour or over a longer period of time, is it re-occurring or an isolated event; how severe or intense is the congestion; what percent and length of the lane miles are congested; and on what percent is there the ability to travel at design speed. Each of these dimensions is considered, to a certain degree, in the selected Mobility performance measures.

> **Weighting Factor -** A v/c ratio equal to or greater than 1.0 indicates congestion, the higher the v/c number, the more intense the congestion. The higher the v/c ratios the more points awarded to the potential project. The v/c ratio measure can contribute up to 20 percent of a projects Mobility score.

Performance Measure – Truck Volume (%) Trucks

Truck volume is a measure of the percent of trucks to total traffic on a roadway. Trucks speed-up, slow-down, and pass at different speeds than passenger cars. Trucks also require greater distances to perform these activities than do passenger cars. If a roadway includes a high percentage of trucks in proportion to passenger cars, the slower speeds and greater distances needed for trucks to negotiate the roadway may cause passenger car movements to slow and traffic to slow or become congested. The percent of trucks to total traffic is a measure of mobility.

> **Weighting Factor -** The measure used for this category is percentage of truck traffic based on functional classification of roadways. The weighting factor is determined based on the higher percentages of trucks receiving the higher point score. The truck volume measure can contribute up to 10 percent of a project's Mobility score.

Performance Measure – Vehicular Volume (AADT)

Vehicular Volume or Average Annual Daily Traffic (AADT) is an annualized average measure of the volume of traffic on a roadway. The more traffic, the more possibility for conflicts and need for each driver to adjust their driving to other drivers in the general area. The actions of one driver braking or swerving can have a wavelike effect on the vehicles surrounding them. Even with adequate capacity, heavy volumes reduce drivers' and roadways' mobility.

Weighting Factor - The weighting factor is based on future traffic and gives priority to traffic growth that may become worse over time, with 10 percent of the Mobility score coming from the Vehicular Volume measure.

Performance Measure – System Gap

A system gap is a segment or section of a roadway that is less than 30 miles long and substantially different than the majority of the remaining roadway corridor. Differences may include a different number of lanes or sharper curves or reduced visibility or a larger number of access points than the remaining roadway. These gaps often become a choke-point or bottleneck to the seamless and continuous traffic flow.

Weighting Factor - The weighting factor provides points if the project fills a system gap as described above. The system gap measure contributes up to 10 percent of the total mobility score.

Performance Measure – Change in v/c LOS (for mainline segments only)

The volume to capacity or v/c ratio is a measure of the amount of traffic compared to the carrying capacity of a roadway. A v/c change is calculated by comparing the existing to the projected future v/c. Change in v/c LOS is to be used as a measure for mainline segments only. A change is an indication traffic growth or loss. This measure provides priority points to projects in areas that traffic is expected to grow.

Weighting Factor - The weight given for this condition depends on the percentage of change comparing the "existing" to a 2015 timeframe. A weight of 1 point will be given for 10% or less growth and up to 3 points for v/c changes of greater than 25%.

Performance Measure – Interchange Operations (for interchanges only)

The interchange operations measure is used to identify and provide priority points to projects that include intersection or interchange improvements. Traffic at interchanges and intersections often is required to stop or reduce their speed to negotiate ramps or to change direction or to transition to a different functional classification of roadway. These delays may cause backups or reduced mobility onto the mainline or in the location of the intersection or interchange. Future development of a system to evaluate interchanges and calculate level-of-service/delay would allow further improvement of this measure and apply the change in v/c LOS process to interchanges, similar to the current process described above for mainline segments.

Weighting Factor - Points are provided to projects that include intersection or interchange improvements. Intersections or interchanges that connect two SIS

facilities receive 3 points, while connections between SIS and non–SIS facilities receive 2 points.

Performance Measure – Bottleneck / Grade Separation

A bottleneck is by definition a mobility choke point. Bottlenecks are often at a location where two roadway facilities or a roadway and railroad line cross. For traffic to cross, one or the other must stop. Separating these facilities (through, for example, an overpass) will eliminate the conflict point and improve mobility.

> **Weighting Factor -** Projects that correct a bottleneck or include a grade separation will be given priority points, with 10 percent of the Mobility score coming from this measure.

Performance Measure – Delay

This measure identifies total vehicle hours of delay on a daily (24 hour) basis along a given section of roadway. Delays can be re-occurring, such as may occur with a traffic signal that is not properly timed and causing backups; or non-re-occurring such as a delay caused by a crash that blocks traffic. The delay measure is different than the v/c ratio measure, as it identifies the magnitude of the congestion problem, rather than just whether or not a facility is congested. Higher daily hours of delay indicate congested conditions during longer time periods during the day than lower daily hours of delay which indicate shorter or peak hour congestion.

> **Weighting Factor –** Projects with higher daily hours of delay will receive priority points compared to projects with lower hours of delay. A maximum of 4 points will be awarded for the delay measure, representing up to 20 percent of a project's Mobility score.

Measures Not Used

It is Florida's goal to improve operations, before adding capacity. Operational improvement projects such as ITS projects, signalization projects and related improvements can improve mobility, but are not specifically given points. However, this would require developing a new and separate rating or ranking system beyond what is currently and routinely collected by FDOT. The changes that may occur from these type projects can receive points from the other measures should sponsors evaluate their operational project based on the performance measures provided.

Land use impacts, such as the number of access points, affect the mobility and safety along a particular roadway. The number of access or conflict points was not used as a measure as the data is not currently available or routinely collected by FDOT.

Travel time reliability is another common mobility performance measure, but the data is currently not available statewide. FDOT's Systems Planning section is currently conducting research to implement a travel time reliability measure, and this measure will be considered for addition to the SIT once development is complete.

Goal 4 – Economic Competitiveness

A total of four measures are used to evaluate a project's impact to satisfying SIS Goal 4, Economic Competitiveness, as identified in the table below:

Goal Measured	Measure	Maximum Score
Economic Competitiveness	Demographic Preparedness Index	5
	Primary Sector Robustness Index	5
	Tourism Intensity Index	5
	Supporting Facilities Index	5
	Possible Subtotal	***20 points***

The economic competitive measures described in the following section are all indices that attempt to measure economic activities that interact with transportation investments to produce economic growth. We understand that, in some cases, the actual variable in use is a proxy for a more fundamental, but difficult to measure, concept or activity.

The key concept of these measures is that the economic activities measured here are complementary with highway capacity, level of service and truck volume. These activities have a superior potential to contribute to economic growth. If certain conditions, especially efficiency in the transportation system, are met, then the appropriate labor, capital and natural resources will be available to increase overall economic production.

The economic competitive measures are evaluated based on a project's location and facility type, such as urban or rural and interstate highway or arterial/collector roadway. Thus, a rural arterial roadway project is only compared to other rural arterial roadway projects in generating a score and a rural project will not be penalized because it is not in a dense urban area with a greater potential for economic development impacts.

More detailed information regarding each performance measure for Goal 4, including the importance to Economic Competitiveness, data sources and characteristics, measure categorization and scoring, and applicability to project segments is included in **Appendix D**.

Performance Measure – Demographic Preparedness Index

The Demographic Preparedness Index is a measure that identifies interrelationships between a regional economy and its population. This index includes five components that reveal general demographic characteristics. The five components are: population density, work force size, educational attainment level, population growth rate and per capita income. High population density and population growth rate may indicate the attractiveness of an area and potential growth in economy. Also, high levels of educational attainment and high per capita income in an area may indicate that the area is more competitive in terms of its labor force and productivity.

> **Weighting Factor -** The Demographic Preparedness Index is assigned a weight equal to the other three indexes. The Demographic Preparedness Index contributes about 25 percent of the total score for economic competitiveness.

Performance Measure – Primary Sector Robustness Index

The Primary Sector Robustness Index is a measure that identifies economic impacts generated by industrial sectors in an area. This index includes four components that reveal the importance of those industrial sectors, especially freight-intensive sectors. The four components are: freight-intensive sectors, property taxes, seaports, and military bases. An area with high concentrations of employment in freight-intensive sectors indicates that the area may need more transportation services. Also, relatively high property taxes, higher seaport volumes, and the presence of military bases may indicate increasing economic activities in a region thereby increasing the demand for transportation facilities

> **Weighting Factor -** The Primary Sector Robustness Index is assigned a weight equal to the other three indexes. The Primary Sector Robustness Index contributes about 25 percent of the total score for economic competitiveness.

Performance Measure – Tourism Intensity Index

The Tourism Intensity Index is a measure that indicates the influence of tourists on the local economy. The index includes two components that help to identify the economic benefits that accrue regionally as a result of tourists. The two components are: per capita sales taxes and the number of visitors. As one of the nation's top vacation destinations, the Tourism Intensity Index is of critical importance for the State of Florida. The components of the index capture two aspects of economic impacts from the number of visitors and their vacation expenditures.

> **Weighting Factor -** The Tourism Intensity Index is assigned a weight equal to the other three indexes. The Tourism Intensity Index contributes about 25 percent of the total score for economic competitiveness.

Performance Measure – Supporting Facilities Index

The Supporting Facilities Index identifies the contribution of certain types of facilities to the regional economy. The index has three components that consist of institutions of higher education, medical facilities, and technology centers. High concentrations of students, patients in medical facilities, and technical professionals in a region may indicate increased economic activity that would generate demand for transportation facilities.

> **Weighting Factor -** The Supporting Facilities Index is assigned a weight equal to the other three indexes. The Supporting Facility contributes about 25 percent of the total score for economic competitiveness.

Measures Not Used

As mentioned earlier, the economic competitive measures described above are all indices that attempt to measure economic activities that interact with transportation investments to produce economic growth. We understand that, in some cases, the actual variable in use is a proxy for a more fundamental, but difficult to measure, concept or activity. Numerous sophisticated computer applications, such as the REMI model, would produce detailed economic development impacts, such as new jobs created and direct economic impacts. However, these types of applications are not appropriate for implementation in evaluating hundreds of projects on a statewide basis.

Benefit/Cost Ratio is also a measure that indicates whether a transportation project can generate higher economic benefit than the costs incurred. The benefits include travel time savings, safety savings, vehicle operating cost savings, and emission reduction savings while the costs include construction and operating/maintenance costs. The benefit to cost ratio measures the direct economic impact of a transportation project. If the value of the benefit and cost ratio is greater than one, it indicates that a transportation project may generate higher benefits than costs to be incurred. This measure is currently not used in the SIT evaluation, but is being researched for future inclusion. The level of data needed to accurately use this measure for projects on a statewide basis is not currently available.

Partner Financing Match is another economic measure not included in SIT. This measure does not address the economic competitiveness goal and may in fact work against it by unfairly favoring wealthier communities or private developers that can afford the match. If a project is not in an MPO area, the impacted local government is recommended to be given an equal opportunity to provide letters or vote of support or demonstrating the project is in their long range plan. Generally, this measure should not be a prioritization criterion but is recommended to be a pre-requisite for any project to advance.

Goal 5 – Quality of Life

A total of four measures are used to evaluate a project's impact to satisfying SIS Goal 5, Quality of Life, as identified in the table below:

Goal Measured	Measure	Maximum Score
Quality of Life	Land and Social Criteria (Farmland Impact (1), Land Use (2), Demographic Impact (1))	4
	Geology Criteria (Sinkholes (1), Archeological/ Historical Site (2), Contamination (1))	4
	Habitat Criteria (Conservation Preservation (2), Wildlife (2))	4
	Water Criteria (Flood Plains/Flood Control (1), Coastal/Marine (1.75), Special Designations (1.75), Water Quality (1.75), Wetlands (1.75))	8
	Maximum Subtotal	***20 points***

FDOT strives to be a good environmental steward by supporting and constructing transportation projects that do-little to no-harm to Florida's quality of life. The SIT Quality of Life performance measures provide both an early social and environmental screening and give priority points to projects that enrich or enhance Florida's quality of life.

FDOT's transportation Efficient Transportation Decision Making (ETDM) and Project Development process incorporates the National Environmental Policy Act (NEPA) process, which evaluates theses and other measures in detail and identifies ways to avoid, minimize or mitigate their impacts. In general, the measures identified for this goal provide a first look or overview of the potential positive and negative impacts from a proposed project and provide points accordingly.

More detailed information regarding each performance measure for Goal 5, including the importance to Quality of Life, data sources and characteristics, measure categorization and scoring, and applicability to project segments is included in **Appendix E**.

Performance Measure – Land and Social Criteria

Land and Social criteria measures the impacts of a potential transportation project to Farmlands, Land Use, and the Demographics in the project area. It is based on the premise that the higher the functional class of roadway (from Interstates to two- lane connector streets) the further it should be from productive farmlands and various at-risk populations. These criteria were identified by professional transportation and environmental staff as one set of criteria commonly used to assess social and environmental impact of a highway project.

Weighting Factor - The measures for farmland, land use, and demographic (low income, minority, aged or youth populations) is distance. Points are given if the project is not located within a 100 to 500 foot buffer (depending on type roadway) of productive farmland, certain land uses and protected population groups. Land and Social criteria provide for 20 percent of a project's total Quality of Life score.

Performance Measure – Geology Criteria

The Geology Criteria measures assess the location and impacts of projects relative to Sinkholes, Archeological and Historic or Hazardous Waste Sites. These criteria were identified by professional transportation and environmental staff as one set of criteria commonly used to assess environmental impact of a highway project.

Weighting Factor - The measure for geological criteria is distance. Points are given if the project is not located within a 100 to 500 foot buffer (depending on type roadway) of sinkholes, archeological and historic or hazardous waste sites. Scoring it is not intended to be based on detailed geological analysis but is based on a preliminary analysis of unevaluated locations and National and State priority lists of these sites. Listings and related information are available from the Florida Department of Environmental Protection. Geology criteria provide for 20 percent of a project's total Quality of Life score.

Performance Measure – Habitat Criteria

Habitat criteria measures evaluate potential effects to threatened and endangered species, wildlife habitats, conservation and protected lands (not included in other criteria). These criteria were identified by professional transportation and environmental staff as one set of criteria commonly used to assess environmental impact of a highway project.

Weighting Factor - The measures for habitat criteria are distance and percent of the project within designated habitat and protected locations. Analysis at this early stage in project development is preliminary and ratings are based on the potential for impact and the amount of the project in or near key habitat locations. Points are given if the project does not pass through or is not located within a 100 to 500 foot buffer (depending on the type of roadway) of protected lands. One or two points are given for Arterial and Connectors if less than 25 or less than 10 percent of the project area is within habitat areas. Habitat criteria provide for 20 percent of a project's total Quality of Life score.

Performance Measure – Water Criteria

Water criteria evaluate potential project impacts to: Flood Plains; Flood Control areas; Costal and Marine habitats, sanctuaries and boundaries; Special Designations area such as aquatic preserves, costal barrier island resources or Outstanding Florida Waters; Water

Quality; and, Wetlands. These criteria were identified by professional transportation and environmental staff, Florida Fish and Wildlife and FEMA staff, and other Florida Costal Experts as the most logical set of criteria to use to assess the impact of a highway project on Florida's water resources. A number of factors were considered in selecting this set of criteria. For example: protecting the quality and availability of drinking water; the need for wetlands to help prevent flooding; and protecting Florida's aquatic life.

> **Weighting Factor -** Priority points are given based on a project's distance from sensitive water criteria locations or percent of the project that is within the zones identified by the water criteria. The score is based on the project segment that receives the worst score. Water criteria provide for 40 percent of a project's total Quality of Life score.

Measures Not Used

Hundreds of transportation related social and environmental measures can be identified and evaluated. A wide variety of social and environmental measures are often included in measuring the impact a highway project may have on the quality of life. Some common measures considered and not used include:

- Energy consumption;
- Air quality / mobile source emissions;
- Noise levels;
- Visual quality/ aesthetics;
- Vibration; and,
- Parks and open space.

All of these criteria, and more, are thoroughly analyzed during the planning, environmental or NEPA activities required as the project is planned designed and advances to construction. The "Measures Not Used" are those that require detailed analysis, calculations for the specific project or are better evaluated in other phases of the project development process. Calculations for the "Measures Not Used" are not routinely collected on a statewide basis and are beyond the scope of the SIT.

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Appendix A

Safety and Security Measures

Description

Crash ratio is the actual crash rate for a roadway segment divided by the average crash rate for that type of roadway for the entire system. This measure is referred to as the Crash Ratio.

Investment Indicator

Crash Ratio is being used as an indicator based on discussions with the Safety Office on the best measure to address crashes. This indicator provides the crash rate for a segment in comparison to the rate of similar roadways statewide.

Importance to Safety and Security Goal

Florida's highest priority and first goal is to provide a safe and secure transportation system for residents, businesses and visitors. Crashes are an indication of a safety problem at a location. A higher than average number of crashes at a specific location is an indication that there may be a major problem at that location. While FDOT recognizes it is important to address all high crash locations, using the crash ratio as a prioritization factor allows FDOT to distinguish among all needed projects and prioritize those at the locations with the highest proportion of crashes in the state.

Data Characteristics

Data Source: Safety Office
Data Type: Linear Coverage
Calculation: ACTUAL / AVERAGE (CRATIO already in the table); score = 0-10
Sample Data: See Crash Ratio (CRATIO)

CRATETBL															
ID	COSECSUB	BMP	EMP	STROAD	LENGTH	CC	CRASHES	ADT	ACTUAL	AVERAGE	**CRATIO**	CONLV	FTL	INJ	PRTY
1	86472000	21.709	21.835	SR 869	0.126	S-6DR	36	17133	15.229	2.027	**7.5131**	99.99	0	18	23

Measure Categorization & Scoring

SCORE	CRATIO
	Crash Ratio
10	Ratio > 3.66
8	2.59< Ratio <= 3.66
6	2.00< Ratio <= 2.59
4	1.63< Ratio <= 2.00
2	1.33< Ratio <= 1.63
1	1.0< Ratio <= 1.33
0	Ratio <= 1.0 = 0

Applicability to Project Segment

Weighted Average (mileage): *Calculate average crash ratio for project. Null values should be ignored, along with their associated lengths.*

$$\text{Weighted Average} = \frac{\sum SegmentValue * SegmentLength}{TotalLength}$$

Note on $SegmentLength$: If the underlying segmentation of data layers does not match project limits, $SegmentLength$ represents the fractional length of any given data segment occurring within the specified project limits.

Note on $TotalLength$: Within the context of this criterion, project $TotalLength$ represents the sum total of CRATIO segment lengths whose $SegmentValue$ is not null. See note above…

Description

The Fatal Crash measure identifies the location of fatal crashes on the State Highway System over the last three (3) years. Crashes are counted over the limits of the project and then divided by the project length. This will ensure shorter projects are not penalized.

Investment Indicator

Fatal Crash is being used as an indication based on discussions with the Safety Office on the best measure to address critical locations. This method is endorsed by the FDOT management who now provide limited funding to address fatal crash locations as areas for guardrail improvements. It is also considered nationally as a standard indicator of safety. This measure will indicate possibilities for safety improvement combined into interchange/intersection or mainline improvements.

Importance to Safety and Security Goal

Fatal crashes are one indicator used to measure safety. Saving lives is a high priority for FDOT. It is FDOT's desire to correct conditions and designs that may result in the loss of lives through a crash. If a project's location is the site of a large number of fatal crashes as compared to the average number of fatal crashes at a similar location in another part of the state, it will be receive a higher score. This will allow FDOT to distinguish among projects and target those by providing priority points to those that recommend improvements to locations with the highest number of fatal crashes.

Data Characteristics

Data Source: Safety Office
Data Type: Point locations
Calculation: (Sum of TOT_FATL within limits) / (Project Length)
Sample Data:

CSEVPTS											
ID	CARNUM	MANDIST	CONTYDOT	SECTNMBR	SUBSECT	COSECSUB	LOCMP	TOT_VHCL	**TOT_FATL**	TOT_INJR	TOT_PEDST
1	713698970	01	01	010	000	01010000	2.22	1	0	1	0

Measure Categorization & Scoring

SCORE	**TOT_FATL**
	Fatal crashes / mile
4	crash/mile > 5
3	4 < crash/mile <=5
2	3 < crash/mile <=4
1	2 > crash/mile <= 3
0	crash/mile <= 2

Applicability to Project Segment

Weighted Sum: *Count number of fatal crashes within project limits. Divide by project length.*

$$\textit{Crashes per Mile} = \frac{\sum Crashes}{projectLength}$$

Description

This measure is the Bridge Appraisal Rating for bridge width and vertical over-clearance. This measure is known as deck geometry in the bridge database.

Investment Indicator

Based on discussions with the Bridge Maintenance Office, the Bridge Appraisal Rating is one of the best measures to address safety. Bridges are broken into 2 categorizes: obsolete and deficient. The Bridge Maintenance Office addresses bridges classified as deficient due to the serious safety issues that need to be addressed. Obsolete bridges are not addressed by the Bridge Maintenance Office because there are issues related to the roadway on either side of the bridge that the Bridge Maintenance Office is not responsible for repairing. These obsolete bridges are the focus of this measure as they would be repaired along with a needed mainline improvement.

Importance to Safety and Security Goal

Narrow bridges and those with low clearances can be a cause for crashes because drivers may need to suddenly stop or adjust their speed to deal with the different geometrics from the rest of the roadway. Providing priority points to projects that address bridges with low appraisal ratings will help FDOT distinguish and prioritize among needed bridge projects. Improving these bridges will help achieve the goal of safety.

Data Characteristics

Data Source: Bridge Maintenance Office
Data Type: Point locations
Calculation: Calculation is already in the table; score = 0-3
Sample Data: See Deck Geometry (DKGEOM)

BRIDGENO	ROAD_SIDE	ROADWAY	BEGIN_POST	END_POST	MAPREF	FACTP	**DKGEOM**	DKCOND	SUPCOND	SUBCOND	CULVCOND
010059	L	01075000	17.871	17.915	404	11	1		0	0	N

Measure Categorization & Scoring

SCORE	**DKGEOM**
	Deck Geometry Rating
3	Rating = 3
2	Rating = 2
1	Rating = 1
0	Rating = 0 or N

Applicability to Project Segment

On Segment: *If an obsolete bridge occurs within project limits, score > 0 is awarded based on Deck Geometry. Highest score is used for projects involving more than one obsolete bridge. (DKGEOM)*

Description

Project located within a ten mile buffer of a military installation.

Investment Indicator

Use of links to or connectivity to US military basis as an indicator of safety and security is based on an understanding of the desires of USDOT and Homeland Security for the NHS and STRAHNET.

Importance to Safety and Security Goal

For the US military to secure the nation and Florida, it is important that they be able to quickly deploy their personnel and equipment. One of the original purposes and intents of the US interstate highway system was to provide a system of roadways that connect all US military installations across the country and allows them to move quickly to any location at which they are needed. Providing priority for projects located near a military base supports FDOT's goal of providing a safer and more secure transportation system and improves the security of State of Florida.

Data Characteristics

Data Source: Florida Geographic Data Library (FGDL)
Data Type: Polygon
Sample Data:

NAME	FACILITY_TYPE
MACDILL AIR FORCE BASE	Major

Measure Categorization & Scoring

SCORE	**Project within 10 Mile Buffer of Military Installations**
3	Yes
0	No

Applicability to Project Segment

Facility Location: If the facility lies within a ten mile buffer of identified military installations it will be given a value of one. If the facility does not fall within the buffer, it will be given a value of zero.

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Appendix B

System Preservation Measures

Description

Volume to capacity ratio indicates the level of congestion versus the total capacity of the facility. The v/c ratio provides a good indication whether the facility is congested by relating whether there is "excess" capacity available, or saturated conditions exist. A v/c ratio equal to 1.0 or greater indicates that the demand volume is exceeding the available capacity of the roadway and forced flow conditions will result.

Investment Indicator

The use of v/c ratio as a measure of system preservation is based on discussions with highway maintenance professionals. High v/c ratios indicate heavy traffic flows, which in turn create excess wear and tear on the roadway system. Roadways with higher traffic and congestion levels generally require more frequent maintenance.

Importance to System Preservation Goal

It is FDOT's goal to preserve and efficiently manage the existing transportation system before investing funds in expanding it. By measuring and prioritizing projects by v/c, FDOT will be able to identify projects with the highest levels of congestion and most in need of a project to address this need. It will be able to distinguish between project that may need design or traffic management improvements from those in need of additional capacity. Also, it follows that the roadway at a highly congested location may be deteriorating more quickly because of the additional wear and tear from extra traffic volumes than an area carrying less volume.

Data Characteristics

Data Source: District LOS Submittal
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from latest available District LOS/Future Traffic (previously within the Decision Support System)

Id	DISTRICT	ACCESS	RDWYID	BEGPT	ENDPT	lanes	MSV	LosNum	Los	aadt	**vc_ratio**	truck_aadt
1	1	PC	01040000	2.203	2.6	6	71600	2	B	31397	0.43	1984

Measure Categorization & Scoring

SCORE	**VC_RATIO**
	v/c For WP & CFP
10	v/c > 1.75
7	v/c > 1.50 and <= 1.75
4	v/c > 1.25 and <= 1.50
2	v/c > 1.00 and <= 1.25
0	v/c <= 1.00

Applicability to Project Segment

Weighted Average (mileage): *Calculate average v/c ratio over project length.*

$$\textit{Weighted Average} = \frac{\sum SegmentValue * SegmentLength}{TotalLength}$$

Note on $SegmentLength$: If the underlying segmentation of data layers does not match project limits, $SegmentLength$ represents the fractional length of any given data segment occurring within the specified project limits.

Description

Average Annual Daily Truck Traffic (AADTT) volume is a measure of the number of trucks traveling on a given section of roadway in both directions during an average day. For the system preservation goal, measures are categorized by functional and area type to identify areas of the system with above normal truck traffic flows, relative to similar facilities throughout the state.

Investment Indicator

AADTT is used as a measure for preservation as the number of trucks on a facility degrades the condition of the roadway at a greater rate than passenger vehicles. There are two measures for this criterion: one for the Cost Feasible timeframe and one for the Work Program timeframe. The difference is in the thresholds used and is based on the current level of service information provided by the FDOT Districts.

Importance to System Preservation Goal

AADTT is used to measure FDOT's goal to effectively preserve and manage Florida's transportation system. Higher truck volumes may decrease the life of a pavement or facility. Special treatments or materials may be needed to extend the facility's useful life because of the additional wear and tear caused by higher than average truck traffic. Providing priority to projects at locations with higher truck volumes can focus on preserving these facilities and will begin to address the special needs at these locations.

Data Characteristics

Data Source: District LOS Submittal
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from latest available District LOS/Future Traffic (previously within the Decision Support System)

Id	RDWYID	BEGPT	ENDPT	aadt	**truck_aadt**	**truck_percent**	LOSTABLE	areatype	facilitytype	**priocat**
1	01040000	2.203	2.6	25920	**1638**	**.06319**	1hwyc	Urban	Highway	**2**

Measure Categorization & Scoring

WP AADTT:

SCORE	Truck AADTT (by PRIOCAT)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural Arterial*	*Rural Highway*	*Rural Freeway*
6	> 6,688	> 7,177	> 17,501	> 4,804	> 4,248	>16,154
3	> 3,245 and <= 6,688	> 3,641 and <= 7,177	> 7,488 and <= 17,501	> 2,768 and <= 4,804	> 1,846 and <= 4,248	> 9,284 and <= 16,154
0	< 3,245	< 3,641	< 7,488	< 2,768	< 1,846	< 9,284

CFP AADTT:

SCORE	Truck AADTT (by PRIOCAT)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural Arterial*	*Rural Highway*	*Rural Freeway*
6	> 7,967	> 8,988	> 21,226	> 5,939	> 5,440	> 20,036
3	> 3,835 and <= 7,967	> 4,434 and <= 8,988	> 9,414 and <= 21,226	> 3,378 and <= 5,939	> 2,248 and <= 5,440	> 11,419 and <= 20,036
0	< 3,835	< 4,434	< 9,414	< 3,378	< 2,248	< 11,419

Applicability to Project Segment

Weighted Average (mileage): *Average measure over project length.*

$$\text{Weighted Average} = \frac{\sum SegmentValue * SegmentLength}{TotalLength}$$

Note on SegmentLength: If the underlying segmentation of data layers does not match project limits, SegmentLength represents the fractional length of any given data segment occurring within the specified project limits.

Score Category Lookup:

tableid_lookup			
tableid	areatype	facilitytype	**priocat**
1art2c	Urban	Arterial	1
1art3c	Urban	Arterial	1
1art1c	Urban	Arterial	1
1art1d	Urban	Arterial	1
1art2d	Urban	Arterial	1
1art3d	Urban	Arterial	1
1art4	Urban	Arterial	1
1hwyd	Urban	Highway	2
1hwyc	Urban	Highway	2
1fwy1d	Urban	Freeway	3
1fwy2c	Urban	Freeway	3
1fwy2d	Urban	Freeway	3
1fwy1c	Urban	Freeway	3
2art3	Transition	Arterial	4
2art2	Transition	Arterial	4
2art1	Transition	Arterial	4
3art	RuralDev	Arterial	4
2hwy	Transition	Highway	5
3hwyd	RuralDev	Highway	5
3hwyu	RuralUn	Highway	5
3fwy	Rural	Freeway	6
2fwy	Transition	Freeway	6

Description

Uses future Average Annual Daily Traffic (AADT) to determine volume of traffic. Measure is categorized by functional and area type to identify areas of the system with above normal traffic flows, relative to similar facilities throughout the state.

Investment Indicator

Using AADT as an indicator is based on discussions with highway maintenance professionals on the need to measure overall traffic. There are two measures for this criterion: one for the Cost Feasible timeframe and one for the Work Program timeframe. The difference is in the thresholds used and is based on the current level of service information provided by the FDOT Districts. This measure differs from v/c ratio as it identifies locations with significant traffic as compared to other similar facilities.

Importance to System Preservation Goal

AADT is used to measure the FDOT goal of effective preservation and management of Florida's transportation facilities and services. Highway segments and surfaces carrying the highest AADT are taking the greatest stress being subjected to the most wear and tear. Identifying and giving priority to projects at these locations can help achieve the goal of system preservation.

Data Characteristics

Data Source: District LOS Submittal
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from latest available District LOS/Future Traffic (previously within the Decision Support System)

Id	RDWYID	BEGPT	ENDPT	**aadt**	truck_aadt	truck_percent	LOSTABLE	areatype	facilitytype	**priocat**
1	01040000	2.203	2.6	**25920**	1638	.06319	1hwyc	Urban	Highway	**2**

Measure Categorization & Scoring

WP AADT:

SCORE	AADT (by PRIOCAT)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural Arterial*	*Rural Highway*	*Rural Freeway*
2	> 70,151	> 69,745	> 217,227	> 39,058	> 25,887	> 91,491
1	> 37,049 and <= 70,151	> 37,798 and <= 69,745	> 100,710 and <= 217,227	> 25,848 and <= 39,058	> 14,158 and <= 25,887	> 37,049 and <= 55,271
0	< 37,049	< 37,798	< 100,710	< 25,848	< 14,158	< 55,271

CFP AADT:

SCORE	AADT (by PRIOCAT)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural Arterial*	*Rural Highway*	*Rural Freeway*
2	> 82,496	> 88,001	> 260,251	> 49,454	> 33,283	> 115,462
1	> 43,478 and <= 82,496	> 46,166 and <= 88,001	> 123,007 and <= 260,251	> 31,571 and <= 49,454	> 17,240 and <= 33,283	> 68,186 and <= 115,462
0	< 43,478	< 46,166	< 123,007	< 31,571	< 17,240	< 68,186

Applicability to Project Segment

Weighted Average (mileage): *Average measure over project length.*

$$\text{Weighted Average} = \frac{\sum SegmentValue * SegmentLength}{TotalLength}$$

Note on $SegmentLength$: If the underlying segmentation of data layers does not match project limits, $SegmentLength$ represents the fractional length of any given data segment occurring within the specified project limits.

Score Category Lookup:

tableid_lookup			
tableid	areatype	facilitytype	**priocat**
1art2c	Urban	Arterial	1
1art3c	Urban	Arterial	1
1art1c	Urban	Arterial	1
1art1d	Urban	Arterial	1
1art2d	Urban	Arterial	1
1art3d	Urban	Arterial	1
1art4	Urban	Arterial	1
1hwyd	Urban	Highway	2
1hwyc	Urban	Highway	2
1fwy1d	Urban	Freeway	3
1fwy2c	Urban	Freeway	3
1fwy2d	Urban	Freeway	3
1fwy1c	Urban	Freeway	3
2art3	Transition	Arterial	4
2art2	Transition	Arterial	4
2art1	Transition	Arterial	4
3art	RuralDev	Arterial	4
2hwy	Transition	Highway	5
3hwyd	RuralDev	Highway	5
3hwyu	RuralUn	Highway	5
3fwy	Rural	Freeway	6
2fwy	Transition	Freeway	6

Description

This measure identifies Bridge Condition Ratings for Deck Condition, Superstructure, Substructure, and Culverts. These measures are known as Deck Conditions in the Bridge database.

Investment Indicator

Based on discussions with the Bridge Maintenance Office, this is the best measure to address preservation. Bridges are broken into 2 categorizes: obsolete and deficient. The Bridge Maintenance Office addresses bridges classified as deficient with ratings 4 and below due to the serious safety issues that need to be addressed. The SIT Tool is only addressing those bridges that have a bridge condition rating of 5 and above as they are not the focus of the Bridge Maintenance Office.

Importance to System Preservation Goal

Bridge condition ratings are used to measure FDOT's goal of system preservation. For the system preservation goal, this measure provides additional points to projects which contain bridges classified as obsolete, which identifies projects that improve the function or design of a facility and help preserve the existing system. Identifying and giving priority points to the "worst first" serves to achieve FDOT's goal of preserving the existing system.

Data Characteristics

Data Source: Bridge Maintenance Office
Data Type: Point locations
Calculation: Calculation is already in the table; score = 0-2; take highest score of 4 measures. CULVCOND = N means that a culvert is not used at that location.
Sample Data: See Deck Condition (DKCOND), Superstructure (SUPCOND), Substructure (SUBCOND), and Culverts (CULVCOND)

OBJECTID	BRIDGENO	ROAD_SIDE	ROADWAY	BEGIN_POST	END_POST	MAPREF	FACTP	DKGEOM	**DKCOND**	**SUPCOND**	**SUBCOND**	**CULVCOND**	SHAPE_LEN
1165	860327	L	86075000	0	0.036	404	11	1	**0**	**0**	**0**	**N**	57.8514355887

Measure Categorization & Scoring

SCORE	**DKCOND**	**SUPCOND**	**SUBCOND**	**CULVCOND**
	Deck Condition Rating (take highest score of 4 measures)			
2	Rating = 2	Rating = 2	Rating = 2	Rating = 2
1	Rating = 1	Rating = 1	Rating = 1	Rating = 1
0	Rating = 0 or N	Rating = 0 or N	Rating = 0 or N	Rating = 0 or N

Applicability to Project Segment

On Segment: *If a deficient bridge occurs within project limits, score > 0 is awarded based on Deck Condition Rating (use highest score of four (4) measures for each bridge). Highest score is used for projects involving more than one deficient bridge.*

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Appendix C

Mobility Measures

Description

This measure indicates locations of SIS connector facilities across the state for projects that link or improve connections between two or more transportation modes.

Investment Indicator

This measure identifies facilities that link between modes which are integral to the intermodal system being developed.

Importance to Mobility Goal

People and freight often move on several modes of transportation. Goods may arrive by ocean and need to be transferred to truck or rail to reach their final destination. People may travel by rail or bus and need to walk or transfer to a car to reach their final destination. Intermodal connectors serve to facilitate the transfer of goods or people between two modes or connect two levels of such modes. Providing priority points to projects related to improving connector locations supports FDOT's mobility goal by supporting a smooth and efficient transition or transfer of people and freight on Florida's system.

Data Characteristics

Data Source: RCI – Feature 147
Data Type: Connector locations – identified in RCI according to the following table – **Feature 147 SIS Facility Type**

SIS System:
11- SIS: Highway corridors that play a critical role in moving people and goods to and from other nations and states, as well as among economic regions within Florida (Required to be on the FIHS or NHS serving major markets in Alabama and Georgia).
12- Emerging SIS: Highway corridors that are of statewide or interregional significance, but do not currently meet the criteria for inclusion as SIS. These facilities meet different thresholds today and are potential candidates for inclusion in future updates as SIS. (Required to be on the FIHS or SHS serving Rural Areas of Critical Concern)
Connectors:
21- SIS Connector: Highways that connect SIS Hubs to SIS Corridors. (May be either on the SHS or Off System)
22- Emerging SIS Connector: Highways that connect Emerging SIS Hubs to SIS Corridors (May be either on the SHS or Off System)
Active/Exclusive:
31- SIS Link: A segment that removes the visual mapping gap and provides continuity between the SIS, Connectors, and Hubs. The mileage of the SIS Link is not part of the SIS Highway Network and is located on Active Exclusive facilities (ramps and frontage roads). These links are usually found at interchanges and are needed to complete the visual flow for mapping the SIS routes.
32- Emerging SIS Link: A segment that removes the visual mapping gap and provides continuity between the Emerging SIS, Connectors, and Hub. The mileage of the SIS Link is not part of the SIS Highway Network and is located on Active Exclusive facilities (ramps and frontage roads). These links are usually found at interchanges and are needed to complete the visual flow for mapping the SIS routes.
Pending:
41- Pending SIS: Roadway alignment that has been assigned a Roadway ID in RCI under Pending Status. The road has not been constructed but has been designated as a SIS corridor upon acceptance of construction completion.
42- Pending Emerging SIS: Roadway alignment that has been assigned a Roadway ID in RCI under Pending Status. The road has not been constructed but has been designated as an Emerging SIS corridor upon acceptance of construction completion.
43- Pending SIS Connector: Roadway alignment that has been assigned a Roadway ID in RCI under Pending Status. The road has not been constructed but has been designated as a SIS Connector upon acceptance of construction completion.
44- Pending Emerging SIS Connector: Roadway alignment that has been assigned a Roadway ID in RCI under Pending Status. The road has not been constructed but has been designated as an Emerging SIS Connector upon acceptance of construction completion.

Calculation: *None*
Sample Data: See RCI Database *(Feature has been extracted into SIS_Connectors.mdb)*

Measure Categorization & Scoring

SCORE	**Feature 147 (FACTP) = 21 or 22**
	Connector
1	Yes
0	No

Applicability to Project Segment

On Segment: *If an connector occurs within project limits, score > 0 is awarded based on Feature 147 equal to 21 (SIS Connector) or 22* (*Emerging SIS Connector)*

Description

Volume-to-capacity (v/c) ratio indicates the level of congestion versus the total capacity of the facility. The v/c ratio provides a good indication whether the facility is congested by relating whether there is "excess" capacity available, or saturated conditions exist. A v/c ratio equal to 1.0 or greater indicates that the demand volume is exceeding the available capacity of the roadway and forced flow conditions will result.

Investment Indicator

Transportation professionals agree that one of the most important ways to evaluate if a highway is operating properly is to measure v/c. The v/c ratio is a good measure of congestion, which is a function of available space compared to the number of vehicles trying to occupy that space at the same time. Congestion has three characteristics. These include length (how far congestion stretches); time (how long it lasts); and intensity (how many vehicles are in the space described.)

Volume-to-capacity (v/c) ratio describes the level of congestion compared to the total capacity available. A v/c ratio equal to 1.0 or greater indicates that the demand (or volume) exceeds the capacity and congested conditions result.

Importance to Mobility Goal

V/C ratio is used to address the SIS Goal of Mobility. Congestion slows traffic costing people and freight movers' time. It also reduces or eliminates their ability to reliably estimate on how long it will take to get from one place to another. Roadway segments with higher v/c ratios generally have a greater need for improvements, which directly links to the SIS Mobility Goal.

Data Characteristics

Data Source: District LOS Submittal
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from latest available District LOS/Future Traffic (previously within the Decision Support System)

Id	DISTRICT	ACCESS	RDWYID	BEGPT	ENDPT	lanes	MSV	LosNum	Los	aadt	**vc_ratio**	truck_aadt
1	1	PC	01040000	2.203	2.6	6	71600	2	B	31397	0.43	1984

Measure Categorization & Scoring

SCORE	**VC_RATIO**
	v/c For WP & CFP
4	v/c > 1.75
3	v/c > 1.50 and <= 1.75
2	v/c > 1.25 and <= 1.50
1	v/c > 1.00 and <= 1.25
0	v/c <= 1.00

Applicability to Project Segment

Weighted Average (mileage): *Calculate average v/c ratio over project length.*

$$\textit{Weighted Average} = \frac{\sum SegmentValue * SegmentLength}{TotalLength}$$

Note on SegmentLength: If the underlying segmentation of data layers does not match project limits, SegmentLength represents the fractional length of any given data segment occurring within the specified project limits.

Description

Truck percentage identifies the percentage of the total average daily traffic volume comprised of trucks along a particular segment of roadway. Measures are categorized by functional and area type to identify areas of the system with above normal truck traffic flows, relative to similar facilities throughout the state.

Investment Indicator

Trucks move differently than automobiles: they require more time to accelerate and to stop; they require more time to go up an entrance ramp and merge. Including trucks with automobile traffic can slow traffic flow and alter how traffic flows. Often automobile drivers are reluctant to pass trucks and, because of the truck's length, they require more time and greater sight distance to pass. Visibility limits of trucks often result in trucks leaving larger gaps between each other and automobiles.

Trucks are critical to the economic health of Florida. Trucks carry the parts, products, finished goods and raw materials needed by business and industry for Florida's economy to prosper. Nationally, more than 70 to 80% of the value and weight of all freight is carried by trucks. Manufactures and retailers demand their shipments at a specific time or "just-in-time." This means that "travel time reliability" is critical to the trucking industry.

Importance to Mobility Goal

Truck percentage is used as a measure of mobility to indicate, relative to other similar types of facilities statewide, whether a facility is carrying more than its share of truck traffic. Facilities carrying higher percentages of truck traffic have a greater mobility impact due to the interaction between trucks and autos. Providing points based on the percentage of trucks addresses mobility by distinguishing projects at locations with the highest percentage of truck traffic.

Data Characteristics

Data Source: District LOS Submittal
Data Keeper: Gina Bonyani or Paul Fang, FDOT Central Office
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from latest available District LOS/Future Traffic (previously within the Decision Support System)

Id	RDWYID	BEGPT	ENDPT	aadt	**truck_aadt**	**truck_percent**	LOSTABLE	areatype	facilitytype	**priocat**
1	01040000	2.203	2.6	25920	**1638**	**.06319**	1hwyc	Urban	Highway	**2**

Measure Categorization & Scoring

Truck Percentage:

SCORE	Percent Trucks (by PRIOCAT, all listed as percentages)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural Arterial*	*Rural Highway*	*Rural Freeway*
2	> 15.77	> 17.59	> 12.19	> 16.52	> 22.56	> 26.34
1	> 8.79 and <= 15.77	> 9.59 and <= 17.59	> 7.43 and <= 12.19	> 10.68 and <= 16.52	> 13.05 and <= 22.56	> 16.79 and <= 26.34
0	< 8.79	< 9.59	< 7.43	< 10.68	< 13.05	< 16.79

Applicability to Project Segment

Weighted Average (mileage): *Average measure over project length.*

$$\text{Weighted Average} = \frac{\sum SegmentValue * SegmentLength}{TotalLength}$$

Note on SegmentLength: If the underlying segmentation of data layers does not match project limits, SegmentLength represents the fractional length of any given data segment occurring within the specified project limits.

Score Category Lookup:

tableid_lookup			
tableid	areatype	facilitytype	**priocat**
1art2c	Urban	Arterial	1
1art3c	Urban	Arterial	1
1art1c	Urban	Arterial	1
1art1d	Urban	Arterial	1
1art2d	Urban	Arterial	1
1art3d	Urban	Arterial	1
1art4	Urban	Arterial	1
1hwyd	Urban	Highway	2
1hwyc	Urban	Highway	2
1fwy1d	Urban	Freeway	3
1fwy2c	Urban	Freeway	3
1fwy2d	Urban	Freeway	3
1fwy1c	Urban	Freeway	3
2art3	Transition	Arterial	4
2art2	Transition	Arterial	4
2art1	Transition	Arterial	4
3art	RuralDev	Arterial	4
2hwy	Transition	Highway	5
3hwyd	RuralDev	Highway	5
3hwyu	RuralUn	Highway	5
3fwy	Rural	Freeway	6
2fwy	Transition	Freeway	6

Description

This measure uses future Average Annual Daily Traffic (AADT) to categorize volume of traffic. The measure is categorized by functional and area type to identify areas of the system with above normal traffic flows, relative to similar facilities throughout the state.

Investment Indicator

AADT is being used as an indicator of mobility based on discussions with transportation professionals on the need to measure overall traffic. There are two measures for this criterion: one for the Cost Feasible timeframe and one for the Work Program timeframe. The difference is in the thresholds used and is based on the current level of service information provided by the FDOT Districts. This measure differs from v/c ratio as it identifies locations with significant traffic as compared to other similar facilities.

Importance to Mobility Goal

Intuitively, heavier volumes can slow the movement of traffic. For example, in heavy traffic locations, the actions of one driver braking or swerving will have a ripple or wave-like effect on the many vehicles surrounding them and slow all the traffic. Prioritizing projects in locations with higher than average vehicular volumes supports FDOT's mobility goal by trying to improve the overall movement of traffic in high volume locations. This indicator also considers and gives priority to projects that address problems in areas with future traffic growth that may get worse over time.

Data Characteristics

Data Source: District LOS Submittal
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from latest available District LOS/Future Traffic (previously within the Decision Support System)

Id	RDWYID	BEGPT	ENDPT	**aadt**	truck_aadt	truck_percent	LOSTABLE	areatype	facilitytype	**priocat**
1	01040000	2.203	2.6	**25920**	1638	.06319	1hwyc	Urban	Highway	**2**

Measure Categorization & Scoring

WP AADT:

SCORE	AADT (by PRIOCAT)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural Arterial*	*Rural Highway*	*Rural Freeway*
2	> 70,151	> 69,745	> 217,227	> 39,058	> 25,887	> 91,491
1	> 37,049 and <= 70,151	> 37,798 and <= 69,745	> 100,710 and <= 217,227	> 25,848 and <= 39,058	> 14,158 and <= 25,887	> 37,049 and <= 55,271
0	< 37,049	< 37,798	< 100,710	< 25,848	< 14,158	< 55,271

CFP AADT:

SCORE	AADT (by PRIOCAT)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural Arterial*	*Rural Highway*	*Rural Freeway*
2	> 82,496	> 88,001	> 260,251	> 49,454	> 33,283	> 115,462
1	> 43,478 and <= 82,496	> 46,166 and <= 88,001	> 123,007 and <= 260,251	> 31,571 and <= 49,454	> 17,240 and <= 33,283	> 68,186 and <= 115,462
0	< 43,478	< 46,166	< 123,007	< 31,571	< 17,240	< 68,186

Applicability to Project Segment

Weighted Average (mileage): *Average measure over project length.*

$$\text{Weighted Average} = \frac{\sum SegmentValue * SegmentLength}{TotalLength}$$

Note on SegmentLength: If the underlying segmentation of data layers does not match project limits, SegmentLength represents the fractional length of any given data segment occurring within the specified project limits.

Score Category Lookup:

tableid_lookup			
tableid	areatype	facilitytype	**priocat**
1art2c	Urban	Arterial	1
1art3c	Urban	Arterial	1
1art1c	Urban	Arterial	1
1art1d	Urban	Arterial	1
1art2d	Urban	Arterial	1
1art3d	Urban	Arterial	1
1art4	Urban	Arterial	1
1hwyd	Urban	Highway	2
1hwyc	Urban	Highway	2
1fwy1d	Urban	Freeway	3
1fwy2c	Urban	Freeway	3
1fwy2d	Urban	Freeway	3
1fwy1c	Urban	Freeway	3
2art3	Transition	Arterial	4
2art2	Transition	Arterial	4
2art1	Transition	Arterial	4
3art	RuralDev	Arterial	4
2hwy	Transition	Highway	5
3hwyd	RuralDev	Highway	5
3hwyu	RuralUn	Highway	5
3fwy	Rural	Freeway	6
2fwy	Transition	Freeway	6

Description

This measure identifies if a project fills a gap in the statewide transportation system.

Investment Indicator

System gap is used to determine system continuity by encouraging projects that create a unified system. Changes in number of lanes frequently are avoided. Continuous sections of fewer lanes greater than 30 miles in length are not considered system gaps.

Importance to Mobility Goal

Correcting a system gap can help achieve the FDOT goal to increase mobility. A gap in a system may be, for example, a portion of a roadway that changes from four-lane to two-lane or it may be a truck carrying freight cargo needing to move on narrow, local streets to reach a private dock or rail yard. Each of these may slow the movement of traffic. Projects that address gaps help avoid bottlenecks and allow for a seamless and continual movement of people and goods that speak to the FDOT mobility goal.

Data Characteristics

Data Source: Systems Planning Office
Data Type: Linear Coverage
Calculation: Yes/No and project adds lanes
Sample Data:

Gap Table *(gaps will be < 30 miles in length)*

ID	RDWYID	BEGPT	ENDPT	LENGTH
1	**01040000**	**0.75**	**10.35**	9.60

(example data)

Project Database

MAPID	ROADWAY1	BEGIN_POST1	END_POST1	IMPROVEMENT	...
1-105-420	**01040000**	**2.203**	**10.67**	**A2-8**	*(various other data)*

(example data)

Measure Categorization & Scoring

SCORE	System Gap Filled
2	Yes
0	No

Applicability to Project Segment

Yes/No and project adds lanes

Description

This measure identifies the change in v/c ratio resulting from the addition of lanes. This measure is to be used only on mainline projects and not interchange projects. See the "interchange operations" measure for interchange or intersection improvement projects.

Investment Indicator

Change in v/c Ratio – LOS is used to determine a level of service change due to implementation of a project. Appropriate data varies for this criterion: 2025 projected traffic will be used for the Cost Feasible timeframe; 2015 projected traffic will be used for the Work Program timeframe.

Importance to Mobility Goal

Change in v/c - LOS can be an indication of a chokepoint or condition at a location that impedes the smooth, continual flow of traffic. Providing priority to projects at locations with changes in v/c-LOS will distinguish and prioritize projects the focus on improving a specific location that is impeding the smooth and continual flow of traffic along a mainline segment.

Data Characteristics

Data Source: District LOS Submittal
Data Type: Linear Coverage
Calculation:

1. Ensure project is not an interchange/intersection (INT_TYPE = "NI")
2. Lookup new maximum volume at critical LOS from applicable LOS table
3. Calculate new v/c ratio
4. Evaluate new ratio versus "existing" ratio and determine percentage change

Sample Data: Not applicable

Measure Categorization & Scoring

SCORE	Change in v/c (percent)
3	>25%
2	10-25%
1	0-10%
0	0%

Applicability to Project Segment

Weighted Average (mileage): *Average new v/c and "existing" v/c*

$$\text{Weighted Average} = \frac{\sum SegmentValue * SegmentLength}{TotalLength}$$

Note on $SegmentLength$: If the underlying segmentation of data layers does not match project limits, $SegmentLength$ represents the fractional length of any given data segment occurring within the specified project limits.

Description

This measure identifies if a project is an interchange or intersection improvement. This measure is to be used only for intersection and interchange projects and not mainline projects. See the "Change in v/c Ratio - LOS" measure for mainline improvement projects.

Investment Indicator

The specific indicator to be used to determine level of service as measures for interchanges has not yet been developed. Therefore, in the interim, this measure provides points for interchange or intersection improvement projects, as it assumes the project provides an improvement in traffic operations. The current measure identifies values based on facilities that are involved.

Importance to Mobility Goal

Interchanges are locations that require personal vehicles and trucks to change speed to transition between two or more highway segments. If the change, for example, is between a limited access throughway that carries high volumes at higher speeds onto a local service road with traffic signals and fewer lanes, congestion and delays can occur. These delays can also cause back-ups onto the mainline of an interstate. If ramps are too short or too steep, trucks accessing or exiting at an interchange may cause congestion and delays because they need longer distances to accelerate or slow to a stop. Providing points to projects in these locations helps achieve the mobility goal by identifying projects intended to improve these locations.

Data Characteristics

Data Source: Systems Planning Office
Data Type: In project database
Calculation:
1. INT_TYPE in (SS, SN)

Sample Data:

MAPID	ROADWAY1	BEGIN_POST1	END_POST1	IMPROVEMENT	**INT_TYPE**	...
1-105-420	01260500	2.203	2.600	M-INCH	**SN**	*(various other data)*

(example data)

Measure Categorization & Scoring

SCORE	**INT_TYPE**
	Interchange Type
3	SS (SIS/SIS)
2	SN (SIS/Non-SIS)
0	None

Applicability to Project Segment

Not Applicable

Description

This measure identifies bottlenecks and grade separations as locations for operational improvements.

Investment Indicator

Use of bottlenecks as an indicator of mobility is based on the understanding that as a chokepoint they are impeding the smooth flow of traffic. At-grade intersections (locations where traffic flows meet to change direction such as a traffic signal at an intersection) or a railroad and roadway crossing are also locations where opposing traffic must stop.

Importance to Mobility Goal

Bottlenecks are by definition a location where the flow of traffic is slowed. Traffic meeting at an at-grade intersection also must stop to allow opposing traffic to cross. By identifying and providing points to projects that address each of these conditions, FDOT is moving to advance its Mobility goal and improving the smooth movement of traffic.

Data Characteristics

Data Source: In project database
Data Type: Project Attribute (In project database)
Calculation: Yes/No
Sample Data:

MAPID	ROADWAY1	BEGIN_POST1	END_POST1	**OP_IMP**	...
1-105-420	01040000	2.203	2.600	**1**	*(various other data)*

(example data)

Measure Categorization & Scoring

SCORE	**OP_IMP**
	Bottleneck / Grade Separation
2	Yes (1)
0	No (0)

Applicability to Project Segment

Not Applicable

Description

This measure identifies total vehicle hours of delay per vehicle (on a daily, 24-hour basis) along a given section of roadway.

Investment Indicator

Delay is by definition an indicator of the lack mobility or a slowing of the free and smooth movement of traffic.

Importance to Mobility Goal

Delays to the smooth and uninterrupted movement of traffic can cost people and businesses money and time. Delays occur from a number of conditions, design features or special circumstances. For example, a sharp curve in a roadway as well as rush-hour traffic can cause re-occurring delays. Non-reoccurring delays may be caused by a crash because traffic slows to avoid it (or to see it) and from emergency vehicles trying to service it, or from its location blocking the flow of traffic. Delays are negative impacts to the smooth flow of traffic – or mobility. Identifying and removing conditions that cause delays and programs (such as roadway capacity increases, improvements to ITS and emergency management programs) will help achieve FDOT's efforts to increase mobility.

Data Characteristics

Data Source: Transportation Statistics Office
Data Type: Delay
Calculation: Delay calculations completed before data reported, but project delay must be calculated using proportional sum calculation (see below).
Sample Data:

Roadway	Local Name	Begin Post	End Post	SIS Facility Type	SECTADT	Daily Delay (veh hours)
3175000	SR 93 / I-75	60.532	60.55	11	60821	0
3175000	SR 93 / I-75	60.55	60.565	11	78500	0.518889776
3175000	SR 93 / I-75	60.565	60.885	11	78500	11.06964855
3175000	SR 93 / I-75	60.885	60.907	11	78500	0.761038338
3175000	SR 93 / I-75	60.907	63.504	11	78500	89.83711651
4010000	SR 31	0	1.28	99	4500	0
4010000	SR 31	1.28	1.432	99	4500	0
4010000	SR 31	1.432	1.49	99	4500	0

Measure Categorization & Scoring

SCORE	***Total Daily Delay (vehicle hours)***
4	> 2,500 vehicle hours
3	> 1,000 and <= 2,500
2	> 250 and <= 1,000
1	> 0 and <= 250
0	0

Applicability to Project Segment

Total Daily Delay will equal the sum of the Daily Delay for all segments within the project limits.

$$\textit{Total Daily Delay} = \sum SegmentValue$$

If the project limits do not match the segment limits of the data, a proportional sum of the Total Daily Delay will be used to determine the correct value to represent ONLY the portion of the project segment that is located within the data segment. This value will be added to the remaining data segments that make up the project limits.

$$\textit{Total Daily Delay} = \sum SegmentValue * \left(\frac{SegmentInProjectLength}{TotalSegmentLength} \right)$$

<u>Note</u>: If the underlying segmentation of data layers does not match project limits, SegmentInProjectLength *represents the fractional length of any given segment of delay data occurring within the specified project limits.* TotalSegmentLength *represents the total length of the original segment of delay data irrespective of the project.*

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Appendix D

Economic Measures

Description and Index Summary

The Demographic Preparedness Index measures the impact of population and related measures on a regional economy. The index is comprised of five components: population density, workforce size, educational attainment level, population growth rate, and per capita income. The total point value of the index is 5 points and has equal weights on all five components as illustrated in the following:

SCORE	CRITERIA
1	Population Density
1	Workforce Size
1	Educational Attainment Level
1	Population Growth Rate
1	Per Capita Income
5	TOTAL Demographic Preparedness Index

Investment Indicator

The Demographic Preparedness Index reveals the characteristics of demographic shifts that could potentially contribute to the area's economy. For instance, areas with certain demographic characteristics tend to be centers of economic activity, and the productivity of those areas tends to increase disproportionately as transportation infrastructure and services are improved.

Importance to Economic Goal

Population is the most important force behind economic development in an area. Increasing population will generate substantial demand for products and services including transportation services and facilities. At the same time, a highly educated and sufficiently large labor force will provide an adequate labor supply for economic development. The Demographic Preparedness Index captures both aspects of supply and demand driven by population in an area.

Population Density Indicator

This measure identifies census tracts with higher population densities relative to the state. This measure can be viewed as a proxy for economic centers. Economic centers of activity typically have a higher propensity and demand for transportation infrastructure and increased congestion. Therefore, higher population density gives rise to the need for additional transportation investments to support the higher level of economic activity.

The value of this measure indicates the relative size of population density in a census tract when comparing it to the state's average density. When the value of this measure equals (or is greater than) 100, it indicates that the population density in a census tract is the same as (or higher) than the state average.

Population Density Data Characteristics

Data Source: 2000 Census
Data Type: Population and land area in square miles by census tract
Calculation: Yes

Population Density Measure Categorization & Scoring

SCORE	Population Density Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.0	≥ 200	≥ 200	≥ 200	≥ 200
0.8	150-199	150-199	150-199	150-199
0.6	100-149	100-149	100-149	100-149
0.4	50-99	50-99	50-99	50-99
0.2	0-49	0-49	0-49	0-49

Workforce Size Indicator

This measure identifies the size of a census tract's workforce relative to the rest of state. When this measure equals (or is greater than) 100, it indicates that the ratio of workforce to population in a census tract is the same as (or higher than) the corresponding ratio in the state.

Workforce Size Data Characteristics

Data Source: 2000 Census
Data Type: Ratio of Labor Force to Population by census tract
Calculation: Yes

Workforce Size Measure Categorization & Scoring

SCORE	Workforce Size Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.0	≥ 200	≥ 200	≥ 200	≥ 200
0.8	150-199	150-199	150-199	150-199
0.6	100-149	100-149	100-149	100-149
0.4	50-99	50-99	50-99	50-99
0.2	0-49	0-49	0-49	0-49

Educational Attainment Level Indicator

This measure identifies the level of educational attainment by census tract relative to the state average. Higher levels of educational attainment are usually associated with labor force regional economic competitiveness and the potential for increased economic activity and consequently higher demand for transportation facilities.

Relative to the state of Florida, when the value of this measure equals (or is greater than) 100, it indicates that the census tract has the same (or higher) number of people received high school or above education as (or than) the state average.

Educational Attainment Level Data Characteristics

Data Source: 2000 Census
Data Type: Percentage of High School Graduate or Higher over Population 25-Year or Older by census tract
Calculation: Yes

Educational Attainment Level Measure Categorization & Scoring

SCORE	Educational Attainment Level Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.0	≥ 200	≥ 200	≥ 200	≥ 200
0.8	150-199	150-199	150-199	150-199
0.6	100-149	100-149	100-149	100-149
0.4	50-99	50-99	50-99	50-99
0.2	0-49	0-49	0-49	0-49

Population Growth Rate Indicator

Population growth creates additional opportunities for economic growth. This is because the regional economy can be reorganized around abundant labor and up-to-date technologies. As a result, economies in rapidly growing areas may become more efficient than those of areas of declining or stable population.

This measure identifies whether an area has attracted more people relative to the state of Florida. When the value of this measure equals (or is greater than) 100, it indicates that the population growth rate in a census tract is the same as (or higher than) the state as a whole.

Population Growth Rate Data Characteristics

Data Source: 1990 Census and 2000 Census
Data Type: Number of People by census tract
Calculation: Yes

Population Growth Rate Measure Categorization & Scoring

SCORE	Population Growth Rate Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.0	≥ 200	≥ 200	≥ 200	≥ 200
0.8	150-199	150-199	150-199	150-199
0.6	100-149	100-149	100-149	100-149
0.4	50-99	50-99	50-99	50-99
0.2	0-49	0-49	0-49	0-49

Per Capita Income Indicator

This measure identifies whether an area is more competitive than other areas in terms of per capita income. High income is generally highly correlated with high productivity. If an area has higher productivity, it is more competitive and transportation investments have a higher probability of generating excess economic returns.

When the value of this measure equals (or is greater than) 100, it indicates that the per capita income is the same as (or higher than) the state as a whole.

Per Capita Income Data Characteristics

Data Source: 2000 Census
Data Type: Per Capital Income by census tract
Calculation: Yes

Per Capita Income Measure Categorization & Scoring

SCORE	Per Capita Income Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.0	≥ 200	≥ 200	≥ 200	≥ 200
0.8	150-199	150-199	150-199	150-199
0.6	100-149	100-149	100-149	100-149
0.4	50-99	50-99	50-99	50-99
0.2	0-49	0-49	0-49	0-49

Description and Index Summary

The Primary Sector Robustness Index measures the potential of transportation investments to impact key transportation dependent sectors. The index is comprised of four components: freight-intensive industries, local property taxes, seaports, and military bases. The total point value is 5 points as shown in the following table:

SCORE	CRITERIA
1.25	Freight Transportation Intensity
1.25	Property Taxes
1.25	Seaports
1.25	Military Bases
5	TOTAL Primary Sector Robustness Index

Investment Indicator

The Primary Sector Robustness Index reveals the contribution of several key sectors to Florida's economy and their role in increasing the demand for transportation services. The index examines not only sectors that are freight-intensive (seaports and military bases), but also makes an assessment from the perspective of property taxes. When an area has a higher property tax base, it is naturally implied that the area has attracted more economic activity. This index is intended to combine measures of sectors which have high transportation demand, primarily freight demand, with measures of the transportation sector itself. Network effects with other highway facilities are not included because these are measured under the Mobility Measures (see Appendix C).

Importance to Economic Goal

Within an economy, certain sectors use transportation facilities more extensively than other sectors. The examples of freight-intensive sectors are construction, manufacturing, whole trade, and transportation and warehousing that either need to ship more materials and finished products than other sectors because of the nature of their business, or provide key linkages between different parts of the economy.

Because of Florida's vast coastline, the demand for Florida seaports to ship goods to international and other domestic markets has been increasing steadily. In addition, cruise lines have increasingly been using Florida seaports to provide services to tourists. Both the goods shipments and cruise lines are important to Florida's economy and they rely on the highway mode to deliver most of their volume.

Since September 11, the military bases in Florida have been playing increasingly important role in the current war on terror. As a result, their impact on the Florida economy, and the potential for economic growth as a result of military activities, has increased.

Freight Transportation Intensity Indicator

This measure identifies census tracts with high concentrations of freight-intensive industries.

This measure serves as an indication of the freight needs of the state's primary sectors. The higher the concentration of freight intensive businesses in area, the more the economic benefit from efficient and reliable goods movement. Therefore in order to maintain and improve economic competitiveness, the State may need to improve highways and other freight transportation modes.

When the value of this measure equals (or is greater than) 100, it indicates that a census tract has the same (or more) activities from freight intensive sectors as (or than) the state as a whole.

Freight Transportation Intensity Ratio Data Characteristics

Data Source: 2000 Census
Data Type: Employment in Freight Intensive Industry Sectors and Total Employment by census tract
Calculation: Yes

Freight Transportation Intensity Measure Categorization & Scoring

SCORE	Freight Transportation Intensity Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.25	≥ 200	≥ 200	≥ 200	≥ 200
1.00	150-199	150-199	150-199	150-199
0.75	100-149	100-149	100-149	100-149
0.50	50-99	50-99	50-99	50-99
0.25	0-49	0-49	0-49	0-49

Property Tax Indicator

This measure identifies census tracts with relatively high property taxes. The measure serves as a proxy for economic activity and transportation dependency. Higher property taxes in an area suggests higher levels of economic activity and thus higher demand for transportation facilities. Therefore, transportation projects that provide benefits to areas with higher concentration of properties should receive additional consideration.

When the value of this measure equals (or is greater than) 100, it indicates that the property tax collected in a census tract is the same as (or higher than) the state average.

Property Tax Base Data Characteristics

Data Source: 2000 Census and Current Property Tax Collection at the County Level
Data Type: Property Tax Collection by county
Calculation: Yes

Property Tax Measure Categorization & Scoring

SCORE	Property Tax Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.25	≥ 200	≥ 200	≥ 200	≥ 200
1.00	150-199	150-199	150-199	150-199
0.75	100-149	100-149	100-149	100-149
0.50	50-99	50-99	50-99	50-99
0.25	0-49	0-49	0-49	0-49

Transportation Infrastructure – Seaports – Indicator

This measure identifies the size and shipment activity at Florida's seaports. It takes into account the growth rates of goods shipments in tonnage and dollar value, growth rates of cruise lines, and relative size of each seaport to the state average.

When the value of this measure equals (or is greater than) 100, it indicates that activities in a seaport are the same as (or higher than) the average activities across all seaports in Florida.

Transportation Infrastructure – Seaports Data Characteristics

Data Source: Florida Seaport Transportation and Economic Development Council
Data Type: Tonnage and Dollar Values of Imports and Exports and Cruise Statistics at Each Port
Calculation: Yes

Transportation Infrastructure Measure Categorization & Scoring

SCORE	Seaports Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.25	≥ 2.0	≥ 2.0	≥ 2.0	≥ 2.0
1.00	1.5 - 1.99	1.5 - 1.99	1.5 - 1.99	1.5 - 1.99
0.75	1.0 - 1.49	1.0 - 1.49	1.0 - 1.49	1.0 - 1.49
0.50	0.5 - 0.99	0.5 - 0.99	0.5 - 0.99	0.5 - 0.99
0.25	0 - 0.49	0 - 0.49	0 - 0.49	0 - 0.49

Military Bases Indicator

This measure identifies the growth rates and relative size of military bases in Florida. Increasing numbers of civilian and military personnel working at military bases may increase the potential for economic growth.

When the value of this measure equals (or is greater than) 100, it indicates that an indexed average of employment and growth rate is the same as (or higher than) the indexed average of all military bases across Florida.

Military Bases Data Characteristics

Data Source: The Department of Defenses Personnel and Procurement Statistics
Data Type: Number of Civilian and Military Personnel at each base
Calculation: Yes

Military Bases Measure Categorization & Scoring

SCORE	Military Bases Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
1.25	≥ 2.0	≥ 2.0	≥ 2.0	≥ 2.0
1.00	1.5 - 1.99	1.5 - 1.99	1.5 - 1.99	1.5 - 1.99
0.75	1.0 - 1.49	1.0 - 1.49	1.0 - 1.49	1.0 - 1.49
0.50	0.5 - 0.99	0.5 - 0.99	0.5 - 0.99	0.5 - 0.99
0.25	0 - 0.49	0 - 0.49	0 - 0.49	0 - 0.49

Description and Index Summary

The Tourism Intensity Index measures the impact of tourists on Florida economy. The index is comprised of two components: per capita sales taxes and the number of visitors. The total point value is 5 points, which includes the following:

SCORE	CRITERIA
2.5	Per Capita Sales Taxes
2.5	Number of Visitors
5	TOTAL Tourism Intensity Index

Investment Indicator

Both per capita sales taxes and the number of visitors to an area are excellent investment indicators to identify potential tourist-related activities. An area with higher per capita sales tax collections may indicate higher sales to tourists.

Importance to Economic Goal

Tourists are one of the top contributors to Florida's economy and deserve high priority of consideration. Two important aspects of tourist-related contribution are tourists' spending and the number of tourists. Both play a significant role in boosting Florida's economy and the demand for more transportation services and facilities.

Sales Taxes per Capita Indicator

This measure identifies the amount of sales taxes collected per capita for each census tract. Because Florida does not levy personal income taxes, the sales taxes are one of the most important indicators that can reveal consumption patterns, including tourists. An area that attracts more tourists may collect more sales tax than other areas.

When the value of this measure equals (or is greater than) 100, it indicates that the sales tax per capita in a census tract is the same as (or higher than) the state average.

Sales Taxes per Capita Data Characteristics

Data Source: 2000 Census, Current Sales Tax Collection, and Population
Data Type: Sales Tax Collection and Population
Calculation: Yes

Sales Taxes per Capita Measure Categorization & Scoring

SCORE	Per Capita Sales Tax Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
2.5	≥ 200	≥ 200	≥ 200	≥ 200
2.0	150-199	150-199	150-199	150-199
1.5	100-149	100-149	100-149	100-149
1.0	50-99	50-99	50-99	50-99
0.5	0-49	0-49	0-49	0-49

Number of Visitors Indicator

This measure identifies census tracts with a higher propensity to generate tourism-based economic activity. Given that tourism is a key industry for the State of Florida, transportation investments to promote the mobility of tourists and the goods needed to serve tourism is essential to contributing to the economic vitality of the State. Therefore, transportation projects that provide the benefits of mobility in areas displaying a high level of tourism activity should receive additional consideration in the project evaluation process.

When the value of this measure equals (or is greater than) 100, it indicates that the number of tourists visited a census tract is the same as (or higher than) the state average.

Number of Visitors Data Characteristics

Data Source: The Database Purchased by FDOT
Data Type: Number of Tourists
Calculation: Yes

Number of Visitors Measure Categorization & Scoring

SCORE	Number of Visitors Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
2.5	≥ 200	≥ 200	≥ 200	≥ 200
2.0	150-199	150-199	150-199	150-199
1.5	100-149	100-149	100-149	100-149
1.0	50-99	50-99	50-99	50-99
0.5	0-49	0-49	0-49	0-49

Description and Index Summary

The Supporting Facilities Index measures the impact of certain types of facilities on the economy. The index is comprised of three components: institutions of higher education, medical centers, and tech centers. The total point value is 5 points, which includes the following:

SCORE	CRITERIA
2.25	Institutions of Higher Education
0.50	Medical Centers
2.25	Tech Centers
5	TOTAL Supporting Facilities Index

Investment Indicator

Three components in the Supporting Facilities Index represent activity centers formed either by the number of students, medical patients or technical professionals. Increasing activities in those types of centers may require more investment on transportation infrastructure.

Importance to Economic Goal

In the current Information Age, institutions of higher education play important roles in economic development. Colleges and universities not only provide education services and raise the skill level of labor force, but increasingly colleges and universities have become technology incubators and innovation centers as well.

Medical centers are also important for providing medical services to communities. As one of the top destinations of choice for migratory retirees, medical centers and hospitals in Florida are in high demand by senior citizens. The three types of facilities featured here are believed to especially boost the productivity of labor and/or capital. Improved highway capacity enables these facilities and institutions to be more effective and interact with higher numbers of persons, thus boosting their contribution to economic growth. This effect is likely to be stronger for Higher Education and Technology Centers than it is for Medical Centers.

Institutions of Higher Education Indicator

The number of institutions of higher education, student enrollment, and quantity of published research are possible measures of the level of education and research in a region. This measure utilizes the number of students enrolled in each of the Florida colleges and universities to identify the impact of the higher education in a census tract.

When the value of this measure equals (or is greater than) 100, it indicates that a college/university located in a census tract has the same (or higher) number of students enrolled as (or than) the state average.

Institutions of Higher Education Data Characteristics

Data Source: Carnegie Foundation
Data Type: Number of Students Enrolled at each institution
Calculation: Yes

Institutions of Higher Education Measure Categorization & Scoring

SCORE	Institutions of Higher Education Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
2.25	≥ 4.0	≥ 4.0	≥ 4.0	≥ 4.0
1.80	3.0 - 3.99	3.0 - 3.99	3.0 - 3.99	3.0 - 3.99
1.35	2.0 – 2.99	2.0 – 2.99	2.0 – 2.99	2.0 – 2.99
0.90	1.0 – 1.99	1.0 – 1.99	1.0 – 1.99	1.0 – 1.99
0.45	0.0 – 0.99	0.0 – 0.99	0.0 – 0.99	0.0 – 0.99

Medical Centers Indicator

Hospitals are high tech facilities using highly trained staff. Therefore, they tend to attract high tech export establishments such as pharmaceutical and medical device manufactures and computer hardware and software developers.

When the value of this measure equals (or is greater than) 100, it indicates that the number of hospital beds in a census tract where the hospital locates is the same as (or higher than) the state average.

Medical Centers Data Characteristics

Data Source: Florida Hospital Association
Data Type: Number of Beds in Hospital
Calculation: Yes

Medical Centers Measure Categorization & Scoring

SCORE	Medical Center Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
0.5	≥ 20.0	≥ 20.0	≥ 20.0	≥ 20.0
0.4	15.0 – 19.99	15.0 – 19.99	15.0 – 19.99	15.0 – 19.99
0.3	10.0 – 14.99	10.0 – 14.99	10.0 – 14.99	10.0 – 14.99
0.2	5.0 – 9.99	5.0 – 9.99	5.0 – 9.99	5.0 – 9.99
0.1	0.0 – 4.99	0.0 – 4.99	0.0 – 4.99	0.0 – 4.99

Tech Centers Indicator

High technology industries, corporations and facilities are more likely to grow than other entities. They are likely to attract other high tech entities employing highly skilled and educated workers, thus creating clusters and allowing benefits from synergies. High tech products, such as software packages, do not necessarily require more freight transportation capability than do traditional manufacturing industries. However, high tech entities frequently require highly mobile staff and require that parts and products be shipped rapidly and reliably. Therefore, high tech entities may be able to accelerate their growth with improved highway facilities, resulting in improved overall economic growth.

When the value of this measure equals (or is greater than) 100, it indicates that the concentration of technology in a census tract is the same as (or higher than) the state average.

Tech Centers Data Characteristics

Data Source: 2000 Census and Enterprise Florida, Inc.
Data Type: Employment in Tech Sectors and Tech Concentration Data
Calculation: Yes

Tech Centers Measure Categorization & Scoring

SCORE	Tech Centers Measure			
	Urban Interstate	Rural Interstate	Urban Arterial/Collector	Rural Arterial/Collector
2.25	≥ 40.0	≥ 20.0	≥ 40.0	≥ 20.0
1.80	30.0 – 39.99	15.0 – 19.99	30.0 – 39.99	15.0 – 19.99
1.35	20.0 – 29.99	10.0 – 14.99	20.0 – 29.99	10.0 – 14.99
0.90	10.0 – 19.99	5.0 – 9.99	10.0 – 19.99	5.0 – 9.99
0.45	0.0 – 9.99	0.0 – 4.99	0.0 – 9.99	0.0 – 4.99

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Appendix E

Quality of Life Measures

Description and Criteria Summary

The Land and Social Criteria measures the impact of a particular project on the surrounding community from a social and environmental character standpoint. The criteria are comprised of three components: farmlands, land use, and social impacts. The total point value is four points, which includes the following:

SCORE	CRITERIA
1	Farmlands
2	Land Use
1	Social
4	TOTAL Land and Social Criteria Score

Investment Indicator

Use of Farmland, Land Use and Social Indicators is based on discussions with FDOT Environmental staff and other Florida Environmental Professionals as a good way to measure impacts to Florida Quality of Life.

Importance to Quality of Life Goal

Enriching the quality of life and being a responsible steward of the environment are a goal of FDOT. This goal can be reached, in part, by protecting and enhancing the existing social and environmental character of the project area. Evaluating impacts of a project to farmland, surrounding land uses and undesirable effects on demographic groups (low income, minorities, the elderly and the youth) will serve to prioritize projects that may improve the surrounding community over those that may have an unintended negative effect.

Farmlands Investment Indicator

This measure assesses the potential extent of productive farmland which may be impacted by a project. Each project is rated "low", "medium", or "high" based on data obtained from data sets for Agricultural lands, prime farmland soil, SSURGO soils, and USGS Hydrographic line features. The data sets include GIS data files from the United States Department of Agriculture, Florida Department of Environmental Protection and the affected Water Management District. In addition, prime farmland designations through the Natural Resource Conservation Service are identified.

Farmlands Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer.

Farmlands Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)
1	Project area is not located within productive farmland areas.
0.5	Less than 50 percent of the project area is located within productive farmland.
0	Greater than 50 percent of the project area is located within productive farmland.

SCORE	**Arterial** (using 200' buffer in all directions from centerline or point)
1	Project area is not located within productive farmland areas.
0.5	Less than 50 percent of the project area is located within productive farmland.
0	Greater than 50 percent of the project area is located within productive farmland.

SCORE	**Connector** (using 100' buffer in all directions from centerline or point)
1	Project area is not located within productive farmland areas.
0.5	Less than 50 percent of the project area is located within productive farmland.
0	Greater than 50 percent of the project area is located within productive farmland.

Land Use Investment Indicator

This measure is based primarily on the risk of the completed project damaging the use or enjoyment of desirable land uses. Each project is rated "low," "medium," or "high" by assessing existing data sets that serve as indicators of desirable land uses in the project study area. Data sets for assessing potential effects on these resources include residential lands and hospitals as indicators of noise sensitive sites; eye clinics as indicators of vibration sensitive sites; community focal points (cultural points of interest), and land use/land cover to assess effects on scenic landscapes such as significant water bodies, rural lands, and urban areas.

Land Use Data Characteristics

Data Source: FGDL
Data Type: Table, with contingencies for nature of facility (Existing vs. New)
Calculation: Spatial analysis with use of buffer

	Residential Land Use	**Community Focal Points**	**Noise Sensitive Uses**
Type	Shapefile	Shapefile	Shapefile
Path	c:\sismeasures_data\landuse	C:\sismeasures_data\landuse	c:\sismeasures_data\landuse
File	residential.shp	gc_culturecenter_mod.shp	GC_HEALTH.shp
Spatial Search Method	Area Intersect	Area Intersect	Area Intersect

Land Use Measure Categorization & Scoring

Applications of these sub-criteria, or categories, depend on the nature of the facility. The first category only applies to projects on existing facilities proposed to be wider than four lanes; the second and third categories only apply to projects on new facilities; and the fourth and fifth categories apply to projects on all facilities.

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)				
	Residential Land Use (Existing Facility)	*Residential Land Use (New Facility)***	*Community Focal Points (New Facility)***	*Noise Impacted Residential Land Use (All Facilities)*	*Noise Sensitive Uses (All Facilities)*
2	Project is on existing facility and 500 foot buffer is comprised of less than 33 percent residential land use.	Project is a new facility, and 500 foot buffer is comprised of less than 33 percent residential land use.	Project is a new facility, and no community focal points are within the 500 foot buffer.	500 foot buffer is comprised of less than 33 percent residential land use (noise-related).	500 foot buffer contains no locations with noise sensitive, nonresidential uses.
1	Project is existing facility and 500 foot buffer is comprised of 33 percent to 66 percent residential land use.	Project is a new facility, and 500 foot buffer is comprised of 33 percent to 66 percent residential land use.	Project is a new facility, and at least one community focal point is within the 500 foot buffer, excluding the 200 foot buffer.	500 foot buffer is comprised of 33 percent to 66 percent residential land use (noise-related).	500 foot buffer contains one to five locations with noise sensitive, nonresidential uses.
0	Project is existing facility and 500 foot buffer is comprised of greater than 66 percent residential land use.	Project is a new facility, and 500 foot buffer is comprised of greater than 66 percent residential land use.	Project is a new facility, and at least one community focal point is within the 200 foot buffer.	500 foot buffer is comprised of greater than 66 percent residential land use (noise-related).	500 foot buffer contains five or more locations with noise sensitive, nonresidential uses.
SCORE	**Arterial**				

	(using 200' buffer in all directions from centerline or point)				
	Residential Land Use(Existing Facility)	*Residential Land Use (New Facility)***	*Community Focal Points (New Facility)***	*Noise Impacted Residential Land Use (All Facilities)*	*Noise Sensitive Uses (All Facilities)*
2	Project is on existing facility and 200 foot buffer is comprised of less than 25 percent residential land use	Project is a new facility, and 200 foot buffer is comprised of less than 25 percent residential land use.	Project is a new facility, and no community focal points are within the 200 foot buffer.	200 foot buffer is comprised of less than 25 percent residential land use (noise-related).	200 foot buffer contains no locations with noise sensitive, nonresidential uses.
1	Project is existing facility and 200 foot buffer is comprised of 25 percent to 50 percent residential land use.	Project is a new facility, and 200 foot buffer is comprised of 25 percent to 50 percent residential land use.	Project is a new facility, and at least one community focal point is within the 200 foot buffer, excluding the 100 foot buffer.	200 foot buffer is comprised of 25 percent to 50 percent residential land use (noise-related).	200 foot buffer contains one to five locations with noise sensitive, nonresidential uses.
0	Project is existing facility and 200 foot buffer is comprised of greater than 50 percent residential land use.	Project is a new facility, and 200 foot buffer is comprised of greater than 50 percent residential land use.	Project is a new facility, and at least one community focal point is within the 100 foot buffer.	200 foot buffer is comprised of greater than 50 percent residential land use (noise-related).	200 foot buffer contains five or more locations with noise sensitive, nonresidential uses.

SCORE	**Connector** (using 100' buffer in all directions from centerline or point)				
	Residential Land Use (Existing Facility)	*Residential Land Use (New Facility)***	*Community Focal Points (New Facility)***	*Noise Impacted Residential Land Use (All Facilities)*	*Noise Sensitive Uses (All Facilities)*
2	Project is on existing facility and 100 foot buffer is comprised of less than 10 percent residential land use.	Project is a new facility, and 100 foot buffer is comprised of less than 10 percent residential land use.	Project is a new facility, and no community focal points are within the 100 foot buffer.	100 foot buffer is comprised of less than 10 percent residential land use (noise-related).	100 foot buffer contains no locations with noise sensitive, nonresidential uses.
1	Project is existing facility and 100 foot buffer is comprised of 10 percent to 20 percent residential land use.	Project is a new facility, and 100 foot buffer is comprised of 10 percent to 20 percent residential land use.	Project is a new facility, and at least one community focal point is within the 100 foot buffer, excluding the 50 foot buffer.	100 foot buffer is comprised of 10 percent to 20 percent residential land use (noise-related).	100 foot buffer contains one to five locations with noise sensitive, nonresidential uses.
0	Project is existing facility and 100 foot buffer is comprised of greater than 20 percent residential land use.	Project is a new facility, and 100 foot buffer is comprised of greater than 20 percent residential land use.	Project is a new facility, and at least one community focal point is within the 50 foot buffer.	100 foot buffer is comprised of greater than 20 percent residential land use (noise-related).	100 foot buffer contains five or more locations with noise sensitive, nonresidential uses.

Applicability to Project Segment:

Please note that the overall Land Use score for any proposed project segment is determined by the applicable category in which that segment receives the ***worst score***. For example, if a proposed widening of an existing arterial receives exemplary scores in the first and fourth categories, but the 200 foot buffer contains five or more locations with noise sensitive, nonresidential uses, then its Noise Sensitive Uses score is the worst possible, i.e. zero points. In such a case, the second and third categories would not apply because the project does not involve the construction of a new facility. The overall Land Use score would be zero points.

Note: ** Project must have improvement code of "NR" or "NCON" to be considered a New Facility

Social Investment Indicator

This measure is based primarily on the risk of undesirable effects on four identified demographic groups. Each project is rated "low," "medium," or "high" by assessing existing data sets which indicate the potential for effects to special population groups including low income and minority groups and the aged and youth populations.

Social Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer

Social Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using a one mile buffer in all directions from centerline or point)			
	Low Income Population	*Minority Population*	*Aged Population*	*Youth Population*
1	The percentage of the low income population within the one mile buffer is less than the countywide percentage for this population.	The percentage of the minority population within the one mile buffer is less than the countywide percentage for this population.	The percentage of the age 65 or older population within the one mile buffer is less than the countywide percentage for this population.	The percentage of the age 17 or younger population within one mile is less than the countywide percentage for this population.
0.5	The percentage of the low income population within the one mile buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the minority population within the one mile buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the age 65 or older population within the one mile buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the age 17 or younger population within the one mile buffer is between 100 percent and 149 percent of the countywide percentage for this population.
0	The percentage of the low income population within the one mile buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the minority population within the one mile buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the age 65 or older population within the one mile buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the age 17 or younger population within the one mile buffer is 150 percent or more of the countywide percentage for this population.

SCORE	Arterial (using ½ mile buffer in all directions from centerline or point)			
	Low Income Population	*Minority Population*	*Aged Population*	*Youth Population*
1	The percentage of the low income population within the half mile buffer is less than the countywide percentage for this population.	The percentage of the minority population within the half mile buffer is less than the countywide percentage for this population.	The percentage of the age 65 or older population within the half mile buffer is less than the countywide percentage for this population.	The percentage of the age 17 or younger population within the half mile buffer is less than the countywide percentage for this population.
0.5	The percentage of the low income population within the half mile buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the minority population within the half mile buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the age 65 or older population within the half mile buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the age 17 or younger population within the half mile buffer is between 100 percent and 149 percent of the countywide percentage for this population.
0	The percentage of the low income population within the half mile buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the minority population within the half mile buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the age 65 or older population within the half mile buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the age 17 or younger population within the half mile buffer is 150 percent or more of the countywide percentage for this population.

SCORE	Connector (using 500' buffer in all directions from centerline or point)			
	Low Income Population	*Minority Population*	*Aged Population*	*Youth Population*
1	The percentage of the low income population within the five hundred foot buffer is less than the countywide percentage for this population.	The percentage of the minority population within the five hundred foot buffer is less than the countywide percentage for this population.	The percentage of the age 65 or older population within the five hundred foot buffer is less than the countywide percentage for this population.	The percentage of the age 17 or younger population within five hundred foot buffer is less than the countywide percentage for this population.
0.5	The percentage of the low income population within the five hundred foot buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the minority population within the five hundred foot buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the age 65 or older population within the five hundred foot buffer is between 100 percent and 149 percent of the countywide percentage for this population.	The percentage of the age 17 or younger population within the five hundred foot buffer is between 100 percent and 149 percent of the countywide percentage for this population.
0	The percentage of the low income population within the five hundred foot buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the minority population within the five hundred foot buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the age 65 or older population within the five hundred foot buffer is 150 percent or more of the countywide percentage for this population.	The percentage of the age 17 or younger population within the five hundred foot buffer is 150 percent or more of the countywide percentage for this population.

Applicability to Project Segment

Please note that the overall Social score for any proposed project segment is determined by the demographic group for which that segment receives the ***worst score***. For example, if a proposed arterial receives exemplary scores in the first three categories, but the percentage of the age 17 or younger population within the half mile buffer is twice the countywide percentage, then its Youth Population score is the worst possible, i.e. zero points. In such a case, the overall Social Use score would be zero points.

Description and Criteria Summary

The Geology Criteria measures the impact of a particular project on the surrounding community from a geological standpoint. The criteria are comprised of three components: Archaeological and historical, geology, and contamination. The total point value is four points, which includes the following:

SCORE	CRITERIA
1	Geology
2	Archaeological and Historical
1	Contamination
4	TOTAL Geology Criteria Score

Investment Indicator

Use of Geology, Archaeological and Historical and Contamination as Indicators is based on discussions with FDOT Environmental staff and other Florida Environmental Professionals as a good way to measure impacts to Florida Quality of Life.

Importance to Quality of Life Goal

Enriching the quality of life and being a responsible steward of the environment are a goal of FDOT. This goal can be achieved, in part, by: avoiding potential sinkholes, protecting, avoiding or enhancing the existing Archaeological and Historical features of the area surrounding the project; and locating projects more than 500 feet from a landfill or other similar hazardous waste site. Evaluating impacts to and scoring a project on their impact to these features will help to prioritize projects that may avoid or improve these conditions or the project area, over those that may have an unintended negative effect on the surrounding community.

Geology Investment Indicator

This measure is based on the presence of reported sinkholes within the proposed project area. The geologic sensitivity of each project is evaluated based on the presence of reported sinkholes within the proposed project area. The sinkhole locations are obtained from the database of reported sinkhole locations maintained by the Florida Sinkhole Institute. It should be noted there is a potential for sinkholes throughout Florida. This potential would likely be highest in the central Florida area and would decrease towards the southern portion of the state.

Geology Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer.

Geology Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)
	Presence of Reported Sinkholes
1	No reported sinkholes within the project area
0.5	One reported sinkhole within the project area
0	More than one reported sinkhole within the project area

SCORE	**Arterial** (using 200' buffer in all directions from centerline or point)
	Presence of Reported Sinkholes
1	No reported sinkholes within the project area
0.5	One reported sinkhole within the project area
0	More than one reported sinkhole within the project area

SCORE	**Connector** (using 100' buffer in all directions from centerline or point)
	Presence of Reported Sinkholes
1	No reported sinkholes within the project area
0.5	One reported sinkhole within the project area
0	More than one reported sinkhole within the project area

Archaeological and Historical Investment Indicator

This measure evaluates proposed project areas for issues associated with archaeological and historical resources. These ratings are used for a gross level "fatal flaw" analysis only, and a "low" rating does not signify that significant archaeological deposits or built environment locations do not exist within the project area. Each project is rated "low," "medium," or "high," by combining existing data sets for archaeological sites and built environment (historic structures, bridges, and cemeteries) records from the Florida State Historic Preservation Office (SHPO) with mapped locations of those resources. No specific geographic locations of archaeological surveys are revealed in this analysis.

Archaeological and Historical Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer.

Archaeological and Historical Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)	
	*Archaeological Sites***	*Built Environment Locations***
2	Absence of any unevaluated, recommended eligible or eligible archaeological sites within the project area.	Project area must contain fewer than two unevaluated, recommended eligible or eligible built environment locations to be rated low.
1	Presence of one to two unevaluated, recommended eligible or eligible archaeological sites within the project area.	Project area must contain fewer than ten unevaluated, recommended eligible or eligible built environment locations.
0	Presence of three or more unevaluated, recommended eligible, or eligible archaeological sites within the project area.	Project area contains ten or more unevaluated, recommended eligible or eligible built environment locations.

SCORE	**Arterial** (using 200' buffer in all directions from centerline or point)	
	*Archaeological Sites***	*Built Environment Locations***
2	Absence of any unevaluated, recommended eligible or eligible archaeological sites within the project area.	Project area must contain fewer than two unevaluated, recommended eligible or eligible built environment locations to be rated low.
1	Presence of one to two unevaluated, recommended eligible or eligible archaeological sites within the project area.	Project area must contain fewer than ten unevaluated, recommended eligible or eligible built environment locations.
0	Presence of three or more unevaluated, recommended eligible, or eligible archaeological sites within the project area.	Project area contains ten or more unevaluated, recommended eligible or eligible built environment locations.

SCORE	**Connector** (using 100' buffer in all directions from centerline or point)	
	*Archaeological Sites***	*Built Environment Locations***
2	Absence of any unevaluated, recommended eligible or eligible archaeological sites within the project area.	Project area must contain fewer than two unevaluated, recommended eligible or eligible built environment locations to be rated low.
1	Presence of one to two unevaluated, recommended eligible or eligible archaeological sites within the project area.	Project area must contain fewer than ten unevaluated, recommended eligible or eligible built environment locations.
0	Presence of three or more unevaluated, recommended eligible, or eligible archaeological sites within the project area.	Project area contains ten or more unevaluated, recommended eligible or eligible built environment locations.

Applicability to Project Segment

Please note that the overall Archeological and Historical score for any proposed project segment is determined by the category in which that segment receives the ***worst score***. For example, if a proposed arterial receives exemplary scores with respect to Archeological Sites, but the project area contains ten or more problematic built environment locations, then it Built Environment Locations score is the worst possible, i.e. zero points. In such a case, the overall Archeological and Historical score would be zero points.

Note: **Must ensure resources are eligible for the National Register of Historic Places (NRHP)

Contamination Investment Indicator

This measure is based on the number and type of hazardous waste sites within the project area. Each project is rated "low", "medium", or "high" based on the following types of sites used in the scoring: EPA National Priority List (NPL) sites, solid waste landfill sites (SWLF), Toxic Release Inventory sites (TRIs), and underground storage sites (UST). Data is obtained from GIS coverages from the Florida Department of Environmental Protection.

Contamination Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer. Each type of site is assigned a number of points based on the expected relative cost of remediating that type of site. The points assigned to each type of site are: NPL = 10 points, SWLF = 5 points, all other types of sites = 1 point.

Contamination Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)
	Sum of Points for Identified Sites Within Project Area
1	Sum of Points < 5
0.5	5 <= Sum of Points < 10
0	Sum of Point >= 10

SCORE	**Arterial** (using 200' buffer in all directions from centerline or point)
	Sum of Points for Identified Sites Within Project Area
1	Sum of Points < 5
0.5	5 <= Sum of Points < 10
0	Sum of Point >= 10

SCORE	**Connector** (using 100' buffer in all directions from centerline or point)
	Sum of Points for Identified Sites Within Project Area
1	Sum of Points < 5
0.5	5 <= Sum of Points < 10
0	Sum of Point >= 10

Description and Criteria Summary

The Habitat Criteria measures the impact of a particular project on the surrounding community from a wildlife preservation standpoint. The criteria are comprised of two components: Conservation and Preservation and Wildlife and Habitat. The total point value is four points, which includes the following:

SCORE	CRITERIA
2	Conservation and Preservation
2	Wildlife and Habitat
4	TOTAL Habitat Criteria Score

Investment Indicator

Use of conservation and preservation and wildlife and habitat as Quality of Life Indicators is based on discussions with FDOT Environmental staff and other Florida Environmental Professionals including staff from Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation commission and the Florida Water Management Districts.

Importance to Quality of Life Goal

Conservation and preservation and wildlife and habitat are used to measure the FDOT goal of enriching the quality of life and being a responsible steward of the environment. Florida provides a unique habitat for a variety of threatened and endangered species. It is also home to many and varied wildlife species that, while not endangered, create the unique natural environment that is valued by Florida residents and visitors. It is the desire of FDOT that its projects do not harm or negatively impact Florida's wildlife or their habitats. This goal can be achieved, in part, by giving priority to projects that avoid, protect, or enhance the existing habitats and conservation areas. Locating projects more than 500 feet from these areas is one way to avoid harming them. Evaluating impacts to and scoring a project based on their impact to these features will help to prioritize projects that may avoid or improve these conditions or the project area, over those that may have an unintended negative effect on the surrounding community.

Wildlife and Habitat Investment Indicator

This measure evaluates the potential effects to both Threatened and Endangered Species and Strategic Wildlife Habitat. Each project is rated "low", "medium", or "high" based on data obtained from data sets for individual species, habitats, groups of species, or special features for Threatened and Endangered Species and data obtained from the threatened and endangered and other sensitive species habitat distribution GIS data sets for Strategic Wildlife Habitat analysis. The data sets include GIS data files from the Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation commission and the affected Water Management Districts. The analysis at this preliminary stage distinguishes types of habitats only on a gross scale, and does not identify differences in type or quality of resources or in usage by individual species. Consequently the ratings are based primarily on the potential amount of key habitat types and total natural habitat within the project area.

Wildlife and Habitat Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer.

Wildlife and Habitat Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)	
	Threatened and Endangered Species	*Strategic Habitat Conservation Area*
2	No occurrence of threatened or endangered species or species of special concern within the project area.	Less than 33 percent of the project area is characterized by FFWCC as a potential Strategic Habitat Conservation Area.
1	Less than 50 percent coverage of project area by threatened or endangered species or species of special concern.	Between 33 percent and 66 percent of the project area is characterized by FFWCC as Strategic Habitat Conservation Areas.
0	50 percent or greater coverage of project area by threatened or endangered species or species of special concern, or project area contains an officially designated Critical Habitat or an exclusion zone.	Over 66 percent of the project area is characterized as Strategic Habitat Conservation Areas by FFWCC.

SCORE	**Arterial** (using 200' buffer in all directions from centerline or point)	
	Threatened and Endangered Species	*Strategic Habitat Conservation Area*
2	No occurrence of threatened or endangered species or species of special concern within the project area.	Less than 25 percent of the project area is characterized by FFWCC as a potential Strategic Habitat Conservation Area.
1	Less than 50 percent coverage of project area by threatened or endangered species or species of special concern.	Between 25 percent and 50 percent of the project area is characterized by FFWCC as Strategic Habitat Conservation Areas.
0	50 percent or greater coverage of project area by threatened or endangered species or species of special concern, or project area contains an officially designated Critical Habitat or an exclusion zone.	Over 50 percent of the project area is characterized as Strategic Habitat Conservation Areas by FFWCC.

SCORE	Connector (using 100' buffer in all directions from centerline or point)	
	Threatened and Endangered Species	*Strategic Habitat Conservation Area*
2	No occurrence of threatened or endangered species or species of special concern within the project area.	Less than 10 percent of the project area is characterized by FFWCC as a potential Strategic Habitat Conservation Area.
1	Less than 50 percent coverage of project area by threatened or endangered species or species of special concern.	Between 10 percent and 20 percent of the project area is characterized by FFWCC as Strategic Habitat Conservation Areas.
0	50 percent or greater coverage of project area by threatened or endangered species or species of special concern, or project area contains an officially designated Critical Habitat or an exclusion zone.	Over 20 percent of the project area is characterized as Strategic Habitat Conservation Areas by FFWCC.

Applicability to Project Segment

Please note that the overall Wildlife and Habitat score for any proposed project segment is determined by the category in which that segment receives the ***worst score***. For example, if a proposed arterial receives exemplary scores in the first category, but the project is in a Strategic Habitat Conservation Area, then its Strategic Habitat Conservation Area score is the worst possible, i.e. zero points. In such a case, the overall Wildlife and Habitat score would be zero points.

Conservation and Preservation Investment Indicator

This measure assesses the potential impacts on other conservation and preservation lands not specifically included in the preceding sections. This category includes publicly owned lands which are managed for conservation or preservation purposes or multi-use areas, such as recreational areas, partially used for conservation and includes current and potential Section 4(f) resources. Each project is rated "low", "medium", or "high" based on the data.

Conservation and Preservation Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer.

Conservation and Preservation Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)
2	Project area does not pass through or is located within 500 feet of conservation or preservation lands or Section 4(f) resources.
1	Project does not pass through conservation or preservation lands or Section 4(f) resources but is located adjacent to (within 500 feet) of conservation or preservations lands or Section 4(f) resources.
0	Project area involves in a direct taking or bisection of conservation or preservation lands or Section 4(f) resources.

SCORE	**Arterial** (using 200' buffer in all directions from centerline or point)
2	Project area does not pass through or is located within 500 feet of conservation or preservation lands or Section 4(f) resources.
1	Project does not pass through conservation or preservation lands or Section 4(f) resources but is located adjacent to (within 500 feet) of conservation or preservations lands or Section 4(f) resources.
0	Project area involves in a direct taking or bisection of conservation or preservation lands or Section 4(f) resources.

SCORE	**Connector** (using 100' buffer in all directions from centerline or point)
2	Project area does not pass through or is located within 500 feet of conservation or preservation lands or Section 4(f) resources.
1	Project does not pass through conservation or preservation lands or Section 4(f) resources but is located adjacent to (within 500 feet) of conservation or preservations lands or Section 4(f) resources.
0	Project area involves in a direct taking or bisection of conservation or preservation lands or Section 4(f) resources.

Description and Criteria Summary

The Water Criteria measures the impact of a particular project on the surrounding community from a coastal, marine, and water quality standpoint. The criteria are comprised of five components: Floodplains, coastal and marine, special designations, water quality, and wetlands. The total point value is eight points, which includes the following:

SCORE	CRITERIA
1	Floodplains and Flood Control
1.75	Coastal and Marine
1.75	Special Designations (wild/scenic rivers, barrier islands)
1.75	Water Quality
1.75	Wetlands
8	TOTAL Water Criteria Score

Investment Indicator

Use of water and wetlands as Quality of Life Indicators is a good way to measure impacts to Florida Quality of Life, based on discussions with FDOT Environmental staff and other Florida Environmental Professionals such as staff from Federal Emergency Management Agency (FEMA), NOAA Coastal Service Center, Florida Marine Research Institute, Florida Fish and Wildlife Commission, and the Florida Department of Environmental Protection.

Importance to Quality of Life Goal

Floodplains and Flood Control, Coastal and Marine, Special Designations (wild/scenic rivers, barrier islands), Water Quality, and Wetlands are used to measure the FDOT goal of enriching the quality of life and being a responsible steward of the environment. Damage to flood plains and wetlands can result in increased flood damage and harm to the quality of Florida's waters and marine life. Damage to marine sanctuaries, sea grass, sensitive shorelines or navigable waterways may destroy the delicate balance of nature and the quality of life Floridians have come to enjoy. It is Florida DOT's desire to protect, avoid, or minimize damage from its projects to floodplains, flood control areas, coastal and marine life, wild/scenic rivers, barrier islands, water quality, and wetlands areas. Providing priority points to projects that avoid these areas will distinguish and advance them over projects that do, and may negatively impact these areas and diminish the environmental quality of Florida's water resources.

Floodplains and Flood Control Investment Indicator

This measure assesses the extent of floodplains associated with each project and is based on the percentage of project area designated as a Special Flood Hazard Area by the Federal Emergency Management Agency (FEMA). Each project is rated "low", "medium", or "high" based on data obtained from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM).

Floodplains and Flood Control Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer.

Floodplains and Flood Control Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)
1	Project area contains less than 30 percent FEMA designated Special Flood Hazard Area (SFHA) zones and no designated floodways.
0.5	Project area contains between 30 percent and 70 percent FEMA designated SFHA zones or Project area contains a FEMA designated floodway (FW).
0	More than 70 percent of the project area is within a FEMA designated SFHA floodplain zone.

SCORE	**Arterial** (using 200' buffer in all directions from centerline or point)
1	Project area contains less than 25 percent FEMA designated Special Flood Hazard Area (SFHA) zones and no designated floodways.
0.5	Project area contains between 25 percent and 50 percent FEMA designated SFHA zones or Project area contains a FEMA designated floodway (FW).
0	More than 50 percent of the project area is within a FEMA designated SFHA floodplain zone.

SCORE	**Connector** (using 100' buffer in all directions from centerline or point)
1	Project area contains less than 10 percent FEMA designated Special Flood Hazard Area (SFHA) zones and no designated floodways.
0.5	Project area contains between 10 percent and 20 percent FEMA designated SFHA zones or Project area contains a FEMA designated floodway (FW).
0	More than 20 percent of the project area is within a FEMA designated SFHA floodplain zone.

Coastal and Marine Investment Indicator

This measure is based on the distance between the project area and designated coastal and marine habitat and boundaries. Each project is rated "low", "medium", or "high" based on data obtained from data sets for NOAA coastline, seagrass, National Marine Sanctuaries, environmental sensitive shoreline, and navigable waterways. The data sets include GIS data files from NOAA Coastal Service Center, Florida Marine Research Institute, Bureau of Transportation Statistics, and the Florida Department of Environmental Protection.

Coastal and Marine Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer.

Coastal and Marine Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)
1.75	Project area is not located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.
1	Project area is located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.
0	Project area is within NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.

SCORE	**Arterial** (using 200' buffer in all directions from centerline or point)
1.75	Project area is not located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.
1	Project area is located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.
0	Project area is within NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.

SCORE	**Connector** (using 100' buffer in all directions from centerline or point)
1.75	Project area is not located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.
1	Project area is located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.
0	Project area is within NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.

Special Designations Investment Indicator

This measure evaluates the potential effects to Aquatic Preserves and Outstanding Florida Waters, and Coastal Barrier Island Resources. Each project is rated "low", "medium", or "high" based on data obtained from the Aquatic Preserves and Outstanding Florida Waters GIS data sets obtained from the Florida Department of Environmental Protection and Florida Fish and Wildlife Conservation Commission. In addition, the project area is reviewed to determine if the project may be subject to the implementing procedures for the Federal Coastal Barrier Resources Act (CBRA) and the Governor's Executive Order 81-105 concerning Coastal Barrier Areas. Section 5 of CBRA specifies that Federal funding, with limited exceptions, is prohibited for activities within the designated boundaries of a coastal barrier unit. The Governor's Executive Order directs State executive agencies to discourage inappropriate coastal barrier development by withholding State funds for projects leading to or within coastal barriers of the state.

Special Designations Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer.

Special Designations Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)	
	Aquatic Preserves and Outstanding Florida Waters	*Coastal Barrier Island Resources*
1.75	Project area: does not cross watersheds of any aquatic preserves or Outstanding Florida Waters, does not cross any major tributaries of Outstanding Florida Waters, and is not within 0.5 miles of any aquatic preserve or Outstanding Florida Waters.	Project area is not within 500 feet of a designated CBRA coastal barrier unit.
1	Project area: contains a portion of an aquatic preserve or Outstanding Florida Waters, but does not cross it or is within 0.5 miles of aquatic preserve boundary or Outstanding Florida Waters.	Project area: is partially within a designated CBRA coastal barrier unit, or is within 500 feet of a designated CBRA coastal barrier unit.
0	Project area crosses at least 1 designated or proposed portion of aquatic preserve or Outstanding Florida Waters.	Project area is completely within a designated CBRA coastal barrier unit.

SCORE	Arterial (using 200' buffer in all directions from centerline or point)	
	Aquatic Preserves and Outstanding Florida Waters	*Coastal Barrier Island Resources*
1.75	Project area: does not cross watersheds of any aquatic preserves or Outstanding Florida Waters, does not cross any major tributaries of Outstanding Florida Waters, and is not within 0.5 miles of any aquatic preserve or Outstanding Florida Waters.	Project area is not within 500 feet of a designated CBRA coastal barrier unit.
1	Project area: contains a portion of an aquatic preserve or Outstanding Florida Waters, but does not cross it or is within 0.5 miles of aquatic preserve boundary or Outstanding Florida Waters.	Project area: is partially within a designated CBRA coastal barrier unit, or is within 500 feet of a designated CBRA coastal barrier unit.
0	Project area crosses at least 1 designated or proposed portion of aquatic preserve or Outstanding Florida Waters.	Project area is completely within a designated CBRA coastal barrier unit.

SCORE	Connector (using 100' buffer in all directions from centerline or point)	
	Aquatic Preserves and Outstanding Florida Waters	*Coastal Barrier Island Resources*
1.75	Project area: does not cross watersheds of any aquatic preserves or Outstanding Florida Waters, does not cross any major tributaries of Outstanding Florida Waters, and is not within 0.5 miles of any aquatic preserve or Outstanding Florida Waters.	Project area is not within 500 feet of a designated CBRA coastal barrier unit.
1	Project area: contains a portion of an aquatic preserve or Outstanding Florida Waters, but does not cross it or is within 0.5 miles of aquatic preserve boundary or Outstanding Florida Waters.	Project area: is partially within a designated CBRA coastal barrier unit, or is within 500 feet of a designated CBRA coastal barrier unit.
0	Project area crosses at least 1 designated or proposed portion of aquatic preserve or Outstanding Florida Waters.	Project area is completely within a designated CBRA coastal barrier unit.

Applicability to Project Segment:

Please note that the overall Special Designations score for any proposed project segment is determined by the category in which that segment receives the ***worst score***. For example, if a proposed arterial receives exemplary scores in the first category, but the project area is completely within a designated coastal barrier unit, then its Coastal Barrier Island Resources score is the worst possible, i.e. zero points. In such a case, the overall Special Designations score would be zero points.

Water Quality Investment Indicator

This measure is based primarily on the distance between the project and surface water resources/supplies or ground water resources. Each project is rated "low", "medium", or "high" based on a combination of Hydrography, Aquatic Preserves and Outstanding Florida Waters, Public Water Supply Wells, and other GIS data sets obtained from the Florida Department of Environmental Protection and Florida Fish and Wildlife Conservation Commission and from other sources describing potable water supplies, surface water classification, and other issues. The analysis at this preliminary stage identifies impacted water resources only on a gross scale.

Water Quality Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer

Water Quality Measure Categorization & Scoring

SCORE	Interstate, Turnpike, or Expressway (no buffer)	
	Surface Water – Resources	*Ground Water – Wells*
1.75	Project alignment is not within 0.5 mile of an aquatic preserve, Outstanding Florida Waters, Class I or Class II water.	No more than two public water supply wells have been identified within, or within 500 feet of the project alignment.
1	Project alignment is within 0.5 mile and in the watershed of an aquatic preserve or Outstanding Florida Waters, but does not cross it, or is within 0.5 mile of a Class I or Class II water.	Project alignment contains, or has within 500 ft of its borders, between three and five public water supply wells from the above data set.
0	Project alignment crosses at least one designated or proposed portion of aquatic preserve, Outstanding Florida Waters, Class I or Class II waters.	Project alignment contains, or has within 500 ft of its borders, six or more public water supply wells from the above data set.

SCORE	Arterial (no buffer)	
	Surface Water – Resources	*Ground Water – Wells*
1.75	Project alignment is not within 0.5 mile of an aquatic preserve, Outstanding Florida Waters, Class I or Class II water.	No more than two public water supply wells have been identified within, or within 500 feet of the project alignment.
1	Project alignment is within 0.5 mile and in the watershed of an aquatic preserve or Outstanding Florida waters, but does not cross it, or is within 0.5 mile of a Class I or Class II water.	Project alignment contains, or has within 500 ft of its borders, between three and five public water supply wells from the above data set.
0	Project alignment crosses at least one designated or proposed portion of aquatic preserve, Outstanding Florida Waters, Class I or Class II waters.	Project alignment contains, or has within 500 ft of its borders, six or more public water supply wells from the above data set.

SCORE	Connector (no buffer)	
	Surface Water – Resources	*Ground Water – Wells*
1.75	Project alignment is not within 0.5 mile of an aquatic preserve, Outstanding Florida Waters, Class I or Class II water.	No more than two public water supply wells have been identified within, or within 500 feet of the project alignment.
1	Project alignment is within 0.5 mile and in the watershed of an aquatic preserve or Outstanding Florida Waters, but does not cross it, or is within 0.5 mile of a Class I or Class II water.	Project alignment contains, or has within 500 ft of its borders, between three and five public water supply wells from the above data set.
0	Project alignment crosses at least one designated or proposed portion of aquatic preserve, Outstanding Florida Waters, Class I or Class II waters.	Project alignment contains, or has within 500 ft of its borders, six or more public water supply wells from the above data set.

Applicability to Project Segment

Please note that the overall Water Quality score for any proposed project segment is determined by the category in which that segment receives the ***worst score***. For example, if a proposed arterial receives exemplary scores in the first category, but the project alignment contains seven publicly owned water supply wells, then its Ground Water – Wells score is the worst possible, i.e. zero points. In such a case, the overall Water Quality score would be zero points.

Wetlands Investment Indicator

This measure is based primarily on the extent of wetlands within each project and not on the quality or replaceability of wetlands. Each project is rated "low", "medium", or "high" based on a combination of the National Wetlands Inventory (NWI) data, Water management District land use/cover data for the project area. The analysis at this preliminary stage distinguishes types of wetlands only on a gross scale, and does not identify differences in type or quality of wetland resources.

Wetlands Data Characteristics

Data Source: FGDL
Data Type: Table
Calculation: Spatial analysis with use of buffer

Wetlands Measure Categorization & Scoring

SCORE	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)			
	Wetlands	*Forested Wetlands*	*Mangrove forest or salt marsh*	*Wetland crossing*
1.75	Less than 33 percent of the project area is composed of wetlands.	Less than 20 percent of the project area is composed of forested wetlands.	There are no wetlands that are estuarine in type (mangrove forest or salt marsh).	No wetlands extend across the entire project area such that a single wetland crossing of greater than 5 percent of the length of the project area would be required regardless of right of way alignment within the project area.
1	Between 33 percent and 66 percent of the project area is composed of wetlands.	Between 20 percent and 40 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type (mangrove forest or salt marsh) are present in less than 20 percent of the project area.	Wetlands extend across the entire project area such that a single wetland crossing of 5-10 percent of the project area would be required regardless of right of way alignment.
0	Over 66 percent of the project area is composed of wetlands.	Over 40 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type (mangrove forest or salt marsh) comprise over 20 percent of the project area.	Wetlands extend across the entire project area such that a single wetland crossing of greater than 10 percent of the project area would be required regardless of right of way alignment.

SCORE	Arterial (using 200' buffer in all directions from centerline or point)			
	Wetlands	*Forested Wetlands*	*Mangrove forest or salt marsh*	*Wetland crossing*
1.75	Less than 25 percent of the project area is composed of wetlands.	Less than 10 percent of the project area is composed of forested wetlands.	There are no wetlands that are estuarine in type (mangrove forest or salt marsh).	No wetlands extend across the entire project area such that a single wetland crossing of greater than 5 percent of the length of the project area would be required regardless of right of way alignment within the project area.
1	Between 25 percent and 50 percent of the project area is composed of wetlands.	Between 10 percent and 20 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type (mangrove forest or salt marsh) are present in less than 10 percent of the project area.	Wetlands extend across the entire project area such that a single wetland crossing of 5-10 percent of the project area would be required regardless of right of way alignment.
0	Over 50 percent of the project area is composed of wetlands.	Over 20 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type (mangrove forest or salt marsh) comprise over 10 percent of the project area.	Wetlands extend across the entire project area such that a single wetland crossing of greater than 10 percent of the project area would be required regardless of right of way alignment.

SCORE	Connector (using 100' buffer in all directions from centerline or point)			
	Wetlands	*Forested Wetlands*	*Mangrove forest or salt marsh*	*Wetland crossing*
1.75	Less than 10 percent of the project area is composed of wetlands.	Less than 5 percent of the project area is composed of forested wetlands.	There are no wetlands that are estuarine in type (mangrove forest or salt marsh).	No wetlands extend across the entire project area such that a single wetland crossing of greater than 5 percent of the length of the project area would be required regardless of right of way alignment within the project area.
1	Between 10 percent and 20 percent of the project area is composed of wetlands.	Between 5 percent and 10 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type (mangrove forest or salt marsh) are present in less than 5 percent of the project area.	Wetlands extend across the entire project area such that a single wetland crossing of 5-10 percent of the project area would be required regardless of right of way alignment.
0	Over 20 percent of the project area is composed of wetlands.	Over 10 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type (mangrove forest or salt marsh) comprise over 5 percent of the project area.	Wetlands extend across the entire project area such that a single wetland crossing of greater than 10 percent of the project area would be required regardless of right of way alignment.

Applicability to Project Segment

Please note that the overall Wetlands score for any proposed project segment is determined by the category in which that segment receives the ***worst score***. For example, if a proposed arterial receives exemplary scores in the first three categories, but a single wetland crossing of greater than 10 percent of the project area would be required, then its Wetland crossing score is the worst possible, i.e. zero points.

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PLANNERS
ECONOMISTS

WilburSmith
ASSOCIATES