STRATEGIC INVESTMENT TOOL

HIGHWAY COMPONENT

MEASURES HANDBOOK

FLORIDA DEPARTMENT OF TRANSPORTATION SYSTEMS PLANNING OFFICE

Chapter 1 – SIS Overview and SIT Process

With the update of the Florida Transportation Plan (FTP) in 2000, the need for a new system encompassing all transportation 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, spaceports, 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.

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 the 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 the FDOT or on the web at www.dot.state.fl.us/planning/sis.

The *SIS Strategic Plan* and the *Guidance* document both required the 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, the FDOT developed the SIS Strategic Investment Tool (SIT). With the completion of the 2010 SIS Update and the 2060 FTP a need existed to revisit the SIT and the measures used to achieve the FDOT's goals.

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 six FTP goals/SIS objectives and prioritizes each specific capacity improvement project competing for the dedicated, discretionary transportation capacity funds.

It is the intent of the FDOT that the SIT and the related process for determining project eligibility and project priorities are 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 phases:

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.

Strategic Plan Development - On January 20, 2005, the Secretary of Transportation for the 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.

Strategic Plan Enhancement and Implementation - In 2009 a 31 member 2010 SIS Strategic Plan Leadership Committee working with statewide and local partners developed 40 recommendations on the development of the SIS 2010 update. After 12 public workshops the SIS Strategic Plan was updated.

FTP Goals

The FDOT and its partners have developed objectives and policy guidance that reflect and support the goals of the Florida Transportation Plan (FTP) and other federal, state, and local efforts to implement multimodal transportation planning processes. The 2060 FTP goals are:

Goal 1: A safer and more secure transportation system for residents, businesses, and visitors - The FDOT's highest priority is the safety of its users. This goal also explicitly acknowledges the importance the network plays in security of the state through connections with military facilities and use of the system for emergency evacuation.

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

Goal 3: Increased mobility and connectivity for people and freight and efficient operation of Florida's transportation system - 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 between regions;
- Increasing the number of high-speed, high-capacity transportation options available for people and freight trips between regions, states, and nations; and
- Increasing the efficiency of SIS facilities and services using appropriate technologies and operational strategies.

Goal 4: Enhanced economic competitiveness and economic diversification - Support economic development by enabling interregional, interstate, and international transportation that:

- 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: Promote Livable Communities - Support making transportation decisions that enhance the livability of communities throughout Florida. Though transportation alone cannot make a community livable, the decisions and investments made by the FDOT will enhance or detract each particular community's characteristics, values, and needs.

Goal 6: Responsible environmental stewardship - Minimize the impacts of the transportation system on the environment. The 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 the FDOT and its partners can be broken into three stages known as the SIS Funding Process:

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

These plans can be found at:
www.dot.state.fl.us/planning/systems/programs/mspi/plans/

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) and the methodology incorporates project priority criteria that are currently used by operators of Florida's highway system.

The SIT includes six categories of prioritization criteria, each corresponding to the six FTP goals/SIS objectives. Statewide priorities will also be guided by district priorities, funding availability, and project phasing.

SIT Prioritization Process

The SIT prioritization process, as described by this document, is a formal and transparent process that is driven by policy objectives and supported by data. The 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 Unfunded 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 the FDOT and its partners.

SIT Eligible Projects

Projects currently eligible to be evaluated by the SIT include all highway corridor and connector capacity projects currently eligible for SIS funding. Funding will be available for projects that enhance movement of interregional, interstate, and international passengers and goods and provide substantial public benefit. These projects include providing 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.

Changes to Scoring Process and 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 FDOT 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

The FDOT owns and operates the majority of the State Highway System, which includes all SIS highway corridors and most SIS highway connectors. A large and diverse group of stakeholders is involved in planning and funding transportation improvements on the remaining SIS facilities. As SIS implementation continues to evolve, the FDOT will continue to 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 and its resulting scores are 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 FTP goals and SIS objectives and to help the FDOT 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. 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 the 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 Cost Feasible 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

- 51 measures are used to evaluate and score projects with respect to the six FTP goals/SIS objectives.
- The Analyzer calculates scores for each project by both individual measures and the overall FTP goal/SIS objective.
- Each measure was evaluated to ensure that it was linked to SIS objectives, is accountable, clear, logical, 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.
- The Measure Mapper tool provides the user a graphical interface to view specific results of the Analyzer as a map.
- Allows user to view various project grouping scenarios and to change the SIS goal weighting factors instantly.

SIT Access

The SIT is housed within the Systems Planning Office at FDOT Central Office in Tallahassee. Users can access the SIT through the Applications tab on the SIS Planning Portal located on the FDOT infonet Central Office planning page. Users must have access to the FDOT network in order to use the 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 ArcGIS Server web-based tool that provides users the ability to view data on any SIS highway 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:

Right Corner Toolbar – This toolbar provides access to standard GIS functions, such as zoom in/out, pan, view full extent, forward, and backward.

Left Corner Menu Bar

Map Contents – The map contents area allows the user to select features to display on the map, aerial images, and provides the map's legend;

Utilities – The utility button includes access to a map magnifier and distance measure tool as well as the following:

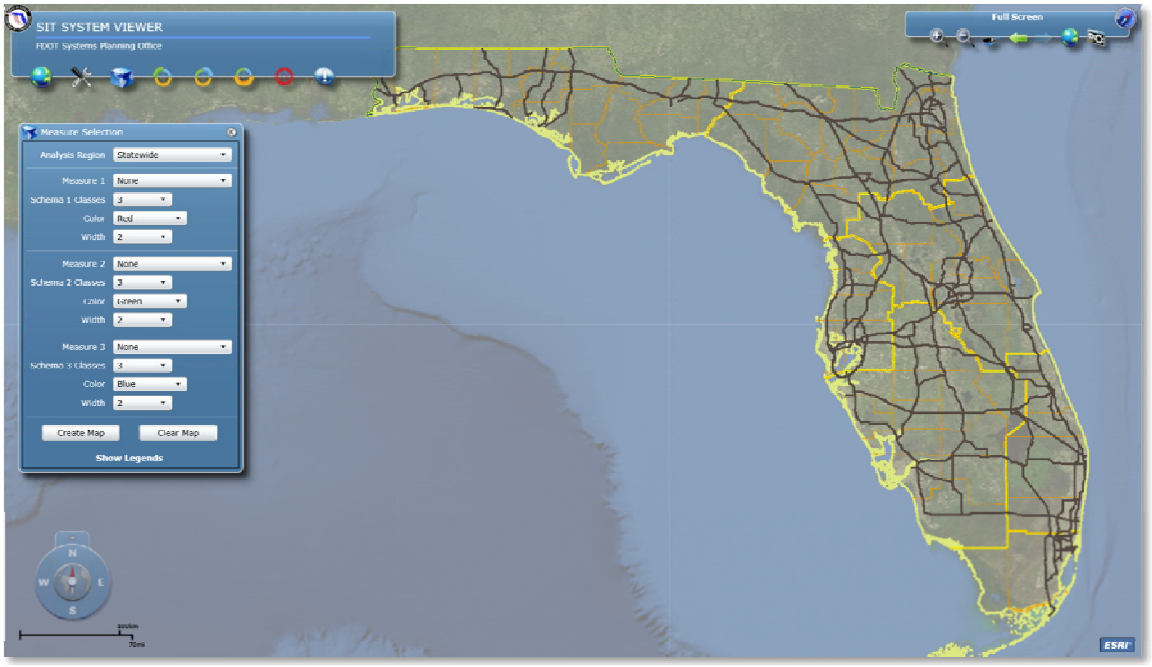
> **Identify Button –** Provides access to detailed system data for a particular SIS roadway segment, such as roadway segment number, AADT, crash ratio, and truck percentage. Also identifies future projects planned for the selected SIS roadway segment from the Work Program, 2nd Five-Year Plan, Cost Feasible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

Co-site Volumes Button – Provides access to future traffic information from the statewide traffic model;

Document Library Button – Provides access to available studies and reports in pdf format on a selected segment of a SIS highway. Click on the Library Button and then select the segment of a SIS highway to view available documents.

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 analysis area, color and width of the lines, as well as the number of classes in which to split the data;

SIS Funding Strategy – The following four circle icons are the for toggling on/off shapefiles that illustrate the SIS Funding Strategy, including the SIS 1st Five-Year, 2nd Five-Year, Cost Feasible Plan, and Unfunded Needs Plans.



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 51 measures are used in the scoring process to determine overall scores for each project for each of the six SIS objectives. Each of the 51 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 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, as well as information about each project, such as:

- Project name;
- Facility;
- Roadway ID and begin/end mileposts;
- Project limits (from/to);
- Roadway classification/type;

Additionally, 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 may override the default choices for the following items:

Road Type – Is the SIS facility an interstate, arterial, or SIS connector?

Interchange Type – A dropdown to allow a user to identify a potential interchange. Is the project located at an interchange of a SIS Corridor to another SIS Corridor, a SIS Corridor to a SIS Connector or Military Access Facility, a SIS Corridor to a Non-SIS facility, or is the project 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.

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.

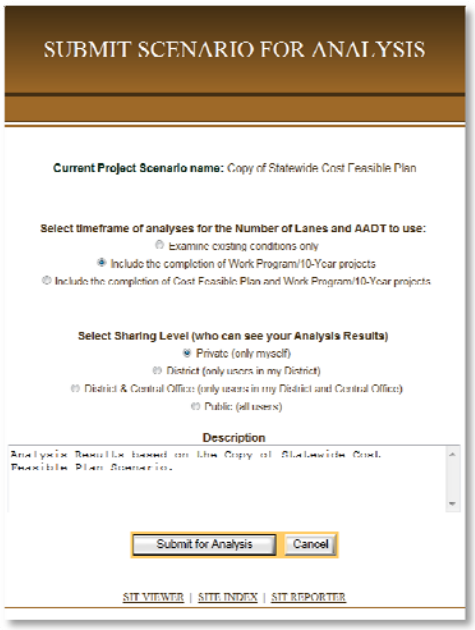
Improvement – A dropdown list of all available improvements types.

Transit – A dropdown list allowing an interpretation of the positive transit impacts of a project. If unsure, select Use Improvement Type.

BikePed – A dropdown list allowing an interpretation of the positive bicycle and pedestrian impacts of a project.

The user can also import projects from the latest adopted SIS Cost Feasible Plan, SIS Work Program, or SIS Multimodal Unfunded Needs Plan. The Import Project screen displays the projects available to import. The user simply clicks the IMPORT2SIT or ADD 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.

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. The user can provide a description of the scenario, as well as select the security level of the scenario, and the time frame for analysis. This time frame incorporates planned improvements into the SIS highway network that may be completed between present day and when the projects submitted to be analyzed are planned. The security level identifies whether the scenario is private to the user only, available to all users within the same district, available to the users district and central office, or available to all users.

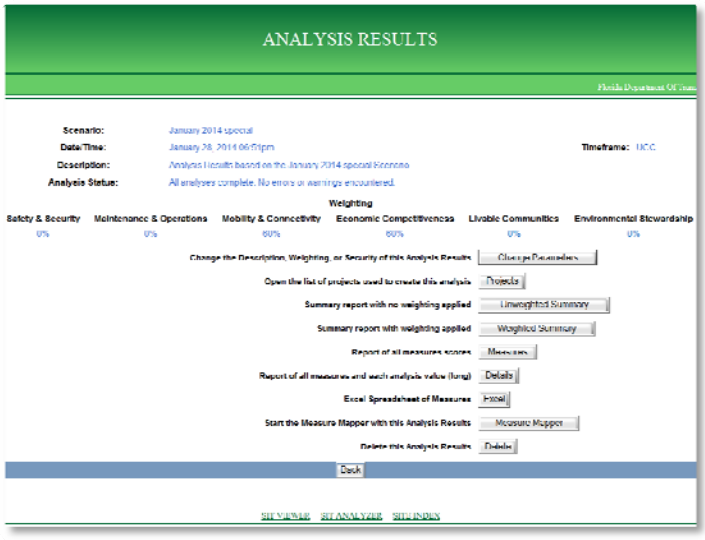


Reporter

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 results for other districts;
- All public 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 SIS objective weighting 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 or some of the projects 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 objective. The user can select any weighting combination, but the weighting must always add up to 120 points. It is important to note that changes to the weighting will replace the previous weighting combinations and all reports, except the unweighted, will now reflect the new weighting scheme for this scenario.

Measure Mapper

The Measure Mapper provides the ability for the user to display the results of the SIT Analyzer on a map. It provides many of the same basic features as the System Viewer, including the following:

Right Corner Toolbar – The main toolbar in the System Viewer provides access to standard GIS functions, such as zoom in/out, pan, and view full or previous extent. In addition, the main toolbar provides access to additional functions as described below.

Left Corner Menu Bar

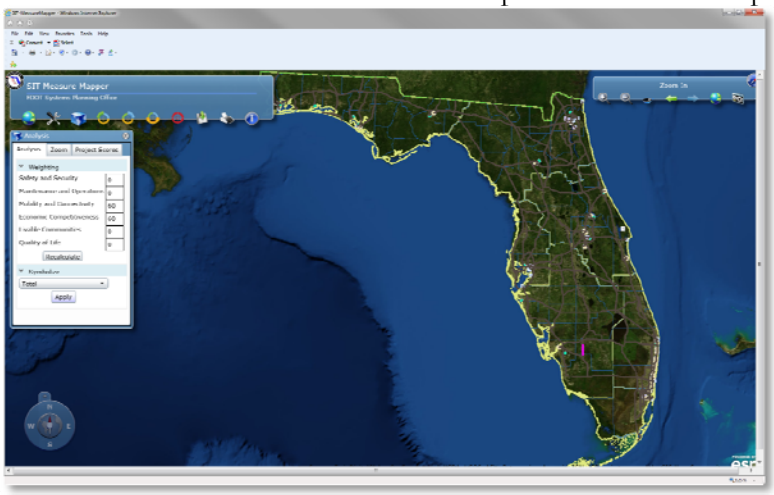
Map Contents – The map contents area allows the user to select features to display on the map, aerial images, and provides the map's legend.

Utility – The identify button provides access to SIT scores for a selected project broken down by SIS objective and will also launch the analysis window. There is also a distance measuring tool.

Analysis Window – The weighting area allows the user to modify the weighting of each of the SIS objectives. The weight given to all of the goals must sum to 120 points. 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. The symbolize area allows the user to create maps where projects are color coded based on only one of the SIS objectives. In addition, tabs for zooming to a particular project as well as the actual project scores are available.

SIS Funding Strategy – The following four circle icons are the for toggling on/off shapefiles that illustrate the SIS Funding Strategy, including the SIS 1st Five-Year, 2nd Five-Year, Cost Feasible Plan, and Unfunded Needs Plans.

Save and Print Buttons – Allows users to save or print the current map view.



Chapter 3 – Highway and Connector Measures

The FDOT developed the Strategic Investment Tool (SIT) to evaluate and prioritize potential highway corridor and connector capacity improvement projects using a series of performance measures linked to the six FTP goals and corresponding SIS objectives. The FTP goals are presented in Chapter 1. This chapter describes what is looked for in performance measures used to evaluate potential projects for funding.

Characteristics of Good Performance Measures

The 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, the 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 following suite. 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. The FDOT utilizes 51 measures in the SIT.

There is considerable national research regarding performance measures. The 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 the FDOT considered in developing the SIT performance measures.

Characteristics of good performance measures include measures that are:

- Understandable, 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.

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;

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

- 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

Fifty-one measures are used to evaluate and prioritize eligible SIS Highway and Connector capacity projects. The measures are summarized in **Table 3-1**. The scoring value for each measure varies depending on how directly it relates to the FTP goal.

In selecting the highway performance measures, the FDOT made considerable effort to verify and validate that the measures selected and used are valid and reliable. As stated, the FDOT conducted a national literature search and review of peer state DOTs to identify, compare, and evaluate the measures and the weighting factors. The FDOT, with the assistance of an independent transportation consultant, evaluated each measure to make certain it was: linked to the goal; matches the purpose of the goal; is accountable (can demonstrate how the goal is being met); is clear and logical; can be based on quantitative data; is easy to understand; its calculation can be duplicated; 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; the high cost or excessive time required collecting data needed for the measure; the measure may not have the correct focus and would result in focusing the program in the wrong direction; the measure duplicated another, better measure; or measure may result in bias. An example of this includes giving points solely based on if the project is in an urban area – this would result in bias against rural Florida.

Table 3-1: SIT Highway and Connector Measures

SIS Objective	Measure	Maximum Score
Safety & Security (5 Measures)	Crash Ratio	10
	Fatal Crash Ratio	4
	Bridge Appraisal Rating	2
	Link to Military Base	2
	Emergency Evacuation	2
	Possible Subtotal	***20 points***
Maintenance & Operations (4 Measures)	Travel Time Reliability	8
	Truck Volume (AADTT)	8
	Adaptation Measure	2
	Bridge Condition Rating	2
	Possible Subtotal	***20 points***
Mobility & Connectivity (8 Measures)	Connector Location	1
	Volume / Capacity (v/c) Ratio	4
	Truck Percentage	2
	Vehicular Volume (AADT)	2
	System Gap	2
	Change in v/c (Mainline) or Interchange Ops (Interchanges)	3
	Bottlenecks	2
	Delay	4
	Possible Subtotal	***20 points***
Economic Competitiveness (14 Measures)	Rural Areas of Critical Economic Concern	2
	Workforce Size	1
	Educational Attainment Level	1
	Population Growth Rate	1
	Per Capita Income	1
	Freight Employment Intensity	1
	Property Taxes	1
	Freight Transportation Infrastructure	2
	Military Bases Employment	1
	Per Capita Sales Tax	2
	Number of Visitors	2
	Institutions of Higher Education	2
	Medical Centers	1
	Tech Centers	2
	Possible Subtotal	***20 points***
Livable Communities (7 Measures)	Residential and Community Impacts	4
	Population Density	2
	Transit Connectivity	3
	Bicycle / Pedestrian Access	4
	Managed Lanes / Special Use	2
	Social Investment / Justice	2
	Personal Safety	3
	Possible Subtotal	***20 points***
Environmental Stewardship (13 Measures)	Farmlands	1
	Geology	1
	Archeological / Historical Sites	2
	Contamination	1
	Conservation and Preservation	2
	Wildlife and Habitat	2
	Flood Plains / Flood Control	1
	Coastal / Marine	1
	Special Designations	2
	Water Quality	1
	Wetlands	2
	Air Quality	2
	Energy and Sustainability	2
	Possible Subtotal	***20 points***
	Total Maximum Score	**120 points**

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- TRB Conference Proceedings, October 29 - November 1, 2000, Performance Measures to Improve Transportation Systems and Agency Operations;
- http://www.ops.fhwa.dot.gov/perf_measurement/fundamentals.htm;
- http://www.ops.fhwa.dot.gov/perf_measurement/pubs_resoruces.htm;
- http://www.wsdot.ws.gov/accountability/library/default.htm (Listing and links to 20 state DOT's performance measure approach and documentation. Including: AK, AZ, CA, DE, FL, KY, LO, MD, MN, MO, NM, OH, OR, PA, SC, TN, TX, VT, VA, WA.
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  - Missouri DOT Dashboard – Measurements of Performance, 2004 Update.
  - Ohio DOT – TRAC Policies and Procedures, 2003.
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Appendix A
Safety and Security

5 Measures

Measure	Maximum Score
Crash Ratio	10
Fatal Crash Ratio	4
Bridge Appraisal Rating	2
Link to Military Base	2
Emergency Evacuation	2

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 FDOT Safety Office. This indicator provides the crash rate for a segment in comparison to the rate of similar roadways statewide.

Importance to Safety and Security

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. A safe and secure transportation system is a goal of the 2060 FTP.

Data Characteristics

Data Source: FDOT 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	> 3.66
8	2.60 – 3.66
6	2.01 – 2.59
4	1.64 – 2.00
2	1.34 – 1.63
1	1.01 – 1.33
0	≤ 1.0

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

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

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

The Fatal Crash Ratio 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 ratio is being used as an indication based on discussions with the FDOT 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 safe ty improvement combined into interchange/intersection or mainline improvements.

Importance to Safety and Security

Fatal crashes are one indicator used to measure safety. Saving lives is a high priority for FDOT and is an objective of the safety goal in the 2060 FTP. 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 projec ts 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: FDOT 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	> 5
3	4.01 – 5
2	3.01 – 4
1	2.01 – 3
0	≤ 2

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

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

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 FDOT Bridge Maintenance Office, the bridge appraisal rating is one of the best measures to address safety. Bridges are broken into two categories: 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

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 the FDOT distinguish and prioritize among needed bridge projects. Improving these bridges will help achieve the 2060 FTP goal of safety.

Data Characteristics

Data Source: FDOT 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
2	3
1.5	2
1	1
0	0

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

The military access facility measure identifies a potential project segment's ability to link Florida's military installations to the SIS.

Investment Indicator

Use of links to or connectivity to US military installations as an indicator of safety and security is based on an understanding of the desires of USDOT and US Homeland Security for the National Highway System and Strategic Highway Network.

Importance to Safety and Security

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 network of roadways that connect US military installations across the country and allows them to move quickly to any location at which they may be needed. Providing priority for projects located near a military base supports the 2060 FTP's goal of providing a safer and more secure transportation system and improves the security of the State of Florida.

Data Characteristics

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

Measure Categorization & Scoring

Score	Project Location
2	On a designated SIS Military Access Facility
1.5	Within a five-mile buffer around the main access gate
1	Within a five-mile buffer around the installation boundary
0	Beyond a five-mile installation boundary buffer

Description

This measure identifies county clearance time for emergency evacuations.

Investment Indicator

The use of out of county clearance times as a safety measure will focus projects in areas where bottlenecks and capacity issues greatly impact clearance times, whether they are in coastal or inland counties. Counties with higher evacuation times will receive higher points.

Importance to Safety and Security

A goal of the 2060 FTP is to provide a safe and secure transportation system for all users. The goal declares, "Hurricanes, wildfires, and other natural disasters in Florida have highlighted the importance of effective emergency response and the vulnerability of the transportation system to major disruption." By expediting the evacuation of people during natural disasters and other emergencies, the FDOT decreases the likelihood of injury and/or death of both citizens and visitors of the state of Florida. This expediting also increases the ability of emergency management personnel to do their job in a more effective manner.

Data Characteristics

Data Source: Florida Department of Emergency Management
Data Type: Linear Coverage
Calculation: County clearance times are calculated by the Florida Department of Emergency Management
Sample Data:

ID	County Name	2010 Clearance Time (Hours)
1	Baker	38.5

Measure Categorization & Scoring

Score	Spatial Analysis
	Project located in county with out of county clearance time
2	> 38.50 hours
1.5	26.51 – 38.50 hours
1	18.01 – 26.50 hours
0.5	13.51 – 18.00 hours
0	< 13.51 hours

If a project crosses county boundaries, then a weighted average will be used to determine the scoring where:

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

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

Appendix B
Maintenance & Operations

4 Measures

Measure	Maximum Score
Travel Time Reliability	8
Truck Volume	8
Adaptation	2
Bridge Condition Rating	2

Description

Travel time reliability is a measure of predictability in a transportation system. The system is performing well when users can adequately anticipate normal travel time and can therefore minimize the time needed for a buffer to arrive at a certain destination.

Investment Indicator

The measure of travel time reliability proposed for use is the travel time reliability index (TTRI). The index is calculated by dividing the 95th percentile travel time by the free flow travel time. 95th percentile travel time and free flow travel time values are determined by a predictive model which incorporates the probability of recurring congestion, incidents, weather, special events, and construction. The model was developed for the FDOT in phases, beginning with Florida's limited access roadway system. As this does not include the entire SIS network, a proxy will be used on all remaining segments until the arterial model is completed and tested.

Importance to Maintenance and Operations

Travel time reliability is an important aspect of maintenance and operations because it is a performance measure common to freight and passenger needs, as well as across modes in a general form. One of the long range objectives in the 2060 FTP is to optimize the efficiency of the transportation system for all modes. Travel time reliability is a way to measure operational performance in this area.

Data Characteristics

Data Source: FDOT Transportation Statistics Office
Data Type: Predictive model
Calculation: None once delivered to FDOT Systems Planning Office
Sample Data: Data from latest available District LOS/future traffic

Measure Categorization & Scoring

Score	Delay on Roadways	Travel Time Index (TTI) or Throughput TTI Proxy
8	High	TTI 1.261 or greater or Proxy -0.80 to -2.35
4	Medium	TTI 1.061 to 1.26 or Proxy -1.04 to -0.81
0	Low	TTI 1.00 to 1.06 or Proxy -1.33 to 1.05

Description

Average annual daily truck traffic (AADTT) 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 maintenance and operations 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 maintenance and operations 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

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 level of service (LOS) submittal
Data Type: Linear coverage
Calculation: None
Sample Data: Data from latest available District LOS/future traffic

ID	RDWYID	BEGPT	EndPT	Aadt	**Truck_aadt**	**Truck_percent**	AreaType	FacilityType	**priocat**
1	01040000	2.203	2.6	25,920	**1638**	**0.06319**	Urban	Highway	**2**

Measure Categorization & Scoring

Work Program timeframe AADTT:

Score	Truck AADTT (by PRIOCAT)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural/Transition Arterial*	*Rural/Transition Highway*	*Rural/Transition Freeway*
8	> 6,688	> 7,177	> 17,501	> 4,804	> 4,248	>16,154
4	> 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

Cost Feasible Plan AADTT:

Score	Truck AADTT (by PRIOCAT)					
	1	2	3	4	5	6
	Urban Arterial	*Urban Highway*	*Urban Freeway*	*Rural/Transition Arterial*	*Rural/Transition Highway*	*Rural/Transition Freeway*
8	> 7,967	> 8,988	> 21,226	> 5,939	> 5,440	> 20,036
4	> 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

Score Category Lookup:

Level of Service Table Lookup			
Area Type	Facility Type	Class Type	**PRIOCAT**
Urban	Arterial	1	1
Urban	Arterial	2	1
Urban	Highway		2
Urban	Freeway	Core	3
Urban	Freeway		3
Transition	Arterial	1	4
Transition	Arterial	2	4
Rural	Arterial		4
Transition	Highway		5
RuralDev	Highway		5
RuralUn	Highway		5
Transition	Freeway		6
Rural	Freeway		6

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

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

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 the possibility of future project segments being affected by weather and climate change.

Investment Indicator

This measure helps reduce the inherited risk of weather and climate change. By building in a manner that reduces risk of system damage from weather and climate change the FDOT is ensuring efficient operations and return on tax payer investment long into the future. Making a wise investment now allows the system to adapt and will help prevent costly future investments and disruptions to operations. For the SIT a measure to represent susceptibility of infrastructure to potential rising sea levels the existing knowledge to the impacts of tropical system storm surges will be utilized. A project will receive more points for the less potential risk that a segment of roadway is

Importance to Maintenance and Operations

Since one of the long rang objectives of the 2060 FTP is to reduce the vulnerability and increase the resilience of critical infrastructure to the impacts of climate trends and events, the adaptation measure is critical for maintenance and operations. By providing roadways that will not be affected by weather and climate change, the FDOT will increase the longevity of roadway surfaces and roadway structures.

Data Characteristics

Data Source: Florida Department of Emergency Management
Data Type: Linear Coverage
Calculation: Storm surge zones are calculated by the Florida Department of Emergency Management
Sample Data:

FID	Cat	RPC	Edited	Shape_area	Shape_len
0	1	SFRP	11/15/2010	1.202913	15.051551

Measure Categorization & Scoring

Score	Spatial Analysis
2	Project located outside of surge zone
1	Project located in category 3, 4, or 5 storm surge zone
0	Project located in category 1, 2, or tropical storm surge zone

Project Segments located within a surge zone receive the score for that zone. If a project segment travels through two or more surge zones, it receives the highest score possible out of the surge zones traveled through.

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 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

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: FDOT 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**	57.851435

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

If a deficient bridge occurs within project limits, a score > 0 is awarded based on bridge condition rating (use highest score of four (4) measures for each bridge). Highest score is used for projects involving more than one deficient bridge.

Appendix C
Mobility & Connectivity

8 Measures

Measure	Maximum Score
Connector Location	1
Volume/Capacity (v/c) Ratio	4
Truck Percentage	2
Vehicular Volume	2
System Gap	2
Change in V/C Ratio or Interchange Operations	3
Bottleneck	2
Delay	4

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 purpose and functionality of the Strategic Intermodal System.

Importance to Mobility and Connectivity 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, with a focus on the 'last mile'.

Data Characteristics

Data Source: FDOT Transportation Statistics Office Roadway Characteristics Inventory (RCI) – Feature 147
Data Type: Connector locations – identified in RCI according to the following table excerpt
Calculation: None

Feature 147 SIS Facility Type (Partial table from FDOT RCI)
21- SIS Connector: Designated roadways that connect SIS Hubs to SIS Corridors. (May be either on the state highway system or off)
22- SIS Connector Planned Add: This alignment is either a new road that has not been constructed, or was not previously designated as a SIS Connector.
23- SIS Connector Planned Drop: An existing SIS Connector that will be de-designated when a facility that is to replace it (planned add) is designated a SIS Connector.

Measure Categorization & Scoring

Score	Connector	Feature 147 (FACTP) = 21, 22, or 23
1	Yes	21 (SIS Connector) & 22 (SIS Connector Planned Add)
0	No	23 (SIS Connector Planned Drop)

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 congested conditions result.

Investment Indicator

A way to evaluate if a highway is operating properly is to measure v/c. This operates as a 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.)

Importance to Mobility and Connectivity Goal

V/C ratio is used to address the 2060 FTP Goal of Mobility and Connectivity. 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 both maintenance and capacity enhancements.

Data Characteristics

Data Source: FDOT District level of service (LOS) submittal
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from available FDOT District LOS/future traffic

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**
	For Work Program & Cost Feasible Plan time frame
4	> 1.75
3	1.51 – 1.75
2	1.26 – 1.50
1	1.01 – 1.25
0	≤ 1.00

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

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

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. The 2009 *Florida Trade and Logistics Study* noted 73% of freight by weight is carried by trucks in Florida. 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 and Connectivity 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: FDOT District level of service (LOS) submittal
Data Keeper: FDOT Systems Planning Office
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from available District LOS/future traffic

ID	RdwyID	BegPT	EndPT	Aadt	**Truck Aadt**	**Truck Percent**	Area Type	Facility Type	**PRIOCAT**
1	01040000	2.203	2.6	25920	**1638**	**0.06319**	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	8.80 – 15.77	9.60 – 17.59	7.44 – 12.19	10.69 – 16.52	13.06 – 22.56	16.80 – 26.34
0	≤ 8.79	≤ 9.59	≤ 7.43	≤ 10.68	≤ 13.05	≤ 16.79

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

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

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:

Level of Service Table Lookup			
Area Type	Facility Type	Class Type	**PRIOCAT**
Urban	Arterial	1	1
Urban	Arterial	2	1
Urban	Highway		2
Urban	Freeway	Core	3
Urban	Freeway		3
Transition	Arterial	1	4
Transition	Arterial	2	4
Rural	Arterial		4
Transition	Highway		5
RuralDev	Highway		5
RuralUn	Highway		5
Transition	Freeway		6
Rural	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 levels. There are two measures for this criterion: one for the Cost Feasible Plan 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 and Connectivity 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. By focusing projects in locations with higher than average vehicular volumes FDOT is trying to improve the overall movement of traffic in support of the 2060 FTP mobility and connectivity goal. 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: FDOT District level of service (LOS) submittal
Data Type: Linear Coverage
Calculation: None
Sample Data: Data from District LOS/future traffic

ID	RdwyID	BegPT	EndPT	**Aadt**	Truck Aadt	Truck Percent	Area Type	Facility Type	**Priocat**
1	01040000	2.203	2.6	**25920**	1638	0.06319	Urban	Highway	**2**

Measure Categorization & Scoring

Work Program Time Frame 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	37,050 – 70,151	37,799 – 69,745	100,711 – 217,227	25,849 – 39,058	14,159 – 25,887	55,272 – 91,491
0	≤ 37,049	≤ 37,798	≤ 100,710	≤ 25,848	≤ 14,158	≤ 55,271

Cost Feasible Plan Time Frame 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	43,479 – 82,496	46,167 – 88,001	123,008 – 260,251	31,572 – 49,454	17,241 – 33,283	68,187 – 115,462
0	≤ 43,478	≤ 46,166	≤ 123,007	≤ 31,571	≤ 17,240	≤ 68,186

Score Category Lookup:

Level of Service Table Lookup			
Area Type	Facility Type	Class Type	**PRIOCAT**
Urban	Arterial	1	1
Urban	Arterial	2	1
Urban	Highway		2
Urban	Freeway	Core	3
Urban	Freeway		3
Transition	Arterial	1	4
Transition	Arterial	2	4
Rural	Arterial		4
Transition	Highway		5
RuralDev	Highway		5
RuralUn	Highway		5
Transition	Freeway		6
Rural	Freeway		6

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

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

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 fills a gap in the statewide roadway transportation system. A system gap has been previously identified by the FDOT Systems Planning Office as a segment of roadways less than 30 miles that is bordered by segments of roadway with higher number or lanes.

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 and Connectivity Goal

Correcting a system gap can help achieve the 2060 FTP goal to increase mobility and connectivity. A gap in a system may be, for example, a portion of a roadway that changes from four-lanes to two-lanes 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 2060 FTP mobility and connectivity goal.

Data Characteristics

Data Source: FDOT 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

Project Database (example data)

MapID	**Roadway1**	**Begin_Post1**	**End_Post1**	**Improvement**	…
1-105-420	**01040000**	**2.203**	**10.67**	**A2-8**	*(various other data)*

Measure Categorization & Scoring

Score	System Gap Filled
2	Yes
0	No

Change in v/c Ratio – Level of Service

(FOR MAINLINE SEGMENTS ONLY)

Appendix C – Mobility Measures

Description

This measure identifies the change in volume to capacity (v/c) ratio – LOS 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: projected traffic from the final year of the latest approved SIS Cost Feasible Plan will be used; projected traffic from the final year of the latest adopted Work Program will be used.

Importance to Mobility and Connectivity 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: FDOT District level of service (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

Measure Categorization & Scoring

Score	Change in v/c (Percent)
3	> 25%
2	11 - 25%
1	1 - 10%
0	0%

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

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

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 and Connectivity 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 roadway that carries high volumes at higher speeds and 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 a limited access roadway. 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: FDOT Systems Planning Office
Data Type: Located in SIT project database
Calculation: None

Measure Categorization & Scoring

Score	Interchange Type
3	SIS Corridor at SIS Corridor or SIS Corridor ramps direct connector to hub
2	SIS Corridor at SIS Connector or SIS Corridor at SIS Military Access Facility
1	SIS Corridor at non-SIS facility
0	Not an interchange project

Description

This measure utilizes identified bottlenecks on SIS highways and connectors. Bottlenecks are a localized section of highway that experiences reduced speeds and inherent delays due to a recurring operational influence or a nonrecurring impacting event.

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. This measure takes the results of the Bottleneck Study completed and routinely updated for the Systems Planning Office and incorporates its findings of identified bottlenecks into the SIT. The Bottleneck Study relied on vehicle probe data which identified bottlenecks through a combination of pl anning time index and frequency of congestion.

Importance to Mobility and Connectivity Goal

Bottlenecks are by definition a location where the flow of traffic is slowed. By identifying and providing points to projects that address this condition, FDOT is moving to advance its Mobility goal and improving the smooth movement of traffic.

Data Characteristics

Data Source: FDOT Systems Planning Office, Bottleneck Study
Data Type: Vehicle Probe Data
Calculation: Calculated for the bottleneck report

Measure Categorization & Scoring

Score	Bottleneck
2	Top 5 bottlenecks identified per FDOT District
1	Remaining identified bottlenecks
0	Not an identified bottleneck

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 of mobility or a slowing of the free and smooth movement of traffic.

Importance to Mobility and Connectivity 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 intelligent transportation systems (ITS) and emergency management programs) will help achieve FDOT's efforts to increase mobility in response to the 2060 FTP.

Data Characteristics

Data Source: FDOT Transportation Statistics Office
Data Type: Linear Coverage
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 (vehicle hours)
3175000	SR 93 / I-75	60.532	60.55	11	60,821	0
3175000	SR 93 / I-75	60.55	60.565	11	78,500	0.518889776
3175000	SR 93 / I-75	60.565	60.885	11	78,500	11.06964855
3175000	SR 93 / I-75	60.885	60.907	11	78,500	0.761038338
3175000	SR 93 / I-75	60.907	63.504	11	78,500	89.83711651
4010000	SR 31	0	1.28	99	4,500	0
4010000	SR 31	1.28	1.432	99	4,500	0
4010000	SR 31	1.432	1.49	99	4,500	0

Measure Categorization & Scoring

Score	Total Daily Delay (vehicle hours)
4	> 2,500
3	1,001 – 2,500
2	251 – 1,000
1	1 - 250
0	0

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

$$Total\ Daily\ Delay = \sum SegmentValue$$

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.

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

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 Competitiveness

14 Measures

Measure	Maximum Score
Rural Areas of Critical Economic Concern	2
Workforce Size	1
Educational Attainment	1
Population Growth Rate	1
Per Capita Income	1
Freight Employment Intensity	1
Property Taxes	1
Freight Transportation Infrastructure	2
Military Base Employment & Growth	1
Per Capita Sales Tax	2
Number of Visitors	2
Institutions of Higher Education	2
Medical Centers	1
Technology Centers	1

Rural Areas of Critical Economic Concern

Appendix D – Economic Competitiveness Measures

Description

This measure identifies projects that take place in counties and communities that have been designated as Rural Areas of Critical Economic Concern (RACEC) by Enterprise Florida.

Investment Indicator

Using Rural Areas of Critical Economic Concern as an investment indicator is based on District user interest to accurately account for areas of the state that are not as economically robust as the state as a whole. These areas are categorized into three regions of the state: a Northwest; North Central; and South Central.

Importance to Economic Competitiveness

In order for Florida to thrive in today's competitive economy, every county and municipality must be encouraged to link into our increasingly interconnected economic landscape with the aim to attract investment and tourism.

Data Characteristics

Data Source: FDOT Systems Planning Office geographic information system (GIS) shapefile
Data Type: Geographic overlay
Calculation: None

Measure Categorization & Scoring

Score	Spatial Analysis
2	Project located in RACEC
0	Project not located in RACEC

Calculation:

1. Buffer designated point features (5 designated RACEC communities) by two (2) miles; and,
2. Test for intersection of proposed project with polygons of counties and buffered points.

Description

This measure identifies the size of a census tract's workforce relative to the rest of state.

Investment Indicator

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.

Importance to Economic Competitiveness

Labor is a fundamental driver in any economy. A strong and accessible workforce is necessary for businesses and investors of all sizes, with higher densities of workers allowing for a competitive and efficient labor market.

Data Characteristics

Data Source: 2010 United States Census
Data Type: Ratio of labor force to population by census tract
Calculation: Averaging

Measure Categorization & Scoring

Score	Workforce Size Measure
1.0	≥ 200
0.8	150 – 199
0.6	100 – 149
0.4	50 – 99
0.2	1 – 49
0	0

Description

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.

Investment Indicator

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.

Importance to Economic Competitiveness

The educational attainment of Florida's citizens reflects directly on the ability of Florida's workforce. An educated population will give Florida a step up on other states when competing for outside business and investment.

Just as important as the size of the labor market, the skills a workforce possesses is critical to competitiveness. A well-trained workforce is highly attractive to employers and investors, since it allows them to efficiently utilize resources that they would otherwise have to expend in training and preparing these workers. For workers, possessing competitive skills presents them with a greater choice of jobs and chance at a satisfying career path.

Data Characteristics

Data Source: 2010 United States Census
Data Type: Percentage of population 25+ years old with high school graduate or higher by census tract
Calculation: Averaging

Measure Categorization & Scoring

Score	Educational Attainment Level Measure
1.0	≥ 200
0.8	150 – 199
0.6	100 – 149
0.4	50 – 99
0.2	1 – 49
0	0

Description

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.

Investment 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.

Importance to Economic Competitiveness

Strong population growth is an indicator of attractiveness of an area to newcomers to Florida as well as residents moving within. Fast growth not only provides for an increased labor force for businesses and investors, but also larger local consumer markets for products, goods, and services.

Data Characteristics

Data Source: 2000 and 2010 United States Census
Data Type: Number of people by census tract
Calculation: Averaging

Measure Categorization & Scoring

Score	Population Growth Rate Measure
1.0	≥ 200
0.8	150 – 199
0.6	100 – 149
0.4	50 – 99
0.2	1 – 49
0	0

Per Capita Income

Appendix D – Economic Competitiveness Measures

Description

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 h as higher productivity, it is more competitive and transportation investments have a higher probability of generating excess economic returns.

Investment Indicator

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.

Importance to Economic Competitiveness

Higher incomes indicate a local job environment that boasts increased levels of produc tivity, specialization, and/or technical skills. High per-capita incomes also provide for larger, more diverse, and higher-end markets for products and services.

Data Characteristics

Data Source: 2010 United States Census
Data Type: Per capita income by census tract
Calculation: Averaging

Categorization & Scoring

Score	Per Capita Income Measure
1.0	≥ 200
0.8	150 – 199
0.6	100 – 149
0.4	50 – 99
0.2	1 – 49
0	0

Description

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

Intensity Indicator

This measure serves as an indication of the freight needs of the state's primary sectors. 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.

Importance to Economic Competitiveness

Logistics and transportation keeps an economy moving. Higher levels of capacity, connectivity, efficiency, and reliability in the freight network provides for a more predictable and consistent economic environment for both businesses and consumers.

Data Characteristics

Data Source: 2010 United States Census
Data Type: Employment in freight intensive industry sectors and total employment by census tract
Calculation: Averaging

Measure Categorization & Scoring

Score	Freight Employment Intensity Measure
1	≥ 200
0.8	150 – 199
0.6	100 – 149
0.4	50 – 99
0.2	1 – 49
0	0

Description

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 suggest 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.

Investment Indicator

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.

Importance to Economic Competitiveness

With no statewide income tax, property taxes in Florida are an essential revenue stream for counties and municipalities to fund local infrastructure projects and maintenance.

Data Characteristics

Data Source: 2010 United States Census and current property tax collection at the county level
Data Type: Property tax collection by county
Calculation: Averaging

Measure Categorization & Scoring

Score	Property Tax Measure
1	≥ 200
0.8	150 – 199
0.6	100 – 149
0.4	50 – 99
0.2	1 – 49
0	0

Description

This measure identifies the size and shipment activity around Florida's freight hubs. 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.

Investment Indicator

When the value of this measure equals (or is greater than) 100, it indicates that activities at the transportation facility are the same as (or higher than) the average activities across all similar facilities in Florida.

Importance to Economic Competitiveness

In order to support a prosperous, globally competitive economy, Florida must have adequate transportation infrastructure in place. By measuring the relative activity level of Florida's seaports, airports, and rail hubs and granting priority to those projects near the infrastructure contributing the most to the state's economy to ensure they continue to adequately operate, this measure works toward FDOT's 2060 FTP goal of promoting economic competitiveness.

Data Characteristics

Data Source: FDOT Office of Freight, Logistics, and Passenger Operations
Data Type: Tonnage and dollar values of imports and exports, cruise statistics, ridership levels
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Score	Project Impact (1/2 mile buffer)	Transportation Infrastructure
2	High	Hub facility with above average activity levels (> 125%)
1.5	Medium	Hub facility with average activity levels (75% - 125%)
1	Low	Hub facility with below average activity levels (< 75%)
0	None	No hub facility or hub facility with no activity

Description

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

Investment Indicator

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 installations across Florida.

Importance to Economic Competitiveness

Military installations have long served as a reliable economic anchor to surrounding communities. These installations offer economic opportunities in catering to the needs of the military and its people: active-duty personnel and high-skilled professional civilians employed on base and living throughout the community.

Data Characteristics

Data Source: The United States Department of Defense Personnel and Procurement Statistics
Data Type: Number of civilian and military personnel at each installation
Calculation: Averaging

Measure Categorization & Scoring

Score	Military Installation Employment Measure
1	≥ 2.00
0.8	1.50 – 1.99
0.6	1.00 – 1.49
0.4	0.50 – 0.99
0.2	0.01 – 0.49
0	0

Description

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, which includes tourists. An area that attracts more tourists may collect more sales tax than other areas.

Investment Indicator

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.

Importance to Economic Competitiveness

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.

With no statewide income tax, sales taxes on purchases by residents and tourists alike are an essential revenue stream for counties and municipalities to fund local infrastructure projects and maintenance. Tourists to Florida collectively spent over $67.2 billion while visiting the state in 2011, generating nearly a quarter of all sales tax receipts. Investing in transportation needs supports the 2060 FTP goals of supporting a prosperous economy.

Data Characteristics

Data Source: 2010 United States Census, current sales tax collection, and population
Data Type: Sales tax collection and population
Calculation: Averaging

Measure Categorization & Scoring

Score	Per Capita Sales Tax Measure
2.0	≥ 200
1.6	150 – 199
1.2	100 – 149
0.8	50 – 99
0.4	1 – 49
0	0

Description

This measure identifies census tracts with a higher propensity to generate tourism-based economic activity. Given that tourism is a key industry for 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.

Investment Indicator

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

Importance to Economic Competitiveness

Florida and tourism have long been synonymous. Due to the sheer variety of landscapes, every corner of the state has the ability to tap into the state's global reputation as a premier tourism destination. Visitors come not only to enjoy the sun and the sand and our theme parks, but also the quiet towns scattered throughout the state and surrounding forests, lakes, and springs. Facilitating ease of movement of tourists within the state is as important as improving connectivity into Florida.

Data Characteristics

Data Source: 2010 United States Census and database purchased by FDOT from Visit Florida
Data Type: Number of tourists by county, adjusted to 2010 Census tract, multiplied by share of employment in retail and tourist related sector
Calculation: Yes

Measure Categorization & Scoring

Score	Number of Visitors Measure
	Adjusted tourist rate relative to state average per census tracts
2.0	≥ 200
1.6	150 – 199
1.2	100 – 149
0.8	50 – 99
0.4	1 – 49
0	0

Description

This measure categorizes and scores institutes of higher education (universities, colleges, community colleges, and vocational schools) by size and density of student populations.

Investment Indicator

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.

Importance to Economic Competitiveness

Higher education spurs economic competitiveness in a myriad of ways. Fundamentally, higher education institutions, from community colleges and technical schools to the largest flagship universities, train the next generation of Florida workers and leaders. They also bring in highly-trained specialists from around the globe, attract innovative new industries and serve as a magnet for a wide range of external funding and investment. These institutions improve quality-of-life, often providing their local areas with valuable amenities such as hospitals, cultural performances, museums, green spaces, and sporting events.

Data Characteristics

Data Source: 2010 United States Census and 2006 Carnegie Foundation
Data Type: Student enrollment
Calculation: Weighted averaging

Measure Categorization & Scoring

Score	Institutions of Higher Education Measure
	Adjusted education rate relative to state average per census tracts
2.0	$\geq$ 4.00
1.6	3.00 – 3.99
1.2	2.00 – 2.99
0.8	1.00 – 1.99
0.4	0.01 – 0.99
0	0

Description

This measure categorizes and scores medical centers, hospitals, and health care facilities by number of beds.

Investment 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 a college/university located in a census tract has the same (or higher) number of students enrolled as (or than) the state average.

Importance to Economic Competitiveness

Medical centers are high-tech facilities that are important to the local economy. The staff are often highly-skilled, well-paid, and are recruited from around the state and across the nation. Hospitals and medical centers can also serve as magnets for research funding and complementary industries such as pharmaceuticals and medical equipment design and manufacturing. Additionally, high quality and comprehensive health care is a major quality-of-life consideration and helps attract new residents to the local area.

Data Characteristics

Data Source: 2010 United States Census and Florida Hospital Association
Data Type: Number of beds in hospital per census tract
Calculation: Averaging

Measure Categorization & Scoring

Score	Medical Center Measure
	Adjusted medical center rate relative to state average per census tracts
1.00	≥ 20.00
0.8	15.00 – 19.99
0.6	10.00 – 14.99
0.4	5.00 – 9.99
0.2	0.01 – 4.99
0	0

Description

Clusters of industries, corporations, and facilities are more likely to attract more industry and grow. Clusters of technology oriented industries are likely to attract other high tech entities employing highly skilled and educated workers 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.

Investment Indicator

This measure is a computation of technology employment. It is then compared to a state average and a ratio is developed. 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.

Importance to Economic Competitiveness

Technology centers also bring in highly-trained specialists from around the globe, attract innovative new industries and serve as a magnet for a wide range of external funding and investment. These industries bring new diversifying tax base and employment opportunities and have the potential to improve quality-of-life for residents, often providing their local areas with valuable amenities.

Data Characteristics

Data Source: 2010 United States Census and Enterprise Florida, Inc.
Data Type: Employment in tech sector's resulting in tech concentration data per census tract
Calculation: Averaging

Measure Categorization & Scoring

Score	Tech Centers Measure
	High tech concentration relative to state average per census tract
2.00	≥ 40.00
1.6	30.00 – 39.99
1.2	20.00 – 29.99
0.8	10.00 – 19.99
0.4	0.01 – 9.99
0	0

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Appendix E
Livable Communities

7 Measures

Measure	Maximum Score
Residential/Community Impacts	4
Population Density	2
Transit Connectivity	3
Bicycle/Pedestrian Access	4
Managed/Special Use Lanes	2
Social Investment/Justice	2
Personal Safety	3

Residential Community Impacts

Appendix E – Livable Communities Measures

Description

This measure categorizes and sorts land use and features into an index of desirability and sensitivity to possible effects of a completed project.

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; and community focal points (cultural points of interest).

Importance to Livable Communities

Transportation and the corresponding projects may either impact the quality of life of Floridians in two different ways, the actual impacts of a project or the results of not doing a project. A population may be affected more by not constructing a project than by actually constructing it. This measure is designed to look at the impacts to existing residential populations by the possible impacts of constructing a project and the impacts on the community. Supporting and enhancing livable communities is a goal of the FDOT's 2060 FTP.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, with contingencies for nature of facility (existing vs. new)
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Score	Land Use Impact	Interstate, Turnpike, or Expressway (using 500' buffer in all directions from centerline or point)				
		Residential Land Use (Existing facility increasing to more than four lanes)	*Residential Land Use (New facility)***	*Community Focal Points (New facility)***	*Noise Impacted Residential Land Use (All facilities)*	*Noise Sensitive Uses (All facilities)*
4	Low	Project is on an existing facility and a 500 foot buffer is comprised of less than 33 % residential land use	Project is a new facility and a 500 foot buffer is comprised of less than 33 % 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 % residential land use	500 foot buffer contains no locations with noise sensitive, nonresidential uses
2	Medium	Project is on an existing facility and a 500 foot buffer is compromised of 33 - 66 % residential land use	Project is a new facility and a 500 foot buffer is compromised of 33 - 66 % residential land use	Project is a new facility and at least one community focal point is between a 200 - 500 foot buffer	500 foot buffer is comprised of 33 - 66 % residential land use	500 foot buffer contains one to five locations with noise sensitive, nonresidential uses
0	High	Project is on an existing facility and a 500 foot buffer is comprised of greater than 66 % residential land use	Project is a new facility and a 500 foot buffer is comprised of greater than 66 % residential land use	Project is a new facility and at least one community focal point is within the 500 foot buffer	500 foot buffer is comprised of greater than 66 % residential land use	500 foot buffer contains five or more locations with noise sensitive, non residential issues

Score	Land Use Impact	Arterial (using 200' buffer in all directions from centerline or point)				
		Residential Land Use (Existing facility increasing to more than four lanes)	*Residential Land Use (New facility)***	*Community Focal Points (New facility)***	*Noise Impacted Residential Land Use (All facilities)*	*Noise Sensitive Uses (All facilities)*
4	Low	Project is on an existing facility and a 200 foot buffer is comprised of less than 25 % residential land use	Project is a new facility and a 200 foot buffer is comprised of less than 25 % 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 % residential land use	200 foot buffer contains no locations with noise sensitive, nonresidential uses
2	Medium	Project is existing facility and 200 foot buffer is compromised of 25 to 50 percent residential land use	Project is new facility and 200 foot buffer is compromised of 25 to 50 percent residential land use	Project is a new facility and at least one community focal point is between a 200 - 500 foot buffer	200 foot buffer is comprised of 25 percent to 50 percent residential land use	200 foot buffer contains one to five locations with noise sensitive, nonresidential uses
0	High	Project is existing facility and 200 foot buffer is comprised of greater than 50 percent residential land use	Project is 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	200 foot buffer contains five or more locations with noise sensitive, non residential issues

Score	Land Use Impact	Connector (using 100' buffer in all directions from centerline or point)				
		Residential Land Use (Existing facility increasing to more than four lanes)	*Residential Land Use (New facility)***	*Community Focal Points (New facility)***	*Noise Impacted Residential Land Use (All facilities)*	*Noise Sensitive Uses (All facilities)*
4	Low	Project is on and 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	100 foot buffer contains no locations with noise sensitive, nonresidential uses
2	Medium	Project is existing facility and 100 foot buffer is compromised of 10 to 20 percent residential land use	Project is new facility and 100 foot buffer is compromised of 10 to 20 percent residential land use	Project is a new facility and at least one community focal point is between a 200 - 500 foot buffer	100 foot buffer is comprised of 10 percent to 20 percent residential land use	100 foot buffer contains one to five locations with noise sensitive, nonresidential uses
0	High	Project is existing facility and 100 foot buffer is comprised of greater than 20 percent residential land use	Project is 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	100 foot buffer contains five or more locations with noise sensitive, non residential issues

Applications of this measure 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.

** Project must have improvement code of "NR" or "NCON" to be considered a new facility.

Population Density

Appendix E – Livable Communities Measures

Description

This measure identifies census tracts with higher population densities relative to the state.

Investment Indicator

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.

Importance to Livable Communities

Transportation and the corresponding projects may either impact the quality of life of Floridians in two different ways, the actual impacts of a project or the results of not doing a project. A population may be affected more by not constructing a project than by actually constructing it. This measure is designed to look at population centers as areas of active movement and trade which inherently have higher demands on the transportation system and increased congestion. Therefore, higher population density gives rise to the need for additional transportation investments to support the higher level of economic activity. Supporting and enhancing livable communities is a goal of the FDOT's 2060 FTP.

Data Characteristics

Data Source: 2010 United States Census
Data Type: Population and land area in square miles by census tract
Calculation: Averaging

Measure Categorization & Scoring

Score	Population Density Measure
2.0	≥ 200
1.6	150-199
1.2	100-149
0.8	50-99
0.4	1-49
0	0

Description

This measure scores highway capacity projects according to their potential in providing increased transit service and benefits.

Investment Indicator

Highway capacity projects will be looked at and classified as a project providing benefits towards improved transit service. The most points would be awarded for highway projects specifically designed for use by transit, while others involving transit indirectly would receive less points. Although highway improvements are not often associated with transit, some highway improvement types could benefit transit. By rewarding projects with a multimodal nature, transit systems will benefit.

Importance to Livable Communities

Transit systems are intended for moving large volumes of people efficiently, and are therefore usually found in urban areas. This emphasis on moving groups of people reduces congestion significantly during peak hour travel. By reducing congestion especially in local urban bottlenecks the quality of the long distance trip is improved and the movement of freight on the roadway network is also improved. Transit is also significant in the promotion of livable communities as a means to provide transportation alternatives for those who cannot or choose not to use an automobile. The reduction of automobiles in urban areas has the additional benefits of reducing pollution, noise, and improvements to safety for other travelers. Transit is a major component of the FDOT 2060 FTP goal of promoting livable communities.

Data Characteristics

Data Source: FDOT Systems Planning Office
Data Type: Roadway project improvement type
Calculation: None

Measure Categorization & Scoring

Score	Improvement Type Codes
3	TSTWAY: Transitway
3	MODAL: Intermodal
2	A2-SUL: Add 2 special use lanes (add or improve bus lane)
2	A4-SUL: Add 4 special use lanes (add or improve bus lane)
1	UP: Ultimate plan (includes sidewalks, bike lanes, transitways, or multi-use paths)
1	CU: Corridor upgrade (includes sidewalks, bike lanes, transitways, or multi-use paths)
0	All others

Description

This measure categorizes access to bicycle and pedestrian facilities in highway capacity projects, in addition to the safety features protecting pedestrians and cyclists.

Investment Indicator

If a SIS highway capacity project includes facilities for cyclists and pedestrians and safety barriers between pedestrians/cyclists and motor vehicles, it functions as an improvement to bicycle and pedestrian mobility. Projects include shared-use paths, large sidewalks, and bike lanes. The most points would be awarded for highway facilities which go above and beyond the requirements, while others involving some improvements would receive fewer points. No points would be awarded for projects without bicycle or pedestrian facility improvements.

Importance to Livable Communities

A goal of the FDOT 2060 FTP is to make transportation decisions to support and enhance livable communities, including providing citizens with multi-modal choices. Part of this goal is working with regional and local partners to develop regional systems of bicycling and pedestrian facilities and integrating these facilities with the roadway network, transit systems, and enhanced support services.

Data Characteristics

Data Source: FDOT Systems Planning Office
Data Type: Roadway project information supplied by user
Calculation: None

Measure Categorization & Scoring

Score	Impact	Project Details Included	Examples of Features
4	High	Exceptional facilities	Dedicated shared-use path or sidewalks and a bike lane separated from automobile traffic with physical barriers
2	Medium	Some facilities	Sidewalk or bike lane without physical barriers
0	Low	None	No sidewalk or bicycle facilities

Description

This measure categorizes managed lanes and special use lanes in highway capacity projects by both project type and project phase.

Investment Indicator

Scoring is based on project improvement type. If a project involves the creation of managed lanes (which may include lanes described as high occupancy vehicle, high occupancy toll, reversible, bus, truck, priced queue jumps, congestion pricing, etc.), the maximum number of points are given. No value is assigned for all other projects. The Systems Planning Offices' assigned improvement type code will be used to identify managed lane projects.

Importance to Livable Communities

Managed lanes help to increase the overall capacity of the entire highway corridor by using innovated traffic management techniques to improve the flow of traffic and potentially limit the impacts of further financial or environmental impacts resulting from a physical expansion of the roadway. Tolls may be used to manage traffic levels in the managed lanes to ensure a certain quality of trip. Managed lanes designed for high occupancy users will encourage more passengers to travel in fewer vehicles and all will provide more person throughput on a fixed amount of transportation infrastructure. Certain managed lanes enhance transit system's ability to perform and provide increased opportunities for people with non-automobile mobility needs. By shifting away from the single-occupant automobile, managed lanes help to reduce overall energy consumption, improve air quality, and reduce emissions. In addition managed lanes have the benefit of improving the flow of traffic on the existing general purpose lanes. They can be a cost-effective, highly viable transportation alternative when demand for transportation capacity is at a premium.

Data Characteristics

Data Source: FDOT Systems Planning Office
Data Type: Project improvement type
Calculation: None

Measure Categorization & Scoring

Score	Project Type
2	Managed lane or special use lane project
0	Non-managed lane projects

Description

This measure utilizes a dataset of "high-conflict" segments, where the potential for unsafe interactions between pedestrians, cyclists, and motor vehicles is greatest.

Investment Indicator

Using crash data maintained by the FDOT Safety Office, crashes involving highway-rail crossing or crashes relating to bike and pedestrian modes are identified. This data is then consolidated into a single dataset helping to identify historical high-conflict areas. Projects located along stretches of identified high-conflict areas would receive points.

Importance to Livable Communities

Increasing the mix and viability of multiple transportation options enhances livability, but may introduce new safety issues if not properly planned. As Florida's transportation system evolves into a more robust multimodal network, the number of locations where modes intersect and the chances for safety-related conflicts between modes will increase. As Florida provides more options for moving people and freight, protecting the entire range of system users must remain a priority. Personal safety is a component for what is to be considered a livable community; a goal of the 2060 FTP.

Data Characteristics

Data Source: FDOT Safety Office
Data Type: Geo-referenced point
Calculation: None

Measure Categorization & Scoring

Score	Crash Per Mile # of crashes per project segment/project length	Project Type
3	≥ 2	Project located on a high-conflict segment
1	1 – 1.9	Project located on a low-conflict segment
0	0 – 0.9	Projects with little to no conflicts

A conflict segment is determined by Crash Per Mile = (# of Crashes per Project) / (Project Length)

This scoring system relies on the assumption any project located on a high-conflict segment would include project designs addressing existing safety issues. This assumption is based on guidance and standards listed in specific FDOT manuals (see table below). These resources require certain standards to ensure the safety of all users:

Manual	Document Description	Bicycle or Pedestrian Element
The Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways	Establishes uniform minimum standards and design criteria for the design, construction, and maintenance of Florida public streets and highways, including pedestrian and bicycle facilities.	Guidance for pedestrian and bicycle facilities is based on the principles: (1) All new highways [i.e., any "public way for purposes of traffic"], except limited access highways, should be designed and constructed under the assumption they will be used by pedestrians; and (2) To varying extents, bicycles will be ridden on all streets and highways where they are permitted. Bicycle-safe design practices, as described in this manual, should be followed during initial roadway design to avoid costly subsequent improvements.
Plans Preparation Manual	Establishes design criteria and guidance for FDOT construction and resurfacing projects.	Pedestrian and bicycle provisions are discussed in multiple chapters: Ch. 2 (Design geometrics and criteria for new construction and reconstruction projects; Ch. 8 (Pedestrian, bicycle, and transit facilities); Ch. 10 (Work zone traffic management); Ch. 21 (transportation design for livable communities); Ch. 25 (Resurfacing and rehabilitation projects).
Design Standards	Contains the FDOT's set of standard drawings, also known as the "Standard Indexes". The Standard Indexes illustrate approved practices based on current criteria and policies of the Department.	Includes useful Standard Indexes for pedestrian and bicycle design, including Numbers 304 (curb ramps), 310 (concrete sidewalks), 17346 (crosswalk markings), 17347 (bicycle lane markings), and 17784 (pedestrian signal detector assembly).

Description

This measure is based primarily on the risk of undesirable effects on four identified demographic groups. Historically certain transportation projects have been considered as undesirable land uses. As such they would tend to be built in communities that were less well organized and less well funded to defend from such investments. The social investment and justice measure is designed to provide a bonus to projects that avoid negatively impacting certain demographics.

Investment Indicator

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.

Importance to Livable Communities

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.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table
Calculation: Geographic spatial analysis with use of buffer

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
2	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 the one mile buffer is less than the countywide percentage for this population.
1	The percentage of the low income population within the one mile buffer is between 100 and 149 % of the countywide percentage for this population.	The percentage of the minority population within the one mile buffer is between 100 and 149 % of the countywide percentage for this population.	The percentage of the age 65 or older population within the one mile buffer is between 100 and 149 % of the countywide percentage for this population.	The percentage of the age 17 or younger population within the one mile buffer is between 100 and 149 % of the countywide percentage for this population.
0	The percentage of the low income population within the one mile buffer is 150 % or more of the countywide percentage of this population.	The percentage of the minority population within the one mile buffer is 150 % or more of the countywide percentage of this population.	The percentage of the age 65 or older population within the one mile buffer is 150 % or more of the countywide percentage of this population.	The percentage of the age 17 or younger population within the one mile buffer is 150 % or more of the countywide percentage of this population.

Score	**Arterial** (Using a 1/2 mile buffer in all directions from centerline or point)			
	Low Income Population	Minority Population	Aged Population	Youth Population
2	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.
1	The percentage of the low income population within the half mile buffer is between 100 and 149 % of the countywide percentage for this population.	The percentage of the minority population within the half mile buffer is between 100 and 149 % of the countywide percentage for this population.	The percentage of the age 65 or older population within the half mile buffer is between 100 and 149 % of the countywide percentage for this population.	The percentage of the age 17 or younger population within the half mile buffer is between 100 and 149 % of the countywide percentage for this population.
0	The percentage of the low income population within the half mile buffer is 150 % or more of the countywide percentage of this population.	The percentage of the minority population within the half mile buffer is 150 % or more of the countywide percentage of this population.	The percentage of the age 65 or older population within the half mile buffer is 150 % or more of the countywide percentage of this population.	The percentage of the age 17 or younger population within the half mile buffer is 150 % or more of the countywide percentage of this population.

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

The overall measure score for any proposed project segment is determined by the demographic group for which that segment receives the lowest score. For example, if a proposed arterial receives high scores in the first three categories, but the percentage of the age 17 and younger population within the half mile buffer is twice the countywide percentage, then its youth population score is the lowest score, i.e zero points. In such a case, the overall social investment and justice measure score would be zero points.

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Appendix F
Environmental Stewardship

13 Measures

Measure	Maximum Score
Farmlands	1
Geology	1
Archeological/Historical Sites	2
Contamination	1
Conservation & Preservation	2
Wildlife & Habitat	2
Flood Plains/Flood Control	1
Coastal/Marine	1
Special Designations	2
Water Quality	1
Wetlands	2
Air Quality	2
Energy & Sustainability	2

Description

The identification and subsequent preservation of actively producing farmlands throughout Florida is essential for the livability and cultural aspects for its residents, sustainability and diversity of the economy, protection for water resources through aquifer recharge, and open space connectivity for animal migration and biodiversity.

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, the Soil Survey Geographic Database, and United States Geological Survey 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.

Importance to Environmental Stewardship

Being a responsible steward of the environment is a goal of the FDOT. This goal can be reached, in part, by protecting and enhancing existing social and environmental character of the project area. Evaluating impacts of a project to active farmland will serve to prioritize projects that may improve the surrounding community over those that may have an unintended negative impact. Though farmland may have environmentally negative impacts at times, that should not be downplayed, it also provides livability and cultural benefits to the residents of Florida, as well as aquifer recharge areas, and open space availability with potential benefits for animal migration connectivity. It is included in the environmental stewardship FTP goal because productive farmland is a unique and strategic land use. It is limited to certain types of soils, neighbors, and climates and extra care should be taken for identification of this resource when scoring impacts of SIS highway projects.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

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

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

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

The farmlands measure is scored via a buffer of the project along a segment of SIS highway as it passes through the farmland areas identified in the database and represented geographically on a map of Florida. The buffer size varies depending on the classification of roadway, whether limited-access, arterial, or connector. If a project has a larger or higher perceived impact on productive farmlands the score will be lower.

Description

Florida's predominant limestone karst topography lends itself to the development of sinkholes. Or unexpected depressions in the earth caused by water hollowing out the limestone bedrock below the surface resulting in a collapse of the surface geology. Though near impossible to predict where or when a sinkhole may form, a database of existing sinkholes does exist. 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.

Investment Indicator

The geology measure is based on the presence of reported sinkholes within the proposed project area. Each project is rated "low", "medium", or "high" based on data obtained from data sets identifying sinkhole locations maintained by the Florida Sinkhole Institute. There is a potential for sinkholes throughout Florida, with the highest potential in the central Florida and decreasing likelihood towards the southern portion of the state.

Importance to Environmental Stewardship

Karst topography and in particular sinkholes due to their nature of being unstable terrain present a unique environmental situation and demand extra care during the planning and construction of roadway projects. Avoidance of these areas can limit time and cost delays on projects. But also, existing sinkholes also provide unique ecosystems throughout Florida. They may provide areas where surface streams disappear into underground caves, aquifer recharge areas, and in some cases biological island habitats with moderate climates that are protected from the extremes of summer or winter. The 2060 FTP identifies the promotion of responsible environmental stewardship as a goal and recognizes characteristics of that which this measure addresses include improvements in water quality, the conservation of water, and preservation of critical habitats.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Geologic Impact	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point) *Presence of reported sinkholes within the project buffer area*	Score
Low	No reported sinkholes	1
Medium	One reported sinkhole	0.5
High	More than one reported sinkhole	0

Geologic Impact	**Arterial** (using 200' buffer in all directions from centerline or point) *Presence of reported sinkholes within the project buffer area*	Score
Low	No reported sinkholes	1
Medium	One reported sinkhole	0.5
High	More than one reported sinkhole	0

Geologic Impact	**Connector** (using 100' buffer in all directions from centerline or point) *Presence of reported sinkholes within the project buffer area*	Score
Low	No reported sinkholes	1
Medium	One reported sinkhole	0.5
High	More than one reported sinkhole	0

The geology measure is scored via a buffer of the project along a segment of SIS highway as it passes through areas of sinkholes in karst topography identified in the database and represented geographically on a map of Florida. The buffer size varies depending on the classification of roadway, whether limited-access, arterial, or connector. If a project has a high interaction or impact with existing sinkholes the score will be lower.

Description

Research indicates Florida has been inhabited by humans for at least the past 14,000 years. For the past 500 years it has been explored and colonized by Europeans, with the first permanent European settlement in the continental United States founded at St. Augustine in 1565. Many historic sites throughout this timeframe have been documented and preserved as protected areas, others are documented but not physically marked, or are unprotected on private property. Still countless other sites remain undocumented and may be uncovered when work begins on a project.

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. For the safety and security of the preservation of these sites, no specific geographic locations of archaeological surveys are revealed to the user in this analysis.

Importance to Environmental Stewardship

Planning facilities and improvements to protect and if possible restores the function of community and environment is an objective of the FTP in responding the environmental stewardship goal. Archaeological and historical sites, whether human or natural in concept are part of Florida's built and non-built environment. The interaction of roadway facilities and the projects upon them may have dramatic impacts on the historical and biological communities in the area and care should be taken when planning for future investments.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Site Impact	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)		Score
	*Archaeological Sites***	*Built Environment Locations***	
Low	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.	2
Medium	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.	1
High	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.	0

Site Impact	**Arterial** (using 200' buffer in all directions from centerline or point)		Score
	*Archaeological Sites***	*Built Environment Locations***	
Low	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.	2
Medium	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.	1
High	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.	0

Site Impact	**Connector** (using 100' buffer in all directions from centerline or point)		Score
	*Archaeological Sites***	*Built Environment Locations***	
Low	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.	2
Medium	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.	1
High	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.	0

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 ***lower score***. For example, if a proposed arterial is located in a 'low impact' site it is eligible for a 2-point score with respect to Archeological Sites, but the project area contains ten or more problematic built environment locations (or a 'high impact'), then the Built Environment Locations score is 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

Description

This measure is based on the number and type of hazardous waste sites within the project area.

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 sites: Environmental Protection Agency National Priority List (NPL) sites, solid waste landfill sites (SWLF), Toxic Release Inventory sites (TRIs), and underground storage sites (UST).

Importance to Environmental Stewardship

Avoidance of hazardous waste sites within the project buffer area limits the potential further disruptions of project schedules and potentially limits further dispersal of hazardous waste to surrounding local communities and ecosystems.

Data Characteristics

Data Source: Florida Geographic Data Library, Florida Department of Environmental Protection
Data Type: Table, geo-referenced onto Florida
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: NPL = 10 points, SWLF = 5 points, other = 1 point

Measure Categorization & Scoring

Site Impact	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point) *Sum of points for identified sites within project area*	Score
Low	< 5	1
Medium	5 – 9	0.5
High	≥ 10	0

Site Impact	**Arterial** (using 200' buffer in all directions from centerline or point) *Sum of points for identified sites within project area*	Score
Low	< 5	1
Medium	5 – 9	0.5
High	≥ 10	0

Site Impact	**Connector** (using 100' buffer in all directions from centerline or point) *Sum of points for identified sites within project area*	Score
Low	< 5	1
Medium	5 – 9	0.5
High	≥ 10	0

The contamination measure is scored via a buffer of the project along a segment of SIS highway as it passes through areas containing varying types of hazardous or contaminated sites identified in the database and represented geographically on a map of Florida. The buffer size varies depending on the classification of roadway, whether limited-access, arterial, or connector. If a project has a high interaction or impact with identified contaminated sites the score will be lower.

Description

The conservation and preservation measure is utilizing the resources of state agencies designed with a mission to protect environmentally sensitive lands. As transportation and the environment are intimately connected it is imperative to avoid conflict areas as early as possible in the planning stages to help conserve time and money.

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.

Importance to Environmental Stewardship

The use of conservation and preservation as an environmental stewardship measure is based on discussions with FDOT Environmental Management Office staff as well as other Florida environmental professionals including staff from the Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, and the Florida Water Management Districts. This measure is significant to account for and limit the impact to lands that are biologically and ecologically significant to Florida. It also helps to ensure the continuation of the quality of life for Floridians into the future. This measure addresses many of the characteristics identified to meet the 2060 FTP environmental stewardship goal.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

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

Site Impact	**Arterial** (using 200' buffer in all directions from centerline or point)	Score
Low	Project area does not pass through or is located within 500 feet of conservation or preservation lands or Section 4(f) resources.	2
Medium	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.	1
High	Project area involves in a direct taking or bisection of conservation or preservation lands or Section 4(f) resources.	0

Site Impact	**Connector** (using 100' buffer in all directions from centerline or point)	Score
Low	Project area does not pass through or is located within 500 feet of conservation or preservation lands or Section 4(f) resources.	2
Medium	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.	1
High	Project area involves in a direct taking or bisection of conservation or preservation lands or Section 4(f) resources.	0

The conservation and preservation measure is scored via a buffer of the project along a segment of SIS highway as it passes through designated conservation and preservation areas identified in the database and represented geographically on a map of Florida. The buffer size varies depending on the classification of roadway, whether limited-access, arterial, or connector. If a project has a high interaction or impact with identified conservation or preservation sites the score will be lower.

Description

The wildlife and habitat measure utilizes information gathered from state agencies on the locations of threatened and endangered species and strategic wildlife habitat. By analyzing the interaction between potential roadway projects and critical wildlife populations or habitats attempts can be made early in the project planning cycle to address issues to save time and money.

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.

Importance to Environmental Stewardship

The wildlife and habitat measure provides a means to address the occurrences of threatened and endangered species in Florida. Florida provides a unique habitat for a variety of threatened and endangered species. It is also home to many and varied wildlife species, while not endangered, create the unique natural environment that is valued by Florida residents and visitors. It is the desire of FDOT that is projects do not harm or negatively impact Florida's wildlife or their habitats. This measure provides a means to accurately address the Florida Transportation Plan's (FTP)'s environmental stewardship goal by preserving critical lands, water, and habitats and preserving biodiversity for future generations. Locating projects more than 500 feet from these areas is one way to avoid harming them. Evaluation 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. This measure addresses many of the characteristics identified to meet the 2060 FTP environmental stewardship goal.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Site Impact	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)		Score
	Threatened and Endangered Species	*Strategic Habitat Conservation Area*	
Low	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.	2
Medium	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.	1
High	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.	0

Site Impact	**Arterial** (using 200' buffer in all directions from centerline or point)		Score
	Threatened and Endangered Species	*Strategic Habitat Conservation Area*	
Low	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.	2
Medium	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.	1
High	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.	0

Site Impact	**Connector** (using 100' buffer in all directions from centerline or point)		Score
	Threatened and Endangered Species	*Strategic Habitat Conservation Area*	
Low	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.	2
Medium	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.	1
High	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.	0

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 lower score. For example, if a proposed arterial receives a 'low impact' score of 2 points in the Threatened and Endangered Species category, but the project is in a Strategic Habitat Conservation Area, then its Strategic Habitat Conservation Area score would be lower, i.e. zero points. In such a case, the overall wildlife and habitat score would be zero points.

Description

Areas that are known to flood present unique problems for the initial planning and design of roadway projects as well as the long term maintenance costs for upkeep of the facility.

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 FEMA Flood Insurance Rate Map (FIRM).

Importance to Environmental Stewardship

Flood plains provide unique habitats which may be easily disturbed by roadway construction, which may result in increased risk of catastrophic flood damage to life and property as a result of degradation of the natural mechanisms in place to cushion the effects of large scale storms and storm surge. This measure emphasizes the preservation of quality habitats and improvements in water quality in coordination with the 2060 FTP environmental stewardship goal.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

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

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

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

The flood plains and flood control measure is scored via a buffer of the project along a segment of SIS highway as it passes through designated areas identified in the database and represented geographically on a map of Florida. The buffer size varies depending on the classification of roadway, whether limited-access, arterial, or connector. If a project has a high interaction or impact with identified areas the score will be lower.

Description

Florida coastlines and waterways are a unique blend of water and land that function not just for economic benefits for tourism and agriculture, but also as unique biological habitats, hurricane and storm protection, and residents' quality of life.

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 National Oceanic and Atmospheric Administration (NOAA) coastlines, seagrass areas, National Marine Sanctuaries, environmental sensitive shorelines, 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.

Importance to Environmental Stewardship

By comparing data regarding coastlines, National Marine Sanctuaries, seagrass areas, sensitive shorelines, and navigable waterways versus potential roadway projects the tool is able to try and avoid areas that tend to be extremely susceptible to disturbances and at a great cost to the ecological habitat as well as the economic benefits of the areas. By utilizing the coastal and marine measure it address the FTP goal of environmental stewardship and the factors the FTP has identified by preserving critical waters and habitats, improvements to water quality, enhancing flora and wildlife populations with well connected habitats, and conserving water and natural resources for the future.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Site Impact	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)	Score
Low	Project area is not located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline, or navigable waterway.	1
Medium	Project area is located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline, or navigable waterway.	0.5
High	Project area is within NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline, or navigable waterway.	0

Site Impact	**Arterial** (using 200' buffer in all directions from centerline or point)	Score
Low	Project area is not located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.	1
Medium	Project area is located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.	0.5
High	Project area is within NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline, or navigable waterway.	0

Site Impact	**Connector** (using 100' buffer in all directions from centerline or point)	Score
Low	Project area is not located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline or navigable waterway.	1
Medium	Project area is located within 500 feet of a NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline, or navigable waterway.	0.5
High	Project area is within NOAA coastline, National Marine Sanctuaries, seagrass, sensitive shoreline, or navigable waterway.	0

The coastal and marine measure is scored via a buffer of the project along a segment of SIS highway as it passes through designated areas identified in the database and represented geographically on a map of Florida. The buffer size varies depending on the classification of roadway, whether limited-access, arterial, or connector. If a project has a high interaction or impact with identified areas the score will be lower.

Description

The special designation measure analyses the impacts of roadway projects on Outstanding Florida Waters as well as barrier islands within Florida.

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.

Importance to Environmental Stewardship

Outstanding Florida Waters are water bodies worthy of special protection because of their natural beauty and ecological significance. These water bodies are identified by the Florida Department of Environmental Protection. Barrier islands act as protection of the mainland coast from storms and are naturally intended to migrate over time. The habitat of barrier islands is also typically different than the mainland. This measure addresses the environmental stewardship goal through preservation of critical land and water habitats, conservation of water, and improving the quality of water within Florida.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Site Impact	**Interstate, Turnpike, or Expressway** (using 500' buffer in all directions from centerline or point)		Score
	Aquatic Preserves and Outstanding Florida Waters	*Coastal Barrier Island Resources*	
Low	Project area does not cross watersheds of aquatic preserves or Outstanding Florida Waters, does not cross major tributaries of Outstanding Florida Waters, and is not within 0.5 mile of aquatic preserve or Outstanding Florida Waters.	Project area is not within 500 feet of a designated CBRA coastal barrier unit.	2
Medium	Project area contains a portion of an aquatic preserve or Outstanding Florida Waters, but does not cross it or is within 0.5 mile of aquatic preserve 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.	1
High	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.	0

Site Impact	**Arterial** (using 200' buffer in all directions from centerline or point)		Score
	Aquatic Preserves and Outstanding Florida Waters	*Coastal Barrier Island Resources*	
Low	Project area does not cross watersheds of aquatic preserves or Outstanding Florida Waters, does not cross major tributaries of Outstanding Florida Waters, and is not within 0.5 mile of aquatic preserve or Outstanding Florida Waters.	Project area is not within 500 feet of a designated CBRA coastal barrier unit.	2
Medium	Project area contains a portion of an aquatic preserve or Outstanding Florida Waters, but does not cross it or is within 0.5 mile of aquatic preserve 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.	1
High	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.	0

Site Impact	**Connector** (using 100' buffer in all directions from centerline or point)		Score
	Aquatic Preserves and Outstanding Florida Waters	*Coastal Barrier Island Resources*	
Low	Project area does not cross watersheds of aquatic preserves or Outstanding Florida Waters, does not cross major tributaries of Outstanding Florida Waters, and is not within 0.5 mile of aquatic preserve or Outstanding Florida Waters.	Project area is not within 500 feet of a designated CBRA coastal barrier unit.	2
Medium	Project area contains a portion of an aquatic preserve or Outstanding Florida Waters, but does not cross it or is within 0.5 mile of aquatic preserve 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.	1
High	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.	0

The overall special designations score for any proposed project segment is determined by the category in which that segment receives the lower score. For example, if a proposed arterial receives a high score of 2 in the Aquatic Preserves and Outstanding Florida Waters 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.

Description

Water quality refers to the biological, chemical, and physical characteristics of water. This is a measure often used to rate the safety to human consumption as well as the health of ecosystems. The health of Florida's water bodies has a direct impact on the economy and the overall quality of life of its residents.

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.

Importance to Environmental Stewardship

The water quality measure is utilized for human health concerns as well as the health of the ecosystems. This measure addresses the FTP environmental stewardship goal and the corresponding FTP characteristics identified including preservation of critical water habitats, conservation of water, flourishing flora and fauna wildlife populations, and improving the quality of water while conserving it for future generations within Florida. Identifying projects early in the planning process that minimize impacts to water quality will provide for more defendable and appropriate projects moving forward, this will enable the saving of time and money as the planning process progresses.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Site Impact	Interstate, Turnpike, or Expressway		Score
	Surface Water – Resources	*Ground Water – Wells*	
Low	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 ft of the project alignment.	1
Medium	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.	0.5
High	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.	0

Site Impact	Arterial		Score
	Surface Water – Resources	*Ground Water – Wells*	
Low	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 ft of the project alignment.	1
Medium	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.	0.5
High	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.	0

Site Impact	Connector		Score
	Surface Water – Resources	*Ground Water – Wells*	
Low	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 ft of the project alignment.	1
Medium	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.	0.5
High	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.	0

The Water Quality score for any project segment is determined by the category in which that segment receives the lower score. For example, if an arterial receives a score of 1 in the Surface Water category, but the project alignment contains seven publicly owned water supply wells, then its Ground Water score is the worst possible, i.e. zero points. In such a case, the overall water quality score would be zero points.

Description

Wetlands is generally used to describe any type of land that acts in transition from aquatic and terrestrial, the area may sit wet for any period of time, but are not permanently bodies of water.

Investment Indicator

This measure is based primarily on the extent of wetlands within each project and not on the quality of the wetlands. Each project is rated "low", "medium", or "high" based on a combination of the National Wetlands Inventory (NWI) data and 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.

Importance to Environmental Stewardship

Wetlands are significant and varied hydrological and ecological geographic areas. They act as significant nurseries for aquatic life both fresh and saltwater depending on location. They act as filters of runoff from the land into the open water often absorbing pollution and large amounts of fresh water which may affect the pH balance of adjacent open bodies of water. Wetlands act as buffers for the damaging effects of mainland for storm surge and flooding incidents. These factors have dramatic impacts on the environment, the residents' quality of life, and the economy of a region. In particular the wetlands measure addresses the FTP goal of Environmental Stewardship and its corresponding characteristics of preservation of critical habitats, flourishing flora and wildlife populations, improvements in water quality, and conservation of resources. Wetland impacts are of concern to many regulatory agencies as they are impacted by construction projects, identifying and limiting the possible impacts to wetlands early in the planning process may help save time and money for a project as it moves forward.

Data Characteristics

Data Source: Florida Geographic Data Library
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis with use of buffer

Measure Categorization & Scoring

Site Impact	Interstate, Turnpike, or Expressway (using 500' buffer in all directions from centerline or point)				Score
	Wetlands	*Forested Wetlands*	*Estuarine (mangrove or salt marsh)*	*Wetland Crossing*	
Low	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.	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 would be required regardless of right of way alignment within the project area.	2
Medium	Between 33-66 percent of the project area is composed of wetlands.	Between 20-40 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type 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 would be required regardless of right of way alignment.	1
High	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 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 would be required regardless of right of way alignment.	0

Site Impact	**Arterial** (using 200' buffer in all directions from centerline or point)				Score
	Wetlands	*Forested Wetlands*	*Estuarine (mangrove or salt marsh)*	*Wetland Crossing*	
Low	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	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 would be required regardless of right of way alignment within the project area.	2
Medium	Between 25-50 percent of the project area is composed of wetlands.	Between 10-20 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type 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 would be required regardless of right of way alignment.	1
High	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 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 would be required regardless of right of way alignment.	0

Site Impact	**Connector** (using 100' buffer in all directions from centerline or point)				Score
	Wetlands	*Forested Wetlands*	*Estuarine (mangrove or salt marsh)*	*Wetland Crossing*	
Low	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.	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 would be required regardless of right of way alignment within the project area.	2
Medium	Between 10-20 percent of the project area is composed of wetlands.	Between 5-10 percent of the project area is composed of forested wetlands.	Wetlands that are estuarine in type 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 would be required regardless of right of way alignment.	1
High	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 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 would be required regardless of right of way alignment.	0

The overall wetlands score for any proposed project segment is determined by the category in which that segment receives the lower 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.

Description

The Clean Air Act (CAA), passed in 1970, regulates air emissions and authorizes the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. Under the Clean Air Act, the EPA sets limits on certain air pollutants, including setting limits on how much can be in the air anywhere in the United States. Congress required "conformity" in the CAA Amendments of 1990 to ensure federal funding and approval are given to highway and transit projects consistent with the air quality goals established by a state air quality implementation plan (SIP).

Investment Indicator

Location (attainment area versus non-attainment area) is used as a measure for air quality per the goals outlined in the CAA. Conformity ensures transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the national ambient air quality standards. Conformity determination confirms total emissions projected for local transportation plans in each non-attainment area are within the emissions limits established by a state air quality implementation plan. A geographic area with air quality cleaner than the primary standard is called an "attainment" area; areas not meeting the primary standard are called "non-attainment" areas.

Importance to Environmental Stewardship

The 2060 FTP identifies the promotion of environmental stewardship as a goal, and specifically acknowledges improvements in air quality as an objective. All projects evaluated in SIT are intended to add capacity to a highway facility. Although promoting roadway expansion is not always perceived as improving air quality, capacity expansion projects provide congestion relief and improve traffic flow; the immediate impacts improve air quality in the area surrounding a project. Although expansion projects are unlikely to permanently reduce congestion, short term air quality benefits result from improved traffic flow and a reduction in idling caused by heavy congestion.

Data Characteristics

Data Source: United States Environmental Protection Agency
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis

Measure Categorization & Scoring

Score	Florida County Location
2	In EPA designated **non-attainment** area county
0	In an EPA designated **attainment** area county

Projects located in non-attainment areas are held to certain procedures not required for projects located in attainment areas. In order to proceed with construction, non-attainment area projects must be projected to eliminate or reduce the severity and number of NAAQS violations in the affected area.

Description

A sustainable transportation system is one meeting the needs of today's population without jeopardizing the health of future generations. The American Association of State Highway and Transportation Officials (AASHTO) define sustainability as consisting of three dimensions including environmental preservation, social equity, and economic efficiency. Sustainable highway projects are projects helping to fulfill transportation needs and address development and economic growth, while also reducing environmental impacts and resource consumption.

There are a number of ways to consider highway capacity projects to be sustainable. First, the decision on the types of facilities to be constructed whether simply construction of general purpose lanes on a limited access facility, construction of a "complete street" with sidewalks and bicycle facilities to promote short distance neighborhood movements, or placement of managed lanes, to move select traffic efficiently longer distances, or even dedicated transit facilities offering efficient movements for larger numbers of users. These all have differing levels of creating a sustainable economy and environmental. They all affect the built environment around the highway network which inevitably affects the sustainability and livability of the communities themselves. The fundamental connection between land use and transportation is pivotal in the potential sustainability discussion for transportation facilities.

Secondly, the technology used on the facility may be of a varying sustainability. Whether the modes of transport are gasoline, electric, hydrogen, or manual power; or the technology transports one user or 100 users. They all have varying levels of sustainability.

Lastly, the materials used in the construction of the facility or the ability of the DOT to share right-of-way with alternative uses either for power production or other means help in the potential for projects and the entire highway network to be considered sustainable for the future.

Investment Indicator

For use in the SIT, the energy and sustainability measure will be scored by integrating population and employment density figures surrounding potential highway capacity projects. Sustainability is measured here by the housing/jobs balance in the census tracts surrounding a project site. This balance is considered indicative of sustainable development patterns and efficient use of available land. This balance will be used as an indicator of an overall more sustainable development practices and would be led by a transportation network that promotes such an environment.

In addition, managed lane facilities are included as a separate SIT measure in the livable communities' goal.

Importance to Environmental Stewardship Goal

The 2060 FTP included responsible environmental stewardship as a goal and specifically identified sustainability and energy as critical considerations to achieve that goal. The measure identified for the SIT is an attempt to reward projects by scoring them higher that advance this goal.

Data Characteristics

Data Source: 2010 United States Census
Data Type: Table, geo-referenced onto Florida
Calculation: Spatial analysis

Measure Categorization & Scoring

Projects will be scored based on a matrix which evaluates the population and employment densities surrounding the project. Density figures are calculated as follows:

Population Density = ∑ Census Tract Population / ∑ Census Tract Acreage
Employment Density = ∑ Census Tract Employment / ∑ Census Tract Acreage

		Population Density within 1 mile of project				
		≥ 7.54	*4.44 – 7.53*	*2.22 – 4.43*	*0.57 – 2.21*	*0.0 – 0.56*
Employment Density within 1 mile of project	*≥ 3.05*	2	1.5	1	0.5	0
	1.47 – 3.04	1.5	1.75	1.25	0.75	0.25
	0.68 – 1.46	1	1.25	1.5	1	0.5
	0.21 – 0.67	0.5	0.75	1	1.25	0.75
	0.0 – 0.20	0	0.25	0.5	0.75	1

This scoring methodology is intended to address sustainability in highway projects by evaluating a combination of density and jobs/housing balance at the location of each project. The maximum number of points is given to projects located in a balanced, high-density employment/high-density population area. Zero points are given to projects in dramatically unbalanced areas such as high-density employment/low-density population areas, or low-density employment/high-density population areas. Projects in areas with balanced low or medium density levels are given more points than unbalanced areas.

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