

Where Section Five defined how the Bicycle, Pedestrian, Greenways and Trails Master Plan would guide the development of a multi-modal network in St. Lucie County, this section lists recommended resources and actions for implementing the Plan. In particular, this section seeks to recommend public policy directions to uphold the Master Plan, to identify specific projects that would most effectively inaugurate the bicycle, pedestrian, greenways and trails system, potential funding sources for these and other projects, and important factors to be considered in developing the system and designing its various facilities.

6.1 COMPREHENSIVE PLAN POLICIES

St. Lucie County should adopt comprehensive plan policies that consider the development of bicycle paths, pedestrian paths, trails and greenways as both a recreational enhancement and a step toward a balanced transportation system.

The following points outline suggest additions to the Transportation Element of the St. Lucie County Comprehensive Plan that support the Bicycle, Pedestrian, Greenways and Trails Master Plan and its contribution to a more balanced transportation system in St. Lucie County. These suggested additions are organized around goals, objectives and policies that would confirm the County's commitment to the Master Plan. These are not policies that will be adopted along with the Bicycle, Pedestrian, Greenways and Trails Master Plan, but rather guidance for the County in developing policies to be considered for separate adoption. The intent of this section is to translate the general purpose of the Bicycle, Pedestrian, Greenways and Trails Master Plan into sample policy language that can be easily adapted by the County to fit within its Comprehensive Plan in a manner that is consistent with other Comprehensive Plan elements.

Note that the numbering of these suggested goals, objectives and policies is modeled after standard organization as seen in Comprehensive Plan elements. The intent of this numbering is not to suggest that these modify or supersede existing goals, objectives and policies in the St. Lucie County Comprehensive Plan. Should these suggested goals be added to the Comprehensive Plan, they may be renumbered to better fit the organization of its goals, objectives and policies per the determination of St. Lucie County.

GOAL 1: The Bicycle, Pedestrian Greenways and Trails Master Plan is intended to contribute to a more balanced transportation system in St. Lucie County, reflecting in particular the needs of non-motorized users.

Objective 1.1 – Provide a more bicycle- and pedestrian-amenable transportation system with complementary facilities to support non-motorized users.

Policy Recommendation 1.1.1 – Ensure that adequate parking and storage facilities are provided for bicycles.

Policy Recommendation 1.1.2 – Other end-of-trip facilities shall be provided in key locations, especially at the juncture of important bicycle and pedestrian routes that respond to the climate conditions in St. Lucie County. In particular, it is important that these facilities have shade, drinking water facilities, restrooms, and potentially shower facilities.



Policy Recommendation 1.1.3 – The County shall require that any development occurring on or adjacent to the location of a bicycle or pedestrian facility as designated in the Bicycle, Pedestrian, Greenways and Trails Master Plan provide for the construction of that portion of the facility occurring within or adjacent to the development. If the facility has already been built, the development shall be connected to the facility in a safe and convenient manner to ensure that it is part of the development’s overall transportation system.

Objective 1.2: Ensure that the system truly connects through the County, including through its incorporated municipalities. This involves coordination with the municipalities on project planning, funding, prioritization, and construction.

Policy Recommendation 1.2.1 – The County should consider developing joint funding programs or agreements with the Cities of Fort Pierce and Port St. Lucie and with St. Lucie Village in completing the pedestrian facilities network on arterial and collector streets within their jurisdictional limits as well as in the unincorporated portions of the County.

Policy Recommendation 1.2.2 – Create a joint meeting structure where funding and capital improvements planning can be coordinated among the County and the Cities of Fort Pierce and Port St. Lucie to meet the intent of the County’s policies to complete a bicycle, pedestrian, trails and greenways network through the entire county, including its incorporated municipalities.

GOAL 2: The Bicycle, Pedestrian, Greenways and Trails Master Plan is intended to link St. Lucie County’s open spaces and recreational facilities, particularly its natural lands and environmentally significant lands, as well as its schools, community facilities, shopping and beaches.

Objective 2.1: Provide connection to county-owned environmentally significant lands.

Policy Recommendation 2.1.1 – Consider connection to environmentally significant lands when prioritizing projects.

Objective 2.2: Open space that dedicated as a part of new development should be publicly accessible through the facilities in the Bicycle, Pedestrian, Greenways and Trails Master Plan.

Policy Recommendation 2.2.1 – Require that open space dedicated as a part of new development be adjacent to other open space or that it be served by trails, greenways, pedestrian or bicycle facilities that connect to the Bicycle, Pedestrian, Greenways and Trails Master Plan system.

Policy Recommendation 2.2.2 – Require that on-site stormwater infrastructure be designed so that connections to the system of paths, greenways and trails in the Bicycle, Pedestrian, Greenway and Trail Master Plan are practicable and safe. The intent of this policy is to maximize the opportunity for connection from new development to the bicycle, pedestrian, greenway and trail system, allowing the land used for stormwater ponds and facilities to accommodate these connections when specific concerns of site design may preclude a direct connection through dedicated open space.



6.2 PROJECT PRIORITIES

Though the Master Plan Map has identified projects to be constructed to form the trails and greenways network, an important element to the realization of the system is the priority given to different projects in determining an order in which they will be constructed. The following list of the ten highest priorities was developed based on discussion with the Bicycle, Pedestrian, Greenways and Trails Master Plan Steering Committee. This discussion arrived at consensus on an evaluation of factors representing environmental, economic, social and public resource concerns. For the projects shown on the plan, each of these factors was assigned values of one (1) to five (5), one representing the least positive reflection of that criterion in the particular project and five representing the most positive reflection. These factors were summarized in an Evaluation Criteria Matrix, a copy of which is provided in Appendix E of this report, to allow easy calculation of the combined rating for each of the projects (note that Appendix E is a sample matrix that is intended to be used for comparative evaluations of any range of projects and that the specific ten projects prioritized here are not listed). The sum of each of these individual values led to a ranking of these projects, the highest ten being listed here.

Each of these projects is listed below, defined by the type of facility that would principally constitute the project (per the facility types described in the Master Plan Vision section of this report) and described briefly. The description does not specify available land or right-of-way for these facilities, but gives a general overview of the geographic extent of the project and how it would relate to its corridor.

Please refer to Section Five (Master Plan Vision) for a description of the project types. Each of the major trail, greenway, or bicycle/pedestrian path types is defined there with an explanation of context and general guidelines on appropriate application.

Priority 1: Florida East Coast Greenway

Project Type: Shared-Use Nature Trail

Approximate Length: 19 miles; potential connection to 3,000 mile East Coast Greenway of entire United States East Coast

The Florida East Coast Greenway initiative is a statewide effort to provide connection along Florida's Atlantic Coast from Georgia to the Florida Keys. In St. Lucie County, an alignment has been identified along North Hutchinson Island, through the Savannas State Park, and connecting to Martin County in the south.

Priority 2: North Fork St. Lucie River Greenway

Project Type: Shared-Use Nature Trail

Approximate Length: 11 miles

This greenway connects the developed part of the County with the Environmentally Significant Lands to the west. It is intended to connect to the Interstate 95 trail (see Priority 9) that would continue north-south connectivity to Martin County.

Priority 3: South Hutchinson Island Trail

Project Type: On-Street Bike Lane and/or Off-Street Shared Use Trail

Approximate Length: 15 miles

A trail along South Hutchinson Island provides recreational and transportation use. It is intended to be paved and located alongside the roadway, though opportunities to connect to natural amenities and conservation lands on the island should be explored.



Priority 4: Midway Road

Project Type: On-Street Bike Lane and/or Off-Street Shared Use Trail
Approximate Length: 11 miles

On Midway Road, a shared-use trail between the East Coast Greenway and Okeechobee Road would allow connection to a growing business and retail corridor between Fort Pierce and Port St. Lucie. This also provides a long-distance cycling alternative to Okeechobee Road for east-west county travel.

Priority 5: South Florida Water Management District Canals

Project Type: Canal Trail
Approximate Length: 60 miles

The C-23, C-24 and C-25 drainage canals have typical rights-of-way of over 300 feet and could accommodate a 20-foot trail section. In some constrained sections, additional right-of-way to accommodate end-of-trip facilities may be necessary.

Priority 6: Okeechobee Road

Project Type: On-Street Bike Lane and/or Off-Street Shared Use Trail
Approximate Length: 27 miles; potential continuation along State Road 70

Okeechobee Road is currently being reconstructed as a four-lane, divided highway as far west as Summerlin Road. As part of the roadway reconstruction, a trail is being built on the north side of the roadway. It is preferable on such a large and heavily traveled roadway section to include trails on both sides of the roadway. In most of these new sections, right-of-way on the south side of the roadway (where the trail is not built) is sufficient to allow the trail outside of standard highway clear zone requirements.

Priority 7: Indrio Road

Project Type: Off-Street Shared Use Trail
Approximate Length: 10 miles

Indrio Road provides an east-west connection in the northern County from the Atlantic Coast and Indian River to the environmentally significant lands in the western County.

As development activity has moved inland in St. Lucie County, such links in the trail system are crucial to connect newer developed areas to the public lands and the components of the trail system serving them. Okeechobee Road and Midway Road are corridors that already have well-established travel patterns of this nature.

Priority 8: Glades Cut-Off Road

Project Type: Off-Street Shared Use Trail
Approximate Length: 18 miles; links to 60-mile proposed network of SFWMD canal trails

Glades Cut-Off is another direct connection from the populated areas of the County to the southwest, offering connection opportunities to Martin County and Lake Okeechobee. This would parallel an active rail line, presumably placing the trail between the vehicular roadway and the railroad where possible to take advantage of the limited turns off of the road (turns are limited due to reduced crossing potential over the rail line).



Priority 9: Interstate-95 Greenway

*Project Type: Shared Use Nature Trail
Approximate Length: 10 miles*

Though connectivity opportunities through Port St. Lucie are usually limited to high traffic, high-speed collector and arterial roadways, utility easements directly adjacent to Interstate-95 would allow a trail connecting to the North Fork St. Lucie Trail and to Martin County on the south.

Priority 10: Kings Highway

*Project Type: On-Street Bike Lane and/or Off-Street Shared Use Trail
Approximate Length: 11 miles*

This trail opportunity would follow an existing trail alignment through the Lakewood Estates subdivision in the northern County south along Kings Highway, connecting to Okeechobee Road on the south.

6.3 FUNDING OPPORTUNITIES

The ten projects described in the preceding section were identified through suggestions from the Trails and Greenways Plan Steering Committee and citizen input at a public presentation in July 2007. As future stakeholder and public input helps to outline an order of priorities for additional projects, the following general guidelines help to indicate likely funding sources.

Maximizing Funding Opportunities through “GRANT STACKING”

Utilizing multiple funding sources has become the most effective way of maximizing the amount of funding a community can obtain. “Grant Stacking” allows a project to draw funding from several sources. The idea of “Grant Stacking” refers to grouping grants of varying levels (federal, state and local) to support one project. Careful selection of grants can result in one grant providing the matching funds requirement for another grant and the reciprocal as well. This process can address acquisition and development in phases to best meet a project’s intent and time schedule.

Priority 1: Florida East Coast Greenway

Shared-Use Recreational/Nature Trail

Funding Opportunity

Coastal Partnership Initiative
Florida Forever Program (FCT)
Greenways & Trails Acquisition Program
Recreational Trails Program
Transportation Enhancement Program
Waterways Assistance Program (FIND)
Land & Water Conservation Fund

Eligible Elements

Trail Design & Construction
Land Acquisition
Land Acquisition
Trail Development/Trailhead Construction
Trail Development
Trailhead Development
Trail & Trailhead Development

Priority 2: North Fork St. Lucie River Greenway

Shared-Use Recreational/Nature Trail

Funding Opportunity

Florida Forever Program (FCT)
FL Recreational Development Assistance
Land & Water Conservation Fund

Eligible Elements

Land Acquisition
Trail & Trailhead Development
Trail & Trailhead Development



Priority 3: South Hutchinson Island Trail
Off-Street Shared Use Trail

Funding Opportunity

Transportation Enhancement Program
Recreational Trails Program
Coastal Partnership Initiative
Florida Forever Program (FCT)
Waterways Assistance Program (FIND)
Land & Water Conservation Fund
Urban & Community Forestry

Eligible Elements

Trail Development
Trail Development/Trailhead Construction
Trail Design & Construction
Land Acquisition
Trailhead Development
Trail & Trailhead Development
Trailhead Development

Priority 4: Midway Road
Off-Street Shared Use Trail

Funding Opportunity

Transportation Enhancement Program
Recreational Trails Program
Lowes Neighborhood Grant

Eligible Elements

Trail Development
Trail Development/Trailhead Construction
Trail & Trailhead Development

Priority 5: South Florida Water Management District (SFWMD) Canals
Canal Trail

Funding Opportunity

SFWMD
Recreational Trails Program
Florida Forever Program (FCT)
Land & Water Conservation Fund
FL Recreational Development Assistance

Eligible Elements

Trail Development
Trail Development/Trailhead Construction
Land Acquisition
Trail & Trailhead Development
Trail & Trailhead Development

Priority 6: Okeechobee Road
Off-Street Shared Use Trail

Funding Opportunity

Recreational Trails Program
Land & Water Conservation Fund
FL Recreational Development Assistance
Transportation Enhancement Program
Urban & Community Forestry

Eligible Elements

Trail Development/Trailhead Construction
Trail & Trailhead Development
Trail & Trailhead Development
Trail Development
Trailhead Development

Priority 7: Indrio Road
Off-Street Shared Use Trail

Funding Opportunity

Recreational Trails Program
Land & Water Conservation Fund
FL Recreational Development Assistance
Transportation Enhancement Program
Urban & Community Forestry

Eligible Elements

Trail Development/Trailhead Construction
Trail & Trailhead Development
Trail & Trailhead Development
Trail Development
Trailhead Development



Priority 8: Glades Cut-Off Road
Off-Street Shared Use Trail

Funding Opportunity

Recreational Trails Program
Land & Water Conservation Fund
FL Recreational Development Assistance
Transportation Enhancement Program
Urban & Community Forestry

Eligible Elements

Trail Development/Trailhead Construction
Trail & Trailhead Development
Trail & Trailhead Development
Trail Development
Trailhead Development

Priority 9: Interstate 95 Greenway
Shared Use Recreational/Nature Trail

Funding Opportunity

Recreational Trails Program
Land & Water Conservation Fund
FL Recreational Development Assistance

Eligible Elements

Trail Development/Trailhead Construction
Trail & Trailhead Development
Trail & Trailhead Development

Priority 10: Kings Road
Bike Lane or Off-Street Shared Use Trail

Funding Opportunity

Transportation Enhancement Program
Urban & Community Forestry
Lowes Neighborhood Grant

Eligible Elements

Trail Development
Trailhead Development
Trail & Trailhead Development

6.4 SAFETY AND SECURITY CONCERNS

Ensuring safety of bicycle and pedestrian facilities is of utmost importance to the success of St. Lucie County’s trails and greenways network. With that, facility design and route designation have taken into account *all* users of the County’s transportation system.

Intersection treatments

Around 40 percent of pedestrian collisions occur at roadway intersections, and an additional 8 percent at driveway or alley intersections. It has also been found that intersections are present in half of bicycle-motor vehicle collisions. A variety of factors play a role in these types of collisions, from the geometric design of the intersection (width, turning radius, auxiliary turn lanes) to speeds of motor vehicles to the age and behaviors of pedestrians, bicyclists, and motorists. The main objective of the research that has uncovered these findings is to develop hazard indices that will allow planners, engineers, and other practitioners to easily identify features at intersections that place pedestrians and bicyclists at risk. By then developing user-friendly guides to get the information in the hands of practitioners, the indices can be used to identify hazardous locations. Specific countermeasures can then be implemented to reduce certain types of hazards. Intersection indices should also be helpful in influencing future intersection design, as well as accommodating the needs of pedestrians with disabilities.

When facilities identified in the Bicycle, Pedestrian, Greenways and Trails Master Plan must cross roadways at intersections, the following points should be considered:



At-Grade Crossings

This plan does not recommend the implementation of grade-separated pedestrian crossings (pedestrian bridges) over roads that are not limited access expressways due to their high cost and limited convenience to the pedestrian or cyclist with regard to the destinations that he or she may be trying to reach. Such bridges are necessary, of course, for crossing expressways such as Interstate 95 and the Florida Turnpike. In general, challenges perceived to warrant the construction of a grade-separated pedestrian intersection should be surmountable by careful treatment of the roadway design itself.

Safety goes beyond movement and vehicle operations: indeed, the most important element of safety for users of the bicycle, pedestrian, greenways and trails system of St. Lucie County is protection from crime and danger. Researchers studying park facilities have shown that exposure to park facilities and the outdoor exposure they provide contributes to relaxation and happiness in urban environments. Perceptions of crime are directly in contrast with this positive psychological effect.

The concept of crime prevention through environmental design (CPTED) developed in the 1970s in response to this problem. It focuses on using design to reduce or eliminate opportunities for activity that promotes perceptions of danger in public areas. Due to the widely different nature of all public facilities, CPTED is generally applied as a series of principles rather than a checklist of necessary actions. It is not universally applied as a solution: what may constitute good use of CPTED principles in one area may be inappropriate in another.

The four core CPTED principles are *surveillance*, *access control*, *definition of territory* and *maintenance*. *Surveillance* refers to designing and keeping the environment of the facility maintained so that people are easily seen by others, implying that people who would commit crimes or make public facilities otherwise unsafe are less likely to do so if they can be seen. This can be accomplished by designing windows next to sidewalks and trails, only allowing short fences in land development regulations, placing lighting evenly to avoid creating dark corners and blind spots, and avoiding 'too-bright' security lighting that causes the human eye difficulty in seeing darker areas. *Access control*, such as fences or flower beds, signals to the user where he should and should not be—in other words, 'walk here' and 'do not walk here.' Taking such steps as using a single, clearly identifiable point of entry and fencing or walls to separate public trails from private spaces can help to control access. *Definition of territory* distinguishes between public and private spaces in a way that announces the public space and its intended function: this can be done by signage, fencing or landscaping (among other means). The idea is to show that the public spaces are owned and cared for, as spaces used for legitimate purposes can quickly be used for illegitimate, illegal or otherwise unwanted activities if they are not well delineated. *Maintenance* refers not only to the timely and regular repair and restoration of facilities, but also the idea that a lack of maintenance implies an absence of ownership. Broken lights and glass, damaged landscaping and other signs of wear on bicycle and pedestrian trail facilities have been identified in surveys and studies as a deterrent to their use and a lessened perception of safety on the part of the users.

Applying these principles to the design of facilities for the Bicycle, Pedestrian, Greenways and Trails Master Plan will help to ensure safety for its users and define the network as a valued addition to the public amenities of St. Lucie County.



6.5 EDUCATIONAL PROGRAMS

Education is an important element in increasing both recreational and transportation use of a trails and greenways network while also improving safety. It is often assumed that as more trips are made through cycling and walking, the number of crashes will also increase. The bicycle and pedestrian programs in other cities throughout the United States have demonstrated that this need not be the case. Probably the most effective way to improve the safety of walking and cycling is simply to improve the quality of bicycle and pedestrian facilities, as has been described in previous chapters. For example, bicycle lanes result in less competition for road space between bicycles and motor vehicles, while narrowed lanes and more frequent crossing refuge areas mean lower motor vehicle speeds and shorter unprotected distances that pedestrians must cross and face potential vehicle conflict. In locations where a trail is separated from the roadway, cyclists and pedestrians are kept from the path of moving vehicles. However, bikeways, sidewalks and trails cannot do it alone; there is also a need for proper *education* of both youth and adults; pedestrians, cyclists and motorists alike.

Education has many different implications when it comes to bicycling and walking, these three being principal among them:

- Developing safe cycling skills in children;
- Teaching adult cyclists their rights and responsibilities; and
- Teaching motorists how to more effectively share the road with cyclists and pedestrians.

Education goes hand-in-hand with *encouragement* to increase cycling; together they improve skills and raise awareness. For example, a bicycle commute day encourages more people to ride for transportation purposes, but it also teaches urban riding skills and the importance of wearing a helmet. Teaching children cycling skills and the importance of wearing a helmet builds confidence as riders and encourages them to ride more both as children and future adults.

Encouragement includes such measures as:

- Providing a complete network, end-of-trip facilities, and bicycle-transit services.
- Holding encouragement events, such as bicycle commute days, business challenges (Eugene), BikeFest (Portland), BikeWeek (Boulder), and large-group public bicycle rides (Montreal, Seattle).
- Providing incentives or advocacy group membership, and other nonfinancial incentives.
- Providing information and/or maps with recommended cycling routes, end-of-trip facilities, bicycles-on-transit services, education programs, and other bicycle related activities. This is especially important as St. Lucie County has an opportunity to use its trails and greenway system as a vehicle to promote tourism.

6.6 FACILITY MAINTENANCE

While implementing bikeway facilities is important, keeping them in good condition is equally important. When a bicycle lane becomes filled with debris, for example, cyclists are forced into the motor vehicle lane. Poor bikeway maintenance can contribute to accidents and deter potential cyclists unwilling to risk flat tires, skidding on city streets, or navigating standing water due to inadequate drainage facilities. Sidewalks and other street infrastructure that do not undergo adequate maintenance may lead to such conditions as collapsed sidewalks over drainage basins or unlevel concrete panels that deter movement in wheelchairs and provide a hazard to vision-impaired pedestrians.



Typically, the responsibilities for maintenance rest with the agency constructing the facility, though it is common for state departments of transportation to cede maintenance of sidewalks and street landscaping to local governments. The recommended steps in sections 6.7 and 6.8 outline how St. Lucie County can assume maintenance responsibilities, dividing the larger responsibility of maintenance into different ‘stages’ or categories.

6.7 ASSESSMENT AND STATUS REPORTING

As the resources needed to continually survey and report on sidewalks, bicycle trails and other bicycle and pedestrian facilities are potentially unrealistic for such a task, this plan recommends establishing a program that allows citizen response to facility problems. The County currently does not have a targeted program allowing public input on the condition of pedestrian and bicycle infrastructure to be directed to the Department of Public Works in an efficient manner.

Recommendations for this include updating the County website to include a prominently displayed feature allowing citizens to report on infrastructure deficiencies. Comparable programs collect information in standard mailing address format and are able to compile databases of reporting events tying an incidence of deficiency to the time it was reported, the location and the nature of the deficiency. The County can utilize its geographic information systems (GIS) resources to physically locate these deficiency events and to better direct Department of Public Works and Environmental Resource Department staff and resources to address repairs and improvements.

6.8 MAINTENANCE AND REPAIRS

In the case of on-street bicycle facilities, the most important maintenance is in street sweeping and, where applicable, keeping curb-and-gutter drainage within its original design function so that standing water does not make bicycle facilities inoperable. The County can meet this objective by instituting a street-sweeping program on designated bicycle routes at least twice per month.

