

Impacts of Bypass Highways on Small- and Medium-Sized Cities in Florida:

Enhancing Existing Evaluation Methods

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TABLE OF CONTENTS

I.	Introduction.....	5
A.	Study Methodology.....	5
B.	What are Indirect Impacts?.....	6
II.	Case Study.....	6
C.	Project Website.....	7
D.	Efficient Transportation Decision Making.....	9
E.	Environmental Impact Statement.....	12
F.	Observations.....	13
III.	Addressing Bypass Impacts.....	13
G.	Sociocultural Effects Evaluation Enhancements.....	16
	Step 1 Review Project Information.....	16
	Step 2 Define the Study Area and Step 3 Prepare the Community Characteristics Inventory.....	18
	Step 4 Evaluate Sociocultural Effects.....	18
	Step 5 Recommend ways to resolve issues.....	29
H.	PD&E Enhancements.....	33
IV.	State Rules, Plans, Policies, and Procedures.....	34
I.	Level of Service.....	34
J.	Strategic Intermodal System.....	35
K.	Florida Intrastate Highways.....	37
L.	Potential State Bypass Policy.....	37
V.	Conclusion and Recommendations.....	38

LIST OF TABLES

Table 1. Socio-cultural Effects Issues.....	14
Table 2. Bypass Effects Preconceptions and Findings	17
Table 3. Checklist to Evaluate Growth Inducement Potential.....	20
Table 4. Assessing Indirect Land Use Effects	25
Table 5. Example Consistency with Adopted Plan Policies and Objectives	27
Table 6. Methods for Determining Traffic Volume, Freight, and Through Trips	28
Table 7. Transportation Cost Categories	34

LIST OF FIGURES

Figure 1. A website screen-shot of the Starke U.S. 301 Corridor Study.	7
Figure 2. A website screen-shot of the Starke U.S. 301 preferred alternative – the rural alternative.....	8
Figure 3. An ETDM website screen-shot of the Purpose and Need for Project #7640 U.S. 301 in Starke.....	9
Figure 4. An ETDM website screen-shot of Project #7640 U.S. 301 in Starke with no agency comments.....	10
Figure 5. An ETDM website screen-shot of Project #8668 SR 29 (Collier/Hendry) containing land use comments. ..	11
Figure 6. Traffic engineering and land use planning cycle.....	15
Figure 7. Relationship of various approaches to the forecasting process for indirect land use effects.....	22
Figure 8. Corridor Redevelopment Along US 311 Bypass.....	31

EVALUATING BYPASS IMPACTS

I. INTRODUCTION

In Florida, bypassing small- and medium-sized communities is commonly considered to relieve vehicle traffic congestion and improve travel time for through vehicles, including freight. Consideration of a bypass alternative is increasing in these communities for roadways that are part of Florida’s Strategic Intermodal System due to their role in the statewide movement of people and goods. In small communities, the roadway to be bypassed may be the only one providing access to, from, and through the area. Bypassing such roadways results in impacts, both direct and indirect, on land use and related considerations such as livability, community character, and local mobility. This report focuses on how the potential indirect impacts of such bypass construction may be assessed and resolved. It is the final task of a broader study to assist the Florida Department of Transportation in establishing a more multidimensional approach to bypass planning in small- and medium-sized communities.

An evaluation of how potential indirect impacts on land use and other considerations are addressed on a pending Florida bypass is provided. Enhancements to the current approach, including tools, resources, and guidance, are provided to enable FDOT staff to more comprehensively consider the potential impact of roadway bypass projects on land use and related considerations. The results can then be weighed in selecting an alternative and in determining appropriate plans, strategies, and mitigation measures to proactively address anticipated impacts of the bypass. The report also sets forth policy considerations relative to proposed bypasses of small- and medium-sized communities in Florida.

A. STUDY METHODOLOGY

The study began with a detailed knowledge search of existing bypass impact studies, as well as state transportation agency policies and procedures, to document the state of the practice. The knowledge search, documented in Technical Memorandum 1, reported numerous sources of information on evaluating bypasses, ranging from economic factors to indirect land use impacts. The methodologies varied from highly quantitative to qualitative, and limitations or gaps appear to be related more to data, local concerns or desired emphasis, and resource availability than to technical deficiencies. Next, the research team performed a case study of a proposed roadway that would bypass a small- or medium- sized Florida community to better understand the existing approach. A bypass was randomly selected from the current FDOT work program for this purpose. Drawing from information provided in the knowledge search and case study, possible approaches to enhance current practice are recommended.

In addition, Florida Department of Transportation (FDOT) guidelines, policies, and procedures were reviewed as they pertain to bypass construction. Several enhancements to these, particularly the approach to sociocultural evaluation, are recommended that may assist analysts and stakeholders in understanding and mitigating the potential impacts of bypass construction on small- and medium-sized communities. For purposes of this study, small- and medium-sized communities are defined as those with populations with a lower limit of 1,000 and an upper limit of 50,000.

B. WHAT ARE INDIRECT IMPACTS?

The National Environmental Policy Act (NEPA) of 1969 and related Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR) require consideration of direct impacts as well as secondary and cumulative effects of transportation projects, including land use, community character and aesthetics. Direct or primary impacts include the actual conversion of productive land to transportation use, the removal of existing uses to accommodate the facility, and any immediate changes to the overall character of the affected area due to construction.

Indirect impacts, also known as secondary impacts, tend to occur over a long period and may involve changes in the overall development and growth patterns of an area. Indirect impacts from transportation improvements can also be cumulative. The CEQ defines indirect effects as those that are “caused by the action and occur later in time or farther removed in distance, but are still reasonably foreseeable” (40 CFR1508.8). Further, indirect effects “may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems” (40 CFR 1508.08). NEPA and CEQ requirements are addressed through project development and environmental studies. Some of the required elements of these studies are studied through Florida’s Efficient Transportation Decision Making (ETDM) process – a process initiated by FDOT in 2006 to facilitate early involvement of other affected agencies in transportation planning and environmental review.

Indirect impacts may include land use and related considerations such as livability, community character, and local mobility. Construction of a roadway bypass provides improved accessibility (ease of getting to and from an area in terms of time and cost) to the land surrounding it. Increased accessibility also occurs via interchanges when a bypass is constructed as a limited access roadway. Increased accessibility, particularly when paired with the provision of urban services and land access, generally increases development pressure in an area. The knowledge search indicated that some bypasses induce urban development while others seem to have no impact. The likelihood of growth inducement depended on the region’s growth rate, the functional class of the roadway, the comprehensive plans in place before the bypass was constructed, and the scale of development permitted near the bypass (ODOT 2002). However, comprehensive plans and other growth management policies can and often do change once vacant land is made more accessible due to market demand and political influences.

Additionally, indirect impacts may occur to land use, livability, community character, and local mobility surrounding the bypassed roadway. Often, this roadway has undergone incremental changes prior to bypass construction designed to maximize vehicular capacity and accommodate large freight vehicles, yet robbing the corridor of its community aesthetic – such as natural and cultural features ranging from street trees to historic civic structures. After bypass construction, the bypassed roadway is likely to have excess vehicular capacity and a wide crossway unfriendly to pedestrians and bicyclists. Plans to mitigate indirect impacts of a bypass, therefore, may include steps to identify and address the character and livability of the bypassed roadway.

II. CASE STUDY

The Florida Highway System contains numerous existing bypasses while additional proposed bypasses are in various stages of implementation. Bypass projects outlined in the *Florida Adopted Five Year Work Program, July 1, 2011 through June 30, 2016* include the US 41 (Venice Bypass), the SR 200 (US 301) Bypass, and the SR 35/Bellevue Bypass. Readily-available information on the Internet regarding pending Florida bypasses includes

project descriptions from public involvement websites and sociocultural impacts contained in the ETDM online database. One of Florida's proposed bypasses was chosen randomly to capture the general level of analysis and information available to the public regarding project impacts on land use and related considerations.

C. PROJECT WEBSITE

The proposed bypass of U.S. 301 in Starke, Florida, population 5,449 in 2010, is described on a project website <http://www.us301starke.com/us301/>. Figure 1 illustrates a screen-shot of the web page that describes the project and indicates additional topic areas. The project description identifies U.S. 301 as part of the National Highway System (NHS), the Florida Strategic Intermodal System (SIS), and Florida Intrastate Highway System (FIHS) and describes the physical characteristics of the roadway corridor for the length of the study area.

Figure 1. A website screen-shot of the Starke U.S. 301 Corridor Study.

The screenshot displays the website for the Starke U.S. 301 Corridor Study. At the top left, there is a green banner with a white shield containing the number '301' and the text 'Starke U.S. 301 Corridor Study'. To the right of the banner is a navigation bar with 'Home // Contact Us'. Below the banner, a paragraph of text describes the project's purpose and scope. To the right of the text is a map showing the project route through Starke, Florida, with labels for 'Begin Project' and 'End Project'. At the bottom of the page, there is a navigation menu with the following items: 'Need for Project', 'Project Analysis', 'Public Involvement', 'Rural Alternative Description', 'Urban Alternative Description', 'Frequently Asked Questions', and 'Contact Us'.

301 Starke U.S. 301 Corridor Study

The Starke U.S. 301 Corridor Study is a Project Development and Environmental (PD&E) Study. The purpose of the study is to evaluate alternative capacity improvements on U.S. 301 through the city of Starke. U.S. 301 is part of the National Highway System (NHS), Florida Strategic Intermodal System (SIS), and the Florida Intrastate Highway System (FIHS). Therefore the operational efficiency of U.S. 301 is important on a national, state, regional and local level. The segment of U.S. 301 in Bradford County, Florida, which is the subject of this study, extends 7.3 miles in a northeast/southwest direction through the City of Starke. It begins at CR 227, which is approximately 2.2 miles south of the Starke city limits, and continues directly through the center of the City of Starke ending approximately 2.1 miles north of Starke at CR 233. U.S. 301 through this area is a four-lane rural **arterial** outside of the city limits and a four-lane urban **arterial** inside the city limits. Within the urban section the road varies from divided to undivided in the center of the city. There are numerous driveways and developed land uses along the entire urban section and much of the rural sections. [Read More...](#)

PUBLIC INFORMATION MEETING
A public information meeting was held Thursday, May 26, 2011 at the Bradford County Fairgrounds in Starke, Florida. The meeting was an open house format in which exhibits were provided for review. Department personnel were available to answer any questions. Public comments were solicited and documented.

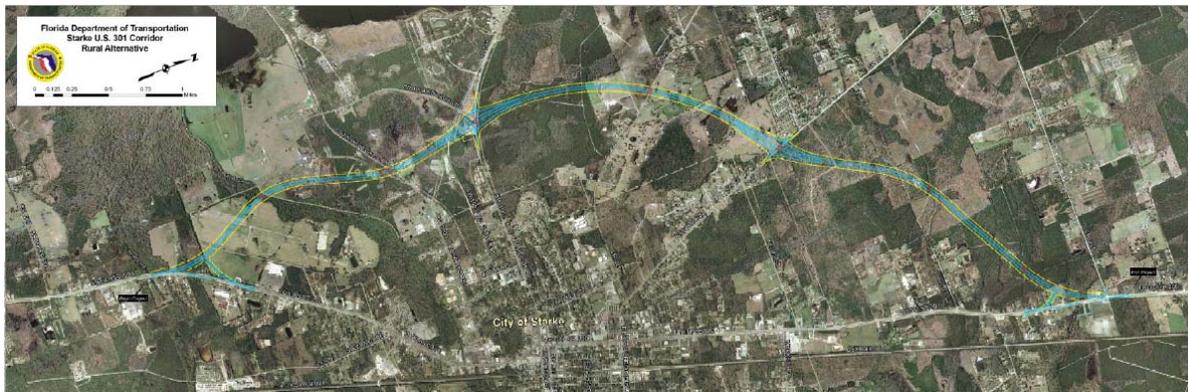
[Need for Project](#)
[Project Analysis](#)
[Public Involvement](#)
[Rural Alternative Description](#)
[Urban Alternative Description](#)
[Frequently Asked Questions](#)
[Contact Us](#)

The topics listed at the bottom of the web page lead to additional web pages providing information about the project, described as follows.

- *Need for Project* – Attributes additional capacity need due to failure to meet local government adopted level of service standards requiring an increase in capacity and upgrades to meet FIHS criteria and the mobility objectives of the SIS. States the additional capacity and upgrades are needed “...in order to address the heavy congestion that prevents the corridor from functioning efficiently as part of a regional transportation link for freight, emergency vehicles, emergency evacuation, and the traveling public.” Also noted are high percentages of freight and through traffic.
- *Project Analysis* – Discusses three basic alternatives including the “no project alternative,” the “urban alternative,” and the “rural alternative.” The rural alternative as a four-lane limited access freeway is noted as the preferred alternative subject for public hearing. It is noted that, “the No Project Alternative was considered along with other “Build” alternatives for comparison purposes, even though it does not meet the FIHS criteria with regards to access control, typical section, level of service, and travel speed.” This statement highlights the effect of the FIHS criteria on the consideration of a bypass.
- *Public Information* – Notes past public meetings and includes section maps of the rural alternative. Interchanges with the bypass route are shown at SR 16 and SR 100.
- *Rural Alternative Description* – This alternative is described as a four-lane limited access facility that will: “1) afford increased safety; 2) have a higher average travel speed; 3) have a greater lane capacity; and 4) reduce the potential of urban sprawl in the rural areas.”
- *Urban Alternative* – This alternative is described as a 4- to 6-lane controlled access facility that in one section would include bike lanes, and a median, while another section would have a continuous left-turn lane. Some realignment of the roadway from the existing U.S. 301 is included in this alternative.
- *Frequently Asked Questions* – Lists and answers seven questions, four that are directly related to the project and three general questions.
- *Contact us* – Provides the project manager contact information.

Figure 2 illustrates the preferred alignment, the rural alternative, on the west side of Starke connecting to US 301 both north and south of the city.

Figure 2. A website screen-shot of the Starke U.S. 301 preferred alternative – the rural alternative.



Source: <http://www.us301starke.com/us301/newsletter/starkeRualAlternative.pdf>

The information provided on the project website highlights the need for additional highway capacity and the need for upgrades to meet FIHS design criteria. Numerous challenges to widening US 301 along the existing and modified alignments are discussed. It indicates that the rural alternative alignment avoids sensitive wetlands; however, the potential of the proposed bypass to impact land use, livability, community character, and local

mobility beyond the proposed project boundaries is not addressed. In addition, there is no discussion regarding whether or not the proposed bypass is consistent with the local government comprehensive plans of the City of Starke or Bradford County – both which will be impacted by the proposed alignment.

D. EFFICIENT TRANSPORTATION DECISION MAKING

Florida’s Efficient Transportation Decision Making website identifies #7640 – U.S. 301 in Starke in the Programming Screen Phase (Figure 3). The Purpose and Need section includes descriptive project information similar to that found on the *Starke U.S. 301 Corridor Study* website. Consistency with the 2025 Florida Transportation Plan (FTP) (since updated) and local government comprehensive plans is addressed. The Rural (Bypass) Alternative is supported by statements such as it meets the FTP “...long-range goals and objectives to develop an integrated transportation system that is optimized to serve specific types of travel and enhance mobility... The Rural (Bypass) Alternative would meet this objective by removing long-haul traffic from the central business district of Starke and easing the bottleneck caused by the at-grade rail crossing and school crossing zone. A bypass would also ensure greater safety for the residents, businesses, and visitors in Starke, by providing a more livable community, and by providing alternate routes for evacuation and emergency services.”¹

Figure 3. An ETDM website screen-shot of the Purpose and Need for Project #7640 U.S. 301 in Starke.

The screenshot shows the ETDM website interface. At the top, there is a navigation bar with 'Welcome', 'General Information', 'Project Diary', 'Project Effects', and 'ETDM Maps'. Below this is a yellow banner for 'Project Effects >> Agency Comments - Purpose and Need'. The main content area is titled 'Agency Comments - Purpose and Need' and features a table for '7640 - US 301 in Starke ** More Recent Data is Available'. The table has columns for 'Submit Comment', 'Request Response', and 'Watch Project'. Below the table, there is a 'Project Milestone: Project Re-Published 3/26/2007' section with a link to view other historical snapshots. The main section is the 'Purpose and Need Statement', which includes a 'System Linkage' section and a detailed description of the project area and alternatives.

7640 - US 301 in Starke ** More Recent Data is Available

	Submit Comment	Request Response	Watch Project
Review Start Date:	6/16/2006	Phase:	Programming Screen
From:	CR 227	To:	CR 233
District:	District 2	County:	Bradford County
Contact Name:	Dennis Lord	Contact Email:	dennis.lord@dot.state.fl.us
Project Milestone Dates:	6/04/2009 3/26/2007	2/07/2007 2/07/2007	7/31/2006 6/16/2006

Project Milestone: Project Re-Published 3/26/2007
Click one of the date links above to view other historical snapshots of the data.

Purpose and Need Statement

UPDATED P&N Statement

System Linkage
WHAT IS OVERALL LINKAGE IN SYSTEM?
This project addresses the portion of SR 200/US 301 in Bradford County, from CR 227 to CR 233, through the City of Starke; a distance of approximately 7.3 miles. This portion of SR 200/US 301 is generally a four-lane divided roadway with a grass median. There is a 4-lane segment with a paved median from north of Alligator Creek to north of W Georgia Street. The functional classification is Rural Principal Arterial from CR 227 to SE 48 Avenue. It changes to Urban Principal Arterial from SE 48 Avenue to south of NW 183 Street and continues as Rural Principal Arterial from south of NW 183 Street to CR 233. The 0.2 mile long segment of the study corridor, from Call St to Pratt St, is designated as a "Construction Constrained Facility" by FDOT.

Beginning on the west coast of Florida at US 41 in Sarasota County, US 301 winds through central Florida and runs generally northeast through the state to Bradford County and continues to the Florida/Georgia State line. It serves as an alternate route to I-95 and I-75 between Tampa and Jacksonville. SR 200/US 301 in the project area passes through Starke. It crosses Prevatt Creek, Alligator Creek, and branches of Water Oak Creek south and north of NE 185 Street.

A PD&E Study, completed in 2005, recommends two build alternatives (Urban Alternative and Rural Alternative) for further study (See attached pdf for more information). The Urban Alternative, with a West Rail Road Overpass Option, is developed as a six-lane controlled access roadway centered on the existing alignment of SR 200/US 301 for much of the project length. Within downtown Starke, a segment of the proposed alternative will be widened to include an auxiliary lane as a continuous right turn lane. The Rural Alternative, also referred to as the Truck Bypass, is developed as a four-lane limited access freeway facility west of Starke. It diverges and merges with the existing SR 200/US 301 at CR 233 to the north of Starke and near CR 227 to the south of Starke. Where this corridor alternative involves the existing highway, a six-lane rural arterial roadway section, consistent with FHHS (SIS) Standards is considered.

Go to <https://etdmpub.flas-etat.org/est/#> to continue

¹ <https://etdmpub.flas-etat.org/est/#>

Additionally, this section indicates that local government comprehensive plans include the following:

Local Comprehensive Plan: Bradford County and the City of Starke are both planning for increased development. Along U.S. 301 both to the north and south of the urban center, commercial uses will fill in where residential and currently undeveloped areas exist. The current trend is for commercial and office development to occur along the highway to the south of Call Street. A new industrial area has been designated to the southeast in the vicinity of the CSX main rail line and the industrial area designated by the County. The infill of new commercial uses along U.S. 301 is expected to create increased traffic and access demands. The Comprehensive Plan for the City of Starke, last updated October 2004, includes a Traffic Circulation Element that identifies deficiencies in the level of service on U.S. 301 and recommends improvements. The Recommended Transportation Improvements map indicates that U.S. 301 be widened to 6 lanes or an equivalent action should be taken. The Comprehensive Plan Policy B.1.1.3 states that: "By communication to the FDOT District Secretary, urge the FDOT to complete the PD&E Study for U.S. 301." Under Proposed Improvements, the plan indicates that six lanes are needed, but may not be feasible due to limited right-of-way and the amount of commercial activity along the right-of-way. The plan recognizes that the FDOT is considering an alternate rural route. (<https://etdmpub.fl.a-etat.org/est/#>)

There is no mention of whether or not the local government comprehensive plan includes additional local roadways or development policies to enhance the supporting network. The Purpose and Need section further describes issues regarding hurricane evacuation, emergency services, and hazardous materials transport that may be remediated by the construction of a bypass. The ETDM section for agency comments regarding project effects contains no comments (Figure 4) possibly due to the project being initiated in the early years of ETDM. Ideally, other review agencies would discuss possible project impacts within their purview. Figure 5 contains an example of agency comments on land use from another project.

Figure 4. An ETDM website screen-shot of Project #7640 U.S. 301 in Starke with no agency comments.

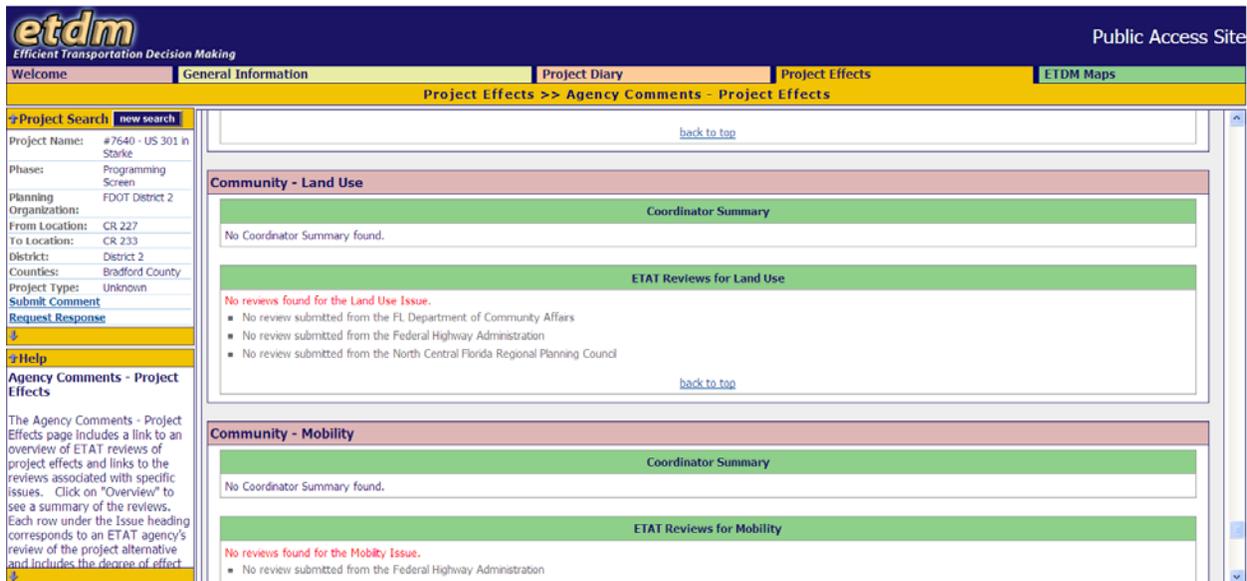


Figure 5. An ETDM website screen-shot of Project #8668 SR 29 (Collier/Hendry) containing land use comments.

etdm

Efficient Transportation Decision Making

Public Access Site

Welcome
General Information
Project Diary
Project Effects
ETDM Maps

Project Effects >> Agency Comments - Project Effects

Project Search
[new search](#)

Project Detail

Detailed information about the selected project:

Project Name: #8668 - SR 29
 (Collier/Hendry)
 Phase: Programming Screen
 Planning: FDOT District 1
 Organization:
 From Location: SR 82
 To Location: CR 80A
 District: District 1
 Counties: Hendry County
 Project Type: Unknown
[Submit Comment](#)
[Request Response](#)

Help

Agency Comments - Project Effects

The Agency Comments - Project Effects page includes a link to an overview of ETAT reviews of project effects and links to the reviews associated with specific issues. Click on "Overview" to see a summary of the reviews. Each row under the Issue heading corresponds to an ETAT agency's review of the project alternative and includes the degree of effect assigned by the ETAT agency. The degree of effect is displayed on the screen in color-coded text. To view the

Community - Land Use

Coordinator Summary

Summary Degree of Effect

Land Use Effect: Minimal

Reviewed By:

FDOT District 1 (5/11/2007)

Comments:

The DCA recommended a DOE of Moderate and expressed concern with the project not being included in the local governments comprehensive plans and indicated that these projects should not be forwarded into the FDOT Five-Year Work Program until this is done. Both Hendry County and Collier County plan to include this project in their respective comprehensive plan during the next amendment process. As such, the proposed roadway improvement will be reflected on each plans adopted future transportation map.

In addition, the existing land use for this area is predominantly agricultural; the rural residential character of the area is anticipated to be maintained during the current comprehensive planning period.

Based on agency comments, the Purpose and Need Statement has been revised to address the consistency of this project with the local government comprehensive plans.

Commitments and Responses: Both Hendry County and Collier County will include this project in their respective comprehensive plan during the next amendment process. This project will be reflected on each plans adopted future transportation map.

ETAT Reviews for Land Use

FDOT District 1 (3/09/2007)

Land Use Effect: Minimal

Coordination Document:

None selected

Dispute Information:

N/A

Identified Resources and Level of Importance:

Hendry County Comprehensive Plan

Comments on Effects to Resources:

As shown in the table below, the predominant existing land use within the 500-foot project buffer is agricultural (53.6%). Designated public/semi-public land composes about 12.5% while industrial, institutional, residential, retail/office, and vacant land uses comprise smaller portions of the buffer area.

Existing Land Use (500-foot project buffer):

Agricultural: 1,185.8 acres (53.6%)
 Public/Semi-Public: 276.0 acres (12.5%)
 Residential: 161.8 acres (7.3%)
 Acreage Not Zoned for Agriculture: 93.6 acres (4.2%)
 Retail/Office: 68.7 acres (3.1%)
 Vacant Residential: 52.5 acres (2.4%)
 Industrial: 33.5 acres (1.5%)
 Vacant Nonresidential: 20.5 acres (1.0%)
 Institutional: 7.8 acres (0.4%)
 ROW: 0.2 acres (0.01%)

Land within the 500-foot project buffer area is designated under the following generalized future land use categories. Approximately 70.9% of this area is designated as agricultural and 22.7% single family. Commercial, multi-family, and estate comprise the rest of the land use designations located in the project buffer. Considering the large tracts of agricultural land currently in the project area, it is anticipated that much of the area will retain its rural residential character over the comprehensive planning period.

Future Land Use (500-foot project buffer):

Agricultural: 1,569.6 acres (70.9%)
 Single Family: 503.0 acres (22.7%)
 Commercial: 38.4 acres (2.6%)
 Multi-Family: 57.6 acres (2.6%)
 Estate: 24.1 acres (1.1%)

Comprehensive Plan Consistency:

While this project is identified within the 2030 Hendry County Long Range Transportation Plan which was developed to reflect local government comprehensive planning, it is not specifically recognized within the local governments comprehensive plan. Therefore, the Hendry County Comprehensive Plan needs to be amended to reflect this proposed roadway improvement on the adopted future transportation map.

Recommendation: Hendry County will include this project in their comprehensive plan during the next amendment process.

Coordinator Feedback:

None

FL Department of Community Affairs (3/05/2007)

Land Use Effect: Moderate

Coordination Document:

None selected

Dispute Information:

N/A

Identified Resources and Level of Importance:

The Department of Community Affairs (DCA) has reviewed the referenced project and, based on current information, this project is not addressed within the local governments comprehensive plan. Therefore, at this time, the project should not be advanced into the Florida Department of Transportation's Five Year Work Program until the comprehensive plan is amended to reflect the proposed roadway modification.

In addition, the Department understands that this roadway is connected through areas defined as Florida Forever Board of Trustees Projects. Land located within these areas has been proposed for acquisition because of outstanding natural resources, opportunity for natural resource based recreation, or historical and archaeological resources. However, at this time, it cannot be determined if portions of property along this roadway project may have already been acquired by the State and/or its acquisition partners.

Staff will make a determination of the consistency of the proposed roadway with the respective comprehensive plan when the comprehensive plan is amended to include the roadway on an adopted future transportation map.

Comments on Effects to Resources:

see above

Coordinator Feedback:

None

- No review submitted from the Federal Highway Administration

[back to top](#)

E. ENVIRONMENTAL IMPACT STATEMENT

The draft Environmental Impact Statement (EIS)² for the US 301 bypass project was also reviewed to ascertain the degree of analysis and discussion regarding the indirect impact of the proposed bypass on land use and other considerations such as livability, community character, and local mobility. The EIS follows the transportation project from official discussions in early 1993 through the proposed action, the rural alternative or bypass. The four-lane bypass is 7.3 miles in length beginning and ending north and south of the Starke city limits. Drawing heavily from the ETDM process, the EIS discusses proposed transportation project alternatives to alleviate growing traffic congestion, meet future traffic volume requirements, and meet FHHS design criteria including limiting access and accommodation of high-speed, high-volume traffic. This process revealed minimal concern regarding indirect land use impacts.

The EIS discussion regarding indirect land use impacts is limited to the future land use plans of Starke and Bradford County found in their respective comprehensive plans. According to the EIS, Bradford County added the bypass to its transportation element in 2009. However, the Bradford County Future Land Use Map shows little planned land use intensification between the developed area of Starke and the proposed bypass alternative. Given the increase in accessibility, development pressure is very likely to occur in this area – particularly along S.R. 100 and S.R. 16 where interchanges are planned. The City of Starke has extended its boundaries out along S.R. 100 and the Future Land Use map indicates an area of high density residential land use as well as a commercial node at the planned interchange with the bypass.

The proposed bypass alternative will increase accessibility to the area west of Starke in the planned Urban Service Boundary of Bradford County, as noted in the EIS. If urban services such as water and sewer are provided to this area, its development likelihood is increased. In addition, the report lacks a discussion of future mobility in the area between the developed area of Starke and the proposed bypass alternative. In the absence of an improved local roadway network throughout the area, many local trips will likely rely on the new bypass. Despite a lack of attention to the affected area in the local comprehensive plans, the EIS maintains that future land development in the area will be subject to compliance with the local government comprehensive plans and other state and local regulations.

The EIS also includes a variety of concerns expressed by residents and business owners throughout the process. Residents expressed concern about the amount of traffic going through Starke and felt the bypass would help to alleviate some congestion and divert noisy truck traffic. Some expressed concern that the bypass would decrease farmland, split family-owned farms, and impact numerous wetlands. Many were concerned that the diversion of traffic would have a negative impact on downtown businesses. However, keeping traffic through town on the proposed eight-lane urban alternative was not considered acceptable either. An economic impact analysis was performed that anticipates a short-term negative impact on downtown businesses, but a long-term positive impact on the overall area.

² *Draft Environmental Impact Statement: Starke U.S. 301 Corridor Study*, ETDM Number: 7640, Florida Department of Transportation, for the U.S. Department of Transportation, Federal Highway Administration (n.d.)

F. OBSERVATIONS

Information regarding project impacts is provided in increasing detail from the project website to the ETDM website and, finally, the Environmental Impact Study. Review of this information resulted in the following observations:

1. Transportation project alternatives on the SIS currently focus mainly on mobility, level of service, design criteria. This sometimes results in a defined need for capacity projects much larger in scale (8 lanes) than can reasonably be accommodated within a small or medium sized community. This can lead to a recommended bypass alternative.
2. Much information available for public review focuses on direct project impacts within defined project boundaries (near the proposed bypass). This can ignore very important study of indirect impacts beyond these boundaries (such as sprawl and impacts to the bypassed downtown).
3. To assess indirect land use impacts, analysts rely on future land use as identified in local government comprehensive plans and local development review requirements and processes. What may be missing from this review is a critical analysis of the potential of the proposed bypass to impact area land use, and development patterns.
4. If a bypass alternative is chosen, the bypassed route may receive little or no corrective treatment to return community character and aesthetics to the bypassed roadway. The bypass may result in less traffic (truck and otherwise) through the community. This may be an excellent opportunity for increased sidewalk, bike-path, and landscaping opportunities.
5. More technical assistance may be provided to the community on methods for addressing potential negative indirect land use impacts.

Such issues may be anticipated and addressed throughout the planning and development of a transportation project, particularly through FDOT's Sociocultural Effects Evaluation process and FDOT policy.

III. ADDRESSING BYPASS IMPACTS

Evaluating how transportation projects will affect land use and related considerations such as livability, community character, and local mobility is an important step in the planning, programming, and project development and environment (PD&E) phases of a project. Potential impacts of major transportation projects, including bypasses, are examined by FDOT and through Florida's Efficient Transportation Decision Making (ETDM) process. The ETDM process was developed by FDOT in the early 2000s to more efficiently accomplish the requirements of National Environmental Policy Act (NEPA) and related Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*.

Conducting a sociocultural effects (SCE) evaluation is an integral part of the ETDM process and guidance for performing it is thoroughly described in several FDOT resources including the ETDM Manual,³ the Social Cultural Effects Handbook,⁴ the Public Involvement Handbook,⁵ and the Project Development and Environment (PD&E)

³ "ETDM Manual." March 2006. Florida Department of Transportation. Web 15 Aug. 2011. <<https://etdmpub.fl.a-etat.org/est/#>>

⁴ "Sociocultural Effects Handbook." November 2005. Florida Department of Transportation. Web 15 Aug. 2011. <<http://www.dot.state.fl.us/emo/pubs/sce/sce1.shtm>>

⁵ "Public Involvement Handbook." April 2011. Florida Department of Transportation. Web 15 Aug. 2011. <http://www.dot.state.fl.us/emo/pubs/public_involvement/pubinvolve1.shtm>

Manual, Chapter 9.⁶ In general, issues considered as part of the Sociocultural Effects Evaluation are categorized as social, economic, land use, mobility, aesthetics, and relocation as detailed in Table 1.

Table 1. Socio-cultural Effects Issues

SOCIAL	ECONOMIC	LAND USE	MOBILITY	AESTHETICS	RELOCATION
<ul style="list-style-type: none"> ▪ Demographics ▪ Community Cohesion ▪ Safety/Emergency Response ▪ Community Goals ▪ Quality of Life 	<ul style="list-style-type: none"> ▪ Business & Employment ▪ Tax Base ▪ Traffic Patterns ▪ Business Access ▪ Special Needs Patrons 	<ul style="list-style-type: none"> ▪ Land Use-Urban Form ▪ Local Plan Consistency ▪ Open Space ▪ Sprawl ▪ Focal Points 	<ul style="list-style-type: none"> ▪ Modal Choices <ul style="list-style-type: none"> ▪ Pedestrian ▪ Bicyclists ▪ Transit ▪ Transportation Disadvantaged ▪ Connectivity ▪ Traffic Circulation ▪ Public Parking 	<ul style="list-style-type: none"> ▪ Noise/Vibration ▪ Viewshed ▪ Compatibility 	<ul style="list-style-type: none"> ▪ Residential ▪ Non-Residential ▪ Public Facilities

Source: *Sociocultural Effects Handbook*, Florida Department of Transportation. November 2005. Web 15 Aug. 2011. <<http://www.dot.state.fl.us/emo/pubs/sce/sce1.shtm>>

Topics within these SCE issues that may warrant more in-depth analysis include:

- Social: Community Goals, Quality of Life
- Economic: Business and Employment, Traffic Patterns
- Land Use: Land Use-Urban Form, Local Plan Consistency, Sprawl
- Mobility: Connectivity

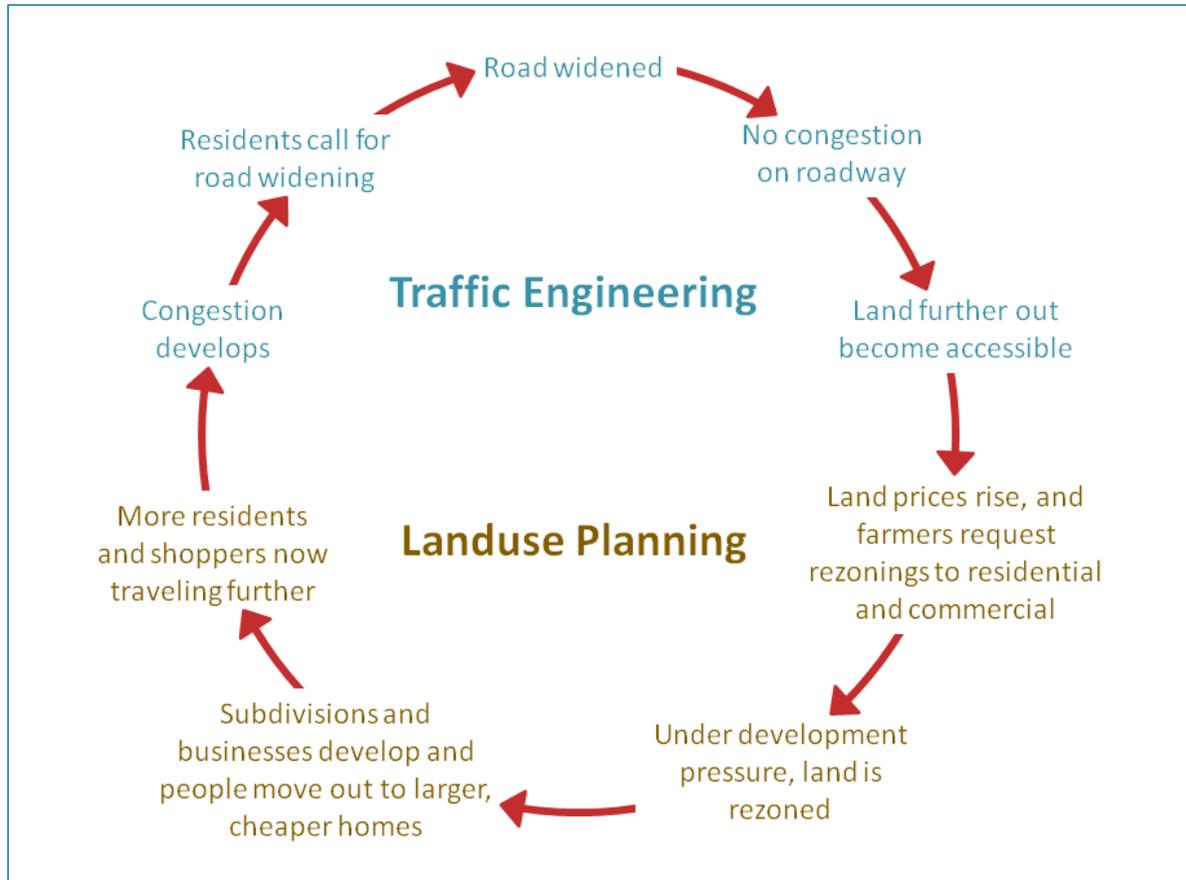
Among transportation roadway projects requiring ETDM screening are new roadways, freeways, or expressways, those that provide new access to an area, and new circumferential or belt highways bypassing a community. In small- and medium-sized communities, a bypass route may entirely bypass a community and join with the route being bypassed beyond the community. It may also be a route within the community that parallels the existing route and has increased access control. The SCE Evaluation objectives and guidance do touch on addressing transportation project impacts to land use and related considerations such as livability, community character, and local mobility. However, new roadway alignments such as a bypass, especially those through undeveloped land, may warrant more detailed analysis to fully understand the potential indirect effects. Although land use planning activities fall outside of the jurisdiction of transportation agencies, lack of consideration of land use impacts can counteract the effectiveness of long-range transportation planning and growth management efforts. The analysis of land use impacts is an opportunity to coordinate with agencies involved in land use decisions and engage them in a collaborative planning process that fully considers the transportation project.

Transportation projects, particularly those that provide access to new areas, can affect the rate of growth and the development patterns of an area as illustrated by the traffic engineering and land use planning cycle (Figure 6). A bypass roadway may shift the spatial distribution of development, including such common changes as intense commercial development around a new rural highway interchange and both commercial and residential development from the existing developed area up to and beyond the bypass. Strip commercial and industrial uses may seek locations on arterials between the developed area and interchanges with the bypass, and developers of low-density residential homes may build on nearby land made more accessible by the bypass. Big box retailers may be attracted to locations along the bypass as well. As a result of the redistribution of development beyond the

⁶ "Project Development and Environmental Manual." March 2011. Florida Department of Transportation. Web 15 Aug. 2011. <<http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm>>

existing community, great potential exists for local trips on the bypass between interchanges, due to a lack of corresponding local roadway development. Over time, mobility is impacted as travel time savings initially sought through construction of the bypass are diminished. In addition, the community will likely experience eventual pressure to build local roads to improve connectivity, even as development may have precluded viable alternatives.

Figure 6. Traffic engineering and land use planning cycle.



Source: Unknown

The type of economic activity along the bypassed route is likely to change. Some small businesses reliant on customers passing on the roadway will close, affecting both the local economy and community character. As through traffic shifts to the bypass, the bypassed route is likely to be oversized and have an unnecessary adverse impact on community character and livability. This potential for bypasses to affect development, harm local economies, or adversely impact the livability of smaller towns should be considered throughout the Sociocultural Effects Evaluation.

In addition, the roadway to be bypassed should be evaluated for possible projects that discourage its use for high-speed, high-volume traffic movement and increase focus on local mobility and community character. Projects may include a road diet, and addition of pedestrian, bicycle, and transit facilities and amenities.

The potential impacts of bypass construction on small- and medium-sized communities are assessed and mitigated through FDOT's existing Sociocultural Effects Evaluation process. Basic steps of the SCE Evaluation are:

1. Review Project Information
2. Define the Study Area
3. Prepare the Community Characteristics Inventory
4. Evaluate Sociocultural Effects
5. Recommend Ways to Resolve Issues
6. Document Findings

Enhancements to the SCE Evaluation may result in a more comprehensive analysis helping stakeholders to thoroughly understand potential bypass impacts and develop effective mitigation. The following recommended enhancements are discussed relative to their consideration within the basic steps of the SCE Evaluation.

G. SOCIOCULTURAL EFFECTS EVALUATION ENHANCEMENTS

STEP 1 REVIEW PROJECT INFORMATION

1. *Enhancement:* **Share information regarding potential bypass impacts**

SCE Evaluation Step 1 includes performing outreach to stakeholders and the community regarding a potential transportation project, including a bypass. Understanding the implications of a bypass roadway on land use, livability, community character, and local mobility is difficult even for transportation and planning professionals. Information regarding possible impacts of a bypass should be conveyed to the community in a user-friendly format such as a pamphlet or presentation containing basic information and possibly myths and facts regarding bypass impacts throughout all phases of the project.

Anecdotal and case study observations reviewed during the knowledge search yielded several preconceptions about the before and after effects of bypasses, particularly on small- and medium-sized communities. Preconceptions often vary among community members and FDOT efforts to clarify the facts may yield more fruitful discussions regarding potential bypass impacts. The most common preconceptions and key findings synthesized in Table 2 along with additional information in the knowledge search below could be used to develop an informational brochure for local governments and citizens.

Elected officials in small- and medium-sized communities often view a new bypass and the undeveloped land access it brings as an opportunity for economic growth. The reality is more likely to be a redistribution of economic activity from the downtown area toward the bypass. The downtown, along with its valuable infrastructure and local businesses, will likely experience increased vacancy rates while new, national chain stores develop near the bypass. This despite the fact that the tax revenue from a vibrant multistory downtown building where infrastructure exists is often much greater per acre than that of a new box building on the urban fringe.⁷ This development shift will require additional investment by the community to provide infrastructure such as connector roads and services including fire and police protection. In addition, local dollars spent at national chains

⁷ *Best bet for tax revenue: mixed-use downtown development*, New Urban News, Vol. 15, No. 6, (Sept. 2010).

results in fewer dollars kept locally as profits go to owners and shareholders located outside of the community, often in other states.

Table 2. Bypass Effects Preconceptions and Findings

Congestion	<p><i>Preconception: Bypasses reduce traffic congestion on the original route through the CBD</i></p> <p>Finding: In all cases, peak hour traffic through the CBD was reduced. The difference in travel time between the old facility and the bypass will determine how many vehicles will divert to the bypass (System Metrics Group, Inc. 2006).</p>
Freight Movement	<p><i>Preconception: Bypasses improve the speed and reliability of freight movement</i></p> <p>Finding: Because the bypass circumvented traffic congestion and traffic control devices, trucks tended to choose the bypass instead of the original route. Thus, travel time and reliability of freight movement improved. The removal of trucks from the CBD tended to improve quality of life in the CBD by reducing noise and allowing the road to be redesigned in a more aesthetic fashion (Handy et al 2000).</p>
Economic Development	<p><i>Preconception: Bypasses provide an opportunity for economic development and increased tax base</i></p> <p>Finding: The actual impact of bypasses on the economy of small communities is mixed, although "...from a local officials point of view the combination of enhanced mobility...and newly accessible land provides an opportunity for growth" (Mills 2009). The economies of smaller communities (<2000 population) are more likely to be adversely impacted by a bypass (Leong 2000).</p>
Sprawl	<p><i>Preconception: The new bypass roadway will encourage urban sprawl and adversely impact community character</i></p> <p>Finding: Some bypasses induced urban sprawl, while others seemed to have no impact. The likelihood of sprawl depended on the region's growth rate, the functional class of the roadway, the comprehensive plans in place before the bypass was constructed, and the scale of development permitted near the bypass (ODOT 2002). Faster growing areas experienced some development pressure along the bypass (Weisbrod 2001).</p>
Population Loss	<p><i>Preconception: The bypass route will draw away population from the bypassed CBD</i></p> <p>Finding: Bypassed cities did not experience universal population loss. The smallest communities (less than 500) were the most prone to population loss. Larger communities were the least likely to lose population, and some even showed moderate gains (Pettit 2007). In areas with no or slow population growth, little residential development chose to build next to the bypass.</p>
Business Activity	<p><i>Preconception: There will be a decline in sales and loss of business activity along the bypassed route, particularly among highway-oriented businesses (gasoline, fast food, etc)</i></p> <p>Finding: Travel-related businesses tend to relocate to the bypass. Further, total sales for the sector often increased (Srinivasan 2002). Downtown business districts in communities with a well-developed local customer base are less adversely impacted by a state route bypass than communities highly dependent on drive-by traffic (Gillis 1994). Perceptions of bypass impacts on business activity varied by industry. Babcock (2004) found that convenience stores and the motel industry perceived bypasses as negative to their business; whereas truck, auto and restaurant establishments perceived bypasses as positive.</p>
Business Relocation	<p><i>Preconception: Businesses will relocate out of the CBD to the bypass route, incurring relocation costs and reducing local tax base</i></p> <p>Finding: Regional retail (big box) and travel-related businesses usually relocated to the bypass route (Weisbrod 2001). Service industries were the least affected by the presence of a bypass, and tended to stay in the CBD (Srinivasan 2002). CBDs with a strong identity as a destination for local shoppers were strengthened due to a reduction in traffic delays, and exhibited little retail flight (Leong 2000).</p>
Property Values	<p><i>Preconception: Property values and occupancy rates of property along the bypassed route will decline</i></p> <p>Finding: No clear consensus was reached during the knowledge search. The overall tax base increased in virtually every circumstance, but the reasons for the increase differed. In some cases the property values in the CBD rose, while in others the CBD stagnated but the loss was offset by increased value adjacent to the bypass (Otto 1995).</p>
Community Support	<p><i>Preconception: Residents of the CBD will oppose a bypass due to concerns relating to economic and quality-of-life factors</i></p> <p>Finding: Although pre-construction opposition was not uncommon, community opinions on bypasses tended to be more supportive after construction of the facility. As noted by Pettit (2007) in a recent study of Iowa bypasses: "Overall the communities do not blame the bypass for much of anything and instead praise them for having removed traffic, congestion, and pollution from their towns."</p>

STEP 2 DEFINE THE STUDY AREA AND STEP 3 PREPARE THE COMMUNITY CHARACTERISTICS INVENTORY

1. *Enhancement:* **Expand the recommended EST buffer, may be specifically for land use and mobility**

Step 2-Define the Study Area and Step 3-Prepare the Community Characteristics Inventory may be enhanced by defining a study area and gathering community characteristics as appropriate for a new bypass. Transportation project study areas are commonly defined in relation to a distance from the proposed improvement. The SCE Evaluation guidance recommends gathering existing and future land use data from the Environmental Screening Tool (EST) in a buffer width of 500 feet from the project's proposed alignment. However in terms of land use and mobility, indirect effects of bypass construction beyond this distance could be substantial. Expansion of the study area with additional data gathered for the community characteristics inventory is recommended.

Mapping and aerial views available through programs such as Google maps have simplified the ability of the community analyst to assess the extent of existing development between a roadway and potential bypass locations. If potential project alternatives involve a bypass through relatively undeveloped area around a small- or medium-sized community, the community analyst should note the potential for additional development to occur in this area. Likely locations for development include where the bypass joins the existing route, at potential interchange locations, and along roadways between the community and bypass as well as beyond.

In addition, new development in the vicinity of the bypass will increase travel demand on the existing local transportation system. New local roads and transit routes may be needed to increase community connectivity and minimize use of the bypass by local traffic. Therefore, mobility features within an expanded study area should also be assessed.

If a bypass alternative is being considered that will provide access to significant undeveloped land, the study area should be increased to a minimum of 1 mile from the project's proposed alignment to include the area where the bypass joins the existing route, at potential interchange locations, and along roadways connecting to the bypass, between the community and bypass, as well as beyond the interchange. This expanded study area is particularly important during the PD&E phase.

STEP 4 EVALUATE SOCIOCULTURAL EFFECTS

Several enhancements to Step 4, Evaluate Sociocultural Effects, are recommended, including the consideration of growth inducement potential in varying levels of details according to project phase, assessing consistency with local government comprehensive plans, and analyzing the potential change in business customers.

1. *Enhancement:* **Consider growth inducement potential**

A growth inducement analysis establishes whether project alternatives are likely to induce growth or alter the planned pattern of development. Projects that would likely influence regional land development location decisions include bypasses that provide convenient access to vacant developable land. Determining if a bypass project would influence intra-regional land development decisions is not necessarily straightforward. The community analyst may be inclined to rely on the local government comprehensive plan to determine future development patterns. However, such plans do not often reflect land use changes that may be expected as a result of new roadway access. This is perhaps due to lack of professional planning capacity which increases the importance of raising the issues during the SCE Evaluation and providing technical assistance to small- and

medium- sized communities through that process. If conditions are generally favorable for growth in a region (available utilities, relatively low land prices, natural amenities, etc.), then a bypass can dramatically influence the rate and location of development.

For small- and medium-sized communities, a simple qualitative approach may be employed to determine the potential for regional growth inducement during the planning and programming phases. Table 3 employs a checklist of questions closely related to factors considered by real estate investors or consumers when making a development or purchase decision. Completion of the checklist will help the community analyst to assess the potential for the project to induce growth in the study area. Many of the questions can be answered by consulting resources gathered for the SCE Evaluation. Other information, including known future development trends, may require contact with local planners, officials, and real estate professionals familiar with the area. The key to making a reasonable determination of growth inducement is to involve study area stakeholders in the process.

Proposed bypass alternatives should be evaluated for their potential to induce growth with results documented in ETDM. If it is determined that the bypass alternatives would not induce growth, then no further action is required beyond documenting the process and findings. If growth may be induced by a bypass alternative, the community analyst should then determine if the potential for induced growth is consistent with local government planning policies and objectives as well as future land use maps within the extended study area.

As the final transportation alternatives being considered are analyzed through an environmental impact assessment in the PD&E phase, the importance of clearly understanding the potential indirect impacts of bypass construction increases. Economic analyses often forecast little change or an improvement in the regional economy of small- or medium-sized communities after bypass construction, but do not pinpoint the location of economic activity. Analyzing the growth inducement potential of a bypass alternative in small-and medium-sized communities is an important element due to the effects a bypass may have on where development will occur in the community typically near the bypass, and also where development may not occur, often the bypassed route.

In *Forecasting Indirect Land Use Effects of Transportation Projects*, Avin (2007) outlines a detailed “framework for conducting indirect land use effects analyses.” The framework provides guidance on evaluating the indirect land use impact of transportation projects regardless of size and pinpoints the most appropriate techniques applicable to evaluating the indirect land use impacts of transportation projects on various-sized communities. Avin notes “failure to account for indirect demand effects likely exaggerates the travel-time saving benefits of capacity expansion and ignores the potential substantial land use shifts that might occur because of the marginal increase in accessibility provided” (Avin 6).

The framework, detailed in Figure 7, establishes three main decision points: 1. Prescreening - the overall extent of induced travel; 2. Forecasting Indirect Land Use Change - the overall extent of indirect land use change that accounts for a portion of this travel; and 3. Allocating Growth - the location of this land use change. (Avin 29) During Prescreening, the possibility of induced growth is determined and, if so, the level of analysis to be performed is established.

Table 3. Checklist to Evaluate Growth Inducement Potential



Checklist to Evaluate Growth Inducement Potential

Background Information

Directions: Check the most appropriate response in the box or provide the appropriate answer as background for completing the checklist. The data required to complete this section of the checklist should already be available from the Community Characteristics Inventory.

Generalized Setting

- Within Metropolitan Statistical Area (Identify MSA)
- Both Inside and Outside MSA
- Outside MSA
- Indicate Distance to Nearest Metropolitan Center _____

Population

	Trend	Projection
Declining	<input type="radio"/>	_____
Static (±1%/10 years)	<input type="radio"/>	_____
Slow Growth	<input type="radio"/>	_____
Rapid Growth (>10%/10 years)	<input type="radio"/>	_____

Employment

	Trend	Projection
Declining	<input type="radio"/>	_____
Static (±1%/10 years)	<input type="radio"/>	_____
Slow Growth	<input type="radio"/>	_____
Rapid Growth (>10%/10 years)	<input type="radio"/>	_____

Regional Study Area Conditions

Directions: A “yes” answer indicates that conditions generally favor growth. The more “yes” answers, the higher the certainty that regional conditions generally favor growth.

- Is the regional population increasing rapidly (generally, > 10% per 10 years)? Yes No
- Is the region considered favorable for receiving federal housing loans? Yes No
- Are there any major growth generators (e.g. universities, military installations, industries, tourist attractions) in the region? Yes No
- Is the regional office/commercial market characterized by low (generally, < 10%) vacancy rates in any class of space? Yes No
- Is the region’s business and civic leadership committed to rapid development? Yes No
- Is the region an exporter of natural resources? Yes No

Local Study Area Conditions

Directions: If regional conditions generally favor growth based on the answers to the preceding questions, then proceed with the next series of questions. A “yes” answer indicates that the area in the immediate project vicinity has land use conversion potential; the more “yes” answers, the higher the certainty that land use conversion will be induced by the project.

General Indicators

- Is the regional path of development in the direction of the local study area? Yes No
- Is the project within 5 miles of a growing community (generally, >5% per 10 years)? Yes No
- Is the local study area characterized by middle and/or high-income levels? Yes No
- Is the local study area free of moratoriums on development (e.g. sewer moratoriums, growth restrictions)? Yes No

Checklist to Evaluate Growth Inducement Potential (continued)



Indicators of Conditions Favorable to Conversion of Lower Density Development

Is the local study area within a 30-minute drive of a major employment center? Yes No

Does the local study area have relatively high land availability/low land prices (generally < one-third of larger parcels developed)? Yes No

Is the vacant land characterized by relatively large parcels? Yes No

Is the local study area characterized predominantly by level land (generally, <5% slope)? Yes No

Is the project's Potential Impact Area characterized by soils suitable for development? Yes No

Is the project's Potential Impact Area predominantly free of flooding or wetlands? Yes No

Indicators of Conditions Favorable to Conversion to Higher Density Development

Does the local study area have relatively low land availability/high land prices (generally >two-thirds of larger parcels developed)? Yes No

Is the local study area served by existing principal arterials and water/sewer systems? Yes No

Is the local study area covered by relatively few governmental jurisdictions? Yes No

Is the local study area characterized by frequent comprehensive plan amendments? Yes No

Conclusion

Do regional conditions generally favor growth? Yes No

Do local study area conditions generally favor growth? Yes No

Do conditions favor conversion to lower or higher density development? Lower Higher

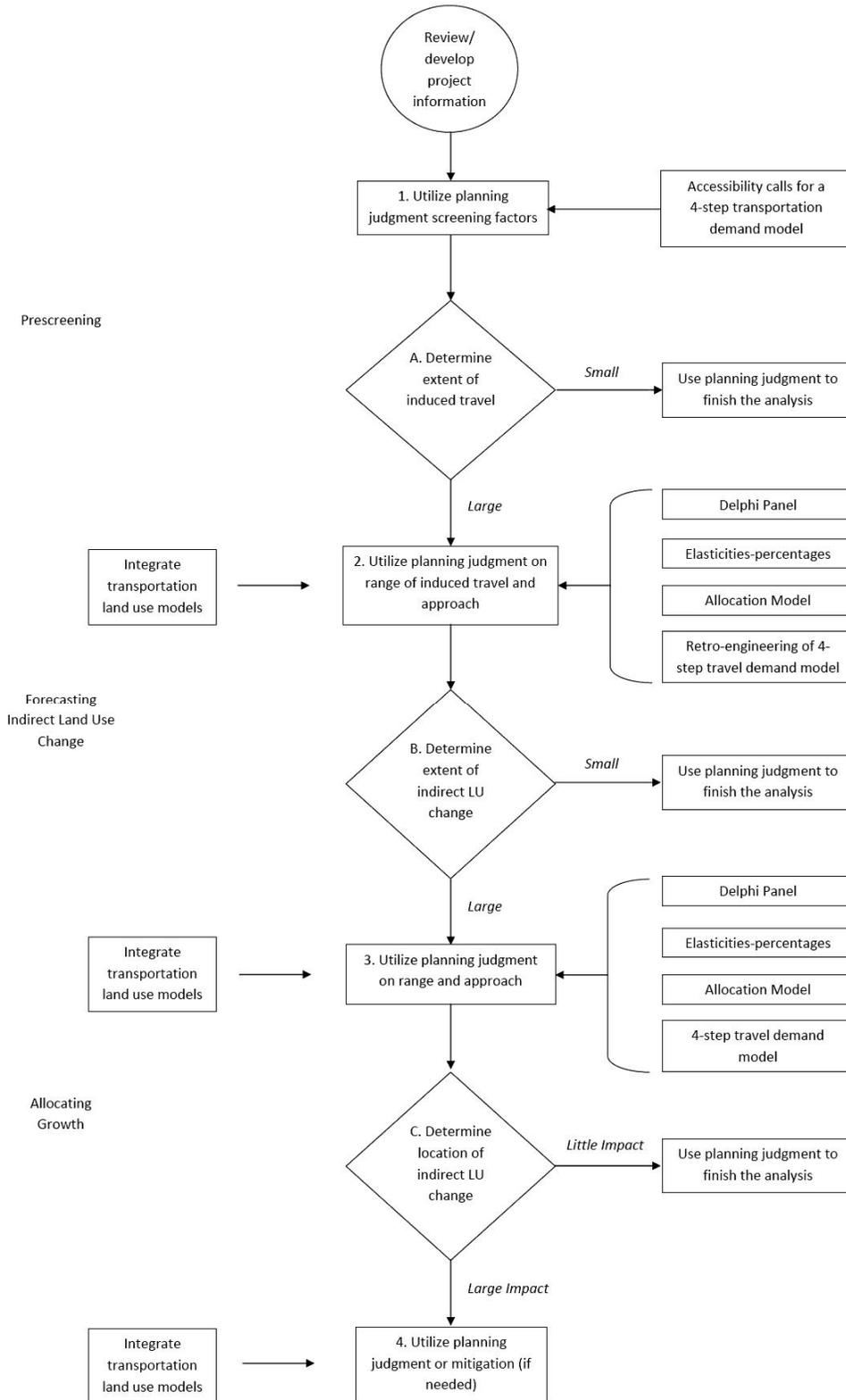
Additional Comments:

Reviewed by:

Name _____ Date _____

Source: Adapted from Louis Berger & Associates, *NCHRP Report 403: Guidance for Estimating the Indirect Effects of Proposed Transportation Projects*, Transportation Research Board, Washington D.C.: National Academy of Sciences, 1998

Figure 7. Relationship of various approaches to the forecasting process for indirect land use effects



Source: "Forecasting Indirect Land Use Effects of Transportation Projects," Transportation Research Board. (Avin 2007)

The next decision point, forecasting land use change, may be accomplished using one of several tools based on time, resources, and data availability. *Forecasting* describes “six approaches or tools for forecasting land use change in response to transportation improvements.” (Avin 26) The first three approaches, planning judgment, collaborative judgment, and elasticities are identified as “foundational” and are described as follows:

- **Planning Judgment** is a structured process for analyzing and forecasting land use change that relies on an understanding of the basics of transportation/land use interactions, basic data sources, asking the right questions and using rules of thumb from research to make informed judgments. If more sophisticated tools are not available, planner judgment may be the most expedient approach to use. (Avin 28)
- **Collaborative Judgment** extends the solo planner’s understanding through soliciting advice from others knowledgeable about the study area. When no other resources are available, collaborative judgment may be the only sufficient approach for indirect land use effects. In such cases, it is particularly important to structure this input so that the weight of given individuals, personalities and agendas are evened out. (Avin 28)
- **Elasticities** bridge the gap between practice and research by providing a synthesis of the best theoretical and empirical research that allows analysts to better sort out the complexities of induced demand, indirect land use effects, and induced investment effects. The elasticities relate change in highway capacity (e.g., assessed through Vehicle Miles Traveled [VMT]) to change in travel behavior and in land use effects. They can be used to check the results of other approaches for reasonableness or as a standalone tool in combination with the above two approaches.

To forecast indirect land use effects of a proposed bypass of a small- or medium-size community, the foundational approaches, particularly planning judgment would be the most appropriate. Although it may be argued that local governments prepare comprehensive plans that include future land use and possibly included a potential bypass route, it is likely that a smaller community lacks knowledge and resources to fully analyze how a new transportation facility would reallocate growth in the area. Assessments of bypass alternatives should include development and testing of future land use scenarios. Although it is not possible to determine precisely how a transportation project will affect growth patterns, the assessment effort will uncover information that could be of significant value to the decision-making process. (Avin 28)

In determining the extent of indirect land use change using the planning judgment approach, *Forecasting* leads the analyst through an assessment exercise addressing the following key variables:

- Change in accessibility,
- Change in property value,
- Expected growth,
- Relationship between land supply and demand,
- Availability of other services,
- Other market factors, and
- Public policy

Data sources for each variable are identified as well as a unique approach to valuing the change in a quantitative manner (Avin 56). Table 4 illustrates the variables, data sources, value, and potential for land use change. Guidance for preparing the report is also provided that asks the analyst to specifically address:

1. How likely is it that a transportation project will be followed by some noticeable change in the land use that would not have occurred in the absence of the project or sooner than anticipated?
2. If such changes did occur, would they be consistent with the comprehensive plan?

Where necessary for a larger area and as resources allow, the analyst may choose to use the collaborative judgment approach or elasticities. However, in the case of most small- and medium-sized communities, planning judgment, particularly in collaboration with local representatives, will be adequate.

The remaining three approaches, described in *Forecasting* as “discretionary” approaches, include allocation models, four step models, and integrated transportation-land use models (Avin 27). In cases where the community is in close proximity of an urban area, use of discretionary approaches becomes more important. FDOT and metropolitan planning organizations throughout Florida widely use a four-step model – the Florida Standard Urban Transportation Model Structure powered by CUBE Voyager (FSUTMS-CUBE). Unfortunately, this travel demand model does not forecast land use, but determines travel demand based on programmed growth estimates.

The application of a four-step model requires more resources. Such models commonly have few traffic analysis zones or TAZs in small- and medium-sized communities, particularly in the outlying areas. In addition, anticipated growth resulting from a new transportation facility may not be appropriately identified in future land use plans and population and employment projections. *Forecasting* does address the application of four-step travel demand forecasting models and provides possible methods to account for induced travel within those models (Avin 110). Also discussed is a method to mechanically account for indirect land use effects applied to the Capital Region Transportation Planning Organization (Tallahassee, Florida) travel demand model (Avin 106).

The following resources include the NCHRP Report, *Forecasting Indirect Land Use Effects of Transportation Projects*, discussed above, as well as two of its supporting documents.

Resources:

- *Forecasting Indirect Land Use Effects of Transportation Projects, NCHRP Project 25-25, Task 22*, Avin, Uri, Cervero, R., Moore, T., Dorney, C., for the Transportation Research Board, Washington , D.C. (2007).
- *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects, NCHRP Report 466*, The Louis Berger Group, Inc. for the Transportation Research Board, Washington , D.C. (2002).
- *A Guidebook for Evaluating the Indirect Land Use and Growth Impacts of Highway Improvements*, ECONorthwest and Portland State University for the Oregon Department of Transportation, (2001).

Table 4. Assessing Indirect Land Use Effects

Change	Data Sources	If value is...	...then potential for land-use change probably...
Change in accessibility <i>Measured as change in travel time or delay, if available. Otherwise, assessment of v/c or change in access</i>	For large projects or jurisdictions: Travel demand models Otherwise: expert opinion, probably from other ODOT or consultant transportation planners or engineers working on the project	Less than a couple minutes of time savings for an average trip, or no change in v/c 2-5 minutes 5-10 minutes More than 10 minutes	None to very weak Weak to moderate Strong Very Strong
Change in property value <i>Measured in dollars</i>	Assessment data Expert opinion	No change 0% to 20% increase 20% to 50% increase More than 50% increase	None to very weak Weak to moderate Strong Very strong
Forecasted growth <i>Measured as population, employment, land development; for region, city, or sub-area</i>	Official population and employment forecasts (should be regionally “coordinated” forecast if possible) Check to see that travel demand forecasting being driven by same pop and emp. forecast	Average annual growth rate (population/employment) of less than 1% 1%-2% 2%-3% Over 3%	None to very weak Weak to moderate Strong Very strong
Relationship between supply and demand <i>Measured as population, employment, land development</i>	Planning documents (See Step 4 re development capacity, history, trends, and forecasts) Interviews with realtors, brokers, developers, planners	More than 20-year supply of all land types, all sub-areas 10 to 20-year supply Less than 10-year supply Less than 10-year supply and specific identified problems in the study area	None to very weak Weak to moderate Strong Very strong
Availability of non-transportation services <i>Measured number of people or employees that can be served or barriers to service provision</i>	Local planning documents Interviews with local planners and engineers Other reports generated as part of the highway project evaluation	Key services not available and difficult to provide Not available and can be provided No available, easily provided and programmed Available now	None to very weak Weak to moderate Strong Very strong
Other factors that impact the market for development	Local planning documents Socioeconomic and ROW reports generated as part of the highway project evaluation Assessment data, MLS, local real estate reports Interviews with brokers, developers	Weak market for development Weak to moderate market Strong market Very strong market	None to very weak Weak to moderate Strong Very strong
Public policy	Local planning documents Interviews with local officials, local planners, reps of neighborhood or interest groups, state agency planners	Strong policy, strong record of policy enforcement and implementation Strong policy, weak enforcement Weak policy, weak enforcement No policy, weak enforcement	None to very weak Moderate to strong Moderate to strong Very strong

Adapted from ECONorthwest

2. *Enhancement: Considerations for determining bypass consistency with local comprehensive plans*

The purpose of the consistency determination is to ensure that a proposed transportation project, including its potential to induce growth, is aligned with and supports, as much as feasible, the interdependent land use and transportation planning objectives of the affected area. Making a consistency determination can be fairly subjective and requires a combination of common sense and some working knowledge of transportation and growth management issues. In addition, because it is essentially a policy determination, the determination of consistency must be made in coordination with local government agencies that develop and implement those plans.

When considering a bypass, the community analyst must review appropriate plans with an eye toward the potential impact of a bypass near the new route as well as on the bypassed route. Objectives and policies addressing land use, livability, community character, and local mobility should be among the many the analyst identifies as potentially applicable to the proposed bypass. Examples of policies, objectives, or issues that might have a bearing on the consistency determination for a bypass include:

- A regional plan policy aimed at improving hurricane evacuation routes;
- A local comprehensive plan policy to limit the number of lanes on roadways traveling through the community;
- A local comprehensive plan policy to discourage sprawl;
- A local comprehensive plan policy to encourage infill development;
- A Main Street Plan objective to provide on street parking, street furniture, and pedestrian signals to improve the walkability of a downtown shopping area;
- A local government future land use map that shows little increased density and intensity near bypass alternatives; and
- Inclusion of a capacity improvement to the facility under consideration in the MPO Long Range Transportation Plan.

Table 5 provides an illustration of consistency findings using the policy examples above. A summary of findings in this case might state:

“Bypass Alternatives A and B would add capacity and alleviate congestion consistent with Policy 2.3 of the Regional Policy Plan that calls for improved hurricane evacuation routes; however, these Alternatives will provide greatly improved access to vacant land outside of the currently developed area potentially contributing to sprawl and hindering infill development inconsistent with local comprehensive plan policies 4.1 and 4.5. Alternative C involves new capacity by adding lanes which is inconsistent with Policy 8.5 of the local government comprehensive plan that limits the number of lanes on roadways traveling through the community to 5 lanes but could accommodate hurricane evacuation needs.

Additional capacity for the facility is included in the MPO LRTP; however, local government future land use maps do not accommodate likely increased density and intensity along the bypass route, particularly near interchanges with arterial roads. Bypass alternatives do not address changes to the bypassed route to support the Main Street Plan objective to provide on street parking, street furniture, and pedestrian signals to improve the walkability of a downtown shopping area.”

Table 5. Example Consistency with Adopted Plan Policies and Objectives

Proposed Alternative	Hurricane Evacuation	Limit Number of Lanes	Discourage Sprawl Encourage Infill	Main Street	Future Land Use Map	Planned Capacity
A - Eastern Bypass	Consistent	Consistent	Inconsistent	Inconsistent	Inconsistent	Consistent
B - Western Bypass	Consistent	Consistent	Inconsistent	Inconsistent	Inconsistent	Consistent
C - 6 lanes	Consistent	Inconsistent	Consistent	Inconsistent	Consistent	Consistent

The draft consistency determination should be reviewed with planning agency staff and study area stakeholders to ensure plan objectives and policies are correctly interpreted. The benefit of this exercise is that potentially controversial items, which might arise at various points in the process, will be documented. If project alternatives, including the potential to induce growth, are largely consistent with local future land use plans, no further action is required beyond documenting the process and findings. Alternatively, if they are significantly inconsistent with local government comprehensive plans, strategies to address those potential impacts should be developed.

3. *Enhancement: Analyze potential change in business customers*

SCE Evaluation Objectives related to the economy include assessing the potential traffic increase/decrease on roads in business centers or corridors. The most common concern of community business leaders and citizens is the potential impact of a bypass on the community’s economy resulting in an economic analysis being performed for many proposed bypasses. Many econometric analyses only convey changes in the economy on a regional basis due to data availability. In other words, the change in business traffic that frequents local businesses may not be captured. In small- and medium-sized communities, a basic survey such as those described in Table 6 may be performed to provide a better glimpse into how much existing traffic actually stops within the area to be bypassed. Such a survey can provide information on the number and percentage of transient and regular travelers or local residents that stop in the area. These stops represent customers/business that would likely be lost to existing business along the route that is to be bypassed.

Table 6. Methods for Determining Traffic Volume, Freight, and Through Trips

<p>1. License Plate Survey</p> <p>Applicability: Small urban area located on a single major roadway</p> <p>Methodology: 1) Establish stations on both sides of the area to be bypassed when license plate numbers will be observed and recorded. 2) Determine the time that it takes to drive between the stations (both directions) without stopping. 3) Match the vehicle license plate numbers of vehicles leaving the area with that of vehicles entering the area. Record the time when each vehicle entered the area and left the area. If the elapsed time is longer than the time interval to drive between the observation stations, the driver is judged to have stopped within the area.</p> <p>Vehicles with out of state license plates are assumed to be “transient.” The zip code of owners of vehicles registered in Florida can be obtained through Florida motor vehicle registration records. Zip codes within and in proximity to the urbanized area are considered to be “local,” others “transient.”</p> <p>Analysis: The number and percent of vehicles (customers) that are “local” and “transient” can be used to assess the likely impact of the bypass on business.</p>
<p>2. On-Site Interviews</p> <p>Applicability: Small urbanized areas located on a single major roadway.</p> <p>Methodology: 1) Identify the businesses (restaurants, gasoline, sales, other) of interest. 2) Conduct interviews and determine if each vehicle is transient or local. (Vehicles with out of state plates are assumed to be transient – Interviewer observes and records the state). Drivers or vehicles with Florida plates are asked their 5 digit postal zip code. 3) Observe and count vehicles entering the area to be bypassed and record the vehicles as being registered in Florida or registered in another state.</p> <p>Analysis: The on-site observations and interviews provide the number and percentage of customers that are out of state transients, the number of Florida transients, and the “locals.” In conjunction with the traffic volume counts, the percentage of out of state vehicles that stopped, and did not stop, can be ascertained. And the percentage of the traffic entering and leaving the area can be summarized as transient (passing through) or local. The likely impact of a bypass can then be evaluated.</p>
<p>3. On-Site Observation</p> <p>Applicability: Small urbanized areas located on a single major roadway.</p> <p>Methodology: Similar to the on-site interview except the license plates of vehicles registered in Florida are recorded and the zip code of the registered owner is obtained from motor vehicle registration records. The vehicles (customers) are then identified as either local or transient.</p> <p>Analysis: Similar to on-site interview method.</p>

STEP 5 RECOMMEND WAYS TO RESOLVE ISSUES

In Step 5-Recommend Ways to Resolve Issues, the community analyst must suggest methods to avoid, minimize, mitigate, or enhance potential transportation project impacts. The SCE Evaluation affords an opportunity to surmount jurisdictional barriers and partner with stakeholder agencies and organizations on creative solutions to indirect bypass impacts. Many methods for addressing potential transportation project impacts, particularly land use impacts, cannot be implemented by FDOT. Strategies for addressing potential project impacts should be identified and pursued, regardless of the lead agency involved in implementation.

*1. Method: **Develop and implement mobility plan***

Specific strategies directed to land use or the transportation system designed to improve or maintain mobility, including corridor access management, may be termed a mobility plan. A local jurisdiction should take the lead in preparing a mobility plan for the area with FDOT providing technical assistance for mobility within the planning area. While the local jurisdiction has the authority to implement a mobility plan, FDOT may lend technical assistance and resources to the effort.

Development and implementation of a mobility plan can enhance the benefits of a new bypass, as well as minimize or mitigate potentially negative impacts. Similarly, the mobility plan can help to mitigate potential impacts to the existing roadway of the selected alternative – even if a bypass alternative is not chosen. In some cases, travel demand on highways that traverse small- and medium-sized communities could be alleviated by improvements on parallel facilities that are not part of the SIS or the State Highway System.

A mobility plan should address land use and transportation including local network deficiencies, operations, and safety. Mobility plans may be an integral part of implementing transportation concurrency alternatives where applicable. Alternatives include transportation concurrency exception areas (TCEA), transportation concurrency management areas (TCMA), multi-modal transportation districts (MMTD), and long-term concurrency management systems. A mobility plan is also appropriate to support mobility in cases where a local government chooses not to adopt state-recommended LOS standards.

Likely land use changes resulting from construction of a limited access bypass include intensive development near interchanges, strip commercial and industrial uses on arterials between the developed area and interchanges with the bypass, and low-density residential development on nearby land made more accessible by the bypass. The mobility plan should address appropriate development location, density and intensity. Site design guidance should accommodate all modes of transportation. As a result of new development, great potential exists for local trips on the bypass between interchanges due to inadequate connectivity of the local multimodal network. Over time, travel time savings initially sought through construction of the bypass may be lost. The mobility plan should also address the multimodal transportation network. Other planning considerations include the provision of such services as water, sewer, fire, and police to new development.

In sum, local governments should work with stakeholders and partners to develop a mobility plan addressing:

- Land use between the community and the bypass and at least one mile beyond the bypass;
- Both land use and access around interchanges taking care to avoid driveway access near interchange ramps;
- Both land use and access where the bypass meets the existing roadway;
- Corridor access management along roadways between the community and the bypass;

- Land use and corridor management along the bypassed roadway;
- Multimodal network improvements to connect outlying transportation facilities in an effort to minimize the use of the bypass for local traffic; and
- Multimodal network improvements to enhance local mobility, community character, and livability on the bypassed corridor.

Guidance for developing and reviewing land use and transportation strategies for a mobility plan is available in the following resource:

Resource:

- *Mobility Review Guide: A Proposed Practice*, Center for Urban Transportation Research, prepared for the Florida Department of Transportation, (2010).

The mobility planning effort should include evaluating roadway design and access characteristics, and proposing changes that maintain reasonable access to property, while improving the safety and operation of the highway. Such changes may involve:

- medians or median opening closures,
- signal location and spacing,
- auxiliary lanes,
- right-of-way needs and requirements,
- site access and circulation design,
- changes to the supporting roadway network, and
- projects involving access for non-automobile transportation modes (e.g. bus pullouts, transitions for special use transit lanes or bus rapid transit, pedestrian crossing treatments).

The policy planning effort involves assessment of local government land development and access management practices. Figure 8 illustrates an example of how land use and mobility planning for a bypass route in North Carolina limited direct access to the bypass ,yet planned for improved access and mobility throughout the area between the bypass and the bypassed route. Regardless of the transportation project chosen, management of both the bypass and the bypassed transportation corridor will provide lasting mobility benefits to the community as well as the State. The following resources provide guidance on how to perform this assessment and to prepare a conceptual plan for implementing corridor management at the local level, as well as an example of a policy assessment for two small communities straddling SR 26 in Alachua County, Florida.

Resources:

- *Guide for Analysis of Corridor Management Policies and Practices*, Williams, K., Hopes, C., Center for Urban Transportation Research, for the Florida Department of Transportation, Tallahassee, FL (2007).
- *Analysis of Corridor Management Practices on Selected Critical SIS Facilities*, Williams, K., Hopes, C., Center for Urban Transportation Research, for the Florida Department of Transportation, Tallahassee, FL (2007).

Figure 8. Corridor Redevelopment Along US 311 Bypass



Source: *Land Use Policy Guidelines for Mobility Protection*, North Carolina Department of Transportation (undated) Retrieved at http://www.ncdot.org/doh/preconstruct/tpb/SHC/pdf/land_use_guidelines.pdf

A long-standing publication that attempts to reconcile the conflict between speed and mobility and community character is “Main Street...when a highway runs through it: A Handbook for Oregon Communities” (ODOT 1999). It discusses typical issues and how to address them, specific measures to take, financing ideas, and offers examples. This guide does recognize that some conditions warrant a bypass, but stresses that comprehensive knowledge of its potential impacts are key to the success of the bypass as well as the bypassed route.

Excess capacity on a bypassed roadway may be addressed while improving local mobility and community character through a road diet. By removing travel lanes and providing enhancement to non-automobile travel, a road diet supports local mobility as well as community character and livability. Results include fewer crashes, slower traffic, and increased pedestrian safety. Installation of roundabouts is also a viable strategy to keep traffic moving, allow for a more aesthetically pleasing and pedestrian-friendly environment, reduce vehicle conflicts and delay, and increase safety. Guidance for road diets and roundabouts can be found in the following:

Resources:

- *Main Street...when a highway runs through it: A Handbook for Oregon Communities*, Transportation and Growth Management, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. November 1999. Accessed June 20, 2011. <http://www.oregon.gov/LCD/TGM/docs/mainstreet.pdf?ga=t>

- *Road Diet Handbook: Setting Trends for Livable Streets*, Rosales, J., Parsons Brinckerhoff (2009)
- *FHWA Safety: Roundabouts*, U.S. Department of Transportation, Federal Highway Administration, Undated, Web 03 Oct. 2011. <http://safety.fhwa.dot.gov/intersection/roundabouts/>

All strategies chosen by the local government to address land use and transportation issues within the community should be addressed clearly in the mobility plan and be supported by intergovernmental agreements between FDOT and impacted communities. Upon completion, the mobility plan should be adopted into local government comprehensive plans and other applicable local and regional plans to guide land use and transportation facility development.

2. *Method: Control access to the bypass*

The impact of a bypass on land use and related considerations such as livability, community character, and local mobility can be avoided or minimized by the use of strict access controls on the bypass. The most effective means to prevent sprawl development along a bypass is by designing interchanges only where the new roadway exits and enters the bypassed roadway. Design and construction of the bypass in this manner will not interfere with existing travel patterns or attract development to outlying areas. On the other hand, development may intensify along the bypassed route in the areas leading to and surrounding connections with the bypass. Such a design should include detailed planning and implementation of a local mobility plan addressing land use and transportation for the bypassed roadway, including some FDOT funding for implementation.

Limited access control, a less restrictive approach, provides for interchanges at crossroads with major arterials and, of course, connection to the bypassed roadway. Development pressure will inevitably occur near the interchanges and is likely in areas between the community and the bypass. Purchasing limited access right of way for a distance of 600 feet to ¼ mile from interchange ramps may help to minimize congestion and safety problems near interchange ramps.

Bypass design in close coordination with affected local government mobility plans may result in development near the bypass that is integrated into the local transportation network with specific points of access to the bypass. Figure 8 illustrates controls on a parallel alignment bypass within a North Carolina community that allows for property development yet minimizes access to the bypass. Local governments can apply additional strategies through the land development process such as:

- Use site plan approval to ensure that site access location and design and on-site circulation will not result in traffic problems “spilling back” onto the major roadway;
- Adopt land development regulation policies that establish:
 - Subdivision of a tract of land does not create a right-of-access to the major roadway;
 - When a property abutting a major roadway is subdivided, access to the parcels created by the subdivision shall be provided in the manner prescribed by the adopted corridor management plan;
 - A new certificate of occupancy is required each time the tenant of a commercial property changes to determine if the type (size of vehicle) and volume of entering and exiting traffic is compatible with the location and design of the access connection, the onsite circulation and parking, and traffic conditions on the abutting roadway.

Resource:

- *Costs and Benefits of Strategic Acquisitions of Limited Access Right-of-Way at Freeway Interchange Areas*, Williams, K., Zhou, H., Hagen, L., Center for Urban Transportation Research, for the Florida Department of Transportation, Tallahassee, FL (2004).
- *Access Management Manual*, Williams, K., Stover, V., Center for Urban Transportation Research, for the Committee on Access Management, Transportation Research Board of the National Academies, Washington, D.C. (2003).

3. Method: ***Plan for maintaining economic viability of bypassed area***

Small- and medium-sized communities often welcome a bypass to minimize through traffic, especially freight, as well as to encourage growth. However, the bypassed area will likely suffer without a well-developed plan to ensure its continued viability. Local businesses dependent on through traffic may close or move to a location along the bypass. After construction of a bypass, the bypassed roadway is likely to have excess capacity and be out of scale with the adjacent urban development found in many small communities. Pedestrian and bicycle facilities are likely minimal as available right of way was used to maximize vehicular capacity. The area may be devoid of street trees and other design details essential to placemaking. A local mobility plan along with or including a downtown development plan will support the long-term viability of the downtown.

Key factors to address in mobility planning for this area include:

- Signage and advertising on the bypass directing travelers to the downtown or bypassed area;
- Development plan or “main street” program including incentives for infill development;
- Pedestrian, bicycle, and transit facilities and amenities;
- Community character, including the addition of street trees, street furniture, and gathering places as well as controlling traffic speed and minimizing pedestrian crossing distances; and
- Infrastructure maintenance.

H. PD&E ENHANCEMENTS

1. Enhancement: ***Perform comprehensive benefit-cost analysis***

A benefit-cost analysis is a mechanism for weighing the benefits of a transportation project against its costs considering common factors such as travel time, safety, and vehicle costs. This analysis, performed as part of the environmental impact assessment during the PD&E Phase often fails to address land use, accessibility, noise and air emissions, and barrier effects - factors that affect livability and community character. A benefit-cost analysis of a transportation action could be more comprehensive by including factors of community concern.

The Victoria Transport Policy Institute publishes the *Transportation Cost and Benefit Analysis Techniques, Estimates and Implications [Second Edition]*. This comprehensive resource for benefit cost analysis of transportation actions provides transportation costs for twenty-three transportation cost categories and “categorizes these costs according to whether they are internal (users bear them directly) or external (imposed on non-users), variable (related to the amount of travel) or fixed, and market (involve goods regularly traded in

competitive markets) or non-market.”⁸ Table 7 describes each of the categories addressed. Land use is specifically addressed due to the cost of sprawl often caused by increased accessibility to an area.

Resource: *Transportation Cost and Benefit Analysis Techniques, Estimates and Implications [Second Edition]*, Victoria Transport Policy Institute. Updated January 2009. <<http://www.vtpi.org/tca/>>

Table 7. Transportation Cost Categories

Cost	Description
Vehicle Ownership	Fixed costs of owning a vehicle.
Vehicle Operation	Variable vehicle costs, including fuel, oil, tires, tolls and short-term parking fees.
Operating Subsidies	Financial subsidies for public transit services.
Travel Time	The value of time used for travel.
Internal Crash	Crash costs borne directly by travelers.
External Crash	Crash costs a traveler imposes on others.
Internal Activity Benefits	Health benefits of active transportation to travelers (a cost where foregone).
External Activity Benefits	Health benefits of active transportation to society (a cost where foregone).
Internal Parking	Off-street residential parking and long-term leased parking paid by users.
External Parking	Off-street parking costs not borne directly by users.
Congestion	Congestion costs imposed on other road users.
Road Facilities	Roadway facility construction and operating expenses not paid by user fees.
Land Value	The value of land used in public road rights-of-way.
Traffic Services	Costs of providing traffic services such as traffic policing, and emergency services.
Transport Diversity	The value to society of a diverse transport system, particularly for non-drivers.
Air Pollution	Costs of vehicle air pollution emissions.
Greenhouse Gas Pollution	Lifecycle costs of greenhouse gases that contribute to climate change.
Noise	Costs of vehicle noise pollution emissions.
Resource Externalities	External costs of resource consumption, particularly petroleum.
Barrier Effect	Delays that roads and traffic cause to nonmotorized travel.
Land Use Impacts	Increased costs of sprawled, automobile-oriented land use.
Water Pollution	Water pollution and hydrologic impacts caused by transport facilities and vehicles.
Waste	External costs associated with disposal of vehicle wastes.

Source: *Transportation Cost and Benefit Analysis Techniques, Estimates and Implications [Second Edition]*, Victoria Transport Policy Institute. Updated January 2009. <<http://www.vtpi.org/tca/>>

IV. STATE RULES, PLANS, POLICIES, AND PROCEDURES

Strict adherence to several existing state policies result in bypass construction including the Florida Statewide Minimum Level of Service (LOS) Standards and Strategic Intermodal System (SIS) Criteria and Thresholds, and the Florida Intrastate Highway System (FIHS) criteria. Modifications to such policies may foster more deliberate consideration of bypass construction.

I. LEVEL OF SERVICE

Rule 14-94, Florida Administrative Code (F.A.C.) contains the Florida Statewide Minimum Level of Service Standards pertaining to state roads. Although in June 2011, the Florida Legislature eliminated state-mandated

⁸ *Transportation Cost and Benefit Analysis Techniques, Estimates and Implications [Second Edition]*, Victoria Transport Policy Institute, Updated January 2009. Web 20 Jun. 2011. <<http://www.vtpi.org/tca/>>

concurrency on transportation facilities, local governments have the option to continue concurrency requirements for local roads as well as state roads running through their jurisdiction. Concurrency will continue to be addressed through local government comprehensive plans with FDOT providing comment and technical guidance when “proposed plan amendments affect facilities on the strategic intermodal system.” (Section 163.3180 (5)(h)1) Florida Statutes (F. S.).

Florida Statewide Minimum Level of Service Standards in Rule 14-94, Florida Administrative Code (F.A.C.) play a crucial role in the consideration of bypass construction, because roadways traversing small- and medium-sized communities often fall below the required LOS. Bypass construction is often proposed by FDOT to return state highway operation to minimum LOS standards, particularly on the SIS. These standards call for no less than LOS C on SIS highways urban areas or communities and no less than LOS B in rural areas. The result is that even short periods of increased traffic during the peak hour may trigger an LOS deficiency in these areas, calling for major transportation improvements, and increasingly, a bypass.

Recent legislation leaves establishment of transportation concurrency up to local governments that will need technical guidance. Some local governments may consider existing State minimum LOS standards too restrictive, fearing a roadway bypass would steer business away from bypassed areas. Viable alternatives may be one of those permitted by existing statutes, such as a transportation concurrency exception area (TCEA) or a multimodal transportation district (MMTD). The following, more flexible approach to LOS, particularly in small- and medium sized communities, should be considered.

- *Revise recommended SIS LOS standards, particularly within defined areas (i.e., small- and medium-sized communities, particularly urban core and activity areas).*
- *Require development and implementation of a corridor access management plan as a first step in managing congestion and improving level of service.*

J. STRATEGIC INTERMODAL SYSTEM

Another potential policy change falls within the realm of policies established specifically for establishing and implementing Florida’s Strategic Intermodal System including the Adopted SIS Criteria and Thresholds and the Community and Environment Screening Criteria. According to the FDOT Adopted SIS Criteria and Thresholds, “to be designated as a SIS highway corridor, a roadway must meet minimum size criteria and community and environment screening criteria.”⁹ The SIS Highway Corridor criteria address among other things, vehicle volume, truck percentage of traffic, and average annual daily truck traffic.

Consideration of the amount freight movement and through trips reflects the primary SIS purposes of interregional freight movement and regional travel. In small- and medium-sized communities where freight and through traffic are perceived to be the cause of traffic congestion, it may be best to clarify the amount of traffic attributable to through trips before considering a bypass as the solution. Such identification may be accomplished in these communities using methods such as a license plate survey, on-site interviews, or on-site observation (see Table 6). In addition, parameters establishing acceptable levels of freight and through vehicle movement would offer more specific guidance. The following policy modification addresses the consideration of freight and through trips.

- *Establish parameters for the amount and frequency of freight movement and through trips within a given context that creates an adverse impact on the SIS.*

⁹ <http://www.dot.state.fl.us/planning/sis/strategicplan/criteria.pdf>

The Community and Environment Screening Criteria¹⁰ for SIS facilities addressing community livability reference corridors serving “high volumes of freight.” Notably, one of the criteria specifies:

“Corridors and connectors should be designated, designed, and constructed in such a way as to avoid or minimize negative impacts and preserve the function and character of local communities, using processes such as the Efficient Transportation Decision-Making process as a tool beginning in early planning phases of a project. SIS corridors serving **high volumes of freight** traffic should consist of facility types designed to accommodate freight movements, and **should not pass through residential and commercial areas with high levels of pedestrian activity or other activities sensitive to the noise, vibration, emissions, and safety impacts associated with freight movement.** Except where supported by local community plans or necessary for connections to transit hubs, through passenger trips should be accommodated by major arterials and limited access facilities, and should be **discouraged from using streets primarily intended to serve local vehicular, bicycle and pedestrian traffic.** **Where the SIS designation process identifies an existing transportation connector between two SIS facilities that does not conform to this criterion, the process shall identify the nonconformity as a gap in the SIS to be filled by a connector conforming to the criteria.”** (*emphasis added*)

This criterion suggests that accommodating “high volumes” of freight is incongruous with livability characteristics and establishes that freight should not pass through areas of high pedestrian activity or other sensitive activities – areas that typify small- and medium-sized communities. The criterion further discourages through passenger trips from these same areas with no reference as to the acceptable amount. Finally, the criterion states that where such conditions exist, the “gap” is “to be filled by a connector conforming to the criteria.” Thus, bypasses are a natural outcome of this criterion.

In many cases, a SIS-facility constitutes the “Main Street” of a small- or medium-sized community that is made up of “residential and commercial areas with high levels of pedestrian activity.” A bypass may or may not be the appropriate solution in such a situation and should be evaluated on a case-by case basis. Solutions have been developed that allow freight and through passenger trips to co-exist with the community. A rational analysis of individual cases where freight and through passenger trips traverse small and midsize communities should be considered. The proposed revised criterion below may also be considered:

- *Corridors and connectors should be designated, designed, and constructed in such a way as to avoid or minimize negative impacts and preserve the function and character of local communities, using processes such as the Efficient Transportation Decision-Making process as a tool beginning in early planning phases of a project.*
- *SIS corridors serving high volumes of freight traffic should consist primarily of facility types designed to accommodate freight movements, and, generally, should not pass through residential and commercial areas with high levels of pedestrian activity or other activities sensitive to the noise, vibration, emissions, and safety impacts associated with freight movement. Where SIS corridors pass through small- and medium-sized communities and serve as the “main street,” a corridor study should be performed to analyze impacts and identify potential solutions.*
- *Except where supported by local community plans or necessary for connections to transit hubs, through passenger trips should be accommodated by major arterials and limited access facilities, and should be discouraged from using streets primarily intended to serve local vehicular, bicycle and pedestrian traffic.*

¹⁰ <http://www.dot.state.fl.us/planning/sis/strategicplan/criteria.pdf>, p. 38.

In some cases, travel demand on highways that traverse small- and medium-sized communities could be alleviated by improvements on parallel facilities that are not part of the SIS or the SHS. A policy change should be considered to allow SIS funding to be spent off-SIS on facilities/projects that would relieve demand on SIS facilities.

K. FLORIDA INTRASTATE HIGHWAYS

Roadways that are a part of Florida's Strategic Intermodal System (SIS) as well as the Florida Intrastate Highway System (FIHS) are subject to criteria established for the SIS¹¹ and FIHS design criteria,¹² which are currently being fully absorbed into the SIS. When additional capacity is needed due to failure to meet local government adopted level of service standards, any increase in capacity requires that the roadway be upgraded to meet FIHS standards and criteria and the mobility objectives of the SIS. Many existing transportation facilities fail to meet these standards and criteria, particularly in terms of design speed, geometric design, access management, and intersection design.

The FIHS standards and criteria do offer the option of applying FDOT's *Transportation Design for Livable Communities* (TDLC)¹³ when appropriate. Applicability of TDLC techniques for the network, corridor, reducing speed or traffic volume, and encouraging multimodal travel is indicated in the guidance. While many of the techniques ranging from shared use paths to incorporating transit-oriented design are considered appropriate for SIS roadways, some are not considered appropriate, particularly lower speed limits and curvilinear alignments. The criteria state, "The design speed for controlled access facilities shall be at least 65 MPH (110 km/h) in rural areas and at least 50 MPH (80 km/h) in urban and urbanized areas." A recommended modification to this policy would be the following:

- *A lower speed limit may be considered when the facility serves as the main street of a small-or medium-sized community.*

L. POTENTIAL STATE BYPASS POLICY

Several existing state policies influence the consideration and construction of bypass roadways and Florida may benefit from a new state policy or modification of existing policies. This section addresses consideration of several options and, in some cases, includes model policy language.

Some states, including California, Texas, and Vermont have policies directly related to the consideration and construction of bypasses embedded in state statute. Such policies address authorization, community consent, and signage for the bypassed area. Although Florida has no guiding policy in place, in statute or otherwise, a bypass policy for the state could clarify the conditions under which a bypass may be considered as well as provide guidance for appropriate analyses to be performed.

The model language provided below establishes that bypasses should only be considered on the Strategic Intermodal System under certain circumstances and, when constructed, should be limited access facilities. The language supports SIS objectives of moving people and goods among markets by ensuring that a bypass is

¹¹ <http://www.dot.state.fl.us/planning/sis/strategicplan/criteria.pdf>

¹² *Development of the Florida Intrastate Highway System*, Topic Number 525-030-250-f, Florida Department of Transportation, Systems Planning Office (2002)

¹³ "Plans Preparation Manual." January 1, 2010. Florida Department of Transportation. Web 15 Aug. 2011.

<<http://www.dot.state.fl.us/rddesign/PPMManual/PPM.shtm>>

constructed only when mobility on a SIS roadway is seriously hampered by congestion through small towns or activity centers and when the resulting bypass will not cause serious environmental damage or facilitate sprawl. Limiting access on bypasses will help to maintain the mobility sought by constructing the bypass; however, only strong land use planning by affected local governments will minimize potential urban sprawl.

- *A highway bypass should be considered only in the following circumstances:*
 1. *Pursuant to a memorandum of agreement with affected local governments, a multimodal corridor plan has been developed and implemented on the main route to control access, support concentrated development patterns, enhance connectivity, address signage, maintain downtown vitality, and encourage transit use where appropriate; and,*
 2. *The facility to be bypassed is part of the Strategic Intermodal System and the investment is needed to reach long range goals and objectives (mobility and connectivity); and*
 3. *The bypass will be a limited access facility accompanied by access management controls at interchange locations and appropriate signage to direct travelers to the business district.*
- *Bypasses may be appropriate in a small number of circumstances including:*
 1. *Where there is a high percentage of through trips and the bypass would provide significant relief from traffic congestion and/or where there are marked adverse effects due to heavy truck traffic; and*
 2. *Where construction of a bypass would not generate undue environmental impacts or facilitate urban sprawl.*

Once a bypass alternative is chosen, FDOT and local governments with jurisdiction over land in the vicinity of the planned bypass should enter into cooperative agreements. These agreements could include plans and strategies to address land use and transportation considerations along the bypass corridor, such as interchange management plans, access management plans, and master plans and/or overlay zones for the bypass corridor.

V. CONCLUSION AND RECOMMENDATIONS

The solution to transportation capacity needs on Florida's Strategic Intermodal System roadways in small- and medium-sized communities is increasingly a bypass. However, a bypass may open up areas of undeveloped land leading to sprawl and redistribution of the area's economic activity. Indirect impacts of potential bypass construction should be thoroughly analyzed and understood by the community, stakeholders, and FDOT so that issues are resolved or other alternatives are chosen.

A few enhancements to FDOT's existing Sociocultural Effects Evaluation process may result in a more comprehensive analysis that helps all stakeholders more thoroughly understand potential bypass impacts on small- and medium-sized communities. Strategies to resolve the impact-related issues can then be addressed through coordinated agency efforts. Recommended enhancements to the SCE Evaluation include:

1. *Share information regarding potential bypass impacts during all project phases.* Stakeholders, community residents, and planning analysts will all have pre-conceptions regarding bypass impacts on the community. Many of these preconceptions are addressed in available literature and should be shared with interested parties throughout the process.

2. *Expand the recommended EST buffer, specifically for land use and mobility, when a bypass is proposed.* Indirect land use and mobility impacts of bypass construction that occur near the bypass, the bypassed roadway, and throughout the transportation network of the community are rarely captured in the EST buffer. An expanded study area is necessary to capturing indirect land use impacts.
3. *Consider growth inducement potential during all phases with more detailed analysis during the PD&E phase.* Determining the potential for growth inducement provides information on which future planning decisions can be based regardless of which transportation alternative is chosen.
4. *Determine bypass consistency with local comprehensive plans.* Identification of all relevant policy issues related to consideration of a bypass alternative will help to determine if the project is aligned with the community's vision.
5. *Analyze potential change in business customers.* Perhaps more telling than an economic impact analysis that is by nature more regionally accurate, an analysis of the potential change in business customers may reveal the amount of local interaction from travelers on the existing facility that may be diverted to a bypass.

The SCE Evaluation requires the community analyst to suggest methods to avoid, minimize, mitigate, or enhance potential transportation project impacts. Strategies for addressing potential project impacts should be identified and pursued, regardless of the lead agency involved in implementation. The following measures offer possible methods for addressing issues potentially resulting from bypass construction.

1. *Develop and implement mobility plan.* Through a mobility plan, a local government can adopt land use and transportation strategies to address the many potential bypass impacts.
2. *Control interchange access to the bypass.* A bypass with no interchanges provides no new access to areas of undeveloped land and is, therefore, unlikely to contribute to sprawl.
3. *Plan for maintaining economic viability of bypassed area.* Bypassed areas, such as small downtowns, can experience economic difficulties as the area adjusts to a decline in business from traffic that has been diverted to a bypass. It is important for the community to have a detailed plan in place to encourage continued growth and development.

During the PD&E phase, a cost-benefit analysis that includes the cost of sprawl will offer decision-makers more information for consideration. Modifications to certain FDOT policies including the Florida Statewide Minimum Level of Service (LOS) Standards and Strategic Intermodal System (SIS) Criteria and Thresholds, and the Florida Intrastate Highway System (FIHS) criteria may foster more deliberate consideration of bypass construction. A new statewide policy is recommended outlining when a bypass is considered appropriate. Recommended existing policy modifications include:

1. Level of service standards
 - a. *Revise recommended SIS LOS standards, particularly within defined areas (i.e., small- and medium-sized communities, particularly urban core and activity areas).*
 - b. *Require development and implementation of a corridor access management plan as a first step in managing congestion and improving level of service.*
2. Strategic Intermodal System
 - a. *Establish parameters for the amount and frequency of freight movement and through trips within a given context that creates an adverse impact.*
 - b. *Modify the Community and Environment Screening Criteria for SIS facilities addressing community livability.*

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