

# Chapter 3:

## Plan Development Process





## Plan Development Process

### INTRODUCTION

This chapter provides an overview of the plan development process that was used to facilitate the development of the 2035 LRTP Update. This includes a summary of the overall approach, tools, and assumptions made to guide the preparation of the plan. Other important issues to the plan development process also are highlighted.

### KEY PLANNING TOOLS

Several tools were used throughout the Needs Plan and Cost Affordable Plan development process. These tools were used to forecast traffic conditions in the future, analyze those traffic conditions based on the improvements, and display the results using maps to convey information in a format fit for general understanding. **Figure 3-1** illustrates how each tool was applied in the evaluation process. These tools include:

- Sarasota Manatee Charlotte (SMC) Regional Planning Model, Version 7, a regional travel demand forecasting model used to forecast roadway conditions in the future. This model is based on the Florida Standard Urban Transportation Model Structure (FSUTMS) in a CUBE environment. Refer to the Technical Support Appendix for additional documentation on SMC.
- ArcMap Geographic Information Systems (GIS) software, used to create maps and perform calculations based on geographic features such as length, acreage, and complex spatial overlay calculations.
- Visual Transportation Inventory Management and Analysis Software, or vTIMAS, a multi-function GIS integrated tool previously developed by Tindale-Oliver & Associates, Inc. that was used to analyze forecasted roadway operating conditions.

### KEY PLANNING ASSUMPTIONS

Selected key planning assumptions are highlighted below, along with references where more detailed information and data are available.

#### Transportation and Land Use

The 2035 LRTP update was based on an extensive analysis of existing land uses, build-out densities and intensities, and developable vacant land by land use plan code. Additionally, this analysis considered the impact of approved Developments of Regional Impact (DRIs) and other major developments, as well as future population and employment projections for Charlotte County.

The sources for future population and employment projections were provided by Charlotte County. The result of this work effort is a set of socioeconomic data that reflects the use of vacant developable land in Charlotte County, along with the associated land uses that can be built on this vacant land. This was accomplished through the use of a land use allocation model. The development of socioeconomic data for Charlotte County and the use of the Charlotte County Land Use Allocation Model are documented in Chapter 4 of this Plan.

#### Development of Roadway Network Alternatives

The development of the final 2035 and 2025 Cost Feasible Plan Networks reflects several iterations and refinements of various network alternatives. The following network alternatives were developed and evaluated, using vTIMAS, as part of the plan development process:

- Base Year (2007) Network
- Existing (2010) Network
- Existing plus Committed (2015) Network
- 2035 Needs Plan Network
- 2035 Cost Feasible Plan Networks
- 2025 Interim Cost Feasible Plan Networks

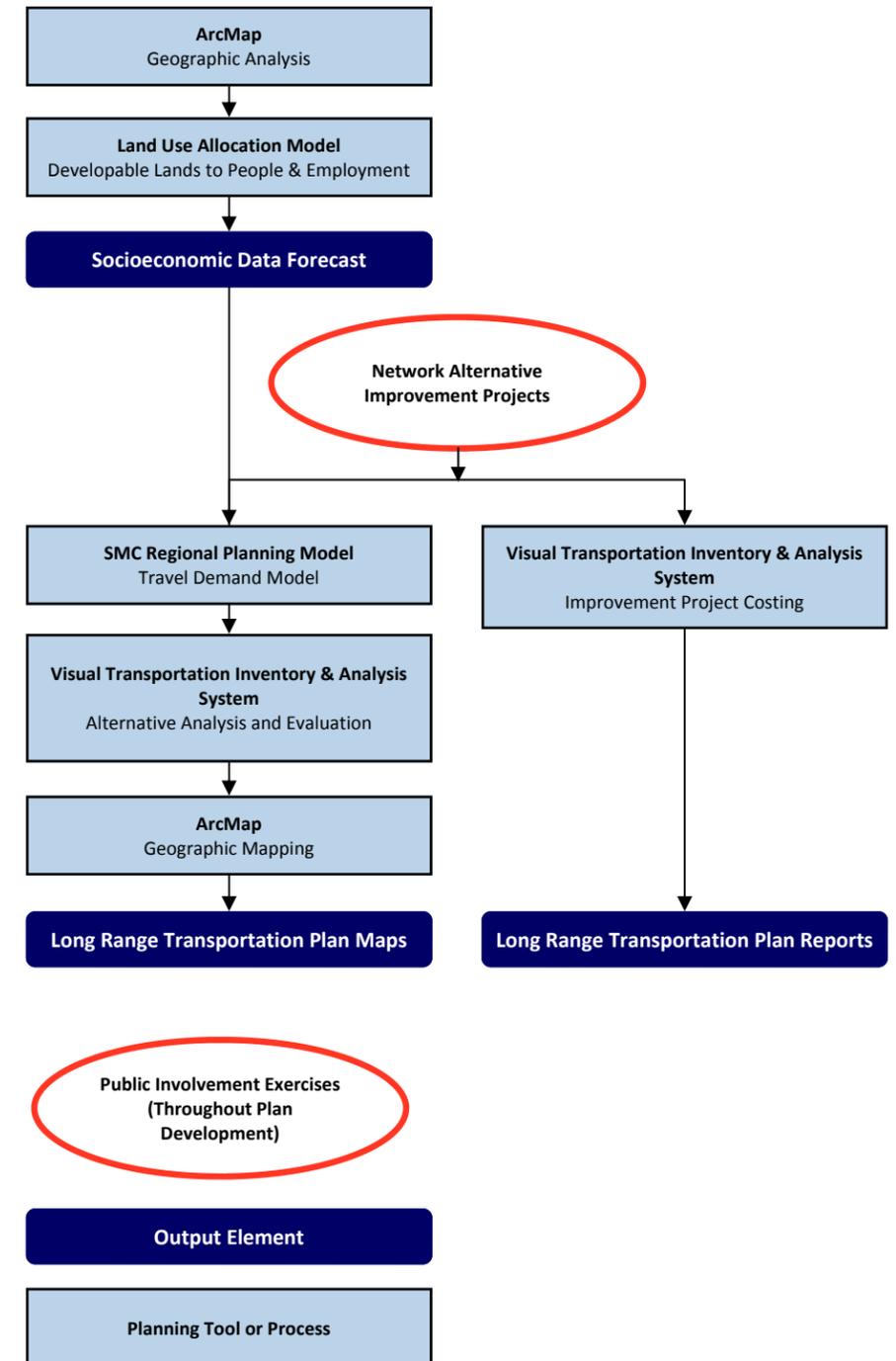


Figure 3-1: Planning Tool Applications

The future networks were developed cooperatively with guidance from the Technical Advisory Committee (TAC), the Citizens Advisory Committee (CAC), and the MPO Board. In addition, several public workshops and discussion groups were held to obtain input from citizens of Charlotte County throughout the plan development process. The public participation process is summarized in Chapter 10.

#### **Linking and Importing Model Volumes and Adjustment Process**

One of the most significant processes in vTIMAS is called FSUTMS Volumes Input, or FVolsIn. This process links the output of a FSUTMS model to vTIMAS and imports the raw model volumes. In Charlotte County, traffic volumes were reviewed and adjusted or “smoothed” to correct for imperfections in the model validation process. These adjustments were made using an accepted methodology published by the Transportation Research Board in Technical Report #255.

Seven “smoothing” methodologies were used to make adjustments as appropriate, including:

- Future Model Volume Adjusted to Average Annual Daily Traffic (AADT) = C
- Difference Method (D) = (A - B) + C
- Ratio Method (E) = (A / B) x C
- Average Method (F) = (D + E) / 2
- Exponential Method (G) = B [1 + (FGR / 100)] (AY - AB)
- Straight Line Method (H) = B [1 + ((AY - BY) (FGR / 100))]
- User Select (U) = User Defined AADT

where:

A = Base Year AADT

B = Base Year Model Volume adjusted to AADT

C = Future Model Volume adjusted to AADT

FGR = Future Growth Rate

AY = Analysis Year

BY = Base Year

Once adjusted volumes are developed using one of these procedures, an additional manual review is conducted for reasonableness.

#### **Level of Service Analysis**

The vTIMAS System was designed to accept inputs and perform generalized and conceptual level of service (LOS). The generalized LOS uses the FDOT Generalized Volume Tables to identify the LOS for a roadway segment and facility. The software also has the ability to run conceptual (ART-PLAN) level of service analysis; however, this type of analysis was not performed as a part of this LRTP, except as required for the Congestion Management Process.





### Cost and Revenue Projections

Significant efforts were devoted to the development of standard and reasonable assumptions for the projections of costs and revenues. The vTIMAS software can calculate the roadway costs for right-of-way, design, construction, and unique costs through calculations based on length, total lane miles, added lane miles, or percent of another cost (such as percent of construction cost). The module also accommodates alternative costing methods such as the use of manual costs.

Cost and revenues projections were prepared for each appropriate element of the LRTP, including:

- Highways
- Public transportation
- Bicycle and pedestrian facilities
- Multi-use trail facilities
- Intelligent Transportation Systems (ITS)
- Intersection improvements
- Transportation Demand Management (TDM)
- Advance right-of-way acquisition

More information on unit cost assumptions and non-roadway costs used in this LRTP can be found in Chapter 5.

### OVERVIEW OF THE PLAN DEVELOPMENT PROCESS

This LRTP includes the 2009 and 2014 Existing + Committed networks that were used as a base for modeling and costing purposes. Several tools were used to develop assumptions, evaluate transportation conditions, and display roadway network alternatives for the 2035 Needs Plan, 2025 Interim Cost Affordable Plan, and the 2035 Cost Affordable Plan.

This plan was developed using technical analysis, public involvement, and the expertise of MPO staff and MPO consultants. The multimodal improvements identified in the plan aim to increase the transportation quality for all of Charlotte County.