2. Defining the Ask

Work related to travel modeling and forecasting is a multifaceted process that begins with addressing various stakeholders' needs. These stakeholders should be considered consumers of model data as they will use the products of the model to inform their decision-making. These consumers include the Florida Department of Transportation (FDOT), Metropolitan Planning Organizations (MPOs), municipalities, and other public sector agencies. Private sector entities, such as developers, also use modeling data, often complying with specific laws or regulations. The type of activities pursued by these consumers significantly influences whether travel modeling and forecasting is the most suitable approach to meet their needs. This chapter guides readers through the process of "defining the ask" including establishing the need for travel modeling and forecasting, understanding the consumer, and selecting the appropriate modeling tool when travel demand modeling efforts are necessary.

The use of travel demand models can be time consuming; however, there are some efforts where a travel demand model is the only suitable tool. As a Stakeholder, you should understand how the model is being used, what data the model will generate, and whether those data meet your needs. It is not necessary to understand how the model works, but you must clearly communicate your needs so the Project Coordinator and the Modeler can provide you with useful information.

The Need to Use a Model

Within the overall realm of transportation planning and analysis, there are several core activities that can warrant the use of a travel demand model. These include:

- Metropolitan Transportation Plan (MTP) updates.
- Scenario planning.
- Project-level traffic forecasting.
- Interchange Access Requests.
- NEPA alternatives analysis.
- PD&E.
- Site Impact Analysis.

Some types of projects may have more specific guidance available related to whether to incorporate modeling for their purposes and how to do so, such as the Project Traffic Forecasting Handbook, the Multimodal Transportation Site Impact Handbook, and the Interchange Access Request User's Guide. Make sure that your modeler is familiar with the appropriate guidance.

There are other specialized use cases and studies for which a travel demand model may also be appropriate. While it is not possible to anticipate every possible use case in this document, a travel demand model may be appropriate when a project requires information concerning the following:

- The movement of people and/or goods.
- Along a regional transportation system.
- Over a span of time measured in decades.
- When the goal is to understand how the public will want to use the system.
- And then plan the future system accordingly.

Project Initiation

When a project stakeholder identifies a need that they believe can be met by using a travel demand model, the stakeholder will approach the individual responsible for coordinating project activities related to modeling. This project coordinator will typically be an agency project manager and may or may not be a modeler themselves. The project coordinator will then initiate the project following the general steps outlined in the sidebar to the right.

It is important to note that the Project Coordinator often oversees a larger project of which travel demand modeling only plays a part. The guidance in this document deals specifically with the modeling aspect of those projects.

Initiate Project

1. Clarify the purpose of the project.
2. Identify required metrics.
3. Determine if the model is the appropriate tool.
4. Identify the appropriate model.
5. Define scenarios.
6. Identify resources needs.
7. Develop scope.

Clarifying the Project

Before beginning any travel demand modeling effort, you should understand the purpose of the effort. Often, stakeholders express their needs in broad terms. This leaves room for interpretation and can result in wasted effort if the intentions behind the modeling request are misunderstood. To prevent this, it is important to engage with the individuals requesting the modeling effort and address the following:

Identify Stakeholders: The principal stakeholder in any modeling project will be the individual requesting that the modeling work be done. They will have a question that will need to be answered or an effort for which data concerning forecast travel behavior will be vital. This principal stakeholder will typically be an FDOT manager or reviewer, or an MPO director or planner. There may be other intra-agency and inter-agency partners that are also stakeholders. Beyond the stakeholders, there are also model data consumers, typically members of the public, with an interest in the outcomes of a project where the model may play a key role. The stakeholders may have these consumers in mind when considering the questions they want the model to answer.

Clarify the Purpose: Ask what challenges the stakeholders face and what questions they are trying to answer. Are they engaging in systems planning, seeking to evaluate a policy objective,

supporting project delivery, or is there another issue to be addressed? Start by establishing a good sense of the consumer's needs and then focus on the more specific questions the consumer needs to answer. Clarifying the purpose will help to establish which metrics the model needs to generate.

Is the Model Suitable?

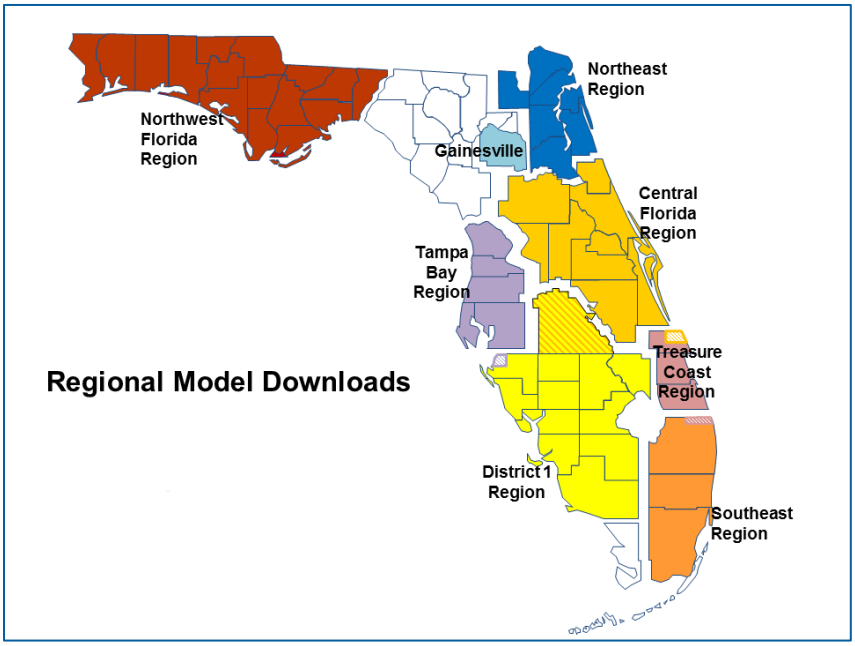
When asked to use the model to support a transportation project, it is important to determine which model to use and the suitability of the model. The model will need to be able to generate metrics that meet needs of the stakeholders and address the purpose of the project. A modeler should be able to clarify whether the model will be able to generate the desired metrics. If a model does not produce the desired metrics for the project, it is typically possible to make minor modifications to the model outputs through post-processing to get at the desired information. If this type of request becomes more common, the model owner should be notified so that they can consider making appropriate enhancements to the model during their next model update. More information concerning model outputs and metrics is available in Chapter 5 of this document.

- As the project coordinator, be prepared to take the lead in identifying key stakeholders and incorporating stakeholder engagement in your scope.
- Determining stakeholder needs prior to starting the project will help in developing an effective and achievable scope of work. Others who have experience doing similar projects may be able to offer insight.
- If you are not a modeler yourself, make sure to engage with someone who is a modeler and can help you understand how the available models can be used to meet the project objectives.

Selecting the Model

The most appropriate model is the one that covers the geographic extent of the project. For example, a traffic forecast being conducted in Hillsborough County should use the Tampa Bay Regional Planning Model as that model contains Hillsborough County. Model boundaries can be confirmed by consulting FDOT's Transportation Forecasting Resource Hub. A map of each model is shown in Figure 1.

Figure 1 Florida's Travel Demand Models (12/19/2024)



Scenario Definition

Scenarios represent the variety of conditions that the model will test to generate the metrics that will answer the questions and meet the stakeholders' needs. Specific guidance on setting up and running model scenarios is given in Chapter 4 of this document. Defining scenarios should be done in full consideration of the requirements of the project. The purpose of modeling scenarios is to compare the results between each scenario that makes it possible to make meaningful decisions. At this point in the process, it is sufficient to identify the number of scenarios anticipated and the overall concepts of what each scenario is intended to cover. This may require additional consultation between the project coordinator, stakeholders, and/or the modeler.

Scenarios should address the following:

- The years that need to be analyzed.
- The network conditions (which projects / alignments).
- Any changes to land use data.

The **scenarios should be defined according to the needs of the project** and not specifically with respect to the model. For example, a project forecasting effort will need to provide forecasts for the opening year and design year of the project. The scenario definitions should include a description of the project, the specific years corresponding to the opening year and the design year, and which years should be modeled without the project and then with the project. Note that the scenario definition in this case does not refer to the model's scenario years. The model, used for the traffic forecast, may not have scenario years corresponding with the project's opening year or design year. There are several ways to address this in the modeling and the modeler will need to account for this when they develop their approach.

Resource Needs

In addition to the model that will be used for the project, the project coordinator should identify other resource needs that could impact the ability to deliver the project. Consider the following:

Staffing—Will the modeling be done in-house, or will it need to be assigned to others, such as a consultant? A single modeler can typically handle simple requests and one-off model runs. Larger projects, such as complex traffic forecasts or MTP updates, will require a team of several modelers who specialize in different aspects of travel demand modeling.

Data—What additional data are needed to develop the model scenarios? These data needs are not as extensive as those required during model development and are typically focused on areas in and around the project study area. Chapter 4 of this document provides more information on the types of data typically used to prepare scenarios.

Time—How long will the modeling take? A simple one-off request asking for planning-level volumes on a particular road may only require a couple of days to accomplish. More complex efforts, like modeling for an MTP, may take months. Most modeling efforts are embedded within larger projects that use model outputs at different stages. This should be kept in mind as modeling activity may occur with breaks in between waiting for feedback from the rest of the project team. Depending on the project, time may also need to be set aside for model review and subarea refinement.

Scoping

When preparing a scope that incorporates modeling, be sure to include the following:

- State the purpose of the project and how the modeling is expected to be used (e.g., to generate project-level traffic forecasts for PD&E, to support an MTP update, etc.).
- Identify the model to be used, including which version of the model.
- Indicate the number of scenarios expected and provide a brief description of each. The goal is to indicate to the modeler how many scenarios they will need to prepare, run, and analyze.
- Note any specific project requirements, such as guidance, procedures, or data.

Model Approach

Once aware of the scope for a project using a travel demand model, a modeler will need to develop an approach as outlined in the sidebar to the right that is able to satisfy the scope. Depending on the project's needs, the modeler may need to consider what adjustments to the model may be required. Determine the suitability of the available model by consulting the model's documentation for the topics shown in Table 1 and contacting the model owner with any questions.

Develop Approach

1. Download appropriate model from FDOT Transportation Forecasting Resource Hub.
2. Familiarize yourself with model capabilities.
3. Confirm if specific guidance exists for project.
4. Specify an approach that satisfies available guidance and standard industry practices.

Table 1 Model Considerations

Criterion	Considerations
Geographic Coverage	The model must cover the geographic area being studied. Whether it is a corridor, a mix of corridors, a city, a county, an MPO, or some other geographically defined space, the model's boundary must contain all relevant areas. The model will not generate data for areas not within the model boundary.
Requisite Features	The model must generate the kinds of data required to provide information to the consumer. This may include key measures of effectiveness, proper temporal resolution (hourly, by period, daily, etc.), accounting for tolls, calculating transit ridership, etc.
Adequate Validation	Regional models are calibrated and validated at a regional level. If a study is focused on a specific subarea of the model or a specific set of corridors, further validation focused on those specific areas may be required.
Future Year Data	While travel demand models are typically provided with data for future years, not all future years required by the consumer may be available. These data include socioeconomic data as well as future year network data.

Addressing model suitability may include expanding the model boundary, validating a subarea, or preparing model data for a specific future year. This is also the time to assess the metrics produced by the model and determine if specific post-processing will be needed to make the model outputs suitable for the project. The effort to modify a model to make it suitable for a particular project should be communicated clearly to the project coordinator and the associated costs and schedule should be incorporated into any related scope of work.

- As the project coordinator, be prepared to take the lead in identifying key stakeholders and incorporating stakeholder engagement in your scope.
- Determining stakeholder needs prior to starting the project will help in developing an effective and achievable scope of work. Others who have experience doing similar projects may be able to offer insight.
- If you are not a modeler yourself, make sure to engage with someone who is a modeler and can help you understand how the available models can be used to meet the project objectives.

Model Output Assessment

To adequately answer the questions that model consumers are asking and provide them with the information they need, conduct an assessment of the outputs generated by the model. Some models may already directly generate outputs that can be used to provide the information required for the project. Typical standard outputs include modeled volumes, vehicle-miles-traveled, and vehicle-hours-traveled. Specific models may generate outputs of particular interest to the regions for which the models were developed. Often, a project will require information that is not directly generated by the model. It is important to understand what these are and to develop an approach to derive these metrics from the model through post-processing or other means.

Another dimension to this assessment is determining how the information or data from the model can be presented to the stakeholders. Travel demand models are data-intensive tools, and often the data generated by the model may not be readily understood by non-modelers. Communicate with the project coordinator to determine how best to present or communicate model information so that project stakeholders can use the products of the model to make informed decisions. More information about model outputs and how to communicate them is given in Chapter 5 of this document.

Consider the following questions when deciding the suitability of the model for the project.

- What plan, program or project is being undertaken?
- What are the details concerning the overall planning context?
- What are the desired performance measures?
- What are the schedule and budgetary constraints?
- What methods and tools are the stakeholders already using?

Modeling Approach Checklist for Modelers

Item	Y/N
Have I read the scope?	
Am I using the model as specified by the scope?	
Did I download the model from: https://www.fdot.gov/forecasting/fl-transportation-forecasting-resource-hub/models	
Have I reviewed the model's documentation, or have I previously worked with this model?	
Do I have the requisite hardware and software to run the model?	
Do I know what the default scenarios are (years, network conditions, land use conditions) that come with the model?	
Do I know what metrics are required for the project?	
Do I know what the outputs, metrics, and reports are that are generated by the model?	
Have I reviewed the model's validation in the project study area?	
Does my approach account for doing a subarea validation if needed?	
Does my approach account for any differences between the scenarios specified in the scope and the scenarios provided by default with the model?	
Does my approach address additional data needs required to model the scenarios?	
Does my approach account for the effort required to prepare each individual scenario that will be modeled?	
Does my approach address how I will calculate the metrics required by the project?	
Does my approach consider how the metrics will be presented/communicated?	
Have I communicated my approach to the project coordinator?	