

Land Use and Ridership Forecasting: *A briefing*

**Sarasota North-South BRT AA
Land Use Technical Team Meeting**

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Sarasota (SCAT) North-South BRT Alternatives Analysis

Agenda/Items For Discussion

1. Welcome and Introductions
2. Purpose of the Technical Team and Role of the Land Use and Development Working Group
3. Project Goals, Scope and Timeline
4. Data Use and Forecasting Approach
5. Ridership Forecasting Methodology and Scope
6. Traffic Analysis Zone system
7. Transit Data
8. Highway and Street Data
9. Land use and socio-economic data

Welcome and Introductions

SCAT Staff

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Consultant Team Staff

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Purpose and Role of Technical Team

The Tech Team's role is to represent the project stakeholders by providing input and guidance at a technical level to the project

- Assist with assembling or providing data
- Review project assumptions
- Provide feedback on technical work
- Ensure analysis is comprehensive and sensitive to local needs and issues

Role of the Land Use and Development Working Group

- Part of the Technical Team
 - Discuss and review land use/demographic assumptions and input data
 - Ensure project accounts for development appropriately
 - Review ridership forecasting approach
 - Provide data
- Did I mention “Provide Data”?

Project Goals

- Reduce travel times for passengers
- Increase level of transit service to major attractions
- Improve operating efficiencies of transit services
- Support regional economic development by improving transit access to key destinations

Project Scope: Alternatives Analysis

- Identify improvements and alignment options for the proposed BRT project
- Select a “locally preferred alternative”
- Federal law requires completion of AA if pursuing funds
- Opportunity for public input and comment
- Results can be incorporated into Federal environmental review (NEPA)

Project Delivery Timeline

Spring 2008	Select Preferred Alternative
Summer 2008	FTA Approval into Project Development
2009	Complete NEPA Environmental Review
2009-2010	FTA Project Construction Grant Agreement
2011-2012	Initial Project Implementation

Alternatives Analysis Timeline

Fall 07	Definition of Alternatives Ridership Forecast Methodology
Winter 08	Market Research/Data Collection Evaluation of Alternatives <ul style="list-style-type: none">- Ridership- Cost- Community and Environmental- Financial
Spring 08	Select Preferred Alternative and NEPA Scoping
Summer 08	Submittal to FTA Small Starts

Data Use and Forecasting Approach

- **Why do we need forecasts?**
- **What does an Alternatives Analysis require?**
- **What about FTA New Starts/Small Starts?**
- **What does Small Starts require of forecasts?**
- **How does this guide us in this project?**
- **What Data do we need?**

Why do we need Ridership Demand Forecasts?

Demand forecasts provide the primary quantitative indicator of the efficacy of mobility improvements, answering the following:

- How many people are going to ride the project?
- How does the project fit into the overall mobility picture in the region?
- Who does the project serve?
- Who benefits from the project? Who is hurt?
- What confidence do we have in our decisions?

Requirements of Alternatives Analysis

Alternatives Analysis is the planning phase which has the responsibility to

- Evaluate a wide range of potential feasible alternatives (alignments, modes, etc.)
- Provide an analytical basis for selection of a preferred alternative
- Provide a clear path to later planning phases
 - Application to Enter Preliminary Engineering or Project Development phase

FTA New Starts/ Small Starts

Discretionary Funding Source for Capital Transit Improvements, as outlined in 49 CFR 5309

Current proposed rule comes in 3 flavors:

- **New Starts** (>\$75M federal share)
- **Small Starts** (<\$75M federal share)
- **Very Small Starts** (<\$50M total cost, etc.)
- Notice of Proposed Rulemaking is issued

FTA New Starts/ Small Starts: Forecasting Implications

Projects are given an overall rating based on Cost Effectiveness

- Rating based on Mobility Improvement measure
- Transportation System User Benefits (TSUB)
- Quantitative representation of the total aggregate mobility benefit of the project
- Complicated mathematical calculation
- Very Small Starts are automatically cost effective if they meet certain criteria

FTA New Starts/ Small Starts: Forecasting Implications

Each level has different requirements for forecasts

New Starts:

Full regional-model based forecasts with TSUB
for Year of Opening and Long-range Year

Small Starts:

Full regional-model based forecasts with TSUB
for Year of Opening

Very Small Starts:

More limited means tests of project ridership

The Need for this in Alternatives Analysis

Officially, Alternatives Analyses are not New Starts projects, so they do not require all of the mobility measures/cost effectiveness calculation

But...such is used by FTA when evaluating the Application to Enter P.E. (or P.D.) that follows an Alternatives Analysis

So...for all intents and purposes, all of this is required in an AA if FTA New Starts/Small Starts funding is to be a part of the funding.

FTA New/Small Starts Forecasting Requirements: Highlights

Project Justification/Making the Case

- Not quite the same as “Purpose and Need”

Input data is based on regionally adopted forecasts

Use of a suitable disaggregate demand model

Fixed trip distribution across alternatives

Trip pattern data based on recent local surveys

Model parameters must be within acceptable ranges

Suitable review of eventual “Baseline” alternative

Forecasting Issues in Sarasota

- AA Needs to look at a range of alternative concepts
 - Which tool to use to screen alternatives?
 - Which tool to use to develop detailed forecasts?
- Adapting regional model to compute TSUB
- Available Survey and Trip-pattern data
 - How to calibrate/validate
 - Project justification

What Data do we have available to us in Sarasota?

- Available data
 - Regional socioeconomic forecasts (MPO adopted)
 - Transit operating and usage data
 - Data to be collected under §5339 grant
 - Florida Statewide data
 - Other data
- This is where you come in...

Ridership Forecasting Approach and Scope

- Guiding Principles
- Model Development
- Model Application
- Review of existing systems
- Use of Data
- Software considerations

Small Starts AA Forecasting: Guiding Principles

- Existing transit user behavior is best proxy for project user behavior
- On-board survey coupled with detailed ridership counts provides the best snapshot of existing transit user behavior
- Identify markets of new ridership types
- Accurate representation of transit services and access characteristics
- Consistency across alternatives
- Efficient use of existing regional data

Forecasting Approach: Development (Task 5)

- **Research** what other regions have done to identify non-pre-existing ridership
- **Revise** the regional zone system appropriately
- **Represent** the regional highway and transit system accurately and appropriately
- **Render** the on-board survey analytically into assignable trip tables
- **Roll up** the above into a tool suitable for testing alternatives

Forecasting Approach: Application (Task 6)

- **Develop** operational/market characteristics of each alternative (running times, etc.)
- **Depict** coding of each alternative sensitive to operational characteristics
- **Do** forecasts, examine results, and revise as necessary
- **Document** forecast results comparatively
- **Discuss** model findings and approach with committee and with FTA technical staff

Reviewing the Regional TAZ System

- Accessibility to transit is key to understanding demand
 - Review TAZ system in corridor
 - Identify zones to be split for size, lop-sidedness, or transit accessibility issues
 - Work with MPO staff to change zone system
 - Modify highway networks accordingly
 - New Centroid Connectors
 - Modify zonal data (ZDATA) as appropriate

Adapting the Regional Networks

- Review SCM model coding for speeds and configuration
- Add missing facilities used by buses
 - Any added links should be done with FSUTMS coding standards and presented to MPO
- Review and revise coding of access links/centroid connectors
- Code each SCAT and MCAT routes
 - Develop travel time functions to match running times

Using the On-board Survey Data

- Market segmentation by
 - Route/service used
 - Trip purpose
 - Modes of access/egress
 - Origin, Destination, Boarding and Alighting location
 - Demographic variables (income, age, etc.)
 - Time of Day, Day of Week
- Geocode survey records to regional TAZ system
 - Develop assignable zone-to-zone trip tables
 - Assign to coded networks and check results against actual ridership

Using the Ridecheck Data

- Basis for factoring survey records
- Target for trip table assignments
- Basis for ridership forecasts
- Understanding of Transfers

Model Considerations

- Software
 - GIS
 - Model analysis software (CUBE/TP+/Tranplan)
 - Analytical software (spreadsheet/database)
 - SUMMIT (FTA User Benefit Software)
- Elements of the Forecasts
 - Survey-based trip table
 - Incremental ridership based on benefit to markets and derived elasticities
 - Computation of benefits

Involving the FTA Technical Staff

- FTA early involvement increases chances of the project advancing by
 - Helping us contact others who have dealt with similar issues
 - Reviewing assumptions and parameters
 - Identifying trouble-spots or potential pitfalls early
 - Assistance with data management and surveys
 - The more they understand the project, the better able to evaluate its merits
- Involvement to date

Review of Systems and Data

- Traffic Analysis Zone system
- Transit Data
- Highway and Street Data
- Land use and socio-economic data

Goals for this session:

- *Review, discuss and build consensus on approach and data to be used for analysis*
- *Obtain clarity on assumptions*
- *Obtain or arrange to obtain necessary data*

Review of Systems and Data

- Traffic Analysis Zone System
- Transit Data
 - Transit Usage Data
 - On-Board Survey
 - Special Transit Markets/Employers

Review of Systems and Data

- Highway and Street Data

 - Network modifications between 2000 and 2008

 - Year 2007/ 2008 traffic counts, speed, etc.

 - Study area model performance/ speeds

 - Study area congestion level

 - Opening year highway network

 - Future year highway network (adopted SMC model)

- Land use and socio-economic data

 - MPO-sourced Year 2008 SE data (interpolated vs. on ground)

 - MPO-sourced Opening year SE data (anticipated developments)

 - MPO-sourced Future year SE data (adopted SMC model)

 - Additional Development

 - Special Markets (e.g. Airport, Universities, tourist sites etc.)

