



Florida's Mobility Performance Measures Program

- Mobility performance measures are one part of a whole family of measures. Performance measures done by others in the Department include:
 - Safety
 - Pavement
 - Bridge
 - Asset management
 - Environmental concerns

Mobility

- Ability to satisfy the demand to move a person or good



Making trip *or*
satisfying trip
objective

- Modal choice
- Accessibility (indication of the ease of reaching desired locations)
- Adequate time/speed
- Moderate costs
- Equitable
- Knowledge
- Reliable



FOCUS

The focus of this effort is to define and describe user oriented mobility performance measures that treat the transportation system which provides mobility for people and goods.



User Perspective

- From a commuter's perspective, mobility is best described in terms of the time and expenses associated with the journey to work
- For transit users, the essential issues are the ability to reach a destination at the desired times with reasonable costs
- For the shipper, the essential issues are the time, money and reliability of delivery services.



Why We Need Mobility Performance Measures

- Mobility performance measures are "yardsticks" that transportation agencies use to measure their operating results and assess investment options.
- Historically, the Florida Department of Transportation (FDOT) has used highway level of service (LOS) as the primary tool for assessing transportation system performance.

Purposes of Measuring Mobility Performance (1)

- **Systems Planning**

Identify location, scale, & nature of transportation problems and needs

“Help us identify what to do”

- **Evaluate Agency Mobility Performance**

Evaluate program performance as part of overall agency performance

“Identify what are we getting back from our investment?”

“Try to improve how we provide transportation to the people of Florida”

“Make sure we are spending the taxpayers dollars as efficiently as possible”

Purposes of Measuring Mobility Performance

Other

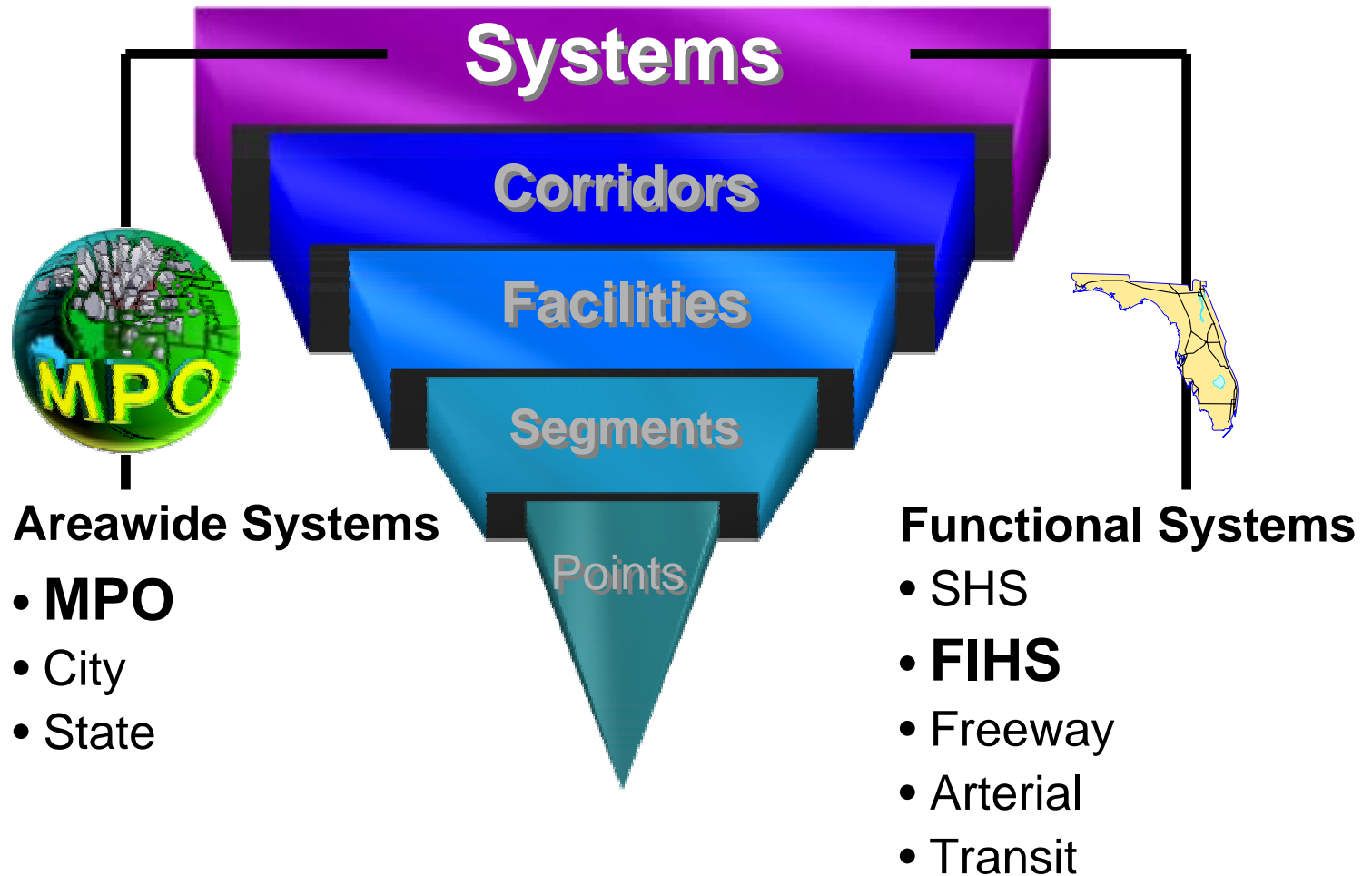
- Design and operational analysis
- Achieve societal goals
- Evaluation of alternatives
- Establish base conditions for alternatives analysis
- Development of impact evaluations
- Commercial vehicle scheduling
- Route & travel choice



Systems Planning / Metropolitan Planning

- Identify the location, scale and nature of transportation problems and needs in order to identify possible solutions to these problems
- Systems planning addresses problems or needs statewide, in an area wide (e.g., metropolitan area) analysis or by functional system [Florida Intrastate Highway System]
- MPO's address many of the same issues as the FDOT at a metropolitan level
- MPO's are responsible for the development of long-range transportation plans that anticipate needs over a 20-year horizon and transportation improvement programs (TIPs) that address needs over a three-to five-year horizon.

Transportation System Hierarchy



Florida's Principles in Developing Mobility Performance Measures



- **User orientation**
- **Understandable to general public**
- **Ability to address multimodal considerations**
- People and goods addressed
- Builds on national research
- Consensus of opinion
- Policy driven process supported by data

Florida's Principles in Developing Mobility Performance Measures



- **Use an incremental approach (FIHS first)**
- Quantifiable
- Fewer performance measures are desirable
- Use of primary and secondary/surrogate measures
- Can be used throughout Department activities
- Can be forecast into the future
- Sensitive to mobility strategies



Use in Determining Needs

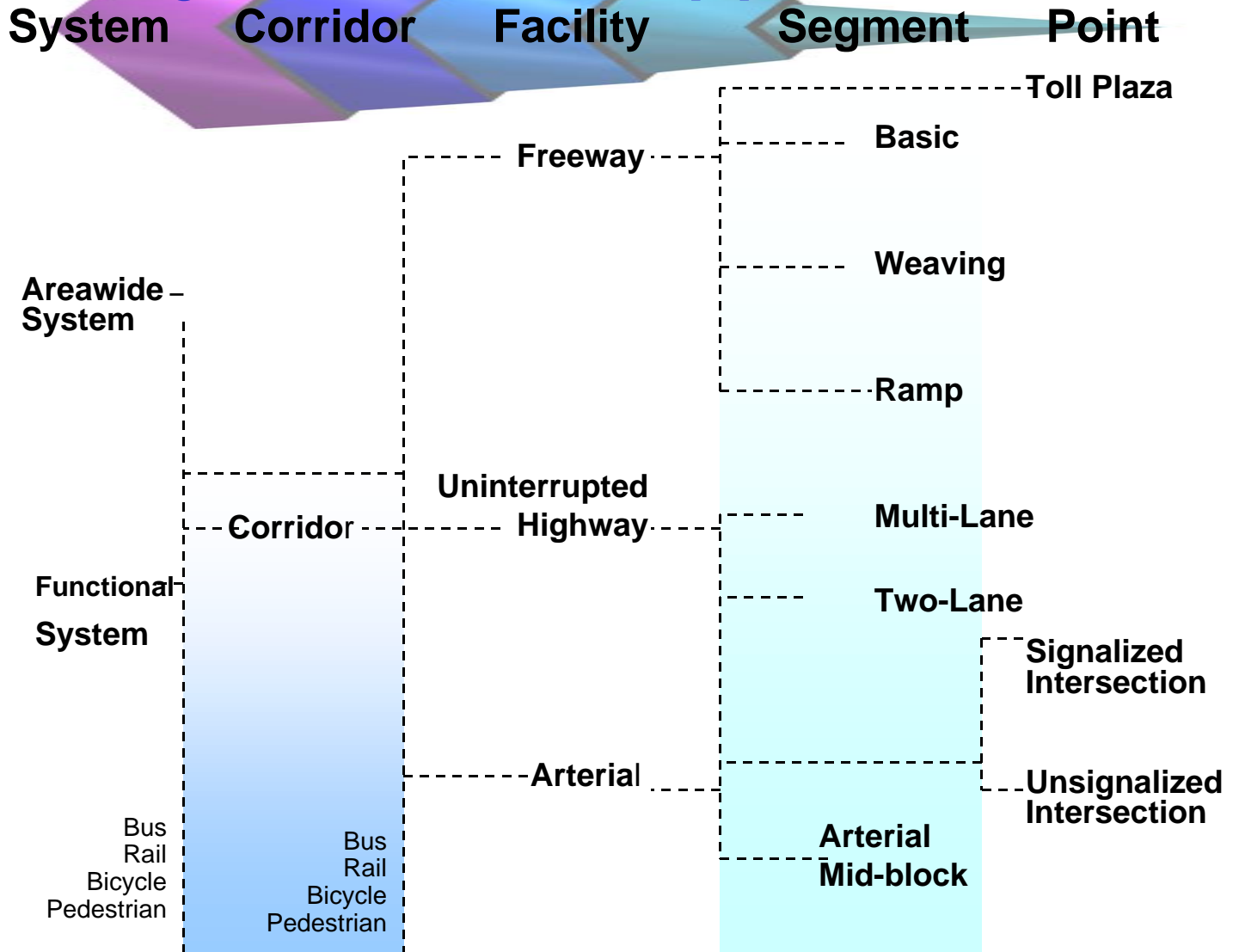
(1)

- Mobility performance measures can also be used in programming, prioritization and policy analysis to determine the need for projects or programs.
- This analysis is intended to evaluate the scale and nature of transportation problems and needs.
- The application of measure at this level is intended to answer the question "What do we need to do?"

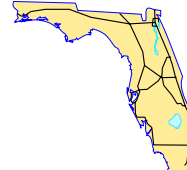
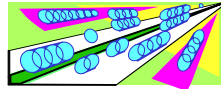
Use in Determining Needs

- An example of this use is FDOT's Decision Support System (DSS) which uses 5 measures to rank the relative priority of the need for improving segments within the FHHS.
- The DSS considers safety, congestion(LOS), pavement condition, intermodal connectivity and economic development in its analysis.

System-Wide Approach



Scope of Florida's Mobility Performance Measures Program



	Corridor	FIHS	Areawide	State
Private Auto	✓	✓	✓	✓
Truck	✓	✓	✓	✓
Intermodal Access/FIHS	✓	✓	✓	✓
Transit Fixed Route	✓	✓	✓	✓
Bike	✓		✓	✓
Pedestrian	✓		✓	✓
Airplane				✓
Boat				✓



Project Development

- Mobility performance measures can be used in the project development process. Measures should address specific problems and evaluate solutions.
- Mobility performance measures are required to perform the following functions to support the project development process:
 - Design and operational analysis
 - Evaluation of alternatives
 - Establish base conditions for alternative analysis
 - Development of impact evaluations
 - Determining route and travel choice

Project Development

- Other related functions where mobility performance measures are needed include:
 - Achieving societal goals
 - Commercial vehicle and route scheduling

Dimensions of Mobility



Accessibility



Primary Measures



Secondary/Surrogate Measures

User Orientation

- Area wide and corridor mobility performance measures are designed to be used by FDOT to characterize (in a manner readily understandable to the general public and decision makers) the success of service in terms of:
 - Quality of service (degree of traveler satisfaction with the service provided)
 - Accessibility of service (ease of engaging in activities)
 - Quantity of service (number of people served)
 - Capacity utilization (quantity of operations)

User Orientation - Time

- TIME is the primary measure relating to quality and accessibility of service. In most situations average travel time to the user should be the primary performance measure for both QUALITY and ACCESSIBILITY of service.
- Time reliability is usually very important as a quality measure and availability of service may be critical for accessibility if modal choices (e.g., transit, bicycle, pedestrian) don't exist to the private automobile.

User Orientation - Quantity

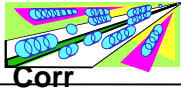


- Nevertheless, the number of people served is a factor in the measure of mobility. It doesn't matter how good transportation service is, if no one is using it. Although quantity of people served is not directly related to individual users perspective, it does embody a collective users perspective and can be useful to FDOT in explaining to others the quantity of travel in the state.

User Orientation-Utilization

- CAPACITY UTILIZATION gives an indication as to whether or not a transportation system is properly sized and has the ability to accommodate growth.
- It indirectly relates to user's perceptions as to how crowded transportation facilities or services are.
- It serves well in describing to the public the relative demand and supply of transportation facilities and services.

User Orientation-Summary

- In summary, the four concepts of:
 - Quality,
 - Accessibility,
 - Quantity
 - Utilization
- Provide a comprehensive picture of mobility to:
 - Individual users
 - General public
 - Decision makers.

	FIHS Intercity 	FIHS (Functional Systems) 	Metropolitan Area (Areawide Systems) 
Quantity	Intercity Person trips ▲ Truck trips ■ vehicle miles traveled ■	Person miles traveled ▲ Truck miles traveled ■ vehicle miles traveled ■	Person trips ▲ person miles traveled ▲ truck miles traveled ■ vehicle miles traveled ▲
Quality	Average travel time ▲ average travel speed ▲ time reliability ▲ roadway maneuverability ▲	Average person speed ▲ time reliability ▲ % travel heavily congested ▲	Average trip time ▲ average travel speed ▲ time reliability ▲ % travel heavily congested ▲
Accessibility	Household/employment proximity ■ connectivity to intermodal facilities ▲	Connectivity to intermodal facilities ▲ % household proximity ■ % employment proximity ■	Household/employment proximity ▲ connectivity to intermodal facilities ▲ % transit availability ▲ % miles bike/pedestrian amenities ■
Utilization	% sections heavily congested ▲ duration of heavy congestion ■ % travel heavily congested ■ vehicles per lane mile ■	% system heavily congested ▲ vehicles per lane mile ▲	% system heavily congested ▲ vehicles per lane mile ▲

▲ Peak Period ■ Daily ▲ ■ Peak Period and Daily

Primary Measure
Secondary/Surrogate Measure



Recently Completed National Efforts

- Lomax ***Quantifying Congestion*** - 9/95
- Meyer ***Alternative Performance Measures for Transportation Planning: Evolution Toward Multimodal Planning*** - 1996
- Dowling ***Planning Techniques to Estimate Speeds and Service Volumes*** - 9/96
- May ***Performance Measures and Level of Service in the Year 2000 Highway Capacity Manual*** - 10/97