



# Project Summary

Texas Department of Transportation

## 0-5668: Comprehensive Planning and Design Guidelines for Incorporating a Bus Rapid Transit Scenario to the Analysis of Texas Highway Corridors

### *Background*

Many urban travel corridors in Texas have traffic congestion problems that could be improved through projects that add additional capacity. Traditionally, roadway expansion projects have been viewed as the best, possibly the only, alternative improvement scheme for such locations. Many very successful examples of such projects have been implemented, however, most have been very costly in terms of right-of-way acquisition and/or construction and/or time to completion. Bus Rapid Transit (BRT) can offer an alternative to roadway expansion in certain corridors and BRT may be implemented with significantly less capital cost, less right-of-way acquisition, and potentially much quicker. Increasing fuel costs have recently caused major shifts in travel mode from auto to public transportation and recent economic issues have further emphasized this mode choice shift. With more commuters seeking reduced travel costs through public transportation, BRT as a corridor improvement scheme might be considered as either an alternative or supplement to traditional corridor transportation system improvement schemes.

### *What the Researchers Did*

This project provides a resource for those wishing to consider BRT as an alternative solution or complement to other solutions for urban travel corridor congestion, emissions, and travel cost issues. The work addresses three basic questions:

- What is Bus Rapid Transit?
- What criteria might be used to identify corridors that are viable BRT implementation locations?
- What BRT system elements should be included for a chosen corridor, and what will they cost?

### *What They Found*

The nature of BRT allows an incremental deployment process that can include numerous elements in any number of distinct phases. One methodology for BRT implementation involves three deployment phases that feature different levels of BRT configuration. The phases could be sequential or any phase might be selected as the ultimate for a particular corridor.

#### **Limited phase: Basic BRT Elements**

Very often, the very first stage or deployment phase of BRT in a corridor is just an enhancement of an existing bus route. Enhancements often include some form of bus priority but not a fully segregated busway providing improved travel time, on-board fare collection, higher quality shelters, clean vehicle technology, and a marketing identity (Wright, 2004).

### *Research Performed by:*

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Financially and technically speaking, this deployment phase represents a low-cost set of attributes that are relatively easy to put into operation. Examples of Basic BRT's are: Los Angeles (San Bernardino Freeway, Harbor Freeway), New York City (Lincoln Tunnel), Philadelphia (Ardmore busway), Alameda and Contra Counties (AC Transit Rapid Bus), Albuquerque (Rapid Ride), Boston (Silver Line Washington Street), Chicago (NEBR), Denver (16th Street Mall), Honolulu (City / County Express), Kansas City (MAX), Los Angeles (Metro Rapid Wilshire Boulevard), Phoenix (RAPID), and Santa Clara (VTA).

#### Moderate phase: BRT

This phase often includes segregated busways or bus-only roadways over the majority of the corridor and at least two of the following features:

- stations that provide level access between the platform and vehicle floor,
- pre-board fare collection and fare verification,
- fare-integration between routes, corridors, and feeder services, or
- distinctive marketing identity for system (Wright, 2004).

Examples of BRT, moderate phase, include: Boston (Silverline), Eugene (EmX), Los Angeles (Orange Line), Miami (Miami-Dade), Orlando (Lymmo), Pittsburg (Busway), Las Vegas (MAX), Quito (Ecuador), Brisbane (Australia), Ottawa (Canada), Guayaquil (Ecuador), Leon (Mexico), Mexico City (Mexico), Pereira (Colombia), and Jakarta (Indonesia).

#### Aggressive phase: Full BRT

The characteristics that distinguish this phase include segregated busways or bus-only roadways over essentially the entire corridor, the items noted under the moderate phase and several of the following:

- busways located in the guideway median rather than in the curb lane,
- enhanced stations that are weather-protected, and
- fare- and physical-integration between routes, corridors, and feeder services.

Based upon this definition, Wright (Wright, 2004) stated that there exist only two truly full BRT systems in the world: Bogota (Colombia) and Curitiba (Brazil).

A BRT system can be gradually enhanced. Each phase or group of elements will depend on both the demand characteristics and the resources invested.

## What This Means

Bus Rapid Transit (BRT) is a very flexible concept that can be implemented in a wide variety of forms resulting in costs ranging from very small to very large. A BRT implementation scheme can be developed for almost any corridor, however, as with any corridor improvement project either available funding or required capacity increases must be known in order for the BRT alternative design process to move forward. Some level of BRT implementation is a viable option for corridor capacity improvement projects for many Texas corridors.

#### References:

Wright, L. *Bus Rapid Transit Planning Guide*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Division 44 Environment and Infrastructure Sector Project, Transport Policy Advice, Germany, 2004.

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