

7 BEST PRACTICES

Elements of Bus Rapid Transit

LOS ANGELES

WHAT IS IT?

Bus Rapid Transit (BRT) is defined as “a flexible, rubber-tired rapid-transit mode that combines stations, vehicles, services, running ways, and Intelligent Transportation System (ITS) elements into an integrated system with a strong positive identity that evokes a unique image.”¹ It has often been described as a rubber-tired version of light rail transit (LRT). However, BRT typically has much lower capital and operating costs than LRT. In contrast to buses, BRT is faster, more reliable, and more easily identifiable.

A permanent, integrated BRT system uses traditional buses or specialized, stylized vehicles in mixed traffic or dedicated lanes to quickly and efficiently transport passengers to their destinations. At the same time, it offers flexibility to meet transit demand and community needs. BRT can incorporate state-of-the-art, low-cost technologies that improve upon the image, speed, and reliability of a traditional bus, thereby attracting more passengers and more effectively reducing congestion.

The term most often used to describe the application of these measures to transit is “BRT”; however, rapid transit principles can also be applied to systems using other vehicle types, such as trams or streetcars, as in several European systems.²



BRT uses various tools (dedicated running ways, longer distances between stations, off-vehicle fare collection, ITS, “clean” vehicles, frequent service) to produce a fast and convenient method of transportation. Following is a list of the key features of rapid transit, in increasing order of investment. These represent a continuum of enhancements that would support a rapid transit system, regardless of vehicle type:

- Unique branding
- Widely-spaced station stops with superior amenities
- Good pedestrian and bike connections
- High level of coordination with connecting services
- Frequent service—no schedule needed

- Real-time passenger information
- Sleek, attractive vehicles
- Low-floor vehicles with multi-door boarding and alighting
- Pre-payment—allows all-door boarding
- Improvements focused on speed/reliability
- Timed signals to favor transit
- Queue jumps
- Bus bulbs
- Dedicated lanes

¹ TCRP Report 90, Volume 1: Case Studies in Bus Rapid Transit, 2003. http://gulliver.trb.org/publications/tcrp/tcrp_rpt_gov1.pdf

² National BRT Institute; see <http://nbrti.org/systems.html> for examples of both U.S. and international BRT systems.

WHY DO IT?

Comprehensive transit improvements such as light rail or BRT systems can provide large increases in transit use and attract riders who would otherwise travel by automobile. Various cities have seen increases in bus ridership with the introduction of BRT service, for example: Pittsburgh (38%), Los Angeles (40%), Brisbane (42%), Adelaide (76%), and Leeds (50%).³ Impacts of other expansions in transit vary depending on the conditions in which they are implemented.

The advantages of BRT are:

- **Cost.** When it decided to construct a rapid transit system in 1976, Ottawa opted for BRT after discovering that capital costs would be half those of rail transit and that it would be 20% less expensive to operate.
- **Travel Times.** BRT vehicles operating on dedicated running ways can save two to three minutes per mile, while those same vehicles driven on arterial streets normally save one to two minutes per mile when compared to regular bus lines. Greater time savings are realized during peak congested hours—Pittsburgh's BRT line reports a time savings of five minutes per mile during peak hours.
- **Branding and Image.** Eye-catching branding reinforces BRT's identity as a high quality transit service and an attractive alternative to automobile travel. The most common strategy is to distinguish BRT through a stylized vehicle design. Other common elements include distinct names, logos, color schemes, typography, station signage, and marketing materials.
- **Stop Amenities.** High quality amenities at stops and stations improve the passenger experience and visibility of the system to potential riders.
- **Permanence.** Public capital investments in stops, stations, and/or dedicated right-of-way help demonstrate a public commitment to a BRT line and convey a sense of permanence, helping to leverage private investment around the line.

BRT systems have been implemented all over the world, with some of the most successful systems in Bogotá, Columbia; Curitiba, Brazil; and Adelaide, Australia. There are approximately 20 systems in the United States. Many of these systems run on dedicated rights-of-way, such as the Los Angeles Metro Orange line. Others, such as Los Angeles Metro Rapid service, run in mixed traffic.⁴

³ TCRP Report 90, Volume 1, 2003

⁴ <http://www.metro.net/around/timetables/700-799/>



Metro Rapid vehicles, which operate in mixed traffic with transit priority features, are distinguished from local buses (shown on the previous page) by their red color and the name of the service, painted on the side of the vehicles.

Source: Wikimedia Commons, Mario Roberto Duran Ortiz



Metro transitway routes, including the Orange Line shown above at North Hollywood Station, operate on exclusive right-of-way.

Source: Wikimedia Commons, Cian Ginty

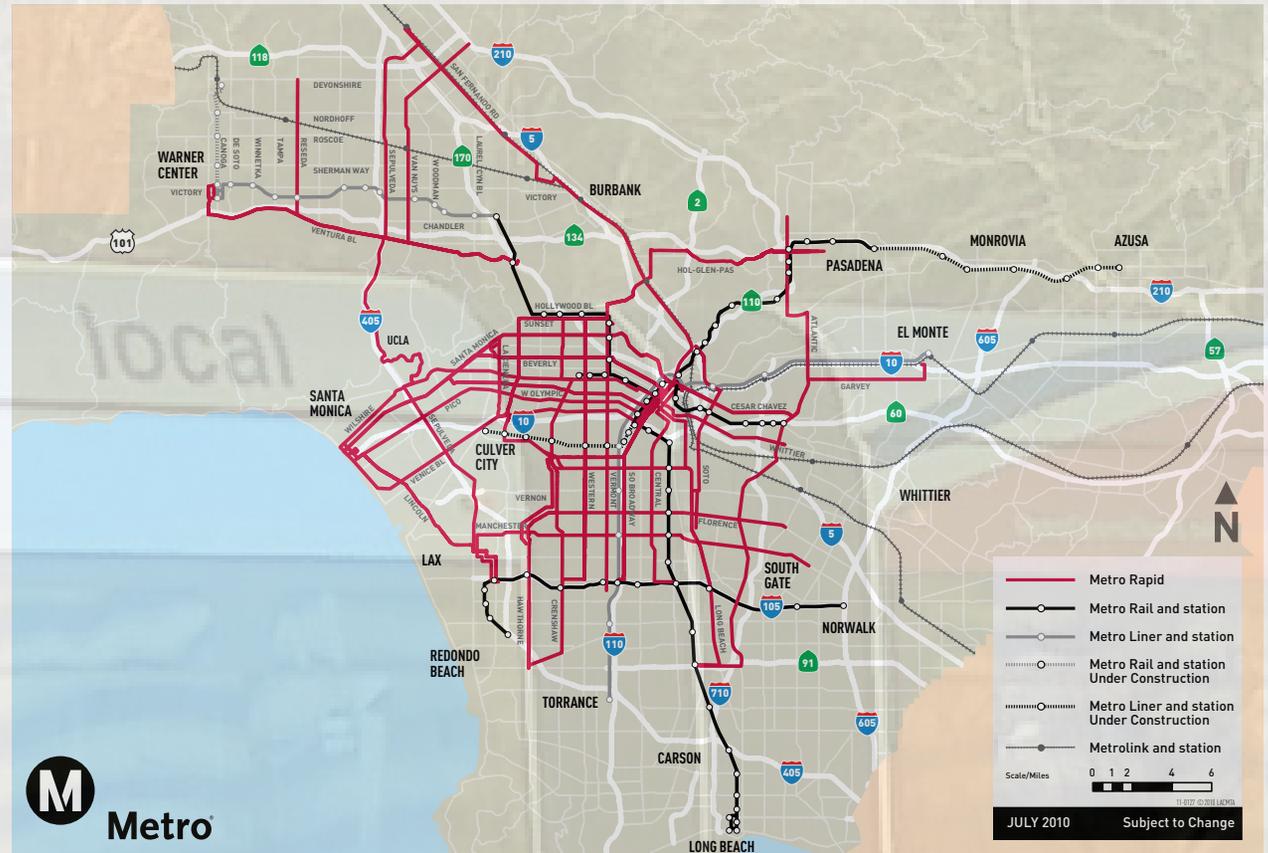
HOW WELL DOES IT WORK?

The success of BRT systems is often associated with the following conditions:

- **Branding and marketing plans.** A coordinated program to brand BRT service and all of its physical elements (vehicles, stations, signage etc.) to differentiate it from traditional bus service and promote it as a convenient and fast alternative to driving alone.
- **Multimodal connectivity.** Accessibility to BRT station area using all modes of travel, particularly walking and bicycling.
- **Competitiveness with automobile travel.** Investments in transit speed and reliability to assure that BRT vehicles can bypass congested roadways and intersections while also accessing desired destinations.
- **Transit supportive land uses.** Mixed-use developments (commercial, residential and other uses) to support high residential densities, employment opportunities and personal trip destinations near BRT station areas.

CASE STUDY: Los Angeles, California. Metro Rapid Buses

Metro Rapid service is an example of a successful, quickly deployed transit investment. This service is a partnership between the Los Angeles County Metropolitan Transportation Authority (MTA), the City of Los Angeles Department of Transportation (LADOT), and other partner cities (such as Pasadena). It is a marriage of improvements in street design to protect the speed and reliability of transit with investments in frequent service and better buses.



Metro Rapid system map

Source: Los Angeles County Metro

The key *transit* attributes of Metro Rapid service (primarily under the MTA's control) are:

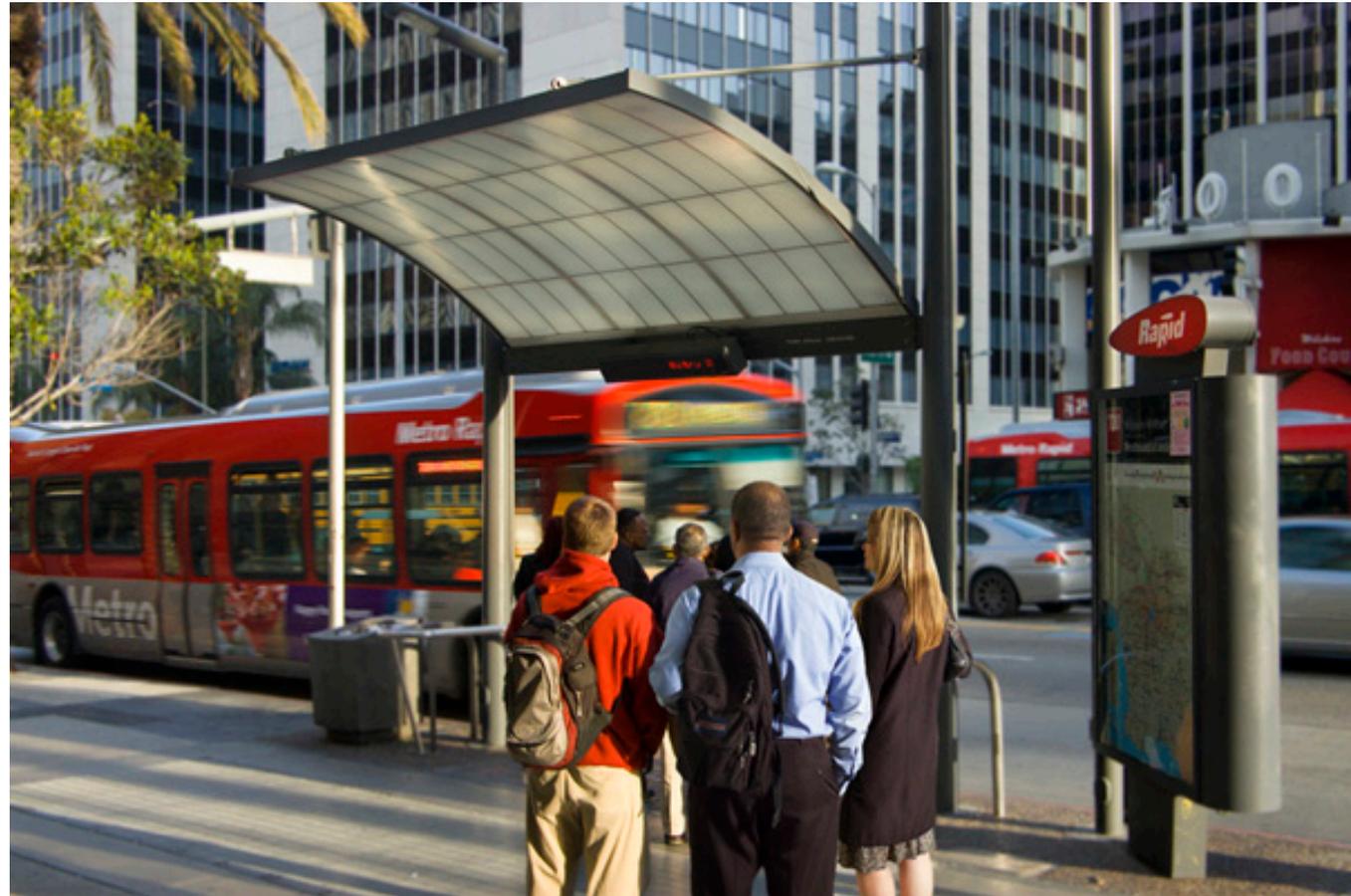
- **Simple route layout:** Makes it easy to find, use and remember.
- **Frequent service:** Buses arrive as often as every 3-10 minutes during peak commuting times.
- **Fewer stops:** Stops are spaced about three-quarters of a mile apart, similar to many rail lines, and include most major transfer points.
- **Level boarding:** Low-floor buses reduce dwell times.
- **Color-coded buses and stops:** Distinctive red paint makes it easy to identify Metro Rapid stops and buses.

The key attributes of street design (primarily under LA DOT control or, in the case of the city of Pasadena, under the Transportation Department) include:

- **Bus priority at traffic signals:** Although Metro Rapid operates in mixed traffic, signal priority technology reduces traffic delay by extending the green light or shortening the red light to help Metro Rapid get through intersections.
- **Enhanced stations:** Metro Rapid stations, designed to emulate light rail transit stations, provide transit information, lighting, canopies, and “Next Trip” real-time arrival displays.

Many of these features, such as the location and design of stops, are decided and designed in partnership, with both agencies involved. The program is an example of how close cooperation between city traffic engineers (who design streets and establish street standards and performance measures) and transit planners (who route and schedule buses) can result in a major improvement in transit performance—even when relatively little funding is available.

According to the Federal Transit Administration (FTA), Metro Rapid has reduced passenger travel times by as much as 29%, with ridership increases of nearly 40%. The reduction in travel times primarily results from the bus signal priority system, which provides up to ten seconds of additional green time at traffic signals, and longer distances between stops.



Metro Rapid stops include a shelter, real-time arrival information and an informational display.

Source: Los Angeles County Metro