

TRANSIT SERVICE

Transit services in Glendale include the Beeline local transit system and the services provided by the MTA. These systems combine to provide frequent transit service on many key streets in downtown Glendale.

Transit service is offered at least every 10 minutes on Brand, Central south of Broadway, San Fernando, Glendale Boulevard, and Broadway. With service this frequent, riders do not need to carry a schedule, but can depend on the next bus arriving soon after they reach their bus stop. Figure 4-1 shows the existing transit services in the study area, including services provided by MTA and the City of Glendale.

Despite this network of high frequency transit services, many residents in Glendale find transit services inadequate, or are unaware of the level of service actually provided.



4.1 PRINCIPLES

The key principles for improving transit service in Glendale include increasing awareness about the services that are available, and marketing a complete system to riders who can choose whether an MTA or Beeline route serves them best. The *Downtown Mobility Study* recommends operating a new shuttle route which will be dedicated to downtown travel, and linking regional transit corridors with the commercial, entertainment and employment opportunities in the Glendale core. The shuttle route, which can begin service almost immediately using existing resources, should ultimately be improved and expanded for a long term future that may include streetcar operations.

- ◆ Create and market a comprehensive system of coordinated regional and local transit that takes advantage of the relatively high level of service that already exists in Glendale, and emphasizes new linkages where needed.
- ◆ Create and expand on a downtown circulator service that connects regional transit nodes with residential, shopping, entertainment and employment destinations downtown and promotes a “park once” environment.
- ◆ Create transit infrastructure that supports a positive urban environment and maximizes transit ridership downtown.
- ◆ Support transit priority treatments on streets with high quality transit service.

4.2 SUMMARY OF RECOMMENDATIONS

Recommendation 4.1

Market the transit resources in Glendale as a single system to show the richness of the transit network in and through Glendale.

Recommendation 4.2

Create a downtown shuttle to encourage non-auto circulation through the downtown. The route should connect regional transit, and key downtown destinations.

- a. Begin service within existing resources.
- b. Change downtown shuttle to a hybrid bus or other unique vehicle.
- c. Implement a new technology for shuttle and other lines.

Recommendation 4.3

Operate the shuttle as frequently as possible, with no fare collection and with a unique and attractive vehicle.

Recommendation 4.4

Implement the recommendations of the *Short Range Transit Plan* including service and capital improvements that affect downtown.

Recommendation 4.5

Bring the price of all transit fares closer together, charging at least \$0.50 per trip on the Beeline. Attempt to negotiate with MTA for a local Glendale fare that will match Beeline fares within the City limits.

Recommendation 4.6

Consolidate high frequency services to the extent possible on a limited number of transit priority streets, which will be optimized for transit operation.

Recommendation 4.7

Consider signal priority for and other operational enhancements on all streets with combined service of at least 10 minutes during peak periods, including all streets with Metro Rapid service.

Recommendation 4.8

Work with MTA to create an “east-west” connector service operating on the HOV infrastructure of Highway 134, and provide convenient connections between this new service and the downtown shuttle.

Recommendation 4.9

Create amenity standards for downtown transit stops based on the number of riders boarding at each location. Maximize amenities including enhanced signage, shelters and other amenities along the shuttle route and other transit priority streets.

Recommendation 4.10

Incorporate real time information in all high amenity bus shelters using Next Bus technology.

Recommendation 4.11

Consider utilizing new revenue generated by the Downtown Transportation and Parking Management District to enhance shuttle and other transit services.

Recommendation 4.12

Utilize the Universal Transit Pass to encourage transit ridership among new downtown residents by requiring passes be provided to new residents through condominium fees.

Recommendation 4.13

Develop performance standards for transit streets that incorporate transit quality of service, and go beyond auto level of service.

4.3 DISCUSSION OF RECOMMENDATIONS

The transit policy recommendations include improvements to local and regional service connectivity, the development of a new downtown shuttle, and improvements in customer experience. Improvements to the Beeline service are based on the *Short Range Transit Plan* combined with other enhancements that can be implemented as funding becomes available.

Figure 4-2 shows the proposed Beeline service network and peak service as proposed by the *Short Range Transit Plan*.

Figure 4-1 Glendale Beeline and MTA Existing Transit Service

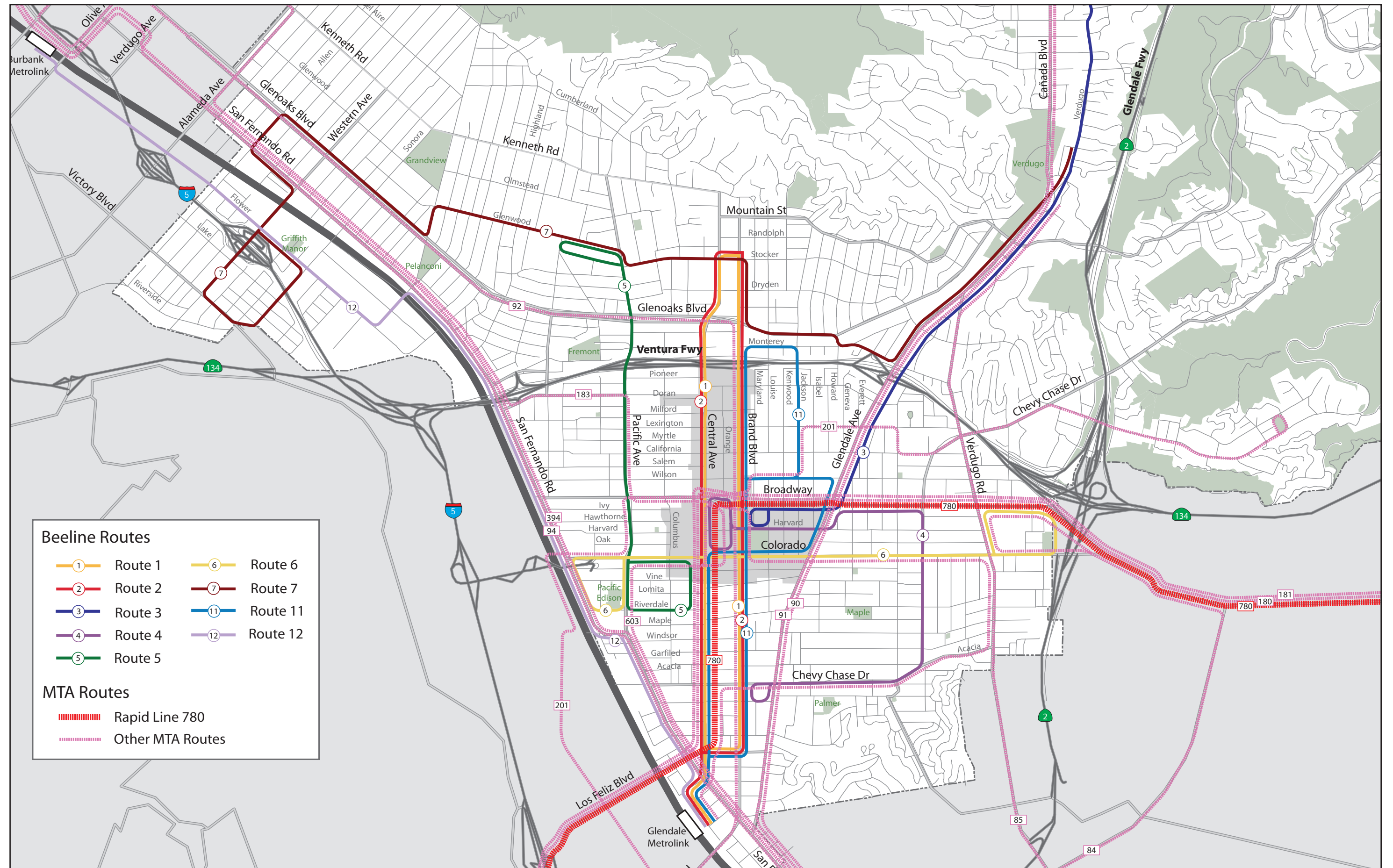
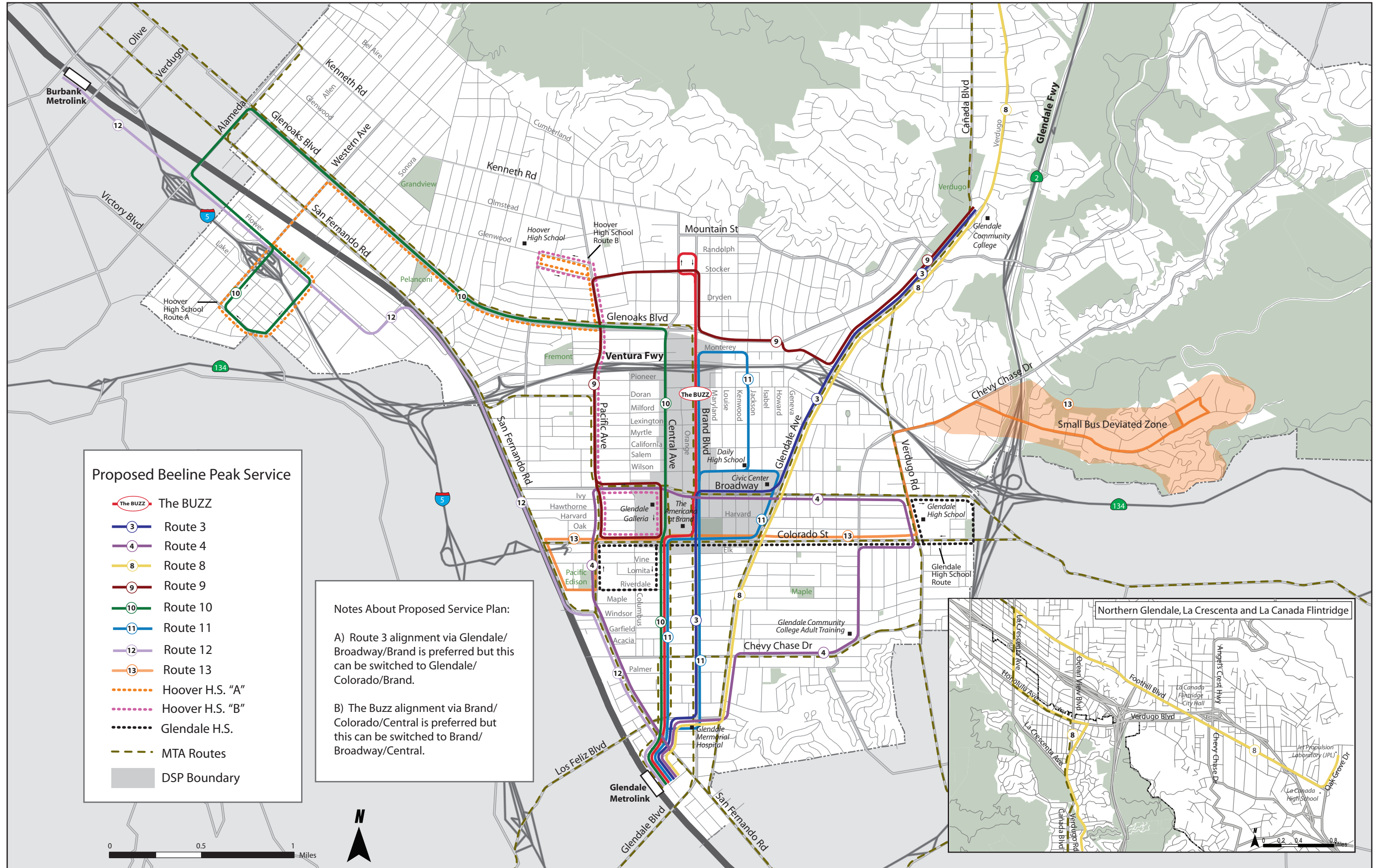


Figure 4-2 Glendale Beeline Proposed Peak Period Service



4.3.1 DEVELOPING A COORDINATED REGIONAL-LOCAL TRANSIT SYSTEM

Glendale’s Beeline system is a critical local link in the overall transit system serving Glendale’s residents and businesses. However, travel demand projections suggest that more than 50% of work trips, and a significant share of total trips made by Glendale residents, are made outside the City of Glendale. Therefore, it is essential that the Beeline system focus not only on providing excellent local service, but also on connecting to regional transit services.

Transit ridership on all transit systems will be enhanced to the extent that all transit services in Glendale can be seen as a single seamless network. To enhance the packaging of transit services, there are a number of potential cooperative projects that Glendale could work on with the MTA.

- ◆ Develop a single map showing all transit services in Glendale, emphasizing those corridors with very frequent service. This could be based on the “12-Minute Frequency” map that MTA has already developed. By adding the local and regional services together, Glendale will be able to show significant high frequency service and local-regional connectivity.
- ◆ Emphasize “try transit” options like the “Try One in Five” campaigns being run by many other cities. The objective is to get people to try transit at least one day in five. The campaign should focus on local-regional connectivity, so that potential transit riders can see how they might leave their cars at home.
- ◆ Implement Universal Transit Fares and Transit Passes. Currently, Beeline fares are \$0.25 for local trips, while MTA routes – serving the same stops – cost \$1.25 for local trips. This creates situations where passengers “pass up” an MTA trip and wait longer simply because Beeline service is less expensive. The fare recommendations in the *Short Range Transit Plan* call for increasing fares on the Beeline ride except on the shuttle which would be fare free. Ideally, MTA would agree to reduce its fare for local travel within Glendale to match Beeline local fares. Given that these trips are very short, a justification could be made for decreasing the local fare to match the Beeline fare. That would simplify riders’ decisions when boarding a bus for a local trip – rather than waiting for the least expensive option, the rider could simply take whichever service comes first. Ridership on both systems is likely to improve long term if fares can be coordinated. Another way of coordinating fares is to emphasize universal fare instruments, such as the Metrocard being implemented by MTA and many of the municipal operators, including Beeline. With the universal farecard, passengers can ride any system and have the proper fare simply deducted from their card balance, similar to a debit card.

Recommendation 4.1

Market the transit resources in Glendale as a single system to show the richness of the transit network in and through Glendale.

Recommendation 4.5

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Recommendation 4.12

Utilize the Universal Transit Pass to encourage transit ridership among new downtown residents by requiring passes be provided to new residents through condominium fees.

Recommendation 4.4

Implement the recommendations of the *Short Range Transit Plan* including service and capital improvements that affect downtown.

Successful implementation of these recommendations is dependent on implementation of the capital and operating plan developed for the *Short Range Transit Plan* (SRTP). The SRTP identifies route re-structuring needs beyond the creation of the Buzz and also outlines critical capital requirements including the need for an expanded fleet and new maintenance and storage facility.

Connectivity Between Local and Regional Service

Today, Glendale is connected to the rest of the region via four transit services:

- ◆ MTA “Local Stop” Regional Services (e.g. Routes 90, 92, 180, etc.)
- ◆ MTA Rapid Bus Service (e.g. Route 780)
- ◆ LA Commuter Express Services (e.g. CE 409 and 549)
- ◆ Metrolink Regional Rail

Figure 4-3 shows critical transfer locations between the Beeline’s proposed services and other regional services in central Glendale.

Streets with overlays of frequent and fast regional service and local distributor service provided by the Beeline are identified as Primary Transit Streets. These streets are identified in Chapter 2 (Street Typology) of this report, and are designed to maintain transit quality of service and overall transit system speeds even at the expense of other modes. Key streets include Brand between Lexington and Broadway, Broadway between Glendale and Central and Central south of Colorado.

MTA Bus Connections

Glendale, Pasadena, and Hollywood are already connected to each other via Metro Rapid Route 780, which operates on Colorado Boulevard in Pasadena and Broadway/Central in Glendale before heading into Hollywood.

The MTA’s current Metro Rapid Program shows a new Rapid route connecting Burbank and Glendale via San Fernando Boulevard, Highway 134 and Brand Boulevard before heading into downtown Los Angeles. Implementation of this route would allow people to travel much faster between the three cities via a simple and easy transfer between routes in downtown Glendale. End to end travel times on transit could be reduced from 120 minutes to approximately 60 minutes. While still slower than auto travel, this new service would undoubtedly be much more competitive with the auto than the traditional local-stop service currently being operated by the MTA.

Joint Beeline/Metro Rapid stops on Broadway and Central and in the future on Brand are key transfer nodes in the system and



ABOVE: LAMTA’s regional pass.

BELOW: Local Beeline routes serve many of the same streets as MTA routes travelling through Glendale.



should receive special attention. High quality amenities, real-time information, and enhanced visibility of those stops are critical, as is timed transfer or very frequent connections so that local-regional transfers can be made seamlessly.

Key transfer locations are at Glenoaks and Brand, where the proposed Metro Rapid route will connect with the Beeline, and at locations along Brand. The Brand/Broadway stop is especially critical as it brings both rapid stops together with Beeline service. A new transfer point will be created at Highway 134 once east-west connector service is initiated.

Metro Rapid routes are supplemented by Commuter Express Routes which can be accessed only at park and ride facilities on the edge of downtown Glendale.

Metrolink Connections

Metrolink, Southern California's regional rail service, provides limited all-day service connecting Glendale with downtown Los Angeles, Burbank and the Antelope Valley. The sole station in Glendale is located just south of downtown near San Fernando Road and Central. Metrolink is designed primarily to serve north/south commute period travel patterns.

Metrolink services can only be accessed at the Glendale or Burbank Metrolink stations. The Glendale Metrolink station is an important node both for regional-local connections and because it brings together nearly all local Beeline routes into a single transit center. This stop has a high priority for amenity improvements, and could serve as a "transit store" location where passes and farecards could be sold, transit information would be provided, and other public activities could be completed. The train station facility, which has been remodeled and returned to its historic appearance, stands empty for much of the day. Opportunities for transit store activity and transit supervision should be evaluated to keep this location active and to keep the system operating on time.

Recommendation 4.8

Work with MTA to create an “east-west” connector service operating on the HOV infrastructure of Highway 134, and provide convenient connections between this new service and the downtown shuttle.



ABOVE: LAMTA's Orange Line provides a quality bus experience similar to rail.

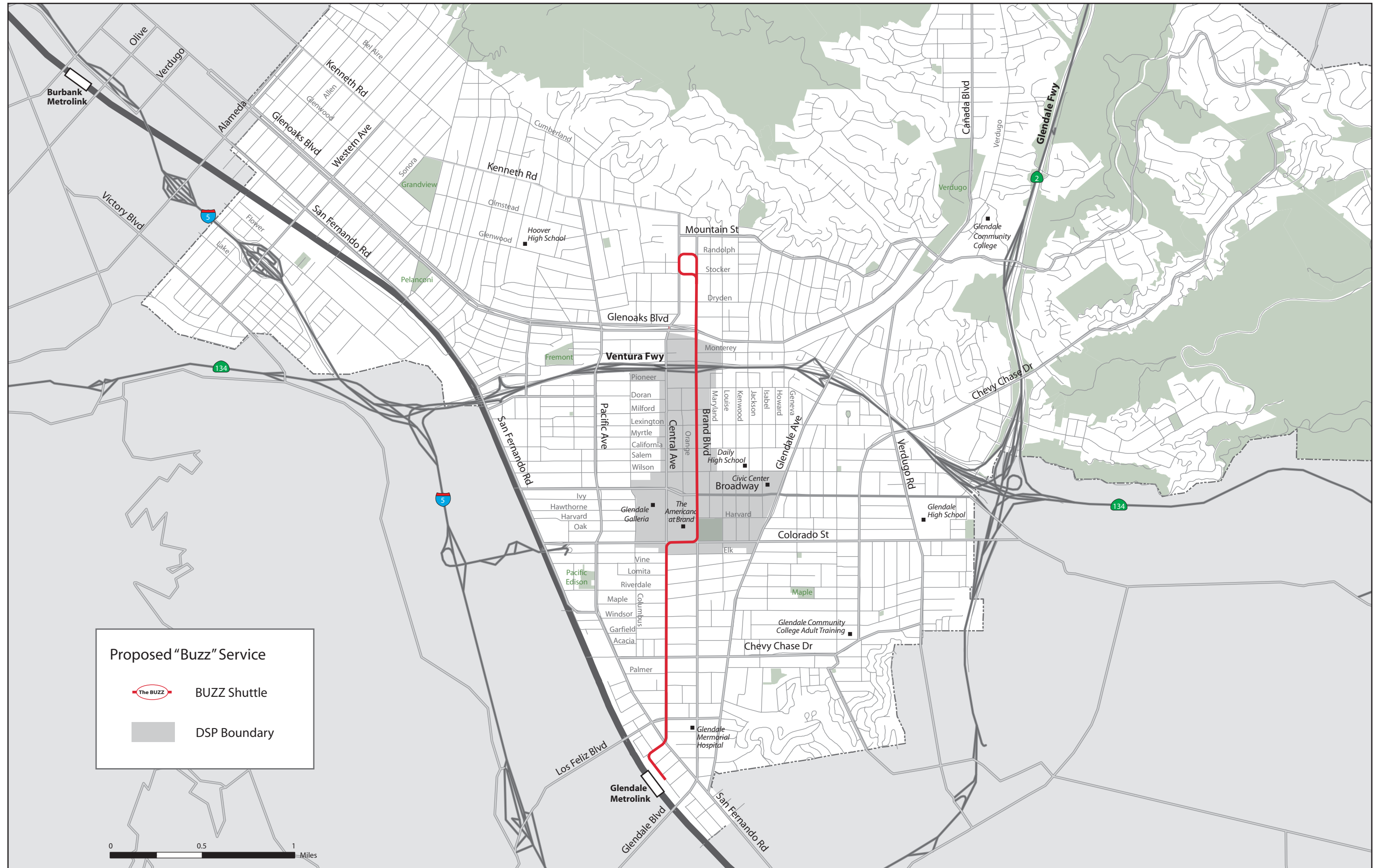
Additional Regional Connectivity Needs

While Glendale is well served by Metro Rapid and other regional services, a critical east-west gap exists in the transit network. A high volume of trips travel between the Arroyo Verdugo cities of Glendale, Burbank, and Pasadena. High-capacity investments have been made on the Gold Line to Pasadena and the Red Line to North Hollywood, but the east-west gap leaves these systems unconnected, and more importantly, leaves Glendale unconnected to either system. The proposed east-west connector would take advantage of the high capacity “diamond lane” infrastructure that exists on Highway 134, creating a high speed busway connecting the three cities, and connecting Glendale to the “north-south” high-capacity investments in the area.

The MTA is currently studying options for serving this line, which could be implemented on a relatively fast timeline using quality bus technology similar to the MTA Orange Line, at least in the short term. Once such a system is operational, Glendale will need to provide local connectivity from the single stop at the 134/Central/Brand interchange. It is critical that, by the time the east-west connector becomes operational, the proposed Buzz Shuttle operates at least as frequently as the east-west service, preferably with timed transfer between systems.

Once operational, the interface between the Highway 134 service and Beeline service will be a critical gateway stop, which should be treated with high level amenities, real-time information, and unique architecture to the extent possible.

Figure 4-4 Glendale Beeline Proposed "Buzz" Shuttle Service



4.3.2 THE BUZZ SHUTTLE – IMPROVING DOWNTOWN SHUTTLE

While a high level of transit service already exists in central Glendale, a dedicated shuttle route that focuses on circulation within the downtown area would further improve circulation and would serve as an incentive for new downtown residents to leave their cars at home. A downtown circulator also reinforces the “park once” concept discussed in Chapter 5 (Parking Management). The proposed downtown Glendale “Buzz” shuttle is designed for flexibility – it can be initiated within existing resources, and can be expanded over time, to create a unique, frequent, and free shuttle that will attract new riders to transit, will reinforce the “park once” philosophy and will help new downtown residents to reduce their dependence on auto travel for local and regional trips.

The proposed Beeline “Buzz” free shuttle is shown on Figure 4-4 and is designed based on principles derived from the “best practices” in shuttle design, described on the next page and in the text box at the end of this chapter entitled “Best Practices Design Principles for a Successful Local Shuttle.”.

Recommendation 4.2

Create a downtown shuttle to encourage non-auto circulation through the downtown. The route should connect regional transit, and key downtown destinations.

- a. Begin service within existing resources.**
- b. Change downtown shuttle to a hybrid bus or other unique vehicle.**
- c. Implement a new technology for shuttle and other lines.**

Recommendation 4.3

Operate the shuttle as frequently as possible, with no fare collection and with a unique and attractive vehicle.

Recommendation 4.11

Consider utilizing new revenue generated by the Downtown Transportation and Parking Management District to enhance shuttle and other transit services.



ABOVE: Denver’s Mall Shuttle.

BELOW: Santa Barbara’s Electric Shuttle.

BOTTOM: A well designed transit service with quality amenities can add to the ambiance of the street environment. This photo of the Santa Monica Transit Mall shows how the unique street furniture adds to the quality of the pedestrian experience.



Shuttle Service Best Practices

Downtown shuttles are successful tools for increasing overall transit use in many other cities. In Denver for example, the 16th Street Shuttle “Mall Ride” links Denver’s Union Station with regional rail service to shopping, entertainment and business locations downtown. The shuttle is operated with both conventional and hybrid electric equipment, making frequent stops along an approximately one mile route. The shuttle has very similar goals to the “Buzz” shuttle in Glendale, which would link regional rail service at the Metrolink station, future east-west service on Highway 134 and virtually all of the major destinations downtown with a single free shuttle. Similar to Glendale, the downtown business core in Denver is just beyond comfortable walking distance from regional rail service, requiring a shuttle to make a regional rail commute reasonable for employees coming to downtown Denver. The Denver Mall Ride carries over 60,000 people on a typical weekday, running very frequent service over a very long service span. While the “Buzz” shuttle envisioned for Glendale would offer less service and would carry far fewer passengers, there is no doubt that there is a market for a free, frequent circulator service connecting regional transit and local nodes.

Similar bus shuttles are operated in a number of cities, from Santa Barbara, California to Indianapolis, Indiana. Santa Barbara runs two very successful shuttles with electric vehicles, along State Street downtown, and along their waterfront. These shuttles operate every 15 minutes, cost \$0.25 per rider (compared with \$1.25 for other transit routes), carrying local riders and visitors. The availability of the shuttles has enabled the Tourism Bureau and other organizations to advertise “Car Free in Santa Barbara” itineraries for visitors, stressing Santa Barbara’s commitment to the environment. The downtown parking authority publishes maps of parking garages that show shuttle routes, encouraging “park once” combined with shuttle or walking travel through the downtown.

The electric vehicles operated by Santa Barbara Transit on these routes are very popular, but have limited application in a city like Glendale. Current technology allows these vehicles to be in service for about 8 hours between charges, operating about 75 miles on a single charge. To operate over a 12 to 15 hour service day, twice as many vehicles would need to be procured as required for peak service demand. At \$400,000 per vehicle, the capital costs of an all electric fleet may be prohibitive. However, new technology in alternative fuel vehicles may make other types of clean and quiet buses a reality in Glendale. The California Air Resources Board recently approved a hybrid-electric bus for

transit operators in California, and other technologies are also available.

Even closer to home, the Los Angeles DASH system, operated by the Los Angeles Department of Transportation is a major success story, turning less productive “big bus” routes operated by the MTA into local shuttles operated at less cost. The DASH system now includes over 400 buses and is far more extensive than would be operated in Glendale, but the concept is similar to a downtown DASH route – frequent, direct, and low-cost service in a vehicle that is identifiable as distinct from the regional service.

Bus transit shuttles have the advantage of maximum flexibility; routes and service levels can be changed easily, and buses can operate in the same lanes as general traffic. However, bus transit services often have a “stigma” of being impersonal and inefficient. Rail service, especially urban streetcar services, are returning to many cities, especially cities that, like Glendale, had a history of successful streetcar service. Urban streetcars can be designed to share a lane with auto traffic. They are less flexible than bus shuttles, but create an image that often spurs new development. Successful streetcar shuttles have been initiated in Portland, Oregon, Tampa, Florida and other cities.

Streetcar infrastructure costs about \$20 million per track mile, and requires both in-street rails and overhead wires. Streetcar vehicles, which include rehabilitated historic cars, new “historic look” cars, and new modern cars cost between \$1 million and \$2 million per car. Given the costs and long lead time required to implement a streetcar shuttle, the initial “Buzz” service in Glendale is recommended as a bus shuttle, with a long-term vision for streetcar operations as the system develops.



ABOVE: Hybrid electric bus approved by CARB.

BELOW: Fuel Cell Bus shuttle in Luxembourg.





ABOVE: Transit wrap advertising the city of Toronto.

BELOW: Valley Metro contest winners.



Implementing the Glendale Buzz Shuttle

The proposed Glendale Buzz shuttle is designed for easy implementation in the short term, using existing equipment and resources. The shuttle is designed to be expanded to more frequent service with a unique vehicle type within a few years of operation, based on the availability of additional funds, through grant sources and transportation district support.

The service would initially operate from 7 am to 10 pm Monday through Friday with reduced service on the weekends. The proposed routing for the initial service is shown in Figure 4-4. This route is intended to run “fare-free” allowing boarding and alighting to occur at all doors, reducing dwell times at stops and increasing the attractiveness of the route.

Buzz stops will be identified with unique graphics that should be coordinated with the graphic scheme on the buses used for the service. Bus stops should include signage at all stops, with most stops having shelters with real-time information. Real-time information displays and shelters have already been purchased and can be deployed along the shuttle route without incurring additional costs.

Immediate Term Service Plan – Use Existing Resources

Initial implementation of the Buzz shuttle can be accomplished with the general Beeline restructuring recommended in the *Short Range Transit Plan*. Using existing resources, the route can operate every 15 minutes from 7 am to 10 pm.

Existing vehicles can be painted or wrapped in a unique scheme for relatively little cost. Full bus wraps can be accomplished for about \$10,000 per vehicle. Wraps are done with a mesh fabric that allow for light to enter the bus through the windows, or graphics can be put on the body of the bus only. The examples at left show bus wraps currently in use. The photos from Valley Metro in Phoenix, Arizona reflect the results of a contest in which area students were asked to submit designs. Holding a contest, sponsored by the City and the business community, will help to form linkages between the transit system and the community at large. Wraps are designed to last from one to two years, which is about the length of time required to order new equipment.

For somewhat more capital investment, existing vehicles can be totally rebuilt as “trolleys.” At least two companies in California do trolley rebuilds on 30’ and 35’ transit buses. An example of the work done by “Cable Car Classics” in northern California is shown at right.

Costs for conversions, which include full interior and exterior rebuilds, average between \$50,000 and \$70,000 per vehicle. Conversion details are guaranteed for the life of the vehicle. A total of three vehicles are needed for daily operations at 20 minute frequencies.

Stop improvements and passenger information are also critical to the success of the shuttle. Stop amenities are described in more detail in the following section. The proposed route should be implemented at the same time new shelters can be deployed. Shelters are already on order for the Beeline and could be targeted to the Buzz line stops as a priority implementation. Glendale has begun to receive an order of 16 Next Bus signs which can be deployed in the Buzz shelters. Should additional shelters or signs be required, these can be ordered for between \$15,000 and \$50,000 each. For installation of Next Bus signs, the largest cost is often extending conduit for electrical power to the shelter. Power conduit was installed on Brand Boulevard as part of the Brand Boulevard reconstruction project. For Next Bus installation in other locations, the cost of extending power should be considered.

Buzz Shuttle Phase II – Adding Frequency and New Equipment

Increasing frequency should be a primary goal of the shuttle once it has been initiated. By adding three vehicles, the shuttle could be operated every 7.5 minutes during peak times. Frequent service will be an inducement to people traveling within downtown Glendale to leave their car at home or to drive and park once while exploring downtown.

Increasing frequencies to 7.5 minutes will require three additional vehicles for a total of six vehicles for regular operation plus at least one spare vehicle. Going to 7.5 minute all day headways would require 15,000 additional revenue service hours per year, or a total of about \$1 million dollars in new revenue. Service enhancements could be phased in, with additional frequency added only during certain hours at first; however, the full fleet investment will be needed to improve frequency. As new vehicles are ordered, Glendale should work towards obtaining a high quality vehicle with a unique look that will project the appropriate image for a dynamic downtown. Many types of vehicles are available.



ABOVE: Unconverted Gillig Phantom bus.

BELOW: Cable Car Classics conversion of a 30’ low floor Gillig Phantom bus.





ABOVE: New Gillig low floor trolley bus.

BELOW: Gillig low floor hybrid electric 30' conventional bus.



Shuttle Vehicle Design Principles

The key principles for a shuttle vehicle should include:

- ◆ **Low-Floor Vehicle.** For easy boarding, and fast access and egress. Low floor vehicles also maximize accessibility for all types of users, and eliminates the need for costly and high maintenance lifts.
- ◆ **Large Door Areas.** Shuttle riders tend to make very short trips – end to end, the proposed shuttle is less than two miles. Riders should be able to enter and exit via all doors “hopping on and off” quickly.
- ◆ **Focus on Comfortable Standing Room.** Because most trips are short, many riders never sit down. Seating is important, but the vehicle should emphasize comfortable standing room, with straps that allow riders to stand comfortably and safely.
- ◆ **Large Window Areas for High Visibility.** Shuttle riders often need to be able to see where they are to get off at the store or restaurant of their choice. Because many shuttle riders are not “regular” riders who get off at the same stop every day, it is especially important that they “see” where they are going.
- ◆ **Project a Unique Image.** While the Buzz will be a Beeline route, it is important that riders not think of it as “just another bus route.” A unique vehicle can project an image that this route is something different to both commuters and occasional riders. The vehicle should be included in all marketing material and should become part of the image of the service.
- ◆ **Clean Fueled.** In today’s environment, riders respond as much or more to “being green” as the primary reason for riding transit. A successful promotion that suggests “Try one in five” – or one in five days on transit, promoting the impact on the environment could be very successful in Glendale. To be successful, the vehicle needs to be clean, and needs to be perceived as clean. While electric vehicles may not be appropriate due to limited range between charges, other alternatives should be explored.

Two types of initial shuttle vehicles are recommended as possibilities for Glendale. Either a “trolley-look” low-floor vehicle such as the Gillig low-floor trolley, or a more conventional vehicle with hybrid-electric power train, both shown at left, could be specified for the service.

Prices for 30-35 foot vehicles range from \$400,000 to \$600,000 depending on the power train and size. Assuming vehicles can be procured for \$500,000 each, a seven vehicle fleet will cost approximately \$3.5 million. If Glendale decides to “design” a unique vehicle, the cost per vehicle could double.

Long-Range Improvements in the Shuttle System

In the long term, an urban streetcar would be a welcome addition to downtown Glendale, creating a very clear “brand” for the downtown shuttle that would encourage visitors and local riders to ride.

Many North American cities were developed around their streetcar tracks, which carried more people than any other mode of transportation. Streetcars were historically a major influence in the City of Glendale, which was well served by the Red Car regional streetcar service. Remnants of the old Red Car system can be seen in the way neighborhoods and streets are laid out in Glendale.

Streetcars offer a number of key advantages over bus service. The primary advantages of streetcars are the ability to add a visible rail system with a capital cost that is less than higher capacity light rail, and the ability to create a circulator that connects into a high capacity transit network (such as light rail or commuter rail) without requiring additional extension or expansion of the more expensive high-capacity mode. Streetcars are also popular because they are a good fit for densely-developed, pedestrian-oriented, urban neighborhoods.

More than a dozen North American cities have streetcar systems that have either been expanded or begun operation in the past 15 years. At least twice as many other cities have new systems or new lines under active planning.

Some of the defining characteristics of modern streetcar systems include:

- ◆ **Streetcars generally attract at least 15-50% more riders than bus routes in the same area.** In many cases, the difference in ridership is much higher. Based on recent North American examples of streetcar implementation, there is a clear ridership boost that can be attributed directly to the implementation of streetcars replacing bus service in a given corridor. In Toronto, on routes where streetcar service replaced a nearly identical bus service, ridership increased between 15-25%.
- ◆ **Streetcars often attract private funding.** Property owners are often willing to financially contribute to a streetcar system because they realize the value that a streetcar brings to their property and to the neighborhood. In Portland and other cities, private owners were willing to “tax themselves” either through fees, benefit districts, or other forms of exactions to receive the benefits of a fixed-route streetcar system. Nearly half of the operating costs of Tampa’s TECO streetcar line are paid through an endowment created by local business contributors.



ABOVE: Little Rock Arkansas’ new River Rail streetcar offers a vintage vehicle primarily serving visitors.

BELOW: Portland’s modern streetcar operates in mixed traffic.





ABOVE: Tampa's "TECO" streetcar uses historic look vehicles to complement its downtown.

BELOW: New streetcar service in Charlotte is already being expanded.



- ◆ **Similar to other street-running modes, streetcars are generally focused on serving a neighborhood, not just moving through it rapidly.** While streetcars can benefit from many of the same treatments that would be given to improve speed on other modes (such as signal preemption, queue jumps, longer stop spacing and exclusive right of way) modern streetcars typically have minimal priorities over other vehicles and are often designed to operate in mixed flow with vehicular traffic. Streetcar stops are generally spaced closer together than light rail or bus rapid transit because streetcar service is designed for local circulation and connections to higher capacity services rather than providing high-speed or high-capacity service themselves. Streetcars are not inherently faster than buses, and in fact, can be less reliable on streets with heavy congestion or other impediments, since streetcars cannot change lanes or maneuver around a problem.
- ◆ **Streetcars provide a visible and easy-to-understand routing which attracts new users.** Rail systems in general provide a physical presence on the street that is easy to comprehend. Riders can stand at a stop and literally see where the line comes from and where it is going. Streetcar routes generally make few deviations from a straight path, giving the user more confidence. Visitors and occasional users are more inclined to use them, since there is less confusion about the streetcar than about taking one of many possible bus routes.
- ◆ **Streetcars attract both a visitor market and a local user market to transit.** The fact that streetcars are easy to “understand” and often operate in areas with high visitor populations, helps attract visitors as well as local riders. Modern streetcar operations often use “vintage” looking vehicles, or may actually use rehabilitated historic vehicles. Some systems use very modern, but distinctive vehicles. All of these vehicle types help attract visitors, as well as local riders, to transit.
- ◆ **Streetcars catalyze and organize development.** Throughout their history, streetcar lines have been an organizing principle behind new development. Streetcars can help create dense pedestrian environments where access to local streetcar stops is possible by foot. Historically, bus routes are added once an area has developed and the demand is in place. Most of the modern streetcar applications in the United States have been catalyzed by the promise of new development, and in fact, have been championed by local developers who also partially funded the line.
- ◆ **Streetcar costs are higher than bus infrastructure, but lower than light rail.** The cost for streetcar construction is approximately \$20-\$40 million per mile and \$2.5-\$3 million is typical for each car. This price compares to \$50-\$75 million per mile for light rail implementation and between \$3-\$4 million for a light rail vehicle. Standard 40-foot diesel buses typically cost around \$400,000, while articulated 65-foot buses cost approximately \$650,000 each. While lower in cost, bus lines do not typically attract private funding for capital costs.

A streetcar is not recommended in the short term for several reasons:

- ◆ **Streetcar infrastructure costs approximately \$20 million per track mile**, based on recent cost experience in Portland, Oregon, with vehicles costing over \$1 million each.
- ◆ **Streetcars are “permanent” infrastructure, with limited flexibility.** Given the amount of construction that could take place in Glendale over the next several years, it is possible that temporary or permanent rerouting could be required to deal with new development. Streetcars should not be implemented until a permanent route can be firmly established.
- ◆ **Brand Boulevard was recently rebuilt** and local merchants should not be asked to endure significant new construction for a significant period of time.
- ◆ **Federal funds are available for the construction of new urban streetcar infrastructure (Small Starts), but additional study is required to access those funds.**

While streetcar service cannot be recommended in the short term, steps could be taken in the short term to finalize a route and put the needed steps in place for an eventual streetcar line in Glendale. Ultimately, streetcar service has the potential to serve both the downtown shuttle corridor, and a second corridor, operating east-west on Glenoaks, utilizing the wide median in that street. The east-west route could connect Glendale with Burbank, and could ultimately be extended to serve the college.

An initial review of streetcar potential along the shuttle route is presented in Appendix 4A. The initial review does not identify any fatal flaws, but does identify areas where special engineering would be required. A key issue is the transition from Brand to Central. Streetcars generally have significantly wider turning requirements than buses. While a bus could easily transition from Brand to Central on either Broadway or Colorado, streetcars would have significant difficulty utilizing Broadway, and in fact, could not use Broadway without a separate signal phase for streetcar operations. Adding a new phase at the intersection of Broadway and Central would likely have a significant impact on traffic operations at that location. Streetcars could make a transition more easily on either Wilson or Colorado, however, high auto volumes, especially on Colorado may make those streets more complex to operate on. Alternatives include the development of a new transit way which could be considered as part of Galleria improvements.

Recommendation 4.6

Consolidate high frequency services to the extent possible on a limited number of transit priority streets, which will be optimized for transit operation.

Recommendation 4.7

Consider signal priority for all streets with combined service of at least 10 minutes during peak periods, including all streets with Metro Rapid service.

4.3.3 TRANSIT INFRASTRUCTURE IMPROVEMENTS

In addition to adding transit service, infrastructure improvements are required to enhance the customer experience and to ensure that transit travel times are maintained on Primary Transit Streets.

Operational Infrastructure Improvements

Transit streets are designed to optimize transit travel times. On average, transit vehicles operating on transit streets should be able to operate at 35% of the posted speed limit including all delays due to stops and boarding activities. Because local routes like the proposed shuttle have very frequent stops, transit travel times should be measured in the aggregate for all routes operating on the transit street. Some routes, like the shuttle, which are designed for frequent stops are likely to have slower overall travel speeds than routes like the Metro Rapid, which is designed for longer stop distances and faster travel times. By measuring travel speeds on all routes, it is possible to balance faster and slower routes.

Transit travel times should be measured regularly to determine the level of operational infrastructure required to speed travel. If transit travel times can not be maintained at 35% of the posted speed limit on transit streets (12.25 miles per hour on a street with 35 mile per hour speed limits) there are a number of tools that can be implemented to improve speed. These include:

- ◆ Reducing the number of stops on some routes
- ◆ Speeding boarding through all-door boarding options
- ◆ Changing signal priority
- ◆ Making other improvements such as turn pockets and other enhancements to minimize bus/auto conflicts, including adding transit lanes on the street

Speeds on the shuttle route are designed to be lower than speeds on the underlying Rapid routes that serve many of the same streets. Speeds on Rapid routes can be increased by reducing the number of stops, allowing the local shuttle route to serve intermediate stops.

Transit Signal Priority

Transit signal priority is a critical tool for increasing transit speed. The City of Pasadena is currently implementing a signal priority system for improving Metro Rapid speeds on Colorado Boulevard (Rapid Route 780). Because these same buses serve Glendale, it is important that signal priority be a consideration in maintaining speeds in Glendale. The MTA has provided grant funds to a number of jurisdictions who are willing to extend signal priorities

to Rapid routes. Should Glendale implement priority signals, all routes should be designed to take advantage of the technology. Studies made by the MTA indicate that priority signalization and other Rapid technologies increase transit speeds by 29%.

Dedicated Transit Lanes

Transit-only lanes can be designated as a last resort, to improve travel speed. Transit-only lanes would be designated only after other tools were implemented, because transit-only lanes would only be implemented at the expense of either on-street parking or mixed-flow travel lanes.

Recommendation 4.9

Create amenity standards for downtown transit stops based on the number of riders boarding at each location. Maximize amenities including enhanced signage, shelters and other amenities along the shuttle route and other transit priority streets.

Recommendation 4.10

Incorporate real time information in all high amenity bus shelters using Next Bus technology.

4.3.4 CUSTOMER EXPERIENCE

The *Short Range Transit Plan* includes a number of recommendations for locating transit stops and improving the level of amenities available at key stops. Improving curb-side amenities is important for transit systems because making stops safer, more comfortable, and more appealing can have an immediate, positive impact on ridership. The level of amenities at each stop should depend on the number of passengers boarding and alighting at the stop, and on special conditions, such as the willingness of local businesses to support a stop, or the number of seniors or persons with disabilities who might use a stop with a higher level of amenities. Amenities include:

- ◆ Signage
- ◆ System map and schedule
- ◆ Benches and shelters
- ◆ Gateway Stops at major transfer points and key nodes
- ◆ "Next Bus" real-time information

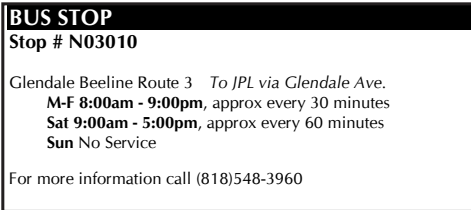
In general, bus stops need to be located, and designed, in a manner which:

- ◆ Provides passengers with protection from adjacent vehicular traffic
- ◆ Allows for easy access by people with disabilities
- ◆ Minimizes opportunities for passengers to slip and fall when boarding or alighting a bus
- ◆ Makes it easy for passengers to get to crosswalks and curb ramps
- ◆ Provides proximity to major trip generators
- ◆ Allows passengers to conveniently transfer between routes
- ◆ Places opposite direction stops in close proximity to each other
- ◆ Enhances safety by incorporating some source of overhead lighting (direct or indirect)

Signs

Every bus stop needs a visible and clearly readable sign marking the stop. A sign should be at least 12" by 18" and should be mounted at least six feet above the ground. The sign should be placed perpendicular to the street so that it is visible from both directions. Each transit operator that serves the stop should be listed on the sign. Space permitting, the sign should also indicate the bus stop ID number, route number(s), hours/days of operations, and a telephone number to call for more information.

Along the shuttle route, the signs should have a consistent and distinctive appearance. A special logo for "the Buzz" should be



ABOVE: An example of a sign with a reasonable amount of information.

plainly visible as should the words “FREE SHUTTLE” so that riders know they can board the free shuttle at that location.

System Map and Schedule

In theory, every bus stop should have a system map so that riders can be certain they are boarding the correct bus for their trip. System maps can help riders plan their trip efficiently, especially if it involves a transfer between two or more routes.

For shuttle stops, the shuttle route and major transfer nodes should be identified, at a minimum. Map canisters make it relatively easy to provide a route map at any location that has a sign pole. Schedules can also be provided in the canister, which goes around the sign pole. At locations where it is not possible to provide a canister, the bus stop sign should list the days, hours, and frequency of every route serving that stop.

Benches and Shelters

Benches and shelters represent two of the most frequently requested improvements listed by current and potential transit riders. Ideally passengers would like to have them installed at every stop, but this can be prohibitively expensive for most transit systems. For example - the purchase and installation of an “off-the-shelf” bus shelter for a single bus stop can cost a transit system as much as \$15,000. In downtown Glendale, shelters should be placed at all shuttle stops, and at any other stop with more than 50 boardings per day.

Bus shelters were ordered for stops on the newly renovated Brand Boulevard. These shelters, costing approximately \$45,000 each, are expected to arrive this year. The shelters have a unique design and would be appropriate as the stop design for all shuttle stops. In addition, Glendale acquired Next Bus signs that are waiting for installation at key stops. Additional “off-the-shelf” shelters can be purchased at lower cost, generally about \$15,000 per shelter.

A key amenity for the success of the shuttle is the introduction of “Next Bus” passenger information at stops. By taking the uncertainty out of transit wait times, real-time passenger information has shown to increase ridership by as much as 5% with no additional changes in service being implemented. The City of Glendale uses Next Bus technology on its buses and in its control center. By providing real time information to passengers, via the internet, phone (including mobile phone), and at bus stops, passengers can be more comfortable counting on transit to meet their travel needs.



TOP: A sign from MTA’s Metro Rapid Red Line showing a bus map and customer information similar to that recommended for the Buzz.

ABOVE: Star Shuttle bus stop sign in Hartford, Connecticut. As is recommended in Glendale, the “star” logo and the words “free ride” are continued on all vehicles and all material related to their downtown shuttle. Just below the sign shown in this photo, a route map and schedule is provided at every stop.

BELOW: Long Beach uses simple canisters to provide schedule and map information.





ABOVE: Next Bus information in Minneapolis.

BELOW: A simple “low profile” shelter on the Metro Rapid line provides weather protection in a minimum of space. *Photo courtesy of Suisman Urban Design.*

BOTTOM: A more substantial shelter provides a unique look for a neighborhood.



Because Glendale is already in the process of acquiring transit shelters and Next Bus technology, there will be no additional capital cost to deploying this order on the shuttle route. Additional stops can be implemented as capital funding becomes available. At a minimum, all stops should have similar signage, regardless of the other amenities available.

In addition to Next Bus, other types of passenger information devices include:

- ◆ **Information Kiosks** – These electronic kiosks, similar in size to a small Automated Teller Machine, have touch screens and can be used by passengers to call up information about schedules, transfers, fares, and route maps.
- ◆ **Fare Machines** – These machines give passengers the opportunity to buy tokens, tickets, and passes at a stop before they board a bus.

These systems can be expensive to purchase, install, and maintain and are not recommended in the short term.

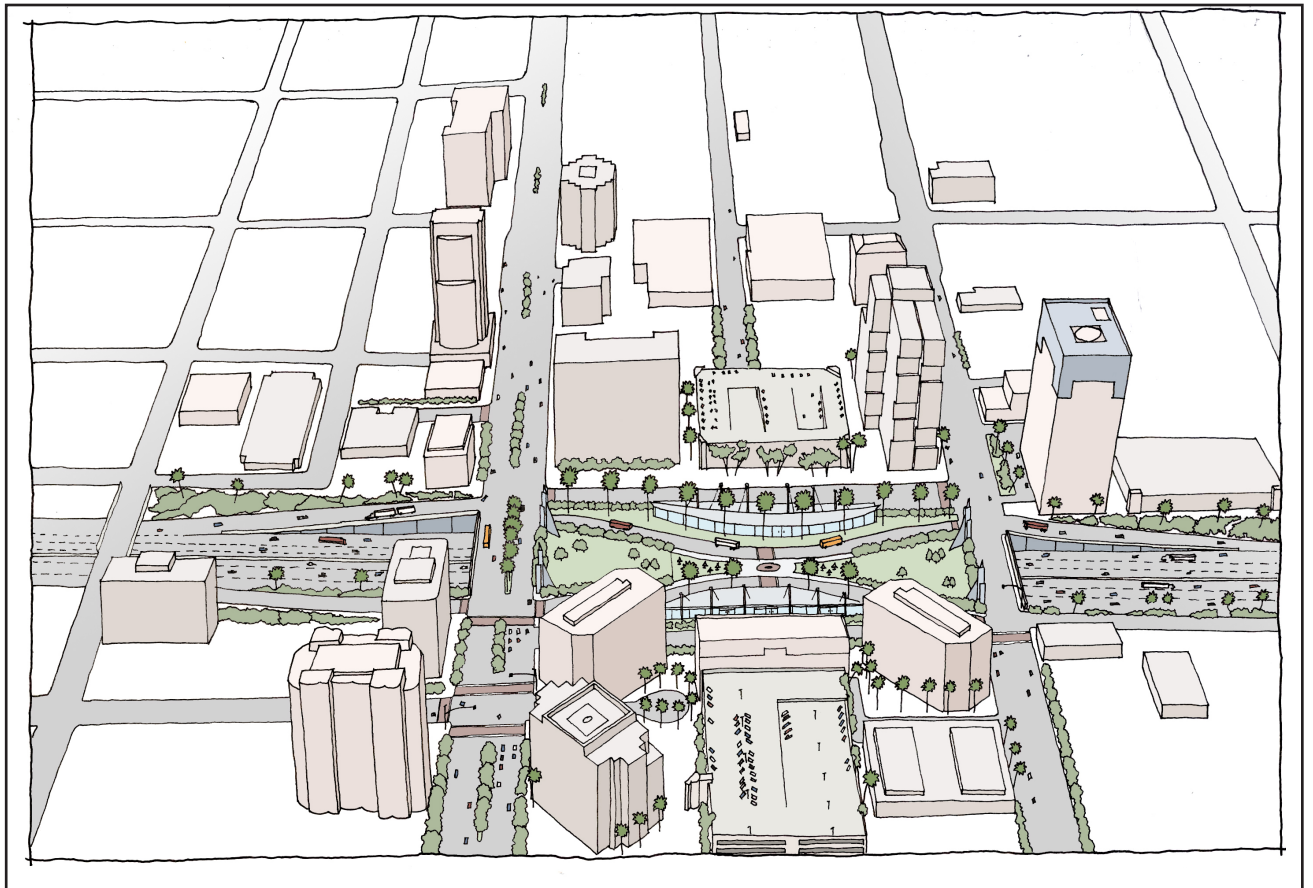
Gateway Stops

While it is strongly recommended that bus stops along the shuttle route have a consistent look and design, the route serves several key transfer points which may warrant a more substantial shelter and enhanced passenger information. These stops include the Metrolink station, where many Beeline routes come together, and the proposed interface with the East-West Connector at Highway 134. Stops in these locations should be simple and easy to maintain, but have a higher quality of amenities, modeled against the Orange Line station stops.



ABOVE: Warner Center station on the MTA Orange Line can serve as a model for gateway stops in Glendale.

BELOW: This Metro Rapid idealized stop is another good model for a Glendale gateway stop at Highway 134. *Image courtesy of Suisman Urban Design.*



ABOVE: One long-term option for a Highway 134 station in Glendale would be to construct a "lid" over the freeway which becomes a bus plaza. The City's DSP consultants (Zimmer Gunsul Frasca) created the drawing above as a potential "freeway lid" station for Glendale. Creating a transit station in this manner opens up potential open space in an area that is currently impacted by the freeway. *Source: Zimmer Gunsul Frasca. Used with permission.*

Recommendation 4.13

Develop performance standards for transit streets that incorporate transit quality of service, and go beyond auto level of service.

4.3.5 MEASURING SUCCESS

Glendale’s Beeline has established a number of goals for defining success on that system:

- ◆ Increase Beeline ridership and improve productivity and efficiency
- ◆ Reduce Dial-A-Ride costs by moving some Dial-A-Ride passengers to Beeline
- ◆ Improve Beeline connections between downtown and San Fernando Road
- ◆ Remove “big bus” service from narrow residential streets (e.g. Glenwood Avenue)
- ◆ Separate school-oriented services from regular fixed route services
- ◆ Improve Beeline on-time performance
- ◆ Provide faster and more frequent Beeline connections between downtown and Community College
- ◆ Provide Beeline service on Glendale Avenue below Colorado Street
- ◆ Create a new high frequency downtown circulator route to support the goals of the *Downtown Mobility Study*

The additional recommended measures for measuring Beeline performance are described in Chapter 2 and summarized on the opposite page. These are measures for all transit services operating in downtown Glendale, including both regional and local service. In some cases, standards are different for these two types of service, and these differences are indicated in the right column of the table on the opposite page

Goal	Standard
<p>Mode Split – Increase the transit mode share for trips WITHIN downtown Glendale, and also between Glendale and neighboring cities.</p>	<p>Mode share for transit trips within downtown Glendale = 10% on all systems.</p> <p>Transit mode share between Glendale, Burbank, Pasadena and Los Angeles for work trips = 8%.</p>
<p>Productivity for Shuttle Service – Measured in “Passengers per Revenue Service Hour.”</p>	<p>Buzz Shuttle productivity = 20 passengers per revenue service hour.</p> <p>Overall Beeline productivity = 15 passengers per revenue service hour.</p>
<p>Travel Speeds on Transit Priority Streets – Measured as % of posted speed limit.</p>	<p>Total transit speed greater than or equal to 35% of the posted speed limit for all services combined.</p>
<p>Connectivity – Transit ridership will increase to the extent that transit services can be packaged as a single system.</p>	<p>Create a joint transit map and schedule for central Glendale focusing on high frequency routes.</p> <p>Identify and protect transfer points. Provide highest level of amenities at key local-regional transfers.</p>
<p>Fares – Measured in farebox recovery.</p>	<p>Implement fare-free shuttle and adjust all other fares to recover at least 15% from farebox. Develop uniform regional fares for local trips.</p>

Best Practices – Design Principles for a Successful Local Shuttle

- ◆ **Provide a Legible Service.** Operate two ways on the same street, minimize turns and keep the route as simple and consistent as possible.
- ◆ **Maximize Connectivity.** Link local and regional transit with key downtown destinations including retail, entertainment, and employment sites.
- ◆ **Serve Multiple Trip Types.** Single purpose “shopper shuttles” generally are not as productive as shuttles that serve many types of trips including connections to work, shop and entertainment.
- ◆ **Stop Often and Quickly.** The shuttle should provide “front door service” to key downtown destinations. Stop dwell times should be reduced with all door boarding.
- ◆ **Operate “Fare Free”.** Eliminating fares allows for all door boarding, and encourages riders to “hop on” for short trips that would seem “uneconomical” for even a low fare payment.
- ◆ **Operate Frequently and with a Long Service Span.** Service can be initiated within existing resources operating every 20 minutes, but a short term goal should be to operate every 10 minutes or more frequently during peak periods. Frequent service allows people to “hop on” and ride without needing a schedule. Operating over a long service day allows people to stay downtown after work, enjoying the theater, dinner or shopping without worrying about the end of the shuttle’s service day. Weekend service is as important as weekday service.
- ◆ **Market Downtown, Not Just the Shuttle.** Using the shuttle is the means to an end – taking transit or parking once and taking full advantage of the opportunities available in downtown Glendale. Marketing the shuttle should not be done in isolation, but rather should be an element of marketing downtown.
- ◆ **Create an Image.** Even with little capital investment, buses can have a unique paint or wrap scheme, amenities can be improved and a unique image can be created for the shuttle which will be enhanced over time with a unique vehicle type.



Santa Barbara’s electric shuttle attracts riders with its clean vehicle and low fares.



Denver’s 16th Street Mall Shuttle provides free service every 2 minutes on low floor hybrid vehicles.



San Antonio’s rubber tire trolleys serve tourist and local trips downtown without the high cost of rail transit.